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[Intervention Review]

Laparoscopic techniques versus open techniques for inguinal hernia repair

Kirsty McCormack[1], Neil Scott[2], Peter M.N.Y.H Go[3], Sue J Ross[4], Adrian Grant[5], Collaboration the EU Hernia Trialists[6]

[1]Health Services Research Unit, University of Aberdeen, Aberdeen, UK. [2]Dept. of Publ. Health, Univ. of Aberdeen, Aberdeen, UK. [3]Dept. of Chirurgie, St Antonius Ziekerhuis, EM Nieuwegein, Netherlands. [4]Mount Sinai Hospital and Samuel Lunenfeld Research Institute, Toronto, Canada. [5]School of Medicine, University of Aberdeen, Aberdeen, UK. [6]Health Services Research Unit, University Of Aberdeen, Scotland, UK

Contact address: Kirsty McCormack, Health Services Research Unit, University of Aberdeen, Polwarth Building, Foresterhill, Aberdeen, AB25 2ZD, UK. k.mccormack@abdn.ac.uk.

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ABSTRACT

Background

Inguinal hernia repair is the most frequently performed operation in general surgery. The standard method for inguinal hernia repair had changed little over a hundred years until the introduction of synthetic mesh. This mesh can be placed by either using an open approach or by using a minimal access laparoscopic technique. Although many studies have explored the relative merits and potential risks of laparoscopic surgery for the repair of inguinal hernia, most individual trials have been too small to show clear benefits of one type of surgical repair over another.

Objectives

To compare minimal access laparoscopic mesh techniques with open techniques.

Search methods

We searched MEDLINE, EMBASE, and The Cochrane Central Controlled Trials Registry for relevant randomised controlled trials. The reference list of identified trials, journal supplements, relevant book chapters and conference proceedings were searched for further relevant trials. Through the EU Hernia Trialists Collaboration (EUHTC) communication took place with authors of identified randomised controlled trials to ask for information on any other recent and ongoing trials known to them.

Selection criteria

All published and unpublished randomised controlled trials and quasi-randomised controlled trials comparing laparoscopic groin hernia repair with open groin hernia repair were eligible for inclusion.

Data collection and analysis

Individual patient data were obtained, where possible, from the responsible trialist for all eligible studies. Where IPD were unavailable additional aggregate data were sought from trialists and published aggregate data checked and verified by the trialists. Where possible, time to event analysis for hernia recurrence and return to usual activities were performed on an intention to treat principle. The main analyses were based on all trials. Sensitivity analyses based on the data source and trial quality were also performed. Pre-defined subgroup analyses based on recurrent hernias, bilateral hernias and femoral hernias were also carried out.

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Main results

Forty-one eligible trials of laparoscopic versus open groin hernia repair were identified involving 7161 participants (with individual patient data available for 4165). Meta-analysis was performed, using individual patient data where possible. Operation times for laparoscopic repair were longer and there was a higher risk of rare serious complications. Return to usual activities was faster, and there was less persisting pain and numbness. Hernia recurrence was less common than after open non-mesh repair but not different to open mesh methods.

Authors' conclusions

The review showed that laparoscopic repair takes longer and has a more serious complication rate in respect of visceral (especially bladder) and vascular injuries, but recovery is quicker with less persisting pain and numbness. Reduced hernia recurrence of around 30-50% was related to the use of mesh rather than the method of mesh placement.

PLAIN LANGUAGE SUMMARY

Laparoscopic techniques versus open techniques for repair of a hernia in the groin

Repair of a hernia in the groin (an inguinal hernia) is the most frequently performed operation in general surgery. The hernia is repaired (with suturing or placing a synthetic mesh over the hernia in one of the layers of the abdominal wall) using either open surgery or minimal access laparoscopy. The most common laparoscopic techniques for inguinal hernia repair are transabdominal preperitoneal (TAPP) repair and totally extraperitoneal (TEP) repair. In TAPP the surgeon goes into the peritoneal cavity and places a mesh through a peritoneal incision over possible hernia sites. TEP is different as the peritoneal cavity is not entered and mesh is used to seal the hernia from outside the thin membrane covering the organs in the abdomen (the peritoneum). The mesh, where used, becomes incorporated by fibrous tissue. Minor postoperative problems occur. More serious complications such as damage to the spermatic cord, a blood vessel or nerves, are occasionally reported with open surgery and nerve or major vascular injuries, bowel obstruction, and bladder injury have been reported with laparoscopic repair. Reoccurrence of a hernia is a major drawback.

The review authors identified 41 eligible controlled trials in which a total of 7161 participants were randomized to laparoscopic or open surgery repair. The mean or median duration of follow up of patients ranged from 6 to 36 months.

Return to usual activities was faster for laparoscopic repair, by about seven days, and there was less persisting pain and numbness than with open surgery. However, operation times were some 15 minutes longer (range 14 to 16 minutes) with laparoscopy and there appeared to be a higher number of serious complications of visceral (especially bladder) and vascular injuries. Using a mesh for repair reduced the risk of a recurring hernia rather than the method of placement (open or laparoscopic surgery).

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BACKGROUND

Inguinal hernia repair is the most frequently performed operation in general surgery (Rutkow 1993). Approximately 80,000 are performed each year in the UK (Kingsnorth 1992), 100,000 in France (Levard 1996) and 700,000 in the USA (Schumpelick 1994). Because inguinal hernia repair is performed so frequently, relatively modest improvements in clinical outcomes would have a significant medical impact (Simons 1996).

The standard method for inguinal hernia repair had changed little over the hundred years since Bassini introduced the modern era of herniorrhaphy (Bassini 1887). Bassini's method relies on a musculo-aponeurotic repair to close the abdominal wall defect under tension, eliminate the presence of a lump and relieve the patient's discomfort. Minor postoperative problems are not uncommon, while more serious complications, such as damage to the spermatic cord, the femoral vein or artery, or the genitofemoral or ilioinguinal nerves are occasionally reported. However, its major drawback is recurrence. Annual statistics from various countries show that, despite many modifications introduced by Shouldice, McVay and others, 10-15% of inguinal hernia operations are for recurrent hernias (Liem 1996).

A newer concept of groin hernia repair is to cover the hernia defect with a prosthetic mesh. This mesh is placed on one of the layers of the abdominal wall either using an open approach or a minimal access laparoscopic technique. The two most common types of laparoscopic repair are the transabdominal preperitoneal repair (TAPP) and the totally extraperitoneal repair (TEP). Some surgeons fix the mesh with staples or sutures whereas others now do not. Schrenk et al (Schrenk 1996) claimed that the benefits of laparoscopic inguinal herniorrhaphy included a decrease in postoperative pain, reduced hospital stay and early return to normal activity. However, serious complications have also been reported, such as nerve injuries, major vascular injuries, bowel obstruction, and bladder injury (Kald 1997).

Although many studies have explored the relative merits and potential risks of laparoscopic surgery for the repair of inguinal hernia, most individual trials have been too small to show clear benefits of one type of surgical repair over another and their authors' conclusions have not been consistent. Nevertheless, many of these trials have had important influence on clinical practice and consequently the debate surrounding the optimal treatment for the surgical repair of inguinal hernia has continued.

In 1996 the International Study Group for Laparoscopic Inguinal Hernia Repair (ISLIR) suggested a 'standard' approach to data collection as a basis for an individual patient data (IPD) meta-analysis to combine the results from all available randomised evidence evaluating laparoscopic repair for inguinal hernia. The EU Hernia Trialists Collaboration (EUHTC) was established in 1998, under whose auspices the meta-analysis was conducted. The project secretariat, funded by the EU BIOMED II workprogramme, made contact with the principal investigators of all known relevant randomised controlled trials and invited them to collaborate. The EUHTC first conducted a meta-analysis of published data only and the results of this were published in Issue 4 2000 of the Cochrane Library and the British Journal of Surgery (EUHTC 2000). However, as expected, these analyses showed that there were insufficient published data to provide reliable estimates of some treatment effects. The purpose of this new version of the review is to build on the published meta-analyses by using, where possible, the results of individual patient data analyses to provide a more comprehensive overview of available trial evidence regarding the benefits and harms of laparoscopic inguinal hernia repair. These analyses were completed in January 2001.

OBJECTIVES

The purpose of this review was to compare minimal access laparoscopic mesh techniques with open techniques for inguinal hernia repair. Comparisons of open mesh techniques versus open non-mesh techniques have been considered in a separate review (Scott 2001).

METHODS

Criteria for considering studies for this review

Types of studies

All published and unpublished randomised controlled trials and quasi-randomised controlled trials comparing laparoscopic inguinal hernia repair with open inguinal hernia repair were eligible for inclusion. Trials were included irrespective of the language in which they were reported.

Types of participants

The trials included all patients with a clinical diagnosis of inguinal hernia for whom surgical management was judged appropriate. Where possible, individual patient data from randomised patients were included in the meta-analysis including data obtained for any patients excluded from the original published analyses.

Types of interventions

Methods of surgical repair of inguinal hernia:

a) Laparoscopic inguinal herniorrhaphy (including the transabdominal preperitoneal technique (TAPP) and the totally extraperitoneal technique (TEP)).

b) Open repair (including open mesh repair and open non-mesh techniques).

Types of outcome measures

The following data items were sought for all trials:

1 Duration of operation (min)
2 'Opposite' method initiated
3 Conversion (defined as a procedure initiated as laparoscopic but converted to open, or a procedure initiated as open but converted to laparoscopic)
4 Haematoma
5 Seroma
6 Wound/Superficial Infection
7 Mesh/Deep Infection
8 Port site hernia
9 Vascular injury
10 Visceral injury
11 Length of hospital stay (Days)
12 Time to return to usual activities (Days)
13 Persisting pain (defined as groin pain of any severity as near 12 months after the operation as possible provided this was at least after 3 months)

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14 Persisting numbness (defined as groin pain of any severity as near 12 months after the operation as possible provided this was at least after 3 months)
15 Hernia recurrence
16 Known death, within 30 days of surgery

Search methods for identification of studies

1. A database search for randomised controlled trials was conducted using MEDLINE, EMBASE, and The Cochrane Central Controlled Trials Registry.

In MEDLINE, the first two stages of the standard Cochrane search strategy described by Dickersin et al (Dickersin 1994) were used with the following specific search terms:

1. explode inguinal hernia/surgery (MeSH)
2. inguinal herni$.tw
3. shouldice.tw
4. bassini.tw
5. mcvay.tw
6. stoppa.tw
7. (laparoscop$ adj25 herni$).tw
8. (tension-free adj25 herni$).tw
9. (conventional adj25 herni$).tw
10. (open adj25 herni$).tw
11. (darn adj25 herni$).tw
12. (mesh adj25 hern$).tw
13. (traditional adj25 herni$).tw
14. (plug adj25 herni$).tw
15.(lichtenstein adj25 herni$).tw
16. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15

2. The reference list of identified trials, journal supplements, and relevant book chapters were searched for further relevant trials.

3. Through the EUHTC, communication took place with authors of identified randomised controlled trials to ask for information on any other completed and ongoing trials known to them

4. Specialists involved in research on the repair of inguinal hernia were contacted to ask for information about any further completed and ongoing trials.

5. Potentially useful sites on the world wide web were checked for references to relevant trials.

Data collection and analysis

This review is based on individual patient data obtained directly from the principal investigator or responsible trialist. The methods used were prespecified in a protocol.

Data were sought for all patients randomised in all eligible published and unpublished randomised controlled trials and follow-up beyond that previously published was requested. When received the IPD were thoroughly checked for internal consistency and consistency with any published reports. Any apparent discrepancies and queries were resolved by discussion with the responsible trialists who also verified the final version of the analyses for each trial. All analyses were based on the original allocation regardless of the actual method of repair performed ('intention to treat'). If patients had been excluded because they did not receive the allocated procedure, details were sought and included where possible.

Where IPD were not available, aggregated data were used; the trialist was asked to verify information abstracted from their publication and supplement this where possible. Any apparent discrepancies and queries were resolved by discussion with the responsible trialists who also verified the final results used for each trial.

Where IPD or additional aggregate data where not available, published data taken from the trial reports were used. All studies were assessed for methodological quality. This was performed by two reviewers independently. Where a difference of opinion existed, the two reviewers consulted an arbiter. The system for classifying methodological quality of trials was based on an assessment of the three principal potential sources of bias. These are: selection bias from insecure random allocation of treatments; attrition bias; and biased ascertainment of outcome where knowledge of the allocation might have influenced the measurement of outcome. The same two reviewers abstracted the outcome data, and other important details of the trial such as the length of follow-up, type of hernia, method of hernia diagnosis, inclusion and exclusion criteria. These data were double checked and any differences of opinion resolved by an arbiter.

For each outcome the results were derived from the best available source: if IPD were not available, information from aggregate data provided by the trialist or data from the trial publications were used. Dichotomous outcome data were combined using the Peto odds ratio method and continuous outcomes were combined using the Mantel-Haenszel weighted mean difference method. Time to return to usual activities was described using IPD by calculating hazard ratios. The interpretation of this outcome is similar to that of other outcomes except that the graph shows estimated hazard ratios instead of odds ratios. By using the IPD the hazard ratio compares the rate of return to usual activities in each group while taking account of the fact that not all trial participants will have returned to usual activities during the follow-up period. The observed minus the expected number of events with its variance were derived for each trial using Kaplan-Meier survival analysis. The results are all reported using a fixed effects model. Chi-squared tests were used to test for heterogeneity across studies and where significant heterogeneity was found possible reasons were explored.

The review was conducted using the standard Cochrane software 'RevMan 4.1'. Comparison 1 considers laparoscopic versus open repair. Within this analysis, the trials were ordered by the method of laparoscopic repair (TAPP and TEP). Comparison 2 considers laparoscopic TAPP versus open repair and the trials were ordered by the method of open repair (open mesh or non-mesh). Comparison 3 considers laparoscopic TEP versus open repair and the trials were also ordered by the method of open repair (open mesh or non-mesh). Comparisons 4-6, 7-9, and 10-12 repeat this but include patients with recurrent, bilateral and femoral hernias respectively.

Duration of operation was defined as time from first incision to last suture or time in theatre where this was not available. "Opposite" method was defined as a laparoscopic repair initiated when an open repair was allocated, or an open repair initiated when a laparoscopic repair was allocated. A conversion was

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defined as a proceedure initiated as a laparoscopic but converted to an open repair, or a procedure initiated as an open but converted to a laparoscopic. Haematoma included wound or scrotal haematoma or ecchymosis but not bruising. Seroma included hydrocele. Wound/superficial infection was defined as wound related infections only and included pus from wound, fistula and sinus formation. Length of postoperative stay was defined as time from admission to discharge. Time to return to usual activities was defined as normal social activities or work where this was not available. Persisting pain was defined as groin pain of any severity (including testicular) persisting at one year after the operation, or at the closest timepoint to one year provided this was at least three months after surgery. Persisting numbness included paresthesia, dysesthesia and discomfort persisting at one year after the operation, or at the closest timepoint to one year provided this was at least three months after surgery. Hernia recurrence data were based on the methods of ascertainment used in individual trials.

The main analyses were based on all trials. However, we also planned a priori sensitivity analyses based on: 1) IPD data alone; 2) Trials with adequate allocation concealment. A priori sub-group analyses for recurrent hernia, bilateral hernias and femoral hernias were also planned, as described above.

RESULTS

Description of studies

The characteristics of the 41 trials are summarised in the 'Characteristics of included studies' table. There were 45 relevant comparisons in 41 eligible trials (7161 participants), because four trials had three-arms. Of the 41 trials included, 34 were reported in full papers and seven as abstracts only. IPD were provided for 25 trials (4165 participants) four of which have a published abstract only, and additional aggregated data for a further seven (2002 participants). Published data only were available for the other nine (994 participants). Two of these were identified too late to approach the authors for individual patient data, with information available for each limited to a conference abstract. All trials were restricted to elective inguinal hernia repair. 19 included recurrent as well as primary hernias, 14 were limited to primary hernias only, one included recurrent hernias only, and these details were not reported for seven. Based on IPD, participants had a mean age of 54.2 (14.9), 96% were men, 11% had recurrent hernias, 9% bilateral, and 1% femoral. The comparisons in the 41 trials were: TAPP versus open mesh (11 trials, 1206 participants); TAPP versus open non-mesh (12 trials, 1528 participants); TAPP versus mixed open (1 trial, 57 participants); TEP versus open mesh (6 trials, 690 participants); TEP versus non-mesh (5 trials, 1522 participants); TAPP versus TEP versus open non-mesh (one trial, 86 participants); mixture of laparoscopic versus a mixture of open repairs (2 trials, 1051 participants); and TAPP versus open mesh versus open non-mesh (three trials, 1021 participants). Across the trials where reported, all but seven of the patients allocated to laparoscopic repairs received a general anaesthetic (one had a local and six regional). Patients in the open groups received general, regional or local anaesthesia, determined by the trial protocol or surgeon's choice.

Risk of bias in included studies

The method of randomisation used was stated explicitly for 36 of 41 trials: central randomisation service in four, sealed envelopes in 23, computer generated random numbers in two and random number tables in three (although concealment details were not described), by alternation in two, by birthdate in one, and random selection by cards in one. In 5 trials, the allocation was said to be 'randomised' but the method was not specified. The trials ranged in size from 38 to 994 randomised patients. The mean or median duration of follow-up ranged from 6 weeks to 36 months, 25 trials confirmed hernia diagnosis by clinical examination and in 21 trials the operation was reported to have been performed by an 'experienced' surgeon or one who had performed at least 10 laparoscopic hernia repairs.

Effects of interventions

1) Duration of operation

The average length of operation was longer in the laparoscopic groups in 36 of 37 trials with data (Comparison 01.01). Overall the WMD was 14.81 minutes (95% CI 13.98 to 15.64; p<0.0001). The estimated effect size was broadly consistent for the comparisons of TAPP versus open and TEP versus open in all sub-categories (open mesh, open non mesh and mixed open: Comparisons 02.01 and 03.01). There was evidence of statistical heterogeneity but, consistency in direction of effect, even when size and effect estimates varied.

2) "Opposite" method initiated

The 'opposite' method was initiated in 59/2053 (2.9%) allocated laparoscopic repairs and 12/2108 (0.6%) allocated open repairs (Comparison 01.02). Similar patterns were observed after allocation to TAPP (Comparison 02.02) and TEP (Comparison 03.02).

3) Conversions

In total, 85 (2.7%) laparoscopic operations were stated to have been converted to an open procedure amongst 3130 allocated laparoscopic repairs and 5 (0.1%) open procedures were converted to a laparoscopic repair amongst 3541 allocated open repairs (Comparison 01.03: Peto OR 6.73, 95% CI 4.42 to 10.24; p<0.0001). Higher rates observed in TEP trials reflected two studies (Coala Trial Gp 1997; MRCmulticentre 1999) (Comparisons 02.03 and 03.03).

4) Haematoma

Overall, there appeared to be fewer haematomas in the laparoscopic groups (Comparison 01.04: 238/2747 vs 317/3007: Peto OR 0.72, 95% CI 0.60 to 0.87; p<0.01) but this reflected TEP trials. Stratification by whether TAPP or TEP largely explained the statistical heterogeneity. There were no clear differences when TAPP trials were considered (Comparison (02.04). Eight of the nine TEP trials favoured laparoscopic repair in this respect (Comparison 03.04).

5) Seroma

Overall, there were more seromas in the laparoscopic groups (Comparison 0105: 139/2408 vs 101/2679: Peto OR 1.58, 95% CI 1.20 to 2.08; P=0.001). The heterogeneity between studies is largely explained by the MRCmulticentre 1999 trial. Excluding this trial, suggests a doubling of the risk of seroma following laparoscopic repair irrespective of method; including it, suggests the differential effect is limited to TAPP repair only (Comparison 02.05 and 03.05).

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6) Wound/Superficial infection

Where reported, wound/superficial infection also appeared less frequent in the laparoscopic groups (Comparison 01.06: Peto OR 0.45, 95% CI 0.32 to 0.65; p<0.0001). Although these results were particularly influenced by the Whipps Cross 1998 trial, the difference remained significant when this trial was removed. The estimated effect was similar when comparing TAPP with open and TEP with open, although non-significant in the TEP versus open comparison.

7) Mesh/deep infection

There were only three reported cases of mesh/deep infection: one case of mesh infection in a laparoscopic TAPP group (Nyborg 1999); one case of mesh infection in an open mesh group (Bydgoszcz 1998); and one case of deep infection in an open non-mesh group (SCUR 1999) (Comparisons 01.07; 02.07; and03.07).

8) Vascular injuries

There were three reported cases of intra-operative vascular injuries all occurring in laparoscopic groups: one unspecified vascular injury (Adelaide 1994); one trocar injury to the left common iliac artery (MRCmulticentre 1999); and one artery hit by a port causing a conversion (Woodville 1996). There were eight post-operative vascular injuries, four in the laparoscopic groups consisting of two cases of post-operative bleeding which required re-operation (Maastricht 1998, Stuttgart 1995) and two haematomas which required re-operation (Maastricht 1998, Stuttgart 1995). The remaining four vascular injuries occurred in the open groups consisting of three haematomas requiring re-operation (Paris 1994, Stuttgart 1995, Woodville 1996) and one wound haemorrhage (Whipps Cross 1994).

9) Visceral injuries

There were seven intra-operative visceral injuries, six were in the laparoscopic groups consisting of 4 bladder injuries (MRCmulticentre 1999, SCUR 1999, Tampere 1998), one re-operation causing small bowel damage (Adelaide 1994), and one punctured stomach (Maastricht 1998). One small bowel injury occurred in the open group of the MRCmulticentre 1999 trial. There were also two post-operative bowel obstructions both of which occurred in the laparoscopic groups (Adelaide 1994, MRCmulticentre 1999).

10) Port-site hernia

There were only 6 cases of port site hernia reported (Aarberg 1996; Linköping 1997; MRCmulticentre 1999; Whipps Cross 1998).

11) Length of stay (days)

There was marked heterogeneity in length of hospital stay, with greater differences in mean stay between different hospitals than there were between laparoscopic and open repairs in the same hospital (Comparisons 01.11; 02.11; and 03.11). In respect of between trial group differences, the trials tended to show either no difference or a clear difference, sometimes in exact days (e.g. Coala Trial Gp 1997). This suggests that the overall finding of shorter stay after laparoscopic repair reflects hospital policy rather than a true effect of the repair.

12) Time to return to usual activity (days)

In all trials with data, the time to return to usual activity was shorter in the laparoscopic groups (Comparison 01.12: HR 0.56, 95% CI 0.51 to 0.61; p<0.0001). This is equivalent to an absolute difference of about 7 days. The estimated effect was similar when comparing TAPP with open and TEP with open. However, there was evidence of statistical heterogeneity and this is likely to be due to differences between trials in: post-operative advice; definition of usual activity (e.g work, walking, sport); existing co-morbidity; and local 'cultures'.

13) Persisting pain

There were fewer cases of persisting pain at one year after the operation in the laparoscopic groups (Comparison 01.13: overall 290/2101 versus 459/2399; Peto OR 0.54, 95% CI 0.46 to 0.64; p< 0.0001). The estimated effect was similar when comparing TAPP with open repair and TEP with open repair in all open mesh and open non-mesh sub-categories. The statistical heterogeneity was largely explained by one trial (MRCmulticentre 1999). This relatively large trial suggests a small difference, but still favoured laparoscopic repair.

14) Persisting numbness

There were fewer cases of persisting numbness in the laparoscopic groups (Comparison 01.14 overall 102/1419 versus 217/1624; Peto OR 0.38, 95% CI 0.28 to 0.49; p<0.0001). The direction of effect was consistent when comparing TAPP with open repairs and TEP with open repairs. The data suggested a larger difference in TAPP (Comparison 02.14) than TEP trials (Comparison 03.14) but this again reflected the MRCmulticentre 1999 trial which contributed the majority of the TEP data. Overall, there was significant heterogeneity but not when TAPP and TEP were considered separately.

15) Hernia recurrence

Totals of 86 recurrences were reported amongst 3138 allocated laparoscopic repair and 109 amongst 3504 allocated to open repair (Comparison 01.15: Peto OR 0.81, 95% CI 0.61 to 1.08; p = 0.16). The comparative performance of both TAPP and TEP was, however, influenced by the nature of the open repair (Comparison 02.15 and 03.15). When the open repair was mesh, the rates of recurrence were similar in the trial groups. In contrast, when the open repair was non-mesh, recurrence was less common after laparoscopic repair, although this was statistically significant only for the TAPP comparison.

16) Known death

Only one death occurred within 30 days of surgery and this was unrelated to operation (Whipps Cross 1998).

SUBGROUP ANALYSIS

Subgroup analyses were performed for patients with recurrent hernias (Comparison 04,05 and 06), bilateral hernias (Comparison 07,08 and 09), and femoral hernias (Comparison 10, 11 and 12). Data were available from 12 trials for recurrent hernias, 12 trials for bilateral hernias, and 4 trials for femoral hernias. When considering recurrent and bilateral hernias all subgroup analyses were also consistent with or statistically compatible (i.e their confidence

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intervals did not rule out the effect estimate derived from the overall results) with the overall results. There were too few data to reliably perform subgroup analyses for patients with femoral hernias.

SENSITIVITY ANALYSIS

Analyses restricted to IPD data alone gave similar estimates for recurrence to the overall results (Peto OR 0.79, 95% CI 0.55 to 1.14; p=0.2). Trials with adequate allocation concealment also gave similar estimates (Peto OR 0.82, 95% CI 0.60 to 1.13; p=0.2).

DISCUSSION

This review was conducted through the formal structure of the EU Hernia Trialists Collaboration which ensured as complete identification of relevant trials as possible. IPD were provided for 25 trials, four of which have a published abstract only, and additional aggregated data for a further seven. This greatly enhanced the amount of data we were able to include in the review compared with the original version based on published data. This particularly applied to 'persisting pain'. The availability of IPD also helped to ensure a better quality of data and randomisation integrity. However, despite maximum effort, published data only were available for nine trials. Two of these trials were identified too late to approach the authors for individual patient data, with information available for each limited to a conference abstract. The framework of this collaboration means that it is unlikely that we have missed important trials, although we do know that one large trial with long term follow-up is currently unreported and recruitment to another is ongoing.

Our results provide evidence that after a laparoscopic repair return to usual activity is faster and persisting pain is reduced. However, operation times are longer and there appears to be a higher rate of serious complication rate in respect of visceral (especially bladder) and vascular injuries. Our findings relating to hernia recurrence are consistent with those in the review of open mesh versus open non-mesh repair of groin hernia (Scott 2001). That review provides evidence that the use of mesh in open repair is associated with a substantial reduction in the risk of hernia recurrence. In this review both of the sub-group comparisons of laparoscopic groups (which use mesh) with non-mesh open methods favour the laparoscopic method (although not statistically significantly so for the TEP versus non-mesh comparison). This is equivalent to around a 30-50% reduction in the risk of hernia recurrence. However, when comparing laparoscopic methods with open mesh methods of hernia repair there is no apparent difference. Therefore results of the two reviews taken together provide evidence that the use of mesh is associated with a reduction in the risk of hernia recurrence rather than the method of placement and that the two methods of mesh placement appear equally effective in this respect.

The results for many of the outcomes in this review displayed significant heterogeneity. With the exception of recurrence there was generally consistency in direction of effect, even when size and effect estimates varied. Much of the variation was explained by differences in the methods of repair, both laparoscopic (TAPP or TEP) and open (mesh or non-mesh). Sensitivity analyses suggested that the type of data (IPD or not) and adequacy of allocation concealment did not influence the estimates of effect, at least in respect of recurrence. Other likely sources of heterogeneity, however, are differences in the way the outcomes were defined or measured; in operator experience; in the types of people studied; and in length of follow-up.

AUTHORS' CONCLUSIONS

Implications for practice

The use of mesh during laparoscopic hernia repair is associated with a reduction in the risk of hernia recurrence in comparison with non-mesh methods of hernia repair. However, there is no apparent difference when laparoscopic methods are compared with open mesh methods of hernia repair. The data available show less persisting pain and numbness following a laparoscopic repair and return to usual activities is faster. However, operation times are longer and there appears to be a higher serious complication rate in respect of visceral (especially bladder) and vascular injuries. An economic evaluation (not reported here) suggests that laparoscopic repair is more costly that an open mesh repair, and that this is not sufficiently offset by benefits to make it cost-effective.

Implications for research

To our knowledge, this is the first time that general surgeons have collaborated in this way and contributed their raw trial data for the purposes of a systematic review. We have demonstrated that, although costly, the collection of IPD can greatly enhance the data available for a Cochrane systematic review compared with using published data only. We used a liberal definition of 'persisting pain' with the consequence of widely varying prevalence rates across trials. Ideally, the issue of chronic pain should now be addressed prospectively using standard definitions and allowing assessment of the degree of pain.

Rare, serious complications are an important consideration in the context of minor surgery. Even considering trials involving over 7000 participants gives imprecise estimates; prospective population-based registries of new surgical proceedures may be the best way to address this. (The advantage of randomised trials, however, is formal entry prior to surgery and this ideal is unlikely to be accomplished in observational studies).

Questions remain about the relative merits and risks of TAPP and TEP. Further research is also required about the optimal mesh type (e.g. size) and placement (e.g. sutured, unsutured or stapled) proceedure for both laparoscopic and open mesh repair.

Laparoscopic groin hernia repair like most other surgical proceedures is technically challenging and performance is likely to improve with experience. In this review, the consistency of the trials (involving surgeons at varying stages of learning) provided reassurance that learning is not a major confounder. Nevertheless, the general issue is important and further methodological research is warranted in the context of both trials and meta-analyses of trials.

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The Steering Committee:
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The Secretariat:
Adrian Grant (UK), Kirsty McCormack (UK), Sue Ross (UK), Neil Scott (UK), Luke Vale (UK)

The Collaborators:
Petri Aitola (Finland), Bo Anderberg (Sweden), Dag Arvidsson (Sweden), Jeffrey Barkun (Canada), Richard Barth Jnr (USA), Morten Bay-Nielsen (Denmark), Geerard Beets (The Netherlands), Reinhard Bittner (Germany), Sven Bringman (Sweden), Torben Callesen (Denmark), Carlo Castoro (Italy), Coala Trial Steering Committee (The Netherlands), Carmen Dirksen (The Netherlands), Charles Filipi (USA), Robert Fitzgibbons (USA), Esbern Friis (Denmark), Ricardo Girão (Portugal), Paul Graham (UK), Efthimios Hatzitheoklitos (Greece), Philippe Hauters (Belgium), Timo Heikkinen (Finland), Hans Jeekel (The Netherlands), Bo Johansson (Sweden), Poul Juul (Denmark), Anders Kald (Sweden), Henrik Kehlet (Denmark), Najib Khoury (Canada), Anton Klingler (Austria), J Köninger (Germany), Robert Kozol (USA), Bernhard Leibl (Germany), Ian Macintyre (UK), Guy Maddern (Australia), James McGillicuddy (USA), Bertrand Millat (France), Erik Nilsson (Sweden), Pär Nordin (Sweden), Alessandro Paganini (Italy), Giuseppe Pappalardo (Italy), Joan Sala Pedrós (Spain), Leopoldo Sarli (Italy), Rainer Schmitz (Germany), Peter Schrenk (Austria), Andreas Schwarz (Germany), Mark Sculpher (UK), Siegfried Shah (Germany), Zbigniew Sledzinski (Poland), Maciej Smietanski (Poland), David Stoker (UK), Arthur Tanner (Ireland), Chanvit Tanphiphat (Thailand), Robert Taylor (UK), Jürgen Treckmann (Germany), Jerome Tschudi (Switzerland), Francesc Vallribera (Spain), Petrousjka van den Tol (The Netherlands), Wietske Vrijland (The Netherlands), James Wellwood (UK), Piotr Witkowski (Poland), Jürgen Zieren (Germany).

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Aarberg 1996

Methods	Randomisation by a blind envelope system; the seal was broken the day before surgery.

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Aarberg 1996 *(Continued)*

Participants	87 patients aged 50 years or more referred for elective inguinal hernia repair. Patients were excluded if they were unfit for general anaesthesia and pneumoperitoneum (ASA III and IV) were excluded, as were those who had irreducible hernia.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=44) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=43) repair performed by the Shouldice technique. All patients were given a local anaesthesia.
Outcomes	Included data items: Time of operation (min) Total inpatient time (days) Complications (inpatient) Time to return to normal activity (days) Hernia recurrence Other data items: Post-operative pain (day 1) Use of analgesia Time to return to work (days) Patient satisfaction
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Adelaide 1994

Methods	Randomised Trial. No information available regarding method of randomisation.
Participants	86 patients scheduled for elective inguinal hernia repair. Patients were excluded if there was contraindication to general anaesthesia or any other medical condition precluding surgery.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=42) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=44) Excision of the hernial sac in the case of indirect hernias and invagination in direct hernias. The posterior inguinal wall was repaired with a continuous 0 prolene suture overlain by a loose double darn of 0 prolene between the conjoint tendon and inguinal ligament. All patients were given local anaesthesia.
Outcomes	Included data items: Operation time (minutes) Conversions Postoperative discharge time (minutes) Return to work or normal activity (days) Complications Hernia recurrence Other data items: Use of analgesia

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Adelaide 1994 *(Continued)*

	Patient satisfaction
Notes	Published abstract and full text available.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Ancona 1998

Methods	Patients were randomised by fax. Each centre participating in the study sent a randomisation form by fax to the co-ordinating centre containing the information required for the patient to be randomised, according to a random number generator table.
Participants	108 low-risk patients classified as either ASA I or II. Patients were entered into the study with a diagnosis of primary or recurrent hernia. Patients with unilateral were included as well as patients with bilateral hernias. High-risk patients (ASA III and IV) were not included, nor were pregnant patients or patients younger than 18 years of age. Patients with incarcerated hernias, congenital hernias, massive scrotal or sliding hernias, or with a history of multiple recurrent hernias were also excluded. Additional exclusion criteria were the presence of previous pelvic surgery, coagulation disorders and the presence of other abdominal diseases amenable to surgical treatment that could be performed laparoscopically during the same operation. Patients with a personal preference for one of the two procedures and those who had been referred from their general practitioner to receive a specific type of procedure were not included in the study.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=52) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=56) primary inguinal hernias were repaired according to the technique described by Amid et al. Recurrent inguinal hernia repairs were repaired according to the technique described by Lichtenstein. 53 patients were given local anaesthesia, 1 patient was given general anaesthesia and 2 patients were given epidural anaesthesia.
Outcomes	Included data items: Operation time (minutes) Intraoperative complications Conversions Postoperative pain (day 1) Postoperative complications Mortality Length of hospital stay (hours) Time to return to work (days) Hernia recurrence Other data items: Use of analgesia Time to return to sport (days) Theatre costs
Notes	There may be a 30 patient overlap with this trial and Parma 1997.

Risk of bias

Bias	Authors' judgement	Support for judgement

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Ancona 1998 *(Continued)*

Allocation concealment?	Low risk	A - Adequate

Bangkok 1998

Methods	Eligible patients were randomised by drawing sealed envelopes arranged in blocks of 10.
Participants	120 patients with inguinal hernia and requiring elective surgery were considered for enrolment into the trial. Patients whose hernias were successfully reduced in the emergency room and could undergo surgery on the next routine operating schedule were also included. Exclusion criteria consisted of the following: high risk for general anaesthesia, pregnancy, previous complicated or multiple lower abdominal or pelvic operations, large or irreducible hernias, second recurrence, and no fixed address in Bangkok or its nearby provinces.
Interventions	Laparoscopic versus open non-mesh inguinal hernia repair. Laparoscopic group: (n=60) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=60) the modified Bassini repair was the standard technique used. 7 patients were given general anaesthesia, 51 patients were given spinal anaesthesia, and 2 patients were given were given epidural anaesthesia.
Outcomes	Included data items: Operation time (minutes) Conversions Postoperative pain (day 1) Postoperative hospital stay (days) Return to activities (stratified data) Postoperative complications Hernia recurrence Other data items: Use of analgesia Postoperative disability
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Allocation concealment?	Low risk	A - Adequate

Barcelona 2 1998

Methods	Abstract Randomised Trial. No information
Participants	59 patients.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=31) repair performed by the TAPP technique. Open group: (n=28) repair performed by the Nyhus (O) technique. All patients were operated on under regional anaesthesia.

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Barcelona 2 1998 *(Continued)*

Outcomes	Included data items: Return to work Other data items: Perceived health Pain (day 7 & day 30) Patient satisfaction
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Berlin 1996

Methods	Eligible patients were randomised by computer randomisation.
Participants	240 patients who were operated on for primary inguinal hernia were entered into the study. Patients with contraindications for general anaesthesia, cardiac insufficiency, age under 18 years , and coagulation disorders as well as incarcerated hernia were excluded from the study.
Interventions	Laparoscopic versus open mesh versus open non-mesh inguinal hernia repair. Laparoscopic group: (n=80) repair performed by the TAPP technique. All patients were given general anaesthesia. Open mesh group: (n=80) repair performed by the plug and patch repair. Patients chose between general or local anaesthesia. Open non-mesh: (n=80) repair performed using the Shouldice technique. Patients chose between general or local anaesthesia.
Outcomes	Included data items: Operating time (minutes) Intraoperative complications Postoperative pain (day 1) Postoperative complications Hospital stay (days) Limitation of daily activities (days) Hernia recurrence Other data items: Use of analgesia (days) Return to work (days) Costs
Notes	There are 2 publications for this trial (one in English and one in German).

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

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Bietigheim 1998

Methods	Patients were allocated strictly at random.
Participants	280 male patients with primary inguinal hernia.
Interventions	Laparoscopic versus open mesh versus open non-mesh inguinal hernia repair. Laparoscopic group: (n=93) repair performed by the TAPP technique. All patients were given general anaesthesia. Open mesh group: (n=93) repair performed by the Lichtenstein repair. All patients were given general anaesthesia. Open non mesh group: (n=94) repair performed by the Shouldice repair. All patients were given general anaesthesia.
Outcomes	Included data items: Operation time (minutes) Postoperative complications Return to work (days) Hernia recurrence Other data items: Use of analgesia Return to sport (days)
Notes	Published in German.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Brisbane 1996

Methods	Abstract Randomised Trial. No information available regarding method of randomisation.
Participants	184 patients.
Interventions	Laparoscopic versus modified Shouldice repair.
Outcomes	Included data items: Operation time (data not reported) Conversions Postoperative complications (data not reported) Return to normal activities Hernia recurrence Other data items: Postoperative pain (day 1: data not reported) Return to work (days)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

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Brisbane 1996 *(Continued)*

Allocation concealment?	Unclear risk	B - Unclear

Bydgoszcz 1998

Methods	Abstract Randomised Trial. No information
Participants	112 patients.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: repair performed by the TAPP technique. Open group: repair performed by the Lichtenstein technique.
Outcomes	Included data items: Mesh infection Hernia recurrence Other data items: Post -operaive pain
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Caen 1998

Methods	Patients were randomised by an envelope system.
Participants	64 male patients aged over 35 years old with a unilateral or bilateral inguinal hernia. Patients were excluded if they were less than 35 years old, had a crurale hernia, complicated or recurrent hernia, previous abdominal surgery, contraindications for laparoscopic surgery, if patients refused one or the other technique.
Interventions	Laparoscopic versus open non-mesh inguinal hernia repair. Laparoscopic group: (n=32) repair performed by the TAPP technique. Open group: (n=32) the Shouldice repair was the standard technique used. All patients were given general anaesthesia.
Outcomes	Included data items: Postoperative complications Length of hospital stay (days) Return to work (days) Hernia recurrence Mortality Other data items: Postoperative pain (day 1) Use of analgesia Costs

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Caen 1998 *(Continued)*

Notes	Published in French.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Coala Trial Gp 1997

Methods	Randomisation by telephone, according to a computer-generated list, in groups of 25 or 50 patients; within each of these groups, the maximal allowable difference in the number of patients assigned to the two treatments was 4. They were stratified according to the hospital and the type of hernia. Analysis by 'intention to treat'
Participants	994 patients over 20 years old, who presented with clinically diagnosed unilateral inguinal hernias (primary hernias or first recurrence) and were scheduled to undergo surgical repair with general anaesthesia were eligible. Exclusion criteria were an additional surgical intervention planned during the hernia repair; a history of extensive lower abdominal surgery, severe local inflammation, or radiotherapy; advanced pregnancy (>12 weeks' gestation); and previous participation in the study (contralateral hernia). Patients who were mentally incompetent or not able to speak Dutch were also excluded.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy Laparoscopic group (n=487) A TEP repair was performed. 481 patients had general while 6 had spinal anaesthesia. Open group: (n=507) Conventional anterior repair consisted of a reduction of the hernia, ligation of the hernial sac, if necessary and a reconstruction of the inguinal floor with nonabsorbable sutures, if necessary. A mesh prosthesis was not used unless adequate repair was otherwise not possible. 201 patients had general while 306 had spinal anaesthesia.
Outcomes	Included data items: Operation time (minutes) Conversions Intraoperative complications Length of hospital stay (days) Time to return to normal activity (days) Complications Hernia recurrence Mortality Other data items: Postoperative pain (day 1) Use of analgesia Time to return to work (days) Time to resumption of athletic activities (days) Activities of daily living score
Notes	There are multiple publications for this trial including a formal economic evaluation and learning curve assessment.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

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Denizli 1998

Methods	Randomised Trial. No information
Participants	64 patients.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=32) repair performed by the TEP technique. Open group: (n=32) repair performed by the prepritoneal mesh technique.
Outcomes	Included data items: Operation time (mins) Conversions Intraoperative complications Post-operative complications Hernia recurrence Mortality Other data items: Use of analgesia
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Hawaii 1994

Methods	Randomisation was provided by an independent computer consultant using a table of random numbers. The nurse co-ordinator prepared sequentially numbered, sealed envelopes containing the operation to be performed. The surgeon was unaware of the sequence of procedures. An envelope was opened by the patient during the clinic visit prior to surgery.
Participants	100 patients between 20 and 70 years of age who were referred with symptomatic inguinal hernias and were suitable for general anaesthesia and able to tolerate a pneumoperitoneum. Direct, indirect, recurrent and bilateral hernias were acceptable for inclusion. Patients with paediatric, femoral or incarcerated hernias were excluded. The prior removal of a non perforated appendix was acceptable, but any other lower abdominal surgery excluded the patient from participation.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=48) repair performed by the TAPP technique. Open group: (n=52) repairs performed in a tension-free manner similar to that described by Lichtenstein. Most of the procedures were performed using local anaesthetic with sedation. Spinal anaesthesia used in two cases and general anaesthesia in 3 cases
Outcomes	Included data items: Operation time (minutes) Conversions Discharge time (hours) Time to return to work (days)

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Hawaii 1994 *(Continued)*

	Complications Pain persisting longer than 3 months Hernia recurrence Time to return to work (days: stratified data) Other data items: 'Straight leg raises' performance Hospital costs
Notes	Published abstract and full text available.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Hawaii 1996

Methods	Abstract Randomised Trial. No information available regarding method of randomisation.
Participants	200 patients.
Interventions	Laparoscopic TAPP (n=48) versus Laparoscopic TEP (n=50) versus open mesh (n=102) inguinal herniorrhaphy.
Outcomes	Included data items: Operation time (minutes) Discharge time (hours) Time to return to work (days) Complications Hernia recurrence Other data items: Hospital costs Disability costs Exercises (data not reported)
Notes	Pooled open group with Hawaii 1994.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Kokkola 1997

Methods	Randomised trial. No information available regarding randomisation method.
Participants	38 consecutive patients.

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Kokkola 1997 *(Continued)*

	Exclusion criteria included high anaesthetic risk, pregnancy, irreducible hernia, infection or the patient's reluctance to give informed consent.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=20) repair performed by the TAPP technique. Open group: (n=18) repair performed by the Lichtenstein technique. All patients were given general anaesthesia
Outcomes	Included data items: Operation time (minutes) Conversions Hospital stay (days) Return to work (days) Complications Hernia recurrence Other data items: Postoperative pain (day 1) Satisfaction scale score (1-4) Use of analgesia Costs
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Linköping 1997

Methods	An unblocked randomisation was carried out by a clinical assistant using randomisation tables.
Participants	200 men aged 25-75 years who were assessed as fit for general anaesthesia. Patients with a history of major lower abdominal surgery or previous abdominal radiotherapy were excluded.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=122) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=89) repair performed by the Shouldice technique with a four-layer suture (n=54) or with a modified technique using a two-layer continuous suture line (n=35). 2 patients had their operations under local anaesthesia, 25 had spinal anaesthesia, and the remaining 62 patients had general anaesthesia.
Outcomes	Included data items: Operating time (minutes) Hospital stay (hours) Time off work (days: stratified data) Complications Hernia recurrence Other data items: Time to complete recovery (days: stratified data) Direct costs

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Linköping 1997 *(Continued)*

Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Linz 1996

Methods	Randomisation was done immediately before surgery in the anaesthetic room by use of sealed envelopes.
Participants	86 consecutive patients having elective unilateral inguinal hernia repair. Patients with recurrent or incarcerated hernia were excluded.
Interventions	Laparoscopic TAPP versus Laparoscopic TEP versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=28) repairs performed by the TAPP technique and (n=24) repairs performed by the TEP technique. All patients were given general anaesthesia. Open group: (n=24) repair performed by the Shouldice technique with continuous 0 polypropylene sutures. 13 patients were given general anaesthesia and 21 were given spinal anaesthesia.
Outcomes	Included data items: Duration of surgery (minutes) Postoperative complications Length of hospital stay (days) Return to work (days) Hernia recurrence Other data items: Postoperative pain (day 1) Use of analgesia Return to stratified activities Patient satisfaction
Notes	There are 2 publications for this trial.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Maastricht 1998

Methods	Randomisation using sealed envelopes.
Participants	210 patients eligible for general anaesthesia (ASA I-III) between 20 and 80 years of age, with a primary inguinal hernia were included. Exclusion criteria included pregnant women, patients with coagulation disorders, advanced carcinoma, history of lower abdominal or other pelvic surgery (except appendectomy), and patients needing other operations simultaneously.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy.

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Maastricht 1998 *(Continued)*

	Laparoscopic group: (n=88) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=87) repair performed by the Bassini technique. All patients were given general anaesthesia.
Outcomes	Included data items: Operating time (minutes) Conversions Postoperative complications Postoperative hospital stay (stratified data) Return to work (stratified data) Chronic pain Chronic inguinal hypaesthesia Hernia recurrence Other data items: Postoperative pain (day 1) (stratified data) Use of analgesia Return to physical activities (stratified data) Abdominal muscle tests
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Maastricht 1999

Methods	Randomisation by sealed envelopes.
Participants	79 patients eligible for general anaesthesia (ASA I-III), between 20 and 80 years of age, with a recurrent inguinal hernia. Exclusion criteria included pregnant women, patients with coagulation disorders, advanced carcinoma, history of lower abdominal or other pelvic surgery (except appendectomy) patients requiring concomitant surgery, patients with giant scrotal recurrent hernias and patients with recurrence after a preperitoneal repair.
Interventions	Laparoscopic versus open mesh repair. Laparoscopic group: (n=42) repair performed by the TAPP technique. All patients were given a general anaesthetic. Open repair: (n=37) repair performed by the GPRVS technique. All patients were given a general anaesthetic.
Outcomes	Included data items: Operating time (minutes) Conversions Postoperative complications Postoperative hospital stay (% discharged) Return to work (stratified data) Chronic pain Chronic inguinal hypaesthesia Hernia recurrence Mortality Other data items:

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Maastricht 1999 *(Continued)*

	Postoperative pain (Day 1-7) Use of analgesia Return to physical activities (stratified data) Abdominal muscle tests Costs
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Madrid 1997

Methods	Abstract Randomised trial. No information available regarding randomisation method.
Participants	120 patients.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=60) repair performed by the TEP technique. Open group: (n=60) repair performed by the Lichtenstein technique. General anaesthesia was administered to all patients.
Outcomes	Included data items: Operation time (minutes) Hospital stay (hours) Return to work (days) Hernia recurrence Other data items: Use of analgesia Hospital costs (data not reported)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Michigan 1997

Methods	Randomised, blinded trial. On arrival in the operating room, an envelope was drawn and the card inside indicated which procedure would be used.
Participants	62 male patients aged between 19 and 81 scheduled for elective inguinal hernia repair. Pre-existing medical problems were present in 21 patients, including hypertension, cardiac disease, and cerebrovascular disease.

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Michigan 1997 *(Continued)*

	9 patients reported a history of substance abuse.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=30) repair performed by the TAPP technique. Open group: (n=32) repair performed using Bassini repairs for small indirect hernias, McVay repairs for small direct hernias and a tension-free mesh technique for large direct hernias. General anaesthesia was administered to all patients.
Outcomes	Included data items: Operation time (minutes) Conversions Postoperative complications Hernia recurrence Other data items: Postoperative pain (day 1) Use of analgesia
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Montreal 1995

Methods	Randomisation was carried out within blocks of 20, by use of computer generated randomised numbers. A separate randomisation box was given to each of the four surgeons to ensure an equal proportion of patients in each group.
Participants	Interim analysis of 92 patients. All patients 16 to 85 years of age and referred to participating surgeons for elective hernia repair were eligible for entry into the study. Exclusion included patients unfit for general anaesthesia, pregnant women and refusal of random group allocation. Exclusion included patients unfit
Interventions	Laparoscopic versus mixed open inguinal herniorrhaphy. Laparoscopic group: (n=43) repair performed by the TAPP technique under general anaesthesia. Open group : (n=49) The open repair was left to each surgeon's preference, which was usually based on the operative findings, type of hernia and strength of the floor. These varied from classic Bassini, McVay, modified Shouldice techniques to tension-free repairs with Marlex patch and/or plugs. 35.7 % had general anaesthesia and 64.3 % had local-regional anaesthetic.
Outcomes	Included data items: Operation time (minutes) Conversions Hospital stay (days) Postoperative complications Convalescence Hernia recurrence Other data items: Postoperative pain (day 1) Use of analgesia Quality of life

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Montreal 1995 *(Continued)*

	Patient satisfaction
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

MRCmulticentre 1999

Methods	Randomisation was performed by using a computer generated series of random numbers. The trial co-ordinator prepared sealed envelopes containing the operation to be performed. The envelopes were opened in the clinical centres.
Participants	Interim analysis of 120 patients aged between 46 and 77. Criteria for exclusion from randomisation included patient refused randomisation, surgeon had not completed 10 laparoscopic hernia repairs, patient medically unfit for general anaesthesia, had a previous midline or lower paramedian incision, an incarcerated hernia, an uncorrected coagulation disorder or is pregnant.
Interventions	Laparoscopic versus mixed open inguinal herniorrhaphy. Laparoscopic group: (n=60) A TEP technique was used. Open group: (n=60) Patients with unilateral primary hernias had a Lichtenstein whereas those with recurrent or bilateral hernias had an open preperitoneal mesh repair through a transverse lower abdominal incision. General anaesthesia was administered to all patients.
Outcomes	Included data items: Operation time (minutes) Conversions Intraoperative complications Return to usual activities (stratified data) Sever groin pain (1 year) Numbness (1 year) Hernia recurrence Other data items: Return to work (days) Costs
Notes	There are 2 publications for this trial.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Nyborg 1999

Methods	The patients were randomised by a blind envelope system. The allocation was provided by an independent consultant using computer-generated random numbers.

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Nyborg 1999 *(Continued)*

Participants	All male patients between 18 and 75 years of age with a primary unilateral hernia referred for elective surgery were eligible for entry into the study. Patients with irreducible hernias and those who were unfit for general anaesthesia were excluded.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=138) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=130) repair performed by a modified Shouldice technique. Patients were given either spinal or general anaesthesia.
Outcomes	Included data items: Operation time (minutes) Conversions Postoperative complications Hospital stay (days) Time to return to normal activities (days) Hernia recurrence Other data items: Use of analgesia
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Omaha 1996

Methods	Randomisation schedules were developed using the PLAN procedure from the Statistical Analysis Systems software. This schedule incorporated a balanced allotment every 20 patients
Participants	53 male patients with unilateral inguinal hernia on clinical examination. All patients were required to have the ability to read English and sign informed consent. Exclusion criteria included bilateral inguinal hernias, inability to tolerate a general anaesthesia, patients requiring additional major surgery under the same anaesthetic, previous preperitoneal pelvic or extensive lower abdominal surgery, drug addiction and the presence of either an incarcerated or strangulated hernia.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=24) repair performed by the transabdominal preperitoneal (TAPP) technique. All patients were given general anaesthesia. Open group: (n=29) repair performed by the Lichtenstein technique. Patients were given general, regional, or local anaesthesia.
Outcomes	Included data items: Operation time (minutes) Postoperative complications Hospital stay (days) Hernia recurrence Other data items: Postoperative pain (day 1) Use of analgesia

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Omaha 1996 *(Continued)*

	Activity assessment
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Oulu 1 1998

Methods	The patients were randomised via sealed envelope.
Participants	42 patients with a primary unilateral hernia considered suitable for day-case surgery. Exclusion criteria included bilateral and recurrent hernia, prefnancy, irreducible hernia, infection, patient's reluctance to give informed consent.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=20) repair performed by the transabdominal preperitoneal (TAPP) technique. Open group: (n=20) repair performed by the Lichtenstein technique. Patients were given local anaesthesia.
Outcomes	Included data items: Operation time (mins) Post-operative stay Return to normal life Intraoperative complications Postoperative complications Hernia recurrence Other data items: Patient satisfaction Return to work Postoperative pain (day 1-14) Hospital costs
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Oulu 2 1998

Methods	Randomisation was carried out at the preoperative visit by opening a sealed envelope defining the method.
Participants	45 employed men with primary unilateral hernias. Exclusion criteria included previous major lower abdominal surgery, retirement from work, pregnancy, irreducible hernia, and infection.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy.

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Oulu 2 1998 *(Continued)*

	Laparoscopic group: (n=22) repair performed by the TEP technique. Al patients were given general anaesthetic. Open group: (n=23) repair performed by the Lichtenstein technique. Patients were given local, spinal or general anaesthesia.
Outcomes	Included data items: Operation time (mins) Post-operative stay intraoperative complications Postoperative complications Return to normal life Hernia recurrence Other data items: Physical fitness at one week Return to work Patient satisfaction Postoperative pain (day 1-14) Hospital costs
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Oxford 1995

Methods	Allocated by unrestricted randomisation in 1:1 ratio.
Participants	125 male patients with primary or unilateral inguinal hernia on examination. Required to meet the local criteria for day surgery (American Society of Anaesthesia grade 1 or 2, age<70 years). Exclusion criteria included patients who had had previous major abdominal surgery or needed over night admission.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy Laparoscopic group : (n=58) A TAPP prosthetic mesh repair was performed. Open group : (n=66) A modified, two layer Maloney darn, comprising polypropylene plication of trans-versalis fascia and a tension-free nylon darn between the inguinal ligament and conjoint tendon. General anaesthesia was administered to all patients.
Outcomes	Included data items: Postoperative complications Return to work or normal activities (days) Hernia recurrence Other data items: Postoperative pain (day 1) use of analgesia SF36 Costs
Notes	There are three published reports for this trial including a formal economic evaluation.

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Oxford 1995 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Paris 1994

Methods	Randomisation was performed using random number tables
Participants	181 male or female patients with unilateral or bilateral, direct or indirect, primary or recurrent inguinal hernia aged 40 years or over. Exclusion criteria included irreducible or strangulated hernia, recurrent hernias following mesh repair, large inguinoscrotal hernias, contraindications for general anaesthesia, contraindications for video endoscopy, cardio pulmonary problems, advanced physiological age, coagulation disorders, glaucoma, pelvic irradiation, local sepsis, midline sub-umbilical laparotomy, obesity, patients susceptible to urological or vascular problems.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=92) repair performed by the TEP technique. Open group: (n=89) repair performed by the Shouldice technique.
Outcomes	Included data items: Operation time (minutes) Postoperative complications Length of hospital stay (days) Return to work (days) Hernia recurrence Mortality Other data items: Postoperative pain (ratios) Use of analgesia Costs
Notes	There are two published reports for this trial. One paper reports on 181 patients and the second reports on 124 cases (both in French).

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Paris 1997

Methods	Randomisation was performed using random number tables
Participants	100 male patients aged 40 years or over with inguinal hernia. Exclusion criteria included irreducible or strangulated hernia, femoral hernia, large inguinoscrotal hernias, recurrent hernias following mesh repair, contraindications for general anaesthesia, contraindications for video endoscopy, cardio pulmonary problems, age>75, cirrhosis, coagulation disorders, glaucoma, pelvic irradiation, abdominal wall or groin infections, midline sub-umbilical laparotomy (excluding appendectomy), obesity BM1>30, patient refusal.

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Paris 1997 *(Continued)*

Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=51) repair performed by the TEP technique. Open group: (n=49) repair performed by the Stoppa technique. All patients were given general anaesthesia.
Outcomes	Included data items: Duration of operation (minutes) Conversions Intraoperative complications Postoperative complications Length of hospital stay (days) Return to work (days) Hernia recurrence Other data items: Postoperative pain (day 1-3; ratios)
Notes	There are two published reports for this trial (one in French and one in English).

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Parma 1997

Methods	Randomisation performed using sealed envelope
Participants	108 patients with inguinal hernia were included in the study without any other complications. Exclusion criteria included no previous lower abdominal surgery for inguinal hernia i.e. recurrent hernia.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=52) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=56) repair performed by the Lichtenstein technique. Patients were given local or spinal anaesthesia.
Outcomes	Included data items: Operation time (minutes) Postoperative complications Hospital stay (days) Return to normal activities (days) Other data items: Postoperative pain (day 1)
Notes	There may be a 30 patient overlap with this trial and Ancona 1998. Clarification is being sought.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

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Quebec 1998

Methods	Random selection by cards.
Participants	292 patients over 18 years old with groin hernias (inguinal or femoral; primary, recurrent and bilateral) were eligible. Exclusion criteria includeda history of multiple lower abdominal surgery, pregnancy and contraindication to general anaesthesia.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=150) repair performed by the TEP technique. All patients were given general anaesthesia. Open group: (n=142) repair performed by using an open mesh-plug under local anaesthesia with light sedation. 7 patients had general anaesthesia, 4 patients had a spinal anaesthesia, and the remaining 131 patients were given a local anaesthesia.
Outcomes	Included data items: Operation time (minutes) Return to work (days) Postoperative morbidity Hernia recurrence Other data items: Postoperative pain (day 1-7) Use of analgesia
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Riga 1999

Methods	Randomisation was provided by an independent computer consultant using a teable of random numbers. The envelopes, containing the operation to be performed, were opened at admission.
Participants	117 patients with synptomatice primary inguinal hernia. Exclusion criteria included patients unsuitable for general anaesthesia and pneumoperitoneum, with previous lower abdominal surgery, and complicated hernias
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=53) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=52) repair performed by the Lichtenstein technique. All patients were given a local anaesthesia.
Outcomes	Included data items: Operation time (mins) Postoperative hospital stay Intraoperative complications Postoperative complications Return to normal activities and work Other data items: Use of analgesia

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Riga 1999 *(Continued)*

	Postoperative pain (day 1&2)
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

SCUR 1999

Methods	Randomisation was computer-generated in blocks of six and distributed to each centre. Patients were randomised at each centre by opening consecutively numbered sealed envelopes.
Participants	613 male patients aged 40-75 years, healthy, with a unilateral or first-recurrence inguinal hernia. Exclusion criteria included irreducible hernias or those requiring emergency surgery, bilateral hernias, more than one recurrence, earlier surgery with mesh in the same groin, patients with complications resulting in ASA 3 or 4, contraindications to laparoscopic hernia repair and giant hernia.
Interventions	Laparoscopic versus open mesh versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=unclear) repair performed by the TAPP technique. Open non-mesh: (n=unclear). repair performed by the techniques preferred by the surgeon. Open mesh: (n=unclear). repair performed using the preperitoneal approach.
Outcomes	Included data items: Operation time (minutes) Conversions Postoperative complications Hernia recurrence Time to return to full recovery (days) Other data items: Postoperative pain (day 7) Restriction of physical activities Sick leave (days) Cost estimation
Notes	Published abstract and full text available. The total numbers randomised to each group is unclear in the full text publication.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Stuttgart 1995

Methods	Randomisation performed using randomisation plan
Participants	102 patients with unilateral inguinal hernia. Exclusion criteria included inguino-scrotal hernias, post laparotomy and ASA>2

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Stuttgart 1995 *(Continued)*

Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=54) repair performed by the TAPP technique. Open group: (n=48) repair performed by the Shouldice technique. All patients were given general anaesthesia.
Outcomes	Included data items: Operation time (minutes) Return to work (days) Postoperative complications Other data items: Postoperative pain (day 1)
Notes	Published in German.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

Tampere 1998

Methods	Randomised trial. No information available regarding randomisation method.
Participants	60 consecutive elective inguinal hernia patients.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=24) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=25) repair performed by the open preperitoneal technique as described by Horten and Florence. 14 patients were given general anaesthesia and 11 patients were given regional anaesthesia.
Outcomes	Included data items: Operation time (minutes) Intraoperative complications Postoperative complications Postoperative hospital stay (days) Return to work or normal activity (days) Hernia recurrence Other data items: Postoperative symptom questionnaire
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

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Tournai 1996

Methods	Simple randomisation using envelopes.
Participants	70 patients aged 20 years or over with simple unilateral inguinal hernia. Exclusion criteria included contra-indication to general anaesthesia, previous surgery under umbilical region, strangulated, recurrent, inguino-scrotal, bilateral and crurale hernias.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=35) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=35) repair performed by the Shouldice technique. 19 patients were given general and 16 patients were given 'rachidiene' anaesthesia.
Outcomes	Included data items: Operation time (minutes) Conversions Postoperative complication Hospital stay (days) Return to home activities (days) Other data items: Postoperative pain (day 1) Return to work (days)
Notes	Published in French. Laparoscopic group received prophylactic antibiotics but Shouldice group did not.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Ulm 1993

Methods	Abstract Randomised Trial. No information available regarding method of randomisation.
Participants	70 patients
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=35) repair performed by the TAPP technique. All patients were given general anaesthesia. Open group: (n=35) repair performed by the Shouldice technique.
Outcomes	Included data items: Postoperative morbidity Mortality
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement

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Ulm 1993 *(Continued)*

Allocation concealment?	Unclear risk	B - Unclear

Whipps Cross 1994

Methods	Randomisation by a blind envelope system. The seal was broken in the anaesthetic room before surgery. Analysis by 'intention to treat'.
Participants	150 patients aged between 18 and 85 years referred for elective inguinal hernia repair. Exclusion criteria were patients in whom pneumoperitoneum could not be established; those who were unfit for general anaesthesia; were pregnant; or who had irreducible hernia; systemic or local infection; or psychiatric conditions precluding consent.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: (n=75) A transabdominal preperitoneal (TAPP) repair was performed. Open group: (n=75) Repair was undertaken with a tension-free interlocking nylon darn between the conjoint tendon and the inguinal ligament. General anaesthesia was administered to all patients.
Outcomes	Included data items: Operation time (minutes) Conversions Return to normal activity (days) Postoperative complications Hernia recurrence Other data items: Postoperative pain (day 1) Use of analgesia
Notes	

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Allocation concealment?	Low risk	A - Adequate

Whipps Cross 1998

Methods	A randomisation schedule in balanced blocks randomly chosen to be of length 4 or 6. Allocations were placed in consecutive opaque envelopes and the seal broken in the anaesthetic room immediately before surgery.
Participants	403 patients with an inguinal hernia. Exclusion criteria included patients who were unfit for general anaesthesia, had psychological complaints, were under 18 years of age or had a poor understanding of English.
Interventions	Laparoscopic versus open mesh inguinal herniorrhaphy. Laparoscopic group: (n=200) repair performed by the TAPP technique. All patients were given a general anaesthesia, Open group: (n=200) repair performed by the Lichtenstein technique. All patients were given a local anaesthesia.

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Whipps Cross 1998 *(Continued)*

Outcomes	Included data items: Duration of surgery (minutes) Intraoperative complications Length of hospital stay (% discharged) Postoperative complications Persistent Numbness (1 and 3 months) Persistent pain (1 and 3 months) Hernia recurrence Mortality Other data items: Postoperative pain (day 1) SF36 Costs
Notes	

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Low risk	A - Adequate

Woodville 1996

Methods	Randomly assigned by the clinical trials officer.
Participants	104 Patients scheduled for elective inguinal hernia repair.
Interventions	Laparoscopic versus open non-mesh inguinal herniorrhaphy. Laparoscopic group: repair performed by the TEP technique. All patients were given a general anaesthesia. Open group: repair performed by the Shouldice technique. All patients were given a local anaesthesia.
Outcomes	Included data items: Operation time (mins) Postoperative morbidity Postoperative stay (mins) Return to normal activity or work Hernia recurrence Other data items: Activity levels Postoperative pain (day 30, 180, 360, and 540) Use of analgesia
Notes	Trial excluded from a previous version of this review due to major deviation from intention to treat analysis.

Risk of bias

Bias	Authors' judgement	Support for judgement
Allocation concealment?	Unclear risk	B - Unclear

TAPP - Transabdominal Preperitoneal

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TEP - Totally Extraperitoneal
GPRVS - Giant Prosthetic Reinforcement of the Visceral Sac

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Amid 1995	Patients were not randomised to different treatments arms.
Brooks 1994	Patients were not randomised to different treatments arms.
Ferzli 1993	Patients were not randomised to different treatments arms.
Goodwin 1995	Patients were not randomised to different treatments arms.
Haug-Gebhard 1996	Patients were not randomised to different treatments arms.
Lukaszczyket 1996	Patients were not randomised to different treatments arms.
Millikan 1994	Patients were not randomised to different treatments arms.
Schultz 1998	Patients were not randomised to different treatments arms.
Sheppard 1993	Patients were not randomised to different treatments arms.
Wilson 1995	Patients were not randomised to different treatments arms.

DATA AND ANALYSES

Comparison 1. Laparoscopic versus Open

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	35	6482	Mean Difference (IV, Fixed, 95% CI)	14.81 [13.98, 15.64]
1.1 TAPP versus Open	27	3978	Mean Difference (IV, Fixed, 95% CI)	17.49 [16.45, 18.53]
1.2 TEP versus Open	9	2384	Mean Difference (IV, Fixed, 95% CI)	9.94 [8.54, 11.34]
1.3 Miscellaneous Laparosopic versus Open	1	120	Mean Difference (IV, Fixed, 95% CI)	14.93 [3.99, 25.87]
2 "Opposite" method initiated	22	4161	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.11 [2.55, 6.62]
2.1 TAPP versus Open	16	1859	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.96 [2.20, 16.18]
2.2 TEP versus Open	7	2302	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.67 [2.13, 6.33]
2.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3 Conversion	35	6671	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.73 [4.42, 10.24]
3.1 TAPP versus Open	26	3999	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.85 [2.29, 10.29]
3.2 TEP versus Open	11	2672	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.80 [4.71, 12.95]
3.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Haematoma	31	5754	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.72 [0.60, 0.87]
4.1 TAPP versus Open	24	3407	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.84 [0.66, 1.06]
4.2 TEP versus Open	9	2347	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.55 [0.41, 0.75]
4.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Seroma	27	5087	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.58 [1.20, 2.08]
5.1 TAPP versus Open	20	2800	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.03 [1.45, 2.82]
5.2 TEP versus Open	8	2287	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.92 [0.57, 1.50]
5.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Wound/superficial infection	28	5565	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.45 [0.32, 0.65]
6.1 TAPP versus Open	21	3358	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.43 [0.29, 0.65]
6.2 TEP versus Open	8	2207	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.53 [0.26, 1.11]
6.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Mesh/deep infection	22	4654	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.65 [0.07, 6.58]
7.1 TAPP versus Open	17	2662	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.65 [0.07, 6.58]
7.2 TEP versus Open	6	1992	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	25	5256	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.38 [0.44, 4.29]
8.1 TAPP versus Open	19	2980	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.61 [0.65, 10.53]
8.2 TEP versus Open	7	2276	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.38 [0.05, 2.74]
8.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
9 Visceral injury	21	4914	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.76 [1.53, 21.68]
9.1 TAPP versus Open	17	2844	Peto Odds Ratio (Peto, Fixed, 95% CI)	9.36 [2.29, 38.26]
9.2 TEP versus Open	5	2070	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.13 [0.00, 6.78]
9.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	22	4822	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.97 [1.40, 34.77]
10.1 TAPP versus Open	18	2870	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.97 [1.40, 34.77]
10.2 TEP versus Open	5	1952	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	35	6249	Mean Difference (IV, Fixed, 95% CI)	-0.04 [-0.08, -0.00]
11.1 TAPP versus Open	26	3564	Mean Difference (IV, Fixed, 95% CI)	0.07 [0.02, 0.11]
11.2 TEP versus Open	10	2563	Mean Difference (IV, Fixed, 95% CI)	-0.33 [-0.40, -0.25]
11.3 Miscellaneous Laparosopic versus Open	1	122	Mean Difference (IV, Fixed, 95% CI)	-0.09 [-0.41, 0.23]
12 Time to return to usual activities (days)	19	2608	Peto Odds Ratio (95% CI)	0.56 [0.51, 0.61]
12.1 TAPP versus Open	14	1678	Peto Odds Ratio (95% CI)	0.58 [0.53, 0.65]
12.2 TEP versus Open	6	930	Peto Odds Ratio (95% CI)	0.51 [0.45, 0.59]
12.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
13 Persisting pain	20	4500	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.54 [0.46, 0.64]
13.1 TAPP versus Open	15	2494	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.62 [0.49, 0.79]
13.2 TEP versus Open	6	2006	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.47 [0.36, 0.60]
13.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Persisting numbness	15	3043	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.38 [0.29, 0.49]
14.1 TAPP versus Open	12	2137	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.23 [0.16, 0.33]
14.2 TEP versus Open	4	906	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.57 [0.41, 0.80]
14.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
15 Hernia recurrence	37	6642	Peto Odds Ratio (95% CI)	0.81 [0.61, 1.08]
15.1 TAPP versus Open	27	3889	Peto Odds Ratio (95% CI)	0.76 [0.52, 1.09]
15.2 TEP versus Open	12	2753	Peto Odds Ratio (95% CI)	0.91 [0.57, 1.46]
15.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]

Analysis 1.1. Comparison 1 Laparoscopic versus Open, Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.1.1 TAPP versus Open							
Hawaii 1994	51	73.1 (20.1)	49	59.9 (15.4)		1.41%	13.24[6.24,20.24]
Stuttgart 1995	54	68.3 (24.7)	48	49 (15.4)		1.11%	19.37[11.48,27.26]
SCUR 1999	207	65.1 (25.5)	406	37.7 (14.8)		4.91%	27.44[23.68,31.2]
Kokkola 1997	20	78.9 (25.7)	18	48 (17.2)		0.37%	30.9[17.13,44.67]
Tampere 1998	27	46.3 (15.8)	29	38.5 (12.2)		1.26%	7.78[0.36,15.2]
Michigan 1997	29	89 (26.4)	28	85.8 (33.3)		0.28%	3.18[-12.45,18.81]
Adelaide 1994	42	46.9 (17.7)	44	33.1 (10.7)		1.8%	13.79[7.59,19.99]
Ulm 1993	23	74.8 (32.6)	27	74.5 (27.1)		0.25%	0.3[-16.5,17.1]
Oulu 1 1998	20	73.7 (26.9)	20	65.1 (11.6)		0.42%	8.6[-4.24,21.44]
Ancona 1998	52	73.8 (28.4)	56	55.6 (32)		0.53%	18.12[6.74,29.5]
Maastricht 1998	87	89.7 (32.1)	86	45.5 (15.3)		1.24%	44.21[36.74,51.68]
Whipps Cross 1994	75	60.4 (29.5)	75	39 (14.4)		1.26%	21.36[13.93,28.79]
Aarberg 1996	51	95.9 (34.9)	49	64.6 (19)		0.58%	31.29[20.34,42.24]
Omaha 1996	24	109 (23.8)	29	87 (17.3)		0.53%	22[10.6,33.4]
Maastricht 1999	42	79.4 (31.7)	37	55.7 (16.5)		0.58%	23.68[12.73,34.63]
Whipps Cross 1998	201	46.4 (16.9)	201	46.9 (15.7)		6.82%	-0.44[-3.63,2.75]
Linköping 1997	110	74.1 (28.8)	89	59.6 (20.6)		1.47%	14.49[7.61,21.37]
Tournai 1996	34	67.9 (23.7)	33	62.7 (13.7)		0.81%	5.21[-4.03,14.45]
MRCmulticentre 1999	101	54.6 (23.4)	98	41.9 (14)		2.43%	12.68[7.34,18.02]
Bietigheim 1998	94	52 (23.8)	186	46.5 (17.3)		2.37%	5.5[0.09,10.91]
Berlin 1996	80	61 (12)	160	41.5 (16.5)		5.16%	19.5[15.84,23.16]
Nyborg 1999	138	72 (31)	130	45 (14)		2.13%	27[21.3,32.7]
Linz 1996	28	46 (9.2)	34	38.4 (9.7)		3.11%	7.6[2.88,12.32]
Bangkok 1998	60	95 (28)	60	67 (27)		0.72%	28[18.16,37.84]
Parma 1997	52	73 (15)	56	59 (11)		2.78%	14[9.01,18.99]
Riga 1999	52	49.6 (5.4)	52	33.9 (6.2)		13.87%	15.7[13.47,17.93]
Oxford 1995	58	72 (11)	66	32 (8)		5.9%	40[36.57,43.43]
Subtotal ***	**1812**		**2166**			**64.09%**	**17.49[16.45,18.53]**
Heterogeneity: Tau²=0; Chi²=461.63, df=26(P<0.0001); I²=94.37%							
Test for overall effect: Z=32.98(P<0.0001)							
1.1.2 TEP versus Open							
Woodville 1996	49	83.4 (32.3)	55	55.8 (18.4)		0.66%	27.66[17.39,37.93]
Quebec 1998	138	32.6 (14.3)	119	31.3 (10.5)		7.49%	1.3[-1.74,4.34]
Hawaii 1996	51	65.2 (20.7)	49	56.6 (18.3)		1.19%	8.61[0.97,16.25]

Favours treatment — Favours control

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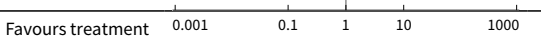
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Oulu 2 1998	22	68.1 (13.8)	23	55.9 (9)		1.48%	12.27[5.44,19.1]
MRCmulticentre 1999	332	59.4 (21.9)	330	43.5 (16.2)		8.07%	15.91[12.98,18.84]
Coala Trial Gp 1997	487	49 (21)	507	40 (15)		13.36%	9[6.72,11.28]
Linz 1996	24	52.3 (13.9)	34	38.4 (9.7)		1.67%	13.9[7.45,20.35]
Denizli 1998	32	58 (23.8)	32	35 (17.3)		0.67%	23[12.82,33.18]
Paris 1997	51	80.6 (31.3)	49	70.3 (15.7)		0.74%	10.3[0.65,19.95]
Subtotal ***	**1186**		**1198**			**35.33%**	**9.94[8.54,11.34]**
Heterogeneity: Tau^2=0; Chi^2=67.39, df=8(P<0.0001); I^2=88.13%							
Test for overall effect: Z=13.91(P<0.0001)							
1.1.3 Miscellaneous Laparosopic versus Open							
Montreal 1995	57	88.8 (34)	63	73.9 (26.1)		0.58%	14.93[3.99,25.87]
Subtotal ***	**57**		**63**			**0.58%**	**14.93[3.99,25.87]**
Heterogeneity: Not applicable							
Test for overall effect: Z=2.68(P=0.01)							
Total ***	**3055**		**3427**			**100%**	**14.81[13.98,15.64]**
Heterogeneity: Tau^2=0; Chi^2=601.06, df=36(P<0.0001); I^2=94.01%							
Test for overall effect: Z=34.87(P<0.0001)							
Test for subgroup differences: Chi^2=72.05, df=1 (P<0.0001), I^2=97.22%							

Analysis 1.2. Comparison 1 Laparoscopic versus Open, Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.2.1 TAPP versus Open					
Ulm 1993	0/23	0/27			Not estimable
Aarberg 1996	0/51	0/49			Not estimable
Kokkola 1997	0/20	0/18			Not estimable
Linköping 1997	0/110	0/89			Not estimable
Adelaide 1994	0/42	0/44			Not estimable
Stuttgart 1995	0/54	0/48			Not estimable
MRCmulticentre 1999	8/104	1/93		12.79%	4.53[1.19,17.22]
Hawaii 1994	0/51	0/49			Not estimable
Tampere 1998	3/29	0/31		4.3%	8.51[0.85,85.23]
Ancona 1998	0/52	0/56			Not estimable
Maastricht 1999	1/42	0/37		1.48%	6.56[0.13,333.2]
Tournai 1996	0/35	0/35			Not estimable
Maastricht 1998	0/88	0/87			Not estimable
Bangkok 1998	0/60	0/60			Not estimable
Berlin 1996	0/80	0/160			Not estimable
Bydgoszcz 1998	3/62	0/73		4.36%	9.12[0.93,89.86]
Subtotal (95% CI)	**903**	**956**		**22.93%**	**5.96[2.2,16.18]**
Total events: 15 (Treatment), 1 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.39, df=3(P=0.94); I^2=0%					
Test for overall effect: Z=3.51(P=0)					
1.2.2 TEP versus Open					



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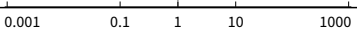
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Madrid 1997	0/60	0/60			Not estimable
Quebec 1998	0/141	0/120			Not estimable
MRCmulticentre 1999	26/340	9/338		49.4%	2.76[1.4,5.45]
Woodville 1996	12/49	0/55		15.87%	10.76[3.24,35.71]
Hawaii 1996	0/51	0/49			Not estimable
Oulu 2 1998	0/22	0/23			Not estimable
Coala Trial Gp 1997	6/487	2/507		11.8%	2.85[0.71,11.46]
Subtotal (95% CI)	**1150**	**1152**		**77.07%**	**3.67[2.13,6.33]**
Total events: 44 (Treatment), 11 (Control)					
Heterogeneity: Tau^2=0; Chi^2=3.89, df=2(P=0.14); I^2=48.54%					
Test for overall effect: Z=4.69(P<0.0001)					
1.2.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**2053**	**2108**		**100%**	**4.11[2.55,6.62]**
Total events: 59 (Treatment), 12 (Control)					
Heterogeneity: Tau^2=0; Chi^2=4.97, df=6(P=0.55); I^2=0%					
Test for overall effect: Z=5.79(P<0.0001)					
Test for subgroup differences: Chi^2=0.7, df=1 (P=0.4), I^2=0%					



Analysis 1.3. Comparison 1 Laparoscopic versus Open, Outcome 3 Conversion.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.3.1 TAPP versus Open					
Whipps Cross 1994	0/75	1/75		1.15%	0.14[0,6.82]
Adelaide 1994	0/42	0/44			Not estimable
Ancona 1998	0/52	0/56			Not estimable
Oulu 1 1998	0/20	0/20			Not estimable
Whipps Cross 1998	1/200	0/200		1.15%	7.39[0.15,372.38]
Aarberg 1996	2/51	0/49		2.27%	7.25[0.45,117.6]
Ulm 1993	0/23	0/27			Not estimable
MRCmulticentre 1999	6/97	0/93		6.7%	7.48[1.48,37.87]
Kokkola 1997	0/20	0/18			Not estimable
Michigan 1997	0/29	0/28			Not estimable
Stuttgart 1995	0/54	0/48			Not estimable
Tampere 1998	1/29	0/31		1.15%	7.92[0.16,399.84]
Maastricht 1998	1/88	0/87		1.15%	7.31[0.14,368.2]
Hawaii 1994	2/51	0/49		2.27%	7.25[0.45,117.6]
Tournai 1996	1/35	2/35		3.34%	0.5[0.05,5]
Linköping 1997	0/110	0/89			Not estimable
SCUR 1999	3/207	1/406		4.08%	6.38[0.8,50.9]
Parma 1997	0/52	0/56			Not estimable
Linz 1996	0/28	0/34			Not estimable

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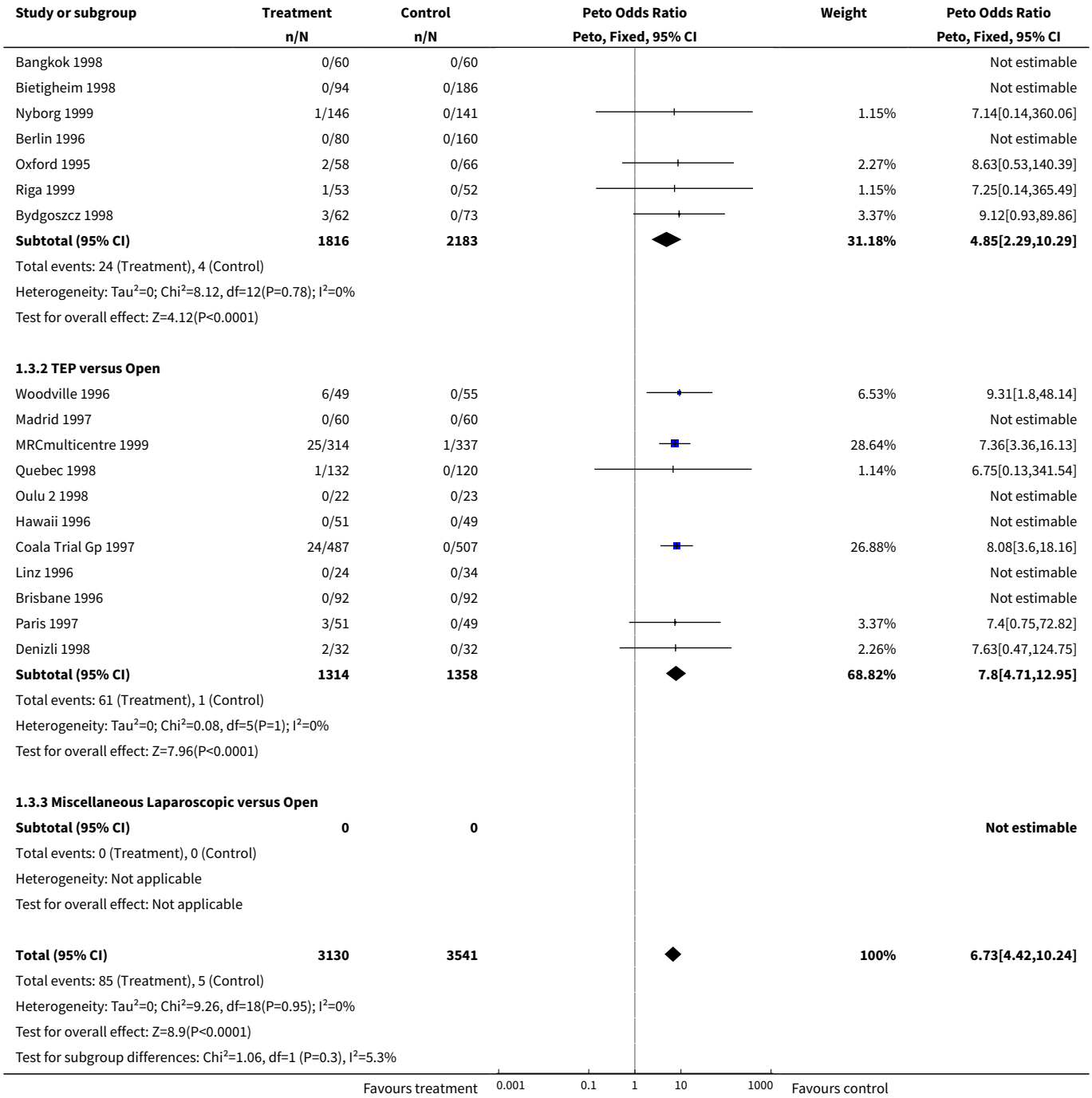
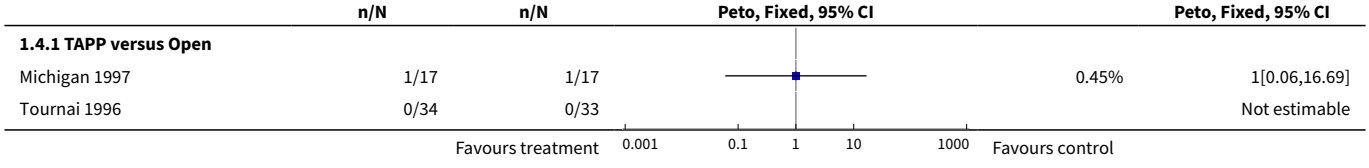


Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Bangkok 1998	0/60	0/60			Not estimable
Bietigheim 1998	0/94	0/186			Not estimable
Nyborg 1999	1/146	0/141		1.15%	7.14[0.14,360.06]
Berlin 1996	0/80	0/160			Not estimable
Oxford 1995	2/58	0/66		2.27%	8.63[0.53,140.39]
Riga 1999	1/53	0/52		1.15%	7.25[0.14,365.49]
Bydgoszcz 1998	3/62	0/73		3.37%	9.12[0.93,89.86]
Subtotal (95% CI)	**1816**	**2183**		**31.18%**	**4.85[2.29,10.29]**
Total events: 24 (Treatment), 4 (Control)					
Heterogeneity: Tau^2=0; Chi^2=8.12, df=12(P=0.78); I^2=0%					
Test for overall effect: Z=4.12(P<0.0001)					
1.3.2 TEP versus Open					
Woodville 1996	6/49	0/55		6.53%	9.31[1.8,48.14]
Madrid 1997	0/60	0/60			Not estimable
MRCmulticentre 1999	25/314	1/337		28.64%	7.36[3.36,16.13]
Quebec 1998	1/132	0/120		1.14%	6.75[0.13,341.54]
Oulu 2 1998	0/22	0/23			Not estimable
Hawaii 1996	0/51	0/49			Not estimable
Coala Trial Gp 1997	24/487	0/507		26.88%	8.08[3.6,18.16]
Linz 1996	0/24	0/34			Not estimable
Brisbane 1996	0/92	0/92			Not estimable
Paris 1997	3/51	0/49		3.37%	7.4[0.75,72.82]
Denizli 1998	2/32	0/32		2.26%	7.63[0.47,124.75]
Subtotal (95% CI)	**1314**	**1358**		**68.82%**	**7.8[4.71,12.95]**
Total events: 61 (Treatment), 1 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.08, df=5(P=1); I^2=0%					
Test for overall effect: Z=7.96(P<0.0001)					
1.3.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**3130**	**3541**		**100%**	**6.73[4.42,10.24]**
Total events: 85 (Treatment), 5 (Control)					
Heterogeneity: Tau^2=0; Chi^2=9.26, df=18(P=0.95); I^2=0%					
Test for overall effect: Z=8.9(P<0.0001)					
Test for subgroup differences: Chi^2=1.06, df=1 (P=0.3), I^2=5.3%					

Analysis 1.4. Comparison 1 Laparoscopic versus Open, Outcome 4 Haematoma.



Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.4.1 TAPP versus Open					
Michigan 1997	1/17	1/17		0.45%	1[0.06,16.69]
Tournai 1996	0/34	0/33			Not estimable

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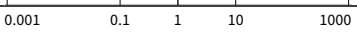
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Tampere 1998	1/29	2/31		0.67%	0.54[0.05,5.38]
SCUR 1999	5/206	13/406		3.6%	0.76[0.28,2.06]
Ancona 1998	4/52	8/56		2.48%	0.52[0.16,1.71]
Linköping 1997	2/110	3/89		1.12%	0.53[0.09,3.16]
MRCmulticentre 1999	7/67	8/64		3.08%	0.82[0.28,2.39]
Whipps Cross 1998	72/200	96/200		22.51%	0.61[0.41,0.91]
Stuttgart 1995	1/54	2/48		0.68%	0.45[0.05,4.42]
Adelaide 1994	4/42	2/44		1.3%	2.13[0.41,11.11]
Kokkola 1997	2/20	10/18		1.94%	0.13[0.03,0.5]
Maastricht 1998	27/88	13/87		7.15%	2.43[1.2,4.91]
Whipps Cross 1994	10/75	10/75		4.02%	1[0.39,2.56]
Oulu 1 1998	2/20	3/20		1.03%	0.64[0.1,4.07]
Aarberg 1996	3/51	3/49		1.31%	0.96[0.19,4.96]
Ulm 1993	0/23	4/27		0.86%	0.14[0.02,1.06]
Maastricht 1999	10/42	5/37		2.82%	1.94[0.63,5.93]
Bangkok 1998	2/60	2/60		0.9%	1[0.14,7.28]
Parma 1997	6/52	3/56		1.92%	2.23[0.57,8.68]
Linz 1996	1/28	1/34		0.45%	1.22[0.07,20.22]
Nyborg 1999	0/146	2/141		0.46%	0.13[0.01,2.08]
Berlin 1996	6/80	9/160		2.89%	1.38[0.45,4.16]
Riga 1999	1/52	2/52		0.68%	0.51[0.05,4.98]
Caen 1998	2/25	1/30		0.66%	2.43[0.24,24.64]
Subtotal (95% CI)	**1573**	**1834**		**62.97%**	**0.84[0.66,1.06]**
Total events: 169 (Treatment), 203 (Control)					
Heterogeneity: Tau^2=0; Chi^2=32.2, df=22(P=0.07); I^2=31.67%					
Test for overall effect: Z=1.47(P=0.14)					
1.4.2 TEP versus Open					
Oulu 2 1998	4/22	6/23		1.83%	0.64[0.16,2.57]
Madrid 1997	2/39	3/25		1.03%	0.39[0.06,2.5]
Woodville 1996	0/49	4/55		0.89%	0.14[0.02,1.05]
MRCmulticentre 1999	33/293	57/291		17.57%	0.53[0.34,0.83]
Quebec 1998	6/136	27/117		6.6%	0.19[0.09,0.4]
Linz 1996	0/24	1/34		0.22%	0.18[0,9.71]
Coala Trial Gp 1997	24/487	14/507		8.43%	1.8[0.94,3.45]
Denizli 1998	0/32	1/32		0.23%	0.14[0,6.82]
Paris 1994	0/92	1/89		0.23%	0.13[0,6.6]
Subtotal (95% CI)	**1174**	**1173**		**37.03%**	**0.55[0.41,0.75]**
Total events: 69 (Treatment), 114 (Control)					
Heterogeneity: Tau^2=0; Chi^2=23.91, df=8(P=0); I^2=66.54%					
Test for overall effect: Z=3.75(P=0)					
1.4.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**2747**	**3007**		**100%**	**0.72[0.6,0.87]**
Total events: 238 (Treatment), 317 (Control)					
Heterogeneity: Tau^2=0; Chi^2=60.42, df=31(P=0); I^2=48.69%					
Test for overall effect: Z=3.45(P=0)					



Favours treatment Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for subgroup differences: Chi²=4.32, df=1 (P=0.04), I²=76.84%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 1.5. Comparison 1 Laparoscopic versus Open, Outcome 5 Seroma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.5.1 TAPP versus Open					
Oulu 1 1998	1/20	0/20		0.49%	7.39[0.15,372.38]
Tampere 1998	2/29	0/31		0.96%	8.2[0.5,134.53]
Maastricht 1998	29/88	25/87		18.3%	1.22[0.64,2.31]
Whipps Cross 1998	8/200	6/200		6.6%	1.34[0.46,3.9]
Ancona 1998	4/52	0/56		1.89%	8.47[1.16,61.94]
Stuttgart 1995	1/54	0/48		0.49%	6.61[0.13,335.5]
Maastricht 1999	15/38	7/37		7.68%	2.66[0.99,7.14]
Adelaide 1994	1/42	2/44		1.43%	0.53[0.05,5.24]
Whipps Cross 1994	0/75	1/75		0.49%	0.14[0,6.82]
SCUR 1999	14/207	10/406		10.07%	3.13[1.32,7.42]
Michigan 1997	0/17	0/17			Not estimable
Ulm 1993	0/23	0/27			Not estimable
Aarberg 1996	3/51	3/49		2.78%	0.96[0.19,4.96]
MRCmulticentre 1999	5/66	5/64		4.53%	0.97[0.27,3.5]
Tournai 1996	3/34	0/33		1.42%	7.63[0.77,76]
Kokkola 1997	1/20	0/18		0.49%	6.69[0.13,338.79]
Bangkok 1998	8/60	3/60		4.91%	2.7[0.78,9.28]
Parma 1997	3/52	0/56		1.43%	8.3[0.84,81.67]
Berlin 1996	4/80	3/160		2.96%	3[0.61,14.74]
Riga 1999	3/52	0/52		1.43%	7.69[0.78,75.57]
Subtotal (95% CI)	**1260**	**1540**		**68.33%**	**2.03[1.45,2.82]**
Total events: 105 (Treatment), 65 (Control)					
Heterogeneity: Tau²=0; Chi²=18.05, df=17(P=0.39); I²=5.83%					
Test for overall effect: Z=4.18(P<0.0001)					
1.5.2 TEP versus Open					
Madrid 1997	1/39	2/25		1.35%	0.3[0.03,3.19]
Woodville 1996	0/49	0/55			Not estimable
Oulu 2 1998	1/22	0/23		0.49%	7.73[0.15,390.08]
MRCmulticentre 1999	19/291	33/291		23.12%	0.55[0.31,0.98]
Quebec 1998	0/136	0/117			Not estimable
Coala Trial Gp 1997	7/487	0/507		3.39%	7.79[1.76,34.46]
Paris 1994	4/92	0/89		1.92%	7.39[1.02,53.38]
Denizli 1998	2/32	1/32		1.42%	1.99[0.2,19.86]
Subtotal (95% CI)	**1148**	**1139**		**31.67%**	**0.92[0.57,1.5]**
Total events: 34 (Treatment), 36 (Control)					
Heterogeneity: Tau²=0; Chi²=17.68, df=5(P=0); I²=71.72%					
Test for overall effect: Z=0.32(P=0.75)					
1.5.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**2408**	**2679**		**100%**	**1.58[1.2,2.08]**
Total events: 139 (Treatment), 101 (Control)					
Heterogeneity: Tau²=0; Chi²=42.57, df=23(P=0.01); I²=45.97%					
Test for overall effect: Z=3.28(P=0)					
Test for subgroup differences: Chi²=6.84, df=1 (P=0.01), I²=85.37%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 1.6. Comparison 1 Laparoscopic versus Open, Outcome 6 Wound/superficial infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.6.1 TAPP versus Open					
Ulm 1993	0/23	0/27			Not estimable
Michigan 1997	0/17	0/17			Not estimable
Kokkola 1997	0/20	0/18			Not estimable
Whipps Cross 1994	1/75	5/75		4.78%	0.25[0.05,1.28]
Ancona 1998	4/52	2/56		4.71%	2.18[0.42,11.23]
SCUR 1999	1/207	10/406		7.98%	0.33[0.09,1.15]
Linköping 1997	1/110	1/89		1.62%	0.81[0.05,13.2]
Adelaide 1994	1/42	0/44		0.82%	7.75[0.15,390.96]
Maastricht 1998	2/88	1/87		2.44%	1.94[0.2,18.9]
Tampere 1998	2/29	0/31		1.62%	8.2[0.5,134.53]
Aarberg 1996	0/51	0/49			Not estimable
MRCmulticentre 1999	2/66	1/64		2.43%	1.91[0.19,18.68]
Oulu 1 1998	0/20	0/20			Not estimable
Tournai 1996	0/34	1/33		0.82%	0.13[0,6.62]
Maastricht 1999	0/42	4/37		3.16%	0.11[0.01,0.8]
Whipps Cross 1998	13/200	37/200		36.15%	0.33[0.19,0.61]
Parma 1997	0/52	6/56		4.71%	0.13[0.03,0.68]
Nyborg 1999	0/146	0/141			Not estimable
Bangkok 1998	2/60	1/60		2.43%	1.97[0.2,19.31]
Berlin 1996	0/80	3/160		2.18%	0.22[0.02,2.45]
Bietigheim 1998	0/94	1/180		0.74%	0.22[0,13.55]
Subtotal (95% CI)	**1508**	**1850**		**76.61%**	**0.43[0.29,0.65]**
Total events: 29 (Treatment), 73 (Control)					
Heterogeneity: Tau²=0; Chi²=21.18, df=14(P=0.1); I²=33.91%					
Test for overall effect: Z=4.06(P<0.0001)					
1.6.2 TEP versus Open					
Woodville 1996	0/49	0/55			Not estimable
Madrid 1997	0/39	0/25			Not estimable
Oulu 2 1998	2/22	0/23		1.61%	8.11[0.49,133.96]
Quebec 1998	0/136	0/117			Not estimable
MRCmulticentre 1999	8/292	10/291		14.4%	0.79[0.31,2.02]
Coala Trial Gp 1997	0/487	6/507		4.92%	0.14[0.03,0.69]

Favours treatment 0.001 0.1 1 10 1000 Favours control

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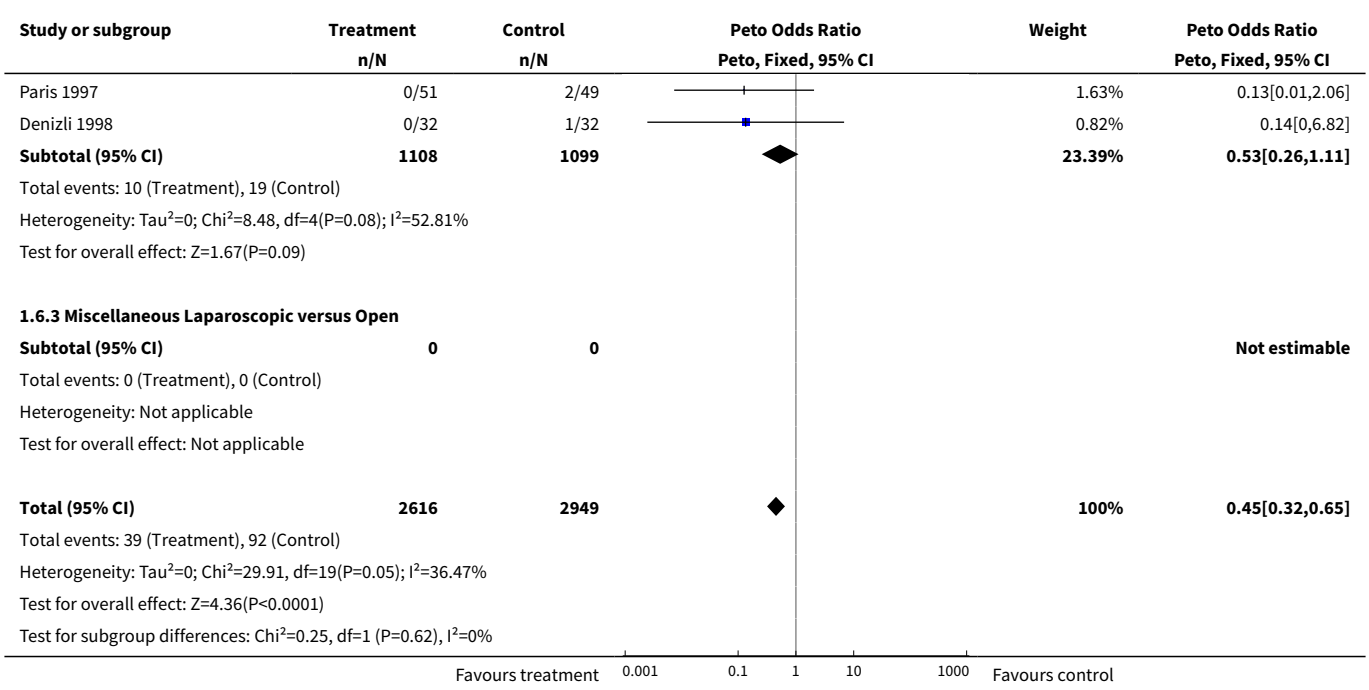
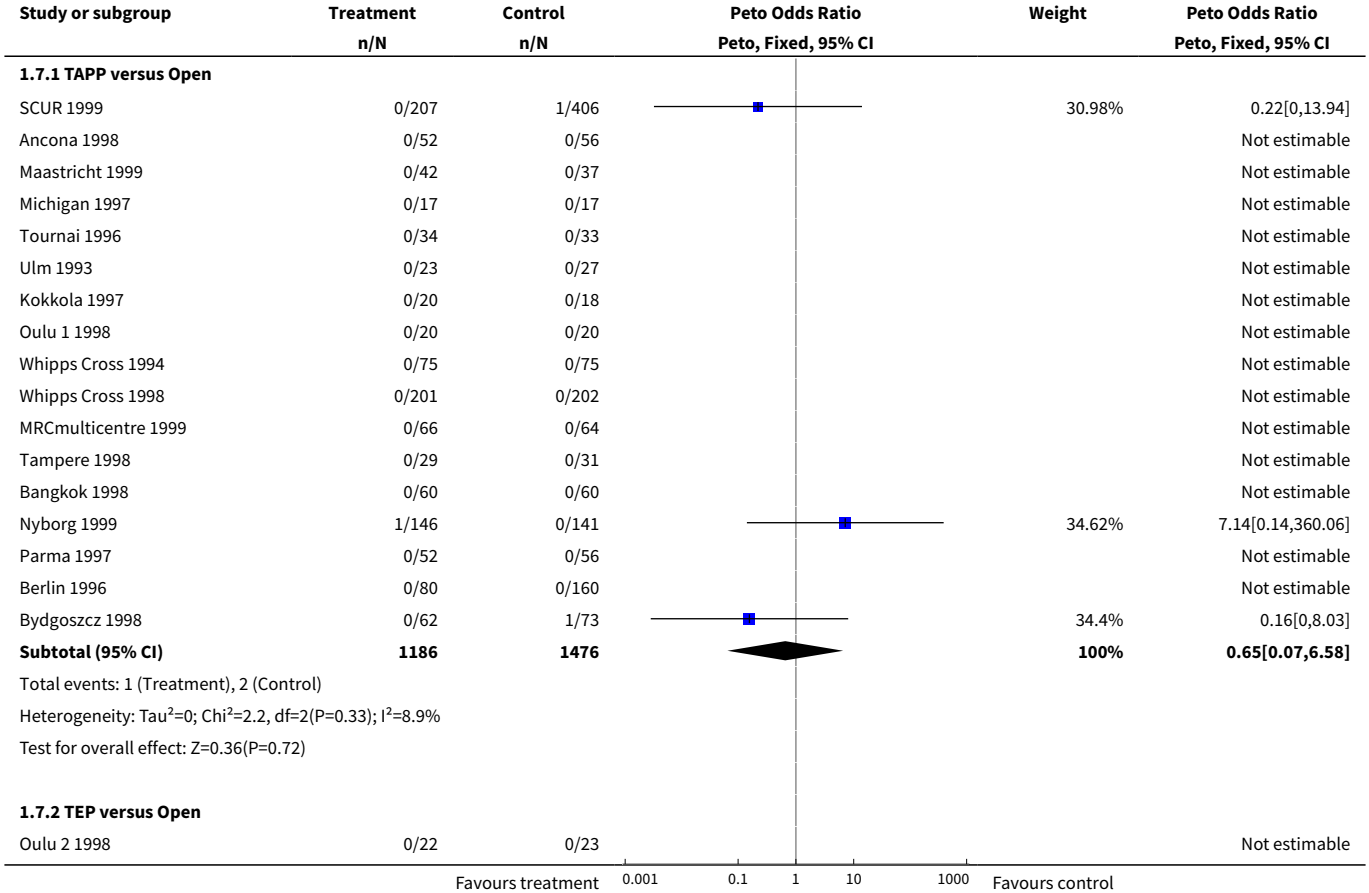


Analysis 1.7. Comparison 1 Laparoscopic versus Open, Outcome 7 Mesh/deep infection.



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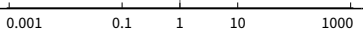
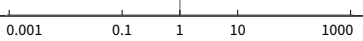
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Woodville 1996	0/49	0/55			Not estimable
MRCmulticentre 1999	0/292	0/291			Not estimable
Quebec 1998	0/136	0/117			Not estimable
Madrid 1997	0/7	0/6			Not estimable
Coala Trial Gp 1997	0/487	0/507			Not estimable
Subtotal (95% CI)	**993**	**999**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.7.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**2179**	**2475**		**100%**	**0.65[0.07,6.58]**
Total events: 1 (Treatment), 2 (Control)					
Heterogeneity: Tau^2=0; Chi^2=2.2, df=2(P=0.33); I^2=8.9%					
Test for overall effect: Z=0.36(P=0.72)					
Test for subgroup differences: Not applicable					



Analysis 1.8. Comparison 1 Laparoscopic versus Open, Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.8.1 TAPP versus Open					
Adelaide 1994	1/42	0/44		8.41%	7.75[0.15,390.96]
Ulm 1993	0/23	0/27			Not estimable
Kokkola 1997	0/20	0/18			Not estimable
Whipps Cross 1998	0/201	0/201			Not estimable
Maastricht 1998	2/88	0/87		16.72%	7.39[0.46,119.1]
Oulu 1 1998	0/20	0/20			Not estimable
Tampere 1998	0/29	0/31			Not estimable
Ancona 1998	0/52	0/56			Not estimable
Stuttgart 1995	2/54	1/48		24.64%	1.75[0.18,17.32]
MRCmulticentre 1999	1/103	0/97		8.4%	6.97[0.14,351.93]
Tournai 1996	0/34	0/33			Not estimable
Whipps Cross 1994	0/75	1/75		8.41%	0.14[0,6.82]
Aarberg 1996	0/51	0/49			Not estimable
SCUR 1999	0/207	0/406			Not estimable
Michigan 1997	0/17	0/17			Not estimable
Parma 1997	0/52	0/56			Not estimable
Nyborg 1999	0/146	0/141			Not estimable
Bangkok 1998	0/60	0/60			Not estimable
Berlin 1996	0/80	0/160			Not estimable
Subtotal (95% CI)	**1354**	**1626**		**66.58%**	**2.61[0.65,10.53]**
Total events: 6 (Treatment), 2 (Control)					



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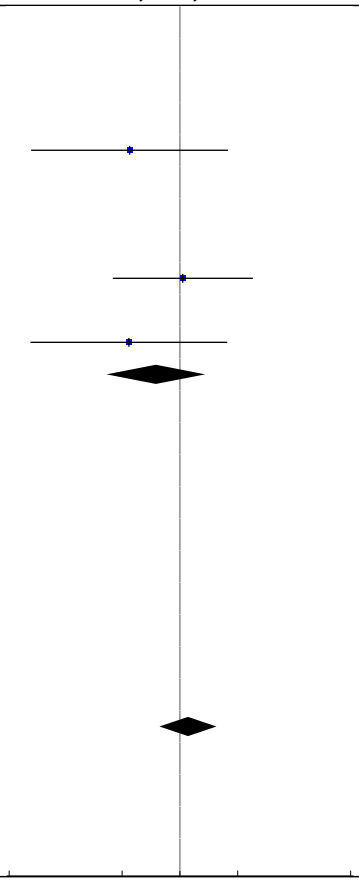
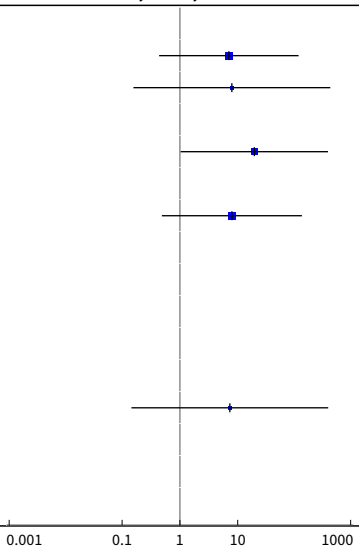
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Heterogeneity: Tau²=0; Chi²=3.38, df=4(P=0.5); I²=0%					
Test for overall effect: Z=1.35(P=0.18)					
1.8.2 TEP versus Open					
MRCmulticentre 1999	0/338	1/336		8.41%	0.13[0,6.78]
Quebec 1998	0/136	0/117			Not estimable
Oulu 2 1998	0/22	0/23			Not estimable
Madrid 1997	0/20	0/5			Not estimable
Woodville 1996	1/49	1/55		16.6%	1.12[0.07,18.3]
Coala Trial Gp 1997	0/487	0/507			Not estimable
Paris 1994	0/92	1/89		8.41%	0.13[0,6.6]
Subtotal (95% CI)	**1144**	**1132**		**33.42%**	**0.38[0.05,2.74]**
Total events: 1 (Treatment), 3 (Control)					
Heterogeneity: Tau²=0; Chi²=1.13, df=2(P=0.57); I²=0%					
Test for overall effect: Z=0.96(P=0.34)					
1.8.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**2498**	**2758**		**100%**	**1.38[0.44,4.29]**
Total events: 7 (Treatment), 5 (Control)					
Heterogeneity: Tau²=0; Chi²=6.95, df=7(P=0.43); I²=0%					
Test for overall effect: Z=0.55(P=0.58)					
Test for subgroup differences: Chi²=2.44, df=1 (P=0.12), I²=58.97%					



Analysis 1.9. Comparison 1 Laparoscopic versus Open, Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.9.1 TAPP versus Open					
MRCmulticentre 1999	2/103	0/97		22.73%	7.04[0.44,113.48]
Tampere 1998	1/29	0/31		11.42%	7.92[0.16,399.84]
Whipps Cross 1998	0/201	0/201			Not estimable
SCUR 1999	2/207	0/406		20.42%	19.42[1.03,364.72]
Ulm 1993	0/23	0/27			Not estimable
Adelaide 1994	2/42	0/44		22.58%	7.94[0.49,129.15]
Whipps Cross 1994	0/75	0/75			Not estimable
Aarberg 1996	0/51	0/49			Not estimable
Kokkola 1997	0/20	0/18			Not estimable
Tournai 1996	0/34	0/33			Not estimable
Ancona 1998	0/52	0/56			Not estimable
Maastricht 1998	1/88	0/87		11.43%	7.31[0.14,368.2]
Oulu 1 1998	0/20	0/20			Not estimable
Bangkok 1998	0/60	0/60			Not estimable
Nyborg 1999	0/146	0/141			Not estimable



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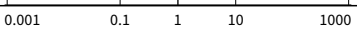
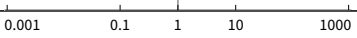
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Berlin 1996	0/80	0/160			Not estimable
Parma 1997	0/52	0/56			Not estimable
Subtotal (95% CI)	**1283**	**1561**		**88.57%**	**9.36[2.29,38.26]**
Total events: 8 (Treatment), 0 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.31, df=4(P=0.99); I^2=0%					
Test for overall effect: Z=3.11(P=0)					
1.9.2 TEP versus Open					
Woodville 1996	0/49	0/55			Not estimable
Oulu 2 1998	0/22	0/23			Not estimable
MRCmulticentre 1999	0/338	1/336		11.43%	0.13[0,6.78]
Quebec 1998	0/136	0/117			Not estimable
Coala Trial Gp 1997	0/487	0/507			Not estimable
Subtotal (95% CI)	**1032**	**1038**		**11.43%**	**0.13[0,6.78]**
Total events: 0 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1(P=0.32)					
1.9.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**2315**	**2599**		**100%**	**5.76[1.53,21.68]**
Total events: 8 (Treatment), 1 (Control)					
Heterogeneity: Tau^2=0; Chi^2=4.3, df=5(P=0.51); I^2=0%					
Test for overall effect: Z=2.59(P=0.01)					
Test for subgroup differences: Chi^2=3.98, df=1 (P=0.05), I^2=74.9%					



Analysis 1.10. Comparison 1 Laparoscopic versus Open, Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.10.1 TAPP versus Open					
SCUR 1999	0/207	0/406			Not estimable
MRCmulticentre 1999	2/75	0/76		33.37%	7.59[0.47,122.49]
Tournai 1996	0/34	0/33			Not estimable
Whipps Cross 1998	1/200	0/200		16.8%	7.39[0.15,372.38]
Ancona 1998	0/52	0/56			Not estimable
Maastricht 1999	0/42	0/37			Not estimable
Whipps Cross 1994	0/75	0/75			Not estimable
Oulu 1 1998	0/20	0/20			Not estimable
Linköping 1997	2/110	0/89		33.05%	6.16[0.38,100.76]
Adelaide 1994	0/42	0/44			Not estimable
Michigan 1997	0/17	0/17			Not estimable
Aarberg 1996	1/51	0/49		16.79%	7.1[0.14,358.35]
Kokkola 1997	0/20	0/18			Not estimable



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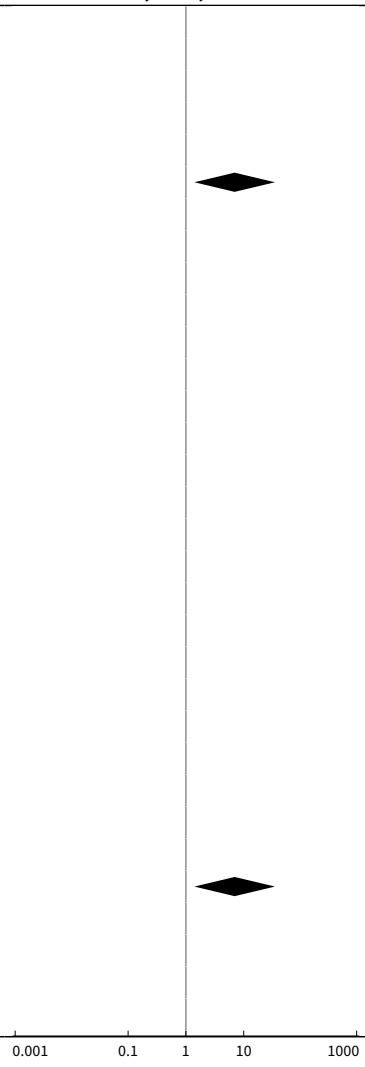
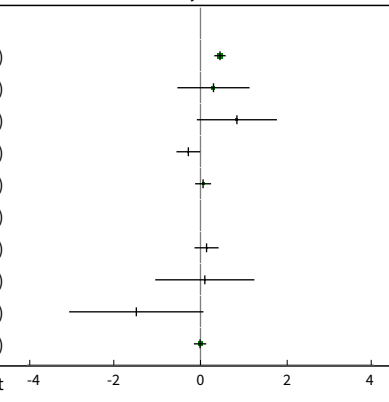
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Ulm 1993	0/23	0/27			Not estimable
Berlin 1996	0/80	0/160			Not estimable
Nyborg 1999	0/146	0/141			Not estimable
Bangkok 1998	0/60	0/60			Not estimable
Parma 1997	0/52	0/56			Not estimable
Subtotal (95% CI)	**1306**	**1564**		**100%**	**6.97[1.4,34.77]**
Total events: 6 (Treatment), 0 (Control)					
Heterogeneity: Tau²=0; Chi²=0.01, df=3(P=1); I²=0%					
Test for overall effect: Z=2.37(P=0.02)					
1.10.2 TEP versus Open					
Oulu 2 1998	0/22	0/23			Not estimable
Woodville 1996	0/49	0/55			Not estimable
Quebec 1998	0/136	0/117			Not estimable
MRCmulticentre 1999	0/285	0/271			Not estimable
Coala Trial Gp 1997	0/487	0/507			Not estimable
Subtotal (95% CI)	**979**	**973**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
1.10.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**2285**	**2537**		**100%**	**6.97[1.4,34.77]**
Total events: 6 (Treatment), 0 (Control)					
Heterogeneity: Tau²=0; Chi²=0.01, df=3(P=1); I²=0%					
Test for overall effect: Z=2.37(P=0.02)					
Test for subgroup differences: Not applicable					



Analysis 1.11. Comparison 1 Laparoscopic versus Open, Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
1.11.1 TAPP versus Open							
SCUR 1999	207	0.9 (0.9)	405	0.5 (0.6)		8.49%	0.45[0.32,0.58]
Tampere 1998	29	1.6 (2.2)	31	1.3 (0.5)		0.21%	0.3[-0.53,1.13]
Oulu 1 1998	20	1.1 (2.1)	20	0.2 (0.3)		0.17%	0.84[-0.08,1.76]
Maastricht 1999	42	1.1 (0.5)	37	1.4 (0.7)		1.96%	-0.28[-0.55,-0.01]
Hawaii 1994	51	0.1 (0.5)	49	0.1 (0.5)		4.31%	0.06[-0.12,0.24]
Adelaide 1994	37	0 (0.2)	40	0 (0)			Not estimable
MRCmulticentre 1999	70	1.3 (1)	68	1.2 (0.7)		1.9%	0.14[-0.14,0.42]
Whipps Cross 1994	75	0.7 (3.6)	73	0.6 (3.5)		0.11%	0.1[-1.04,1.24]
Ulm 1993	23	6.2 (2.7)	27	7.7 (2.9)		0.06%	-1.48[-3.03,0.07]
Linköping 1997	110	0.5 (0.5)	89	0.5 (0.5)		7.18%	-0.01[-0.15,0.13]



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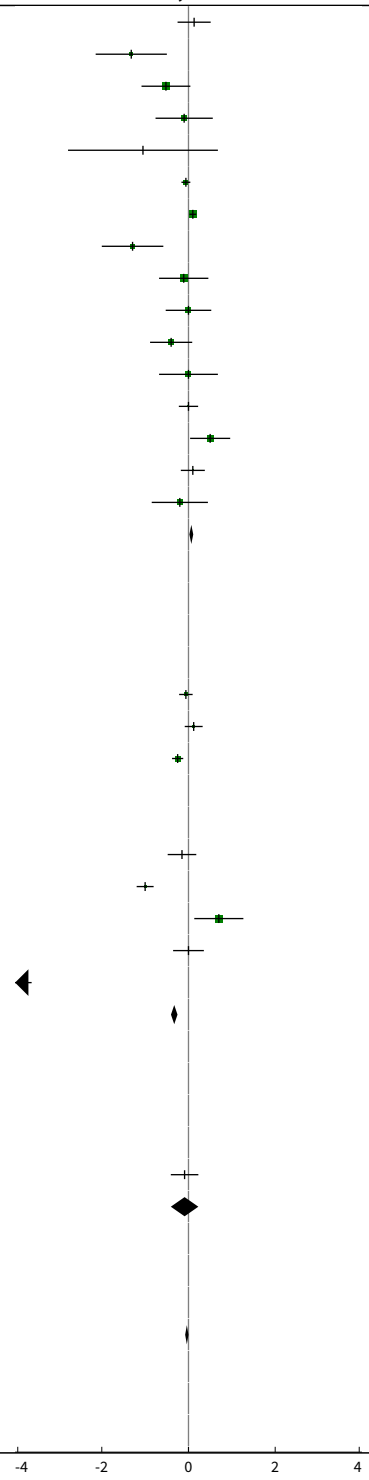
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Kokkola 1997	20	1.9 (0.7)	18	1.7 (0.6)		1.01%	0.13[-0.25,0.51]
Aarberg 1996	51	4.8 (1.6)	49	6.2 (2.5)		0.22%	-1.32[-2.14,-0.5]
Tournai 1996	35	3.5 (1)	35	4.1 (1.4)		0.46%	-0.52[-1.08,0.04]
Omaha 1996	24	1.7 (1.2)	29	1.8 (1.3)		0.34%	-0.1[-0.76,0.56]
Michigan 1997	29	1.7 (1.6)	28	2.7 (4.4)		0.05%	-1.05[-2.78,0.68]
Maastricht 1998	88	1 (0.3)	87	1.1 (0.4)		13.94%	-0.06[-0.16,0.04]
Whipps Cross 1998	200	0.1 (0.5)	201	0 (0.2)		24.27%	0.1[0.02,0.18]
Stuttgart 1995	54	8.2 (1.8)	48	9.5 (1.9)		0.29%	-1.29[-2,-0.58]
Ancona 1998	52	2.9 (1.3)	56	3 (1.7)		0.45%	-0.11[-0.68,0.46]
Berlin 1996	80	3 (2)	160	3 (1.9)		0.53%	0[-0.53,0.53]
Bangkok 1998	60	2.6 (1.2)	60	3 (1.5)		0.62%	-0.4[-0.89,0.09]
Linz 1996	28	3.7 (1.4)	34	3.7 (1.3)		0.32%	0[-0.68,0.68]
Nyborg 1999	138	1.4 (0.5)	130	1.4 (1.2)		2.96%	0[-0.22,0.22]
Parma 1997	52	2.4 (1.2)	56	1.9 (1.3)		0.69%	0.5[0.04,0.96]
Riga 1999	52	2.3 (0.7)	52	2.2 (0.7)		1.91%	0.1[-0.18,0.38]
Caen 1998	25	4 (1.2)	30	4.2 (1.3)		0.35%	-0.2[-0.85,0.45]
Subtotal ***	**1652**		**1912**			**72.8%**	**0.07[0.02,0.11]**
Heterogeneity: Tau²=0; Chi²=93.2, df=24(P<0.0001); I²=74.25%							
Test for overall effect: Z=2.85(P=0)							
1.11.2 TEP versus Open							
Woodville 1996	47	0.1 (0.4)	55	0.2 (0.5)		6.07%	-0.06[-0.22,0.1]
Oulu 2 1998	22	0.4 (0.3)	22	0.3 (0.4)		3.44%	0.12[-0.09,0.33]
Madrid 1997	60	1.1 (0.2)	60	1.3 (0.5)		8.8%	-0.25[-0.38,-0.12]
Hawaii 1996	51	0 (0.1)	49	0 (0)			Not estimable
Quebec 1998	140	0 (0)	118	0.3 (0.6)			Not estimable
MRCmulticentre 1999	302	1.4 (2.1)	301	1.6 (2)		1.35%	-0.15[-0.48,0.18]
Coala Trial Gp 1997	487	1 (1)	507	2 (2)		3.84%	-1[-1.2,-0.8]
Linz 1996	24	4.4 (0.9)	34	3.7 (1.3)		0.46%	0.7[0.13,1.27]
Brisbane 1996	92	1 (1.2)	92	1 (1.3)		1.17%	0[-0.35,0.35]
Paris 1997	51	3.2 (1.2)	49	7.3 (1.3)		0.63%	-4.1[-4.58,-3.62]
Subtotal ***	**1276**		**1287**			**25.75%**	**-0.33[-0.4,-0.25]**
Heterogeneity: Tau²=0; Chi²=329.18, df=7(P<0.0001); I²=97.87%							
Test for overall effect: Z=8.54(P<0.0001)							
1.11.3 Miscellaneous Laparosopic versus Open							
Montreal 1995	58	0.7 (0.8)	64	0.8 (1)		1.45%	-0.09[-0.41,0.23]
Subtotal ***	**58**		**64**			**1.45%**	**-0.09[-0.41,0.23]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.56(P=0.58)							
Total ***	**2986**		**3263**			**100%**	**-0.04[-0.08,-0]**
Heterogeneity: Tau²=0; Chi²=499.9, df=33(P<0.0001); I²=93.4%							
Test for overall effect: Z=1.96(P=0.05)							
Test for subgroup differences: Chi²=77.51, df=1 (P<0.0001), I²=97.42%							



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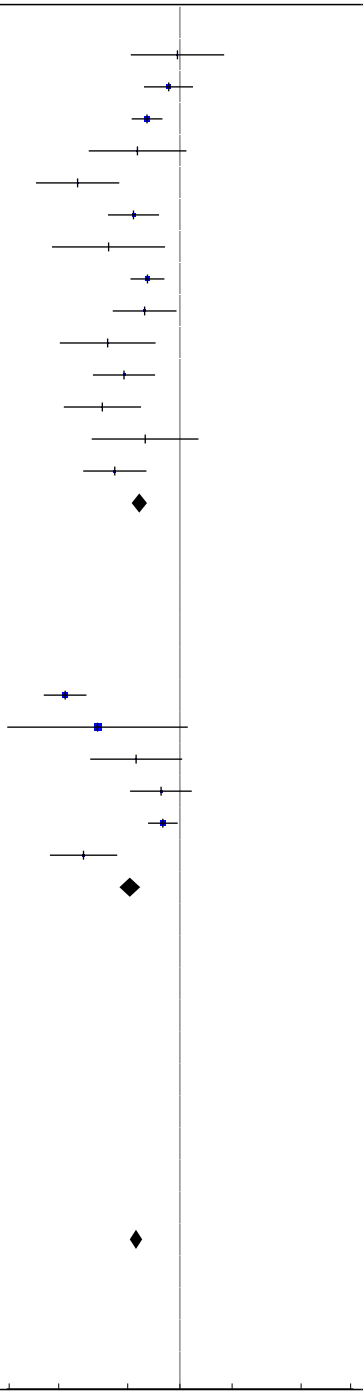
Analysis 1.12. Comparison 1 Laparoscopic versus Open, Outcome 12 Time to return to usual activities (days).

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
1.12.1 TAPP versus Open					
Tampere 1998	21/21	19/19		1.74%	0.97[0.52,1.8]
MRCmulticentre 1999	75/79	69/70		6.25%	0.86[0.62,1.19]
Whipps Cross 1998	193/193	189/189		15.95%	0.65[0.53,0.79]
Oulu 1 1998	20/20	19/19		1.6%	0.57[0.3,1.09]
Tournai 1996	34/34	33/33		2.19%	0.26[0.15,0.45]
Whipps Cross 1994	73/73	72/72		5.82%	0.54[0.38,0.76]
Kokkola 1997	17/17	13/13		1.19%	0.39[0.18,0.82]
SCUR 1999	137/137	247/247		13.21%	0.65[0.52,0.81]
Maastricht 1998	48/51	39/41		3.72%	0.63[0.41,0.96]
Ulm 1993	22/22	27/27		1.65%	0.38[0.2,0.72]
Hawaii 1994	51/51	49/49		3.92%	0.48[0.31,0.72]
Stuttgart 1995	36/36	33/33		2.54%	0.36[0.21,0.6]
Maastricht 1999	16/16	16/16		1.32%	0.63[0.31,1.28]
Aarberg 1996	51/51	49/49		3.79%	0.42[0.28,0.64]
Subtotal (95% CI)	**801**	**877**		**64.88%**	**0.58[0.53,0.65]**
Total events: 794 (Treatment), 874 (Control)					
Heterogeneity: Tau^2=0; Chi^2=28.25, df=13(P=0.01); I^2=53.99%					
Test for overall effect: Z=10.41(P<0.0001)					
1.12.2 TEP versus Open					
Quebec 1998	136/136	116/116		8.26%	0.22[0.16,0.29]
Madrid 1997	7/7	5/5		0.47%	0.34[0.1,1.11]
Oulu 2 1998	22/22	23/23		1.79%	0.56[0.3,1.03]
Woodville 1996	44/44	50/50		3.95%	0.78[0.52,1.17]
MRCmulticentre 1999	215/228	183/199		17.28%	0.8[0.66,0.97]
Hawaii 1996	51/51	49/49		3.37%	0.28[0.18,0.43]
Subtotal (95% CI)	**488**	**442**		**35.12%**	**0.51[0.45,0.59]**
Total events: 475 (Treatment), 426 (Control)					
Heterogeneity: Tau^2=0; Chi^2=66.02, df=5(P<0.0001); I^2=92.43%					
Test for overall effect: Z=9.45(P<0.0001)					
1.12.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1289**	**1319**		**100%**	**0.56[0.51,0.61]**
Total events: 1269 (Treatment), 1300 (Control)					
Heterogeneity: Tau^2=0; Chi^2=96.35, df=19(P<0.0001); I^2=80.28%					
Test for overall effect: Z=13.99(P<0.0001)					
Test for subgroup differences: Chi^2=2.08, df=1 (P=0.15), I^2=52.02%					



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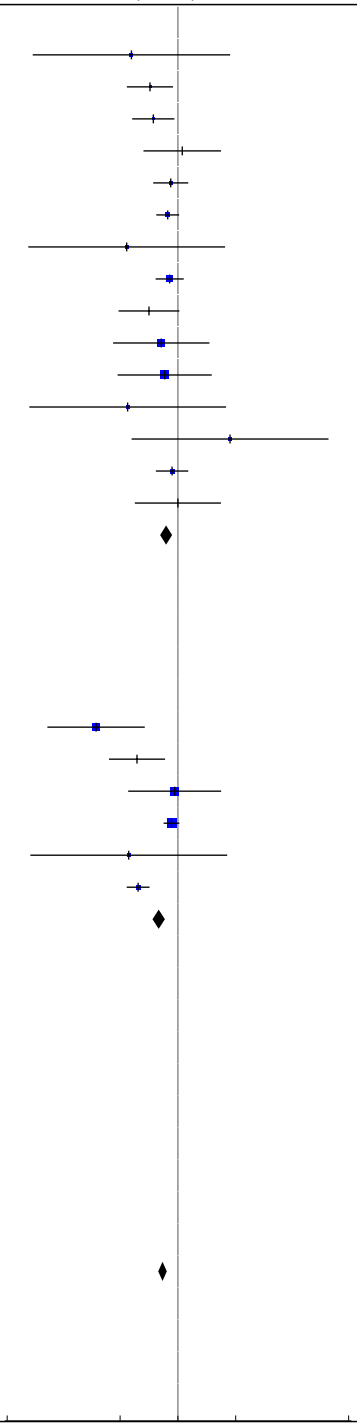
Analysis 1.13. Comparison 1 Laparoscopic versus Open, Outcome 13 Persisting pain.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.13.1 TAPP versus Open					
Ulm 1993	0/23	1/27		0.19%	0.16[0,8.01]
Ancona 1998	6/52	17/56		3.52%	0.33[0.13,0.82]
Whipps Cross 1994	11/50	21/48		4.2%	0.38[0.16,0.87]
Maastricht 1999	4/42	3/37		1.24%	1.19[0.25,5.57]
Maastricht 1998	19/84	23/82		6.08%	0.75[0.37,1.51]
Whipps Cross 1998	45/184	59/180		14.36%	0.67[0.42,1.05]
Aarberg 1996	0/51	1/49		0.19%	0.13[0,6.55]
MRCmulticentre 1999	42/107	45/95		9.56%	0.72[0.41,1.26]
SCUR 1999	1/176	11/350		2.02%	0.32[0.09,1.06]
Adelaide 1994	2/14	3/12		0.8%	0.52[0.08,3.51]
Michigan 1997	2/17	3/16		0.84%	0.59[0.09,3.85]
Bangkok 1998	0/60	1/60		0.19%	0.14[0,6.82]
Parma 1997	1/52	0/56		0.19%	7.98[0.16,403.24]
Bietigheim 1998	15/94	35/180		7.13%	0.79[0.42,1.51]
Berlin 1996	2/80	4/160		1.01%	1[0.18,5.56]
Subtotal (95% CI)	**1086**	**1408**		**51.52%**	**0.62[0.49,0.79]**
Total events: 150 (Treatment), 227 (Control)					
Heterogeneity: Tau^2=0; Chi^2=9.91, df=14(P=0.77); I^2=0%					
Test for overall effect: Z=3.84(P=0)					
1.13.2 TEP versus Open					
Madrid 1997	0/34	5/17		0.79%	0.04[0.01,0.27]
Quebec 1998	2/137	11/117		2.37%	0.2[0.06,0.6]
Woodville 1996	3/11	3/10		0.87%	0.88[0.14,5.6]
MRCmulticentre 1999	125/324	142/317		30.07%	0.77[0.57,1.06]
Oulu 2 1998	0/22	1/23		0.19%	0.14[0,7.13]
Coala Trial Gp 1997	10/487	70/507		14.19%	0.2[0.13,0.32]
Subtotal (95% CI)	**1015**	**991**		**48.48%**	**0.47[0.36,0.6]**
Total events: 140 (Treatment), 232 (Control)					
Heterogeneity: Tau^2=0; Chi^2=32.03, df=5(P<0.0001); I^2=84.39%					
Test for overall effect: Z=6.07(P<0.0001)					
1.13.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**2101**	**2399**		**100%**	**0.54[0.46,0.64]**
Total events: 290 (Treatment), 459 (Control)					
Heterogeneity: Tau^2=0; Chi^2=44.76, df=20(P=0); I^2=55.32%					
Test for overall effect: Z=6.98(P<0.0001)					
Test for subgroup differences: Chi^2=2.83, df=1 (P=0.09), I^2=64.6%					



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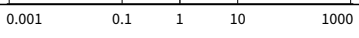
Analysis 1.14. Comparison 1 Laparoscopic versus Open, Outcome 14 Persisting numbness.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
1.14.1 TAPP versus Open					
MRCmulticentre 1999	19/102	44/89		17.74%	0.25[0.14,0.46]
SCUR 1999	0/170	15/342		5.43%	0.21[0.07,0.64]
Whipps Cross 1994	0/50	5/48		2.01%	0.12[0.02,0.71]
Maastricht 1999	0/42	0/37			Not estimable
Hawaii 1994	0/51	0/49			Not estimable
Ancona 1998	0/52	0/56			Not estimable
Whipps Cross 1998	2/201	30/202		12.4%	0.15[0.07,0.31]
Michigan 1997	1/17	0/16		0.42%	6.97[0.14,351.74]
Maastricht 1998	1/83	9/82		3.97%	0.18[0.05,0.65]
Aarberg 1996	1/51	0/49		0.42%	7.1[0.14,358.35]
Berlin 1996	1/80	3/160		1.47%	0.68[0.08,5.54]
Parma 1997	1/52	1/56		0.83%	1.08[0.07,17.49]
Subtotal (95% CI)	**951**	**1186**		**44.7%**	**0.23[0.16,0.33]**
Total events: 26 (Treatment), 107 (Control)					
Heterogeneity: Tau^2=0; Chi^2=10.12, df=8(P=0.26); I^2=20.91%					
Test for overall effect: Z=7.65(P<0.0001)					
1.14.2 TEP versus Open					
Quebec 1998	1/137	0/117		0.42%	6.39[0.13,325.76]
MRCmulticentre 1999	75/308	104/296		52.95%	0.6[0.42,0.85]
Madrid 1997	0/1	2/2		0.37%	0.05[0,3.18]
Oulu 2 1998	0/22	4/23		1.56%	0.12[0.02,0.93]
Subtotal (95% CI)	**468**	**438**		**55.3%**	**0.57[0.41,0.8]**
Total events: 76 (Treatment), 110 (Control)					
Heterogeneity: Tau^2=0; Chi^2=5.04, df=3(P=0.17); I^2=40.46%					
Test for overall effect: Z=3.21(P=0)					
1.14.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1419**	**1624**		**100%**	**0.38[0.29,0.49]**
Total events: 102 (Treatment), 217 (Control)					
Heterogeneity: Tau^2=0; Chi^2=27.72, df=12(P=0.01); I^2=56.7%					
Test for overall effect: Z=7.51(P<0.0001)					
Test for subgroup differences: Chi^2=12.56, df=1 (P=0), I^2=92.04%					



Favours treatment — Favours control

Analysis 1.15. Comparison 1 Laparoscopic versus Open, Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
1.15.1 TAPP versus Open					
Michigan 1997	8/17	3/13		3.84%	2.72[0.62,11.86]
Aarberg 1996	3/51	6/49		4.88%	0.49[0.13,1.81]

Favours treatment — Favours control

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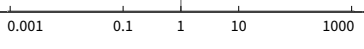
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
Maastricht 1999	6/42	1/37		3.8%	4.08[0.93,17.94]
SCUR 1999	3/207	17/406		9.72%	0.43[0.17,1.09]
Hawaii 1994	0/51	0/49			Not estimable
Ancona 1998	2/52	0/56		1.08%	8[0.5,127.97]
Linköping 1997	2/110	5/89		3.69%	0.29[0.06,1.31]
Stuttgart 1995	0/54	0/48			Not estimable
Whipps Cross 1998	1/200	1/200		1.08%	1[0.06,15.99]
Kokkola 1997	0/20	0/18			Not estimable
Tournai 1996	1/34	3/33		2.17%	0.41[0.06,2.92]
MRCmulticentre 1999	0/75	0/76			Not estimable
Ulm 1993	1/23	0/27		0.54%	8.67[0.17,437]
Adelaide 1994	1/42	0/44		0.54%	5.81[0.12,292.93]
Maastricht 1998	7/88	22/87		15.7%	0.33[0.16,0.69]
Whipps Cross 1994	0/50	2/48		1.06%	0.12[0.01,2.05]
Omaha 1996	0/24	2/29		1.06%	0.16[0.01,2.57]
Tampere 1998	5/28	1/31		3.21%	3.03[0.6,15.17]
Bietigheim 1998	1/94	3/180		1.93%	0.66[0.08,5.27]
Parma 1997	2/52	1/56		1.58%	2.15[0.22,21.35]
Linz 1996	1/28	0/34		0.54%	9.03[0.18,454.83]
Bangkok 1998	1/58	0/57		0.54%	7.39[0.15,372.38]
Berlin 1996	0/80	0/160			Not estimable
Nyborg 1999	4/138	3/130		3.71%	1.26[0.28,5.66]
Oxford 1995	1/58	0/66			Not estimable
Caen 1998	0/25	0/30			Not estimable
Bydgoszcz 1998	2/62	1/73		1.58%	2.34[0.24,23.18]
Subtotal (95% CI)	**1763**	**2126**		**62.28%**	**0.76[0.52,1.09]**
Total events: 52 (Treatment), 71 (Control)					
Heterogeneity: Tau²=0; Chi²=32.47, df=19(P=0.03); I²=41.49%					
Test for overall effect: Z=1.5(P=0.13)					
1.15.2 TEP versus Open					
Quebec 1998	3/137	6/116		4.88%	0.5[0.13,1.83]
Woodville 1996	2/47	0/55		1.06%	10.67[0.65,175.44]
MRCmulticentre 1999	7/285	0/271		3.8%	7.1[1.61,31.24]
Oulu 2 1998	0/22	0/23			Not estimable
Madrid 1997	0/59	0/57			Not estimable
Coala Trial Gp 1997	17/487	31/507		24.79%	0.57[0.32,1.01]
Linz 1996	0/24	0/34			Not estimable
Paris 1997	3/51	1/49		2.1%	2.69[0.37,19.68]
Denizli 1998	0/32	0/32			Not estimable
Brisbane 1996	1/92	0/92		0.54%	7.39[0.15,372.38]
Paris 1994	0/89	0/92			Not estimable
Hawaii 1996	1/50	0/50		0.54%	7.39[0.15,372.38]
Subtotal (95% CI)	**1375**	**1378**		**37.72%**	**0.91[0.57,1.46]**
Total events: 34 (Treatment), 38 (Control)					
Heterogeneity: Tau²=0; Chi²=17.11, df=6(P=0.01); I²=64.93%					
Test for overall effect: Z=0.37(P=0.71)					
1.15.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					



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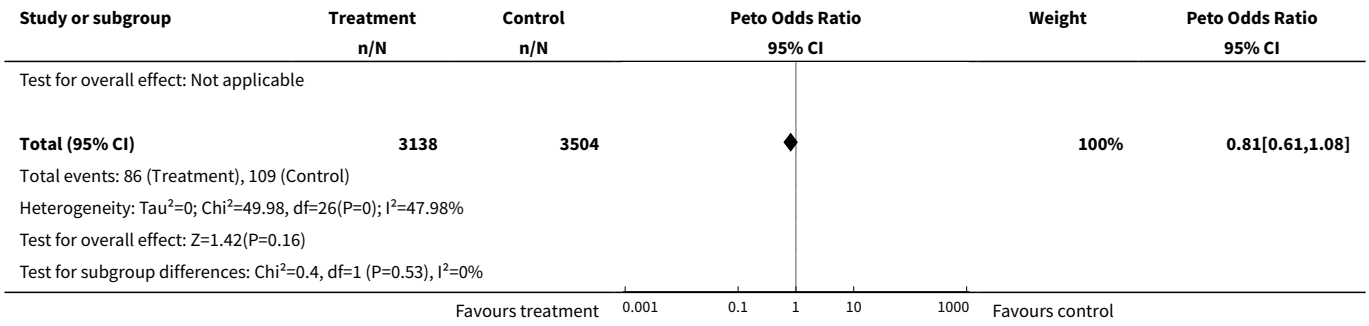

Comparison 2. TAPP versus Open

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	27	4611	Mean Difference (IV, Fixed, 95% CI)	16.20 [15.26, 17.15]
1.1 TAPP versus Mesh	13	1841	Mean Difference (IV, Fixed, 95% CI)	14.42 [13.09, 15.75]
1.2 TAPP versus Non-Mesh	15	2514	Mean Difference (IV, Fixed, 95% CI)	18.52 [17.12, 19.92]
1.3 TAPP versus Mixed Open	2	256	Mean Difference (IV, Fixed, 95% CI)	11.69 [6.64, 16.74]
2 "Opposite" method initiated	16	1939	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.96 [2.20, 16.18]
2.1 TAPP versus Mesh	7	680	Peto Odds Ratio (Peto, Fixed, 95% CI)	8.44 [1.88, 37.84]
2.2 TAPP versus Non-Mesh	9	1062	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 TAPP versus Mixed Open	1	197	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.53 [1.19, 17.22]
3 Conversion	26	4326	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.53 [2.23, 9.21]
3.1 TAPP versus Mesh	12	1847	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.77 [2.37, 25.47]
3.2 TAPP versus Non-Mesh	15	2232	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.40 [0.84, 6.89]
3.3 TAPP versus Mixed Open	2	247	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.48 [1.48, 37.87]
4 Haematoma	24	3695	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.84 [0.67, 1.06]
4.1 TAPP versus Mesh	10	1503	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.69 [0.51, 0.93]
4.2 TAPP versus Non-Mesh	15	2061	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.18 [0.81, 1.73]
4.3 TAPP versus Mixed Open	1	131	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.82 [0.28, 2.39]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5 Seroma	20	3087	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.02 [1.46, 2.81]
5.1 TAPP versus Mesh	10	1499	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.47 [1.44, 4.24]
5.2 TAPP versus Non-Mesh	10	1424	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.93 [1.25, 2.99]
5.3 TAPP versus Mixed Open	2	164	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.97 [0.27, 3.50]
6 Wound/superficial infection	21	3739	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.41 [0.27, 0.61]
6.1 TAPP versus Mesh	10	1583	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.36 [0.23, 0.59]
6.2 TAPP versus Non-Mesh	12	1992	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.47 [0.21, 1.04]
6.3 TAPP versus Mixed Open	2	164	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.91 [0.19, 18.68]
7 Mesh/deep infection	17	2949	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.54 [0.06, 5.16]
7.1 TAPP versus Mesh	10	1537	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.16 [0.00, 8.03]
7.2 TAPP versus Non-Mesh	7	1248	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.98 [0.06, 15.71]
7.3 TAPP versus Mixed Open	2	164	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	19	3267	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.61 [0.65, 10.53]
8.1 TAPP versus Mesh	8	1322	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TAPP versus Non-Mesh	11	1711	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.27 [0.51, 10.07]
8.3 TAPP versus Mixed Open	2	234	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.97 [0.14, 351.93]
9 Visceral injury	17	3131	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.42 [2.14, 25.72]
9.1 TAPP versus Mesh	8	1322	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.39 [0.77, 71.25]
9.2 TAPP versus Non-Mesh	10	1609	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.60 [1.31, 44.10]
9.3 TAPP versus Mixed Open	1	200	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.04 [0.44, 113.48]
10 Port site hernia	18	3157	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.97 [1.40, 34.77]
10.1 TAPP versus Mesh	8	1339	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.39 [0.15, 372.38]
10.2 TAPP versus Non-Mesh	10	1633	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.46 [0.66, 62.92]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
10.3 TAPP versus Mixed Open	2	185	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.59 [0.47, 122.49]
11 Length of stay (days)	26	3438	Mean Difference (IV, Fixed, 95% CI)	0.06 [0.01, 0.10]
11.1 TAPP versus Mesh	12	1657	Mean Difference (IV, Fixed, 95% CI)	0.15 [0.09, 0.21]
11.2 TAPP versus Non-Mesh	13	1586	Mean Difference (IV, Fixed, 95% CI)	-0.10 [-0.17, -0.02]
11.3 TAPP versus Mixed Open	2	195	Mean Difference (IV, Fixed, 95% CI)	0.11 [-0.16, 0.38]
12 Time to return to usual activities (days)	14	1753	Peto Odds Ratio (95% CI)	0.59 [0.54, 0.65]
12.1 TAPP versus Mesh	7	876	Peto Odds Ratio (95% CI)	0.63 [0.55, 0.72]
12.2 TAPP versus Non-Mesh	7	728	Peto Odds Ratio (95% CI)	0.50 [0.43, 0.58]
12.3 TAPP versus Mixed Open	1	149	Peto Odds Ratio (95% CI)	0.86 [0.62, 1.19]
13 Persisting pain	15	2844	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.51 [0.40, 0.63]
13.1 TAPP versus Mesh	7	1348	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.59 [0.43, 0.83]
13.2 TAPP versus Non-Mesh	8	1235	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.35 [0.24, 0.50]
13.3 TAPP versus Mixed Open	3	261	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.69 [0.41, 1.16]
14 Persisting numbness	12	2387	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.22 [0.15, 0.32]
14.1 TAPP versus Mesh	7	1292	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.18 [0.10, 0.33]
14.2 TAPP versus Non-Mesh	5	871	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.20 [0.09, 0.43]
14.3 TAPP versus Mixed Open	2	224	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.27 [0.15, 0.49]
15 Hernia recurrence	27	4270	Peto Odds Ratio (95% CI)	0.67 [0.47, 0.96]
15.1 TAPP versus Mesh	12	1830	Peto Odds Ratio (95% CI)	1.01 [0.56, 1.85]
15.2 TAPP versus Non-Mesh	16	2259	Peto Odds Ratio (95% CI)	0.45 [0.28, 0.72]
15.3 TAPP versus Mixed Open	2	181	Peto Odds Ratio (95% CI)	2.72 [0.62, 11.86]

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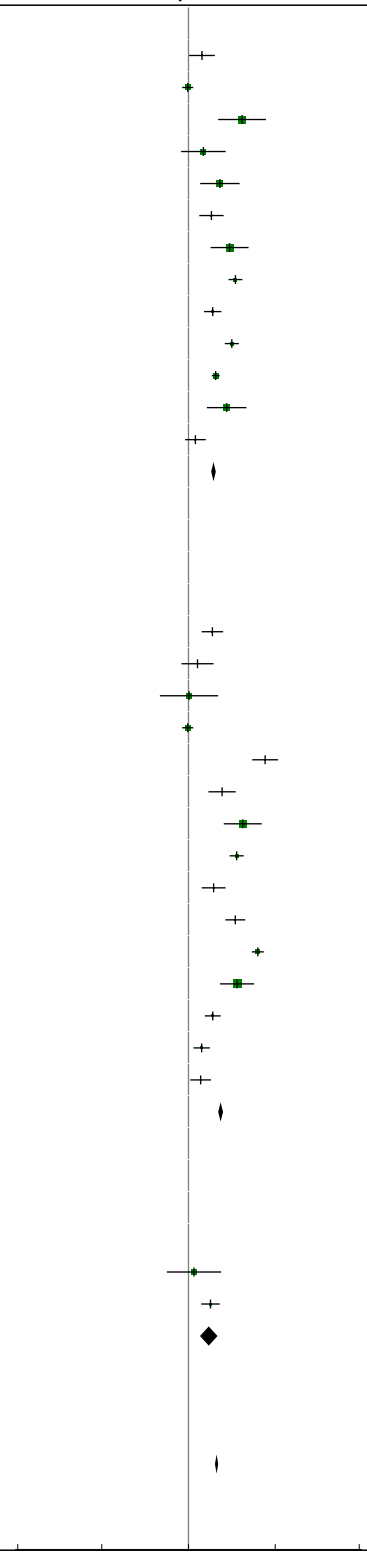
Analysis 2.1. Comparison 2 TAPP versus Open, Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
2.1.1 TAPP versus Mesh							
Tampere 1998	27	46.3 (15.8)	29	38.5 (12.2)		1.63%	7.78[0.36,15.2]
Whipps Cross 1998	201	46.4 (16.9)	201	46.9 (15.7)		8.82%	-0.44[-3.63,2.75]
Kokkola 1997	20	78.9 (25.7)	18	48 (17.2)		0.47%	30.9[17.13,44.67]
Oulu 1 1998	20	73.7 (26.9)	20	65.1 (11.6)		0.54%	8.6[-4.24,21.44]
Ancona 1998	52	73.8 (28.4)	56	55.6 (32)		0.69%	18.12[6.74,29.5]
Hawaii 1994	51	73.1 (20.1)	49	59.9 (15.4)		1.83%	13.24[6.24,20.24]
Maastricht 1999	42	79.4 (31.7)	37	55.7 (16.5)		0.75%	23.68[12.73,34.63]
SCUR 1999	207	65.1 (25.5)	199	38 (14.1)		5.65%	27.09[23.11,31.07]
Parma 1997	52	73 (15)	56	59 (11)		3.6%	14[9.01,18.99]
Berlin 1996	80	61 (12)	80	36 (14)		5.49%	25[20.96,29.04]
Riga 1999	52	49.6 (5.4)	52	33.9 (6.2)		17.96%	15.7[13.47,17.93]
Omaha 1996	24	109 (23.8)	29	87 (17.3)		0.69%	22[10.6,33.4]
Bietigheim 1998	94	52 (23.8)	93	48 (17.3)		2.53%	4[-1.95,9.95]
Subtotal ***	**922**		**919**			**50.65%**	**14.42[13.09,15.75]**
Heterogeneity: Tau^2=0; Chi^2=176.04, df=12(P<0.0001); I^2=93.18%							
Test for overall effect: Z=21.24(P<0.0001)							
2.1.2 TAPP versus Non-Mesh							
Adelaide 1994	42	46.9 (17.7)	44	33.1 (10.7)		2.33%	13.79[7.59,19.99]
Tournai 1996	34	67.9 (23.7)	33	62.7 (13.7)		1.05%	5.21[-4.03,14.45]
Ulm 1993	23	74.8 (32.6)	27	74.5 (27.1)		0.32%	0.3[-16.5,17.1]
Whipps Cross 1994	201	46.4 (16.9)	201	46.9 (15.7)		8.82%	-0.44[-3.63,2.75]
Maastricht 1998	87	89.7 (32.1)	86	45.5 (15.3)		1.61%	44.21[36.74,51.68]
Stuttgart 1995	54	68.3 (24.7)	48	49 (15.4)		1.44%	19.37[11.48,27.26]
Aarberg 1996	51	95.9 (34.9)	49	64.6 (19)		0.75%	31.29[20.34,42.24]
SCUR 1999	207	65.1 (25.5)	207	37.3 (15.6)		5.42%	27.78[23.71,31.85]
Linköping 1997	110	74.1 (28.8)	89	59.6 (20.6)		1.9%	14.49[7.61,21.37]
Nyborg 1999	138	72 (31)	130	45 (14)		2.76%	27[21.3,32.7]
Oxford 1995	58	72 (11)	66	32 (8)		7.64%	40[36.57,43.43]
Bangkok 1998	60	95 (28)	60	67 (27)		0.93%	28[18.16,37.84]
Berlin 1996	80	61 (12)	80	47 (17)		4.31%	14[9.44,18.56]
Linz 1996	28	46 (9.2)	34	38.4 (9.7)		4.03%	7.6[2.88,12.32]
Bietigheim 1998	94	52 (23.8)	93	45 (17.3)		2.53%	7[1.05,12.95]
Subtotal ***	**1267**		**1247**			**45.83%**	**18.52[17.12,19.92]**
Heterogeneity: Tau^2=0; Chi^2=424.32, df=14(P<0.0001); I^2=96.7%							
Test for overall effect: Z=25.95(P<0.0001)							
2.1.3 TAPP versus Mixed Open							
Michigan 1997	29	89 (26.4)	28	85.8 (33.3)		0.37%	3.18[-12.45,18.81]
MRCmulticentre 1999	101	54.6 (23.4)	98	41.9 (14)		3.15%	12.68[7.34,18.02]
Subtotal ***	**130**		**126**			**3.51%**	**11.69[6.64,16.74]**
Heterogeneity: Tau^2=0; Chi^2=1.27, df=1(P=0.26); I^2=21.32%							
Test for overall effect: Z=4.53(P<0.0001)							
Total ***	**2319**		**2292**			**100%**	**16.2[15.26,17.15]**
Heterogeneity: Tau^2=0; Chi^2=622.15, df=29(P<0.0001); I^2=95.34%							
Test for overall effect: Z=33.54(P<0.0001)							



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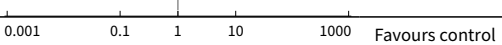
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Test for subgroup differences: Chi²=20.52, df=1 (P<0.0001), I²=90.25%							

Analysis 2.2. Comparison 2 TAPP versus Open, Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.2.1 TAPP versus Mesh					
Maastricht 1999	1/42	0/37		6.45%	6.56[0.13,333.2]
Tampere 1998	3/29	0/31		18.76%	8.51[0.85,85.23]
Hawaii 1994	0/51	0/49			Not estimable
Kokkola 1997	0/20	0/18			Not estimable
Ancona 1998	0/52	0/56			Not estimable
Berlin 1996	0/80	0/80			Not estimable
Bydgoszcz 1998	3/62	0/73		19.02%	9.12[0.93,89.86]
Subtotal (95% CI)	**336**	**344**		**44.24%**	**8.44[1.88,37.84]**
Total events: 7 (Treatment), 0 (Control)					
Heterogeneity: Tau²=0; Chi²=0.02, df=2(P=0.99); I²=0%					
Test for overall effect: Z=2.79(P=0.01)					
2.2.2 TAPP versus Non-Mesh					
Tournai 1996	0/35	0/35			Not estimable
Adelaide 1994	0/42	0/44			Not estimable
Maastricht 1998	0/88	0/87			Not estimable
Ulm 1993	0/23	0/27			Not estimable
Aarberg 1996	0/51	0/49			Not estimable
Linköping 1997	0/110	0/89			Not estimable
Stuttgart 1995	0/54	0/48			Not estimable
Berlin 1996	0/80	0/80			Not estimable
Bangkok 1998	0/60	0/60			Not estimable
Subtotal (95% CI)	**543**	**519**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.2.3 TAPP versus Mixed Open					
MRCmulticentre 1999	8/104	1/93		55.76%	4.53[1.19,17.22]
Subtotal (95% CI)	**104**	**93**		**55.76%**	**4.53[1.19,17.22]**
Total events: 8 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.21(P=0.03)					
Total (95% CI)	**983**	**956**		**100%**	**5.96[2.2,16.18]**
Total events: 15 (Treatment), 1 (Control)					
Heterogeneity: Tau²=0; Chi²=0.39, df=3(P=0.94); I²=0%					
Test for overall effect: Z=3.51(P=0)					
Test for subgroup differences: Chi²=0.37, df=1 (P=0.54), I²=0%					



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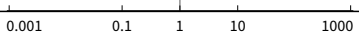
Analysis 2.3. Comparison 2 TAPP versus Open, Outcome 3 Conversion.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.3.1 TAPP versus Mesh					
SCUR 1999	3/207	0/199		9.76%	7.18[0.74,69.43]
Kokkola 1997	0/20	0/18			Not estimable
Ancona 1998	0/52	0/56			Not estimable
Tampere 1998	1/29	0/31		3.27%	7.92[0.16,399.84]
Hawaii 1994	2/51	0/49		6.47%	7.25[0.45,117.6]
Oulu 1 1998	0/20	0/20			Not estimable
Whipps Cross 1998	1/200	0/200		3.27%	7.39[0.15,372.38]
Bietigheim 1998	0/94	0/93			Not estimable
Berlin 1996	0/80	0/80			Not estimable
Bydgoszcz 1998	3/62	0/73		9.6%	9.12[0.93,89.86]
Parma 1997	0/52	0/56			Not estimable
Riga 1999	1/53	0/52		3.27%	7.25[0.14,365.49]
Subtotal (95% CI)	**920**	**927**		**35.64%**	**7.77[2.37,25.47]**
Total events: 11 (Treatment), 0 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.03, df=5(P=1); I^2=0%					
Test for overall effect: Z=3.38(P=0)					
2.3.2 TAPP versus Non-Mesh					
Maastricht 1998	1/88	0/87		3.27%	7.31[0.14,368.2]
Stuttgart 1995	0/54	0/48			Not estimable
Whipps Cross 1994	0/75	1/75		3.27%	0.14[0,6.82]
Tournai 1996	1/35	2/35		9.53%	0.5[0.05,5]
Aarberg 1996	2/51	0/49		6.47%	7.25[0.45,117.6]
Ulm 1993	0/23	0/27			Not estimable
Adelaide 1994	0/42	0/44			Not estimable
SCUR 1999	3/207	1/207		12.99%	2.74[0.38,19.58]
Linköping 1997	0/110	0/89			Not estimable
Bietigheim 1998	0/94	0/93			Not estimable
Bangkok 1998	0/6	0/60			Not estimable
Berlin 1996	0/80	0/80			Not estimable
Linz 1996	0/28	0/34			Not estimable
Nyborg 1999	1/146	0/141		3.27%	7.14[0.14,360.06]
Oxford 1995	2/58	0/66		6.46%	8.63[0.53,140.39]
Subtotal (95% CI)	**1097**	**1135**		**45.26%**	**2.4[0.84,6.89]**
Total events: 10 (Treatment), 4 (Control)					
Heterogeneity: Tau^2=0; Chi^2=5.88, df=6(P=0.44); I^2=0%					
Test for overall effect: Z=1.63(P=0.1)					
2.3.3 TAPP versus Mixed Open					
Michigan 1997	0/29	0/28			Not estimable
MRCmulticentre 1999	6/97	0/93		19.1%	7.48[1.48,37.87]
Subtotal (95% CI)	**126**	**121**		**19.1%**	**7.48[1.48,37.87]**
Total events: 6 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.43(P=0.02)					
Total (95% CI)	**2143**	**2183**		**100%**	**4.53[2.23,9.21]**
Total events: 27 (Treatment), 4 (Control)					



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Heterogeneity: Tau²=0; Chi²=8.46, df=13(P=0.81); I²=0%					
Test for overall effect: Z=4.18(P<0.0001)					
Test for subgroup differences: Chi²=2.55, df=1 (P=0.28), I²=21.55%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 2.4. Comparison 2 TAPP versus Open, Outcome 4 Haematoma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.4.1 TAPP versus Mesh					
Tampere 1998	1/29	2/31		1.01%	0.54[0.05,5.38]
Kokkola 1997	2/20	10/18		2.93%	0.13[0.03,0.5]
Oulu 1 1998	2/20	3/20		1.56%	0.64[0.1,4.07]
Maastricht 1999	10/42	5/37		4.27%	1.94[0.63,5.93]
Whipps Cross 1998	72/200	96/200		34.01%	0.61[0.41,0.91]
SCUR 1999	5/207	6/199		3.73%	0.8[0.24,2.64]
Ancona 1998	4/52	8/56		3.74%	0.52[0.16,1.71]
Riga 1999	1/52	2/52		1.02%	0.51[0.05,4.98]
Berlin 1996	6/80	5/80		3.59%	1.21[0.36,4.12]
Parma 1997	6/52	3/56		2.9%	2.23[0.57,8.68]
Subtotal (95% CI)	**754**	**749**		**58.76%**	**0.69[0.51,0.93]**
Total events: 109 (Treatment), 140 (Control)					
Heterogeneity: Tau²=0; Chi²=13.65, df=9(P=0.14); I²=34.05%					
Test for overall effect: Z=2.46(P=0.01)					
2.4.2 TAPP versus Non-Mesh					
Maastricht 1998	27/88	13/87		10.8%	2.43[1.2,4.91]
Tournai 1996	0/34	0/33			Not estimable
Michigan 1997	1/17	1/17		0.68%	1[0.06,16.69]
Ulm 1993	0/23	4/27		1.3%	0.14[0.02,1.06]
Adelaide 1994	4/42	2/44		1.96%	2.13[0.41,11.11]
Whipps Cross 1994	10/75	10/75		6.07%	1[0.39,2.56]
Aarberg 1996	3/51	3/49		1.98%	0.96[0.19,4.96]
SCUR 1999	5/207	7/207		4.07%	0.71[0.23,2.24]
Stuttgart 1995	1/54	2/48		1.02%	0.45[0.05,4.42]
Linköping 1997	2/110	3/89		1.69%	0.53[0.09,3.16]
Nyborg 1999	0/146	2/141		0.69%	0.13[0.01,2.08]
Bangkok 1998	2/60	2/60		1.36%	1[0.14,7.28]
Caen 1998	2/25	1/30		1%	2.43[0.24,24.64]
Berlin 1996	6/80	4/80		3.28%	1.53[0.43,5.48]
Linz 1996	1/28	1/34		0.68%	1.22[0.07,20.22]
Subtotal (95% CI)	**1040**	**1021**		**36.59%**	**1.18[0.81,1.73]**
Total events: 64 (Treatment), 55 (Control)					
Heterogeneity: Tau²=0; Chi²=14.19, df=13(P=0.36); I²=8.41%					
Test for overall effect: Z=0.86(P=0.39)					
2.4.3 TAPP versus Mixed Open					
MRCmulticentre 1999	7/67	8/64		4.66%	0.82[0.28,2.39]
Subtotal (95% CI)	**67**	**64**		**4.66%**	**0.82[0.28,2.39]**

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total events: 7 (Treatment), 8 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.37(P=0.71)					
Total (95% CI)	**1861**	**1834**		**100%**	**0.84[0.67,1.06]**
Total events: 180 (Treatment), 203 (Control)					
Heterogeneity: Tau^2=0; Chi^2=32.68, df=24(P=0.11); I^2=26.56%					
Test for overall effect: Z=1.44(P=0.15)					
Test for subgroup differences: Chi^2=4.84, df=1 (P=0.09), I^2=58.66%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 2.5. Comparison 2 TAPP versus Open, Outcome 5 Seroma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.5.1 TAPP versus Mesh					
Tampere 1998	2/29	0/31		1.38%	8.2[0.5,134.53]
Oulu 1 1998	1/20	0/20		0.7%	7.39[0.15,372.38]
Kokkola 1997	1/20	0/18		0.7%	6.69[0.13,338.79]
Whipps Cross 1998	8/200	6/200		9.5%	1.34[0.46,3.9]
Maastricht 1999	15/38	7/37		11.05%	2.66[0.99,7.14]
SCUR 1999	1/207	3/199		2.78%	0.35[0.05,2.51]
Ancona 1998	4/52	0/56		2.72%	8.47[1.16,61.94]
Parma 1997	3/52	0/56		2.06%	8.3[0.84,81.67]
Riga 1999	3/52	0/52		2.06%	7.69[0.78,75.57]
Berlin 1996	4/80	2/80		4.07%	1.99[0.39,10.12]
Subtotal (95% CI)	**750**	**749**		**37.02%**	**2.47[1.44,4.24]**
Total events: 42 (Treatment), 18 (Control)					
Heterogeneity: Tau^2=0; Chi^2=9.88, df=9(P=0.36); I^2=8.93%					
Test for overall effect: Z=3.29(P=0)					
2.5.2 TAPP versus Non-Mesh					
Maastricht 1998	29/88	25/87		26.33%	1.22[0.64,2.31]
Stuttgart 1995	1/54	0/48		0.7%	6.61[0.13,335.5]
Adelaide 1994	1/42	2/44		2.05%	0.53[0.05,5.24]
Aarberg 1996	3/51	3/49		3.99%	0.96[0.19,4.96]
Ulm 1993	0/23	0/27			Not estimable
Tournai 1996	3/34	0/33		2.04%	7.63[0.77,76]
Whipps Cross 1994	0/75	1/75		0.7%	0.14[0,6.82]
SCUR 1999	14/207	1/207		10.16%	6.01[2.15,16.84]
Bangkok 1998	8/60	3/60		7.06%	2.7[0.78,9.28]
Berlin 1996	4/80	1/80		3.42%	3.42[0.58,20.22]
Subtotal (95% CI)	**714**	**710**		**56.46%**	**1.93[1.25,2.99]**
Total events: 63 (Treatment), 36 (Control)					
Heterogeneity: Tau^2=0; Chi^2=12.8, df=8(P=0.12); I^2=37.48%					
Test for overall effect: Z=2.96(P=0)					
2.5.3 TAPP versus Mixed Open					
MRCmulticentre 1999	5/66	5/64		6.52%	0.97[0.27,3.5]

Favours treatment 0.001 0.1 1 10 1000 Favours control

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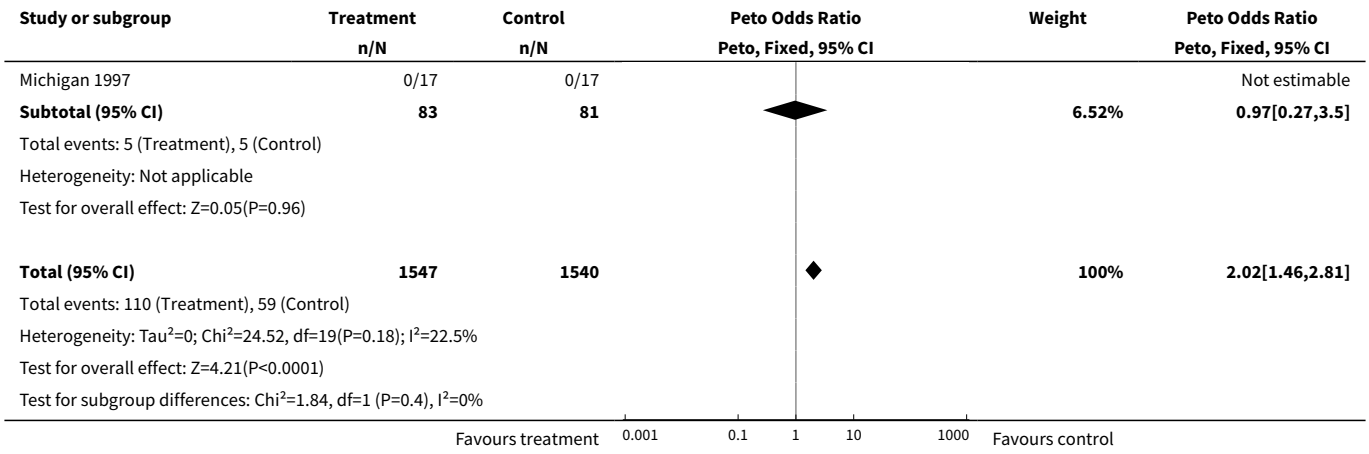
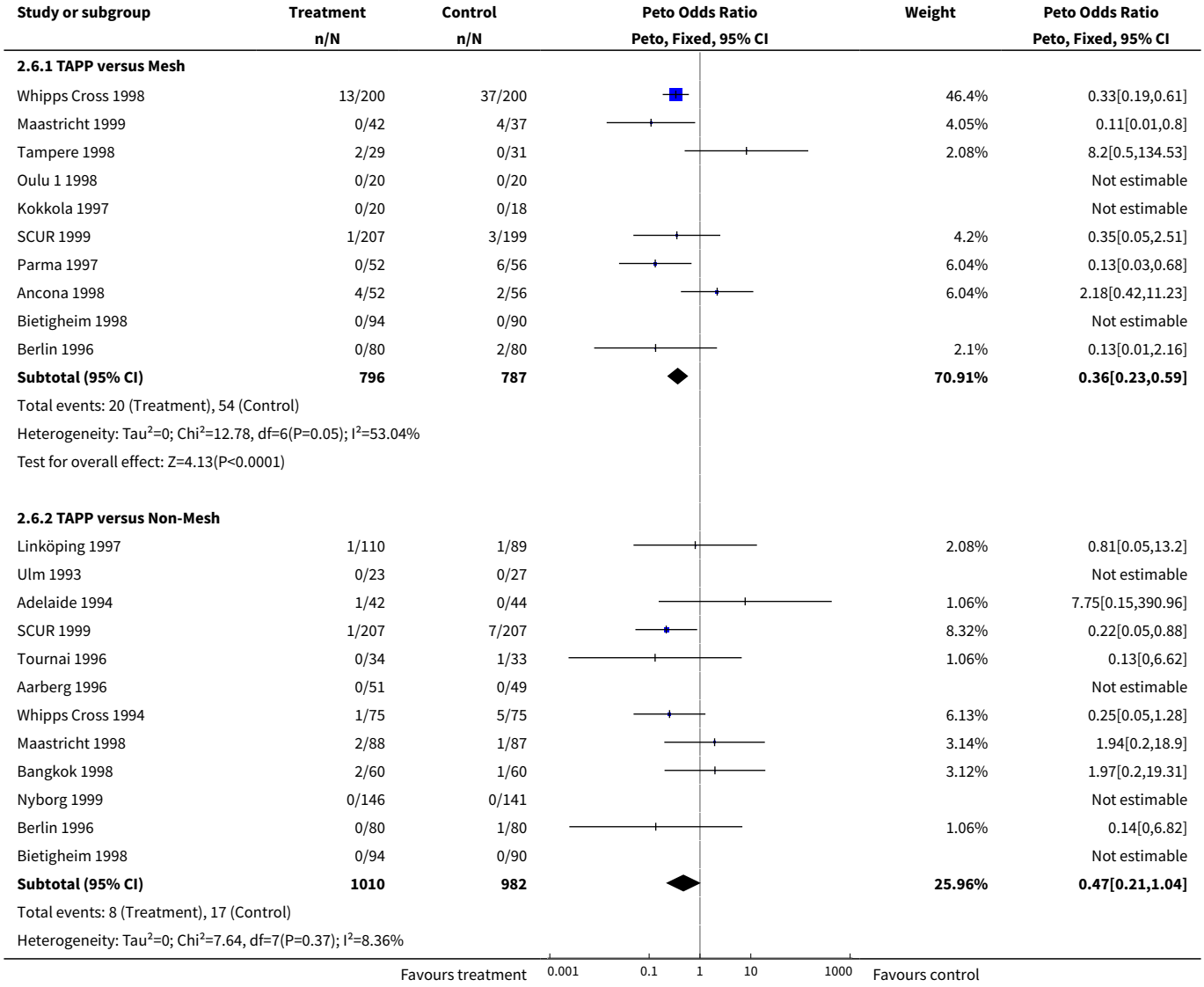


Analysis 2.6. Comparison 2 TAPP versus Open, Outcome 6 Wound/superficial infection.



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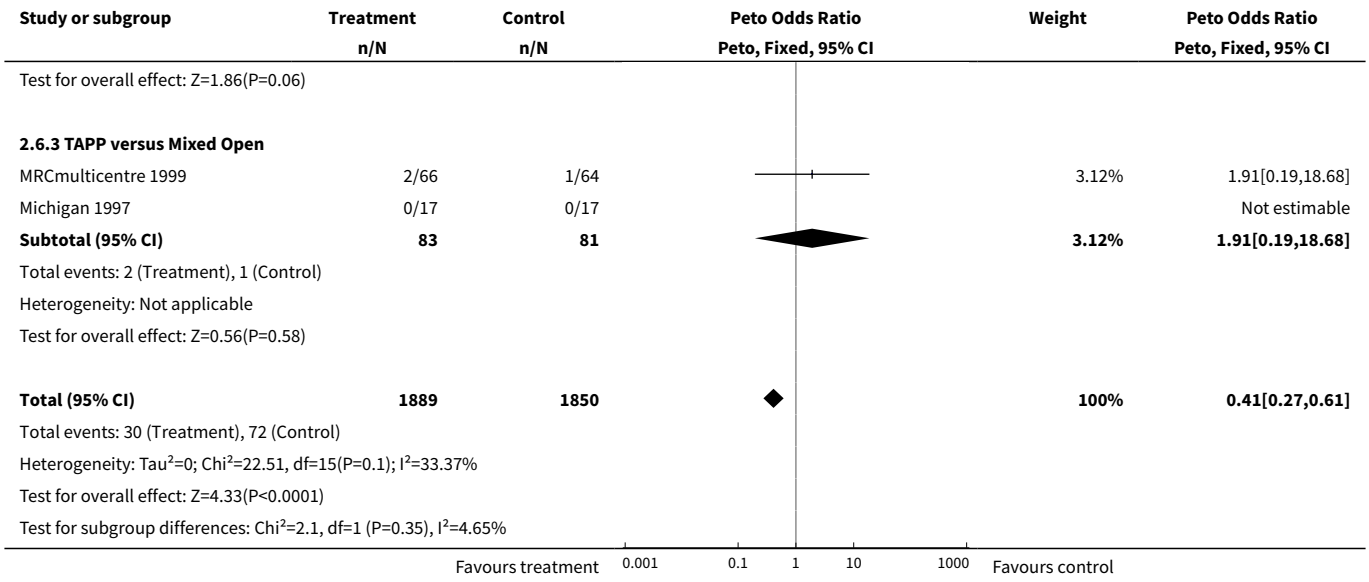
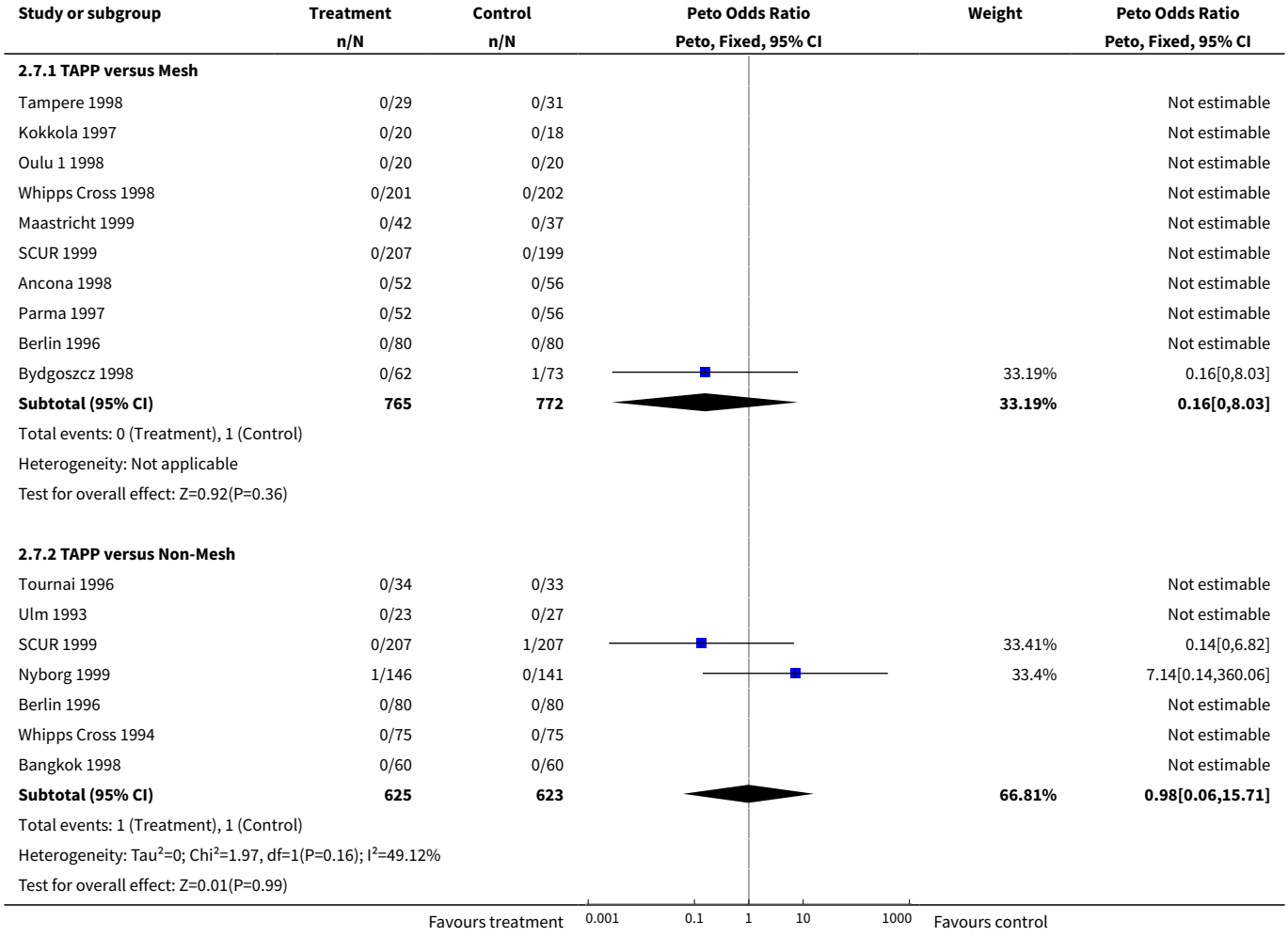


Analysis 2.7. Comparison 2 TAPP versus Open, Outcome 7 Mesh/deep infection.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.7.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/66	0/64			Not estimable
Michigan 1997	0/17	0/17			Not estimable
Subtotal (95% CI)	**83**	**81**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1473**	**1476**		**100%**	**0.54[0.06,5.16]**
Total events: 1 (Treatment), 2 (Control)					
Heterogeneity: Tau^2=0; Chi^2=2.52, df=2(P=0.28); I^2=20.71%					
Test for overall effect: Z=0.54(P=0.59)					
Test for subgroup differences: Chi^2=0.56, df=1 (P=0.46), I^2=0%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 2.8. Comparison 2 TAPP versus Open, Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.8.1 TAPP versus Mesh					
Whipps Cross 1998	0/201	0/201			Not estimable
Kokkola 1997	0/20	0/18			Not estimable
Tampere 1998	0/29	0/31			Not estimable
Oulu 1 1998	0/20	0/20			Not estimable
SCUR 1999	0/207	0/199			Not estimable
Ancona 1998	0/52	0/56			Not estimable
Parma 1997	0/52	0/56			Not estimable
Berlin 1996	0/80	0/80			Not estimable
Subtotal (95% CI)	**661**	**661**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
2.8.2 TAPP versus Non-Mesh					
Tournai 1996	0/34	0/33			Not estimable
SCUR 1999	0/207	0/207			Not estimable
Adelaide 1994	1/42	0/44		12.62%	7.75[0.15,390.96]
Ulm 1993	0/23	0/27			Not estimable
Maastricht 1998	2/88	0/87		25.11%	7.39[0.46,119.1]
Aarberg 1996	0/51	0/49			Not estimable
Nyborg 1999	0/146	0/141			Not estimable
Berlin 1996	0/80	0/80			Not estimable
Bangkok 1998	0/60	0/60			Not estimable
Whipps Cross 1994	0/75	1/75		12.63%	0.14[0,6.82]
Stuttgart 1995	2/54	1/48		37.01%	1.75[0.18,17.32]
Subtotal (95% CI)	**860**	**851**		**87.38%**	**2.27[0.51,10.07]**
Total events: 5 (Treatment), 2 (Control)					
Heterogeneity: Tau^2=0; Chi^2=3.11, df=3(P=0.38); I^2=3.4%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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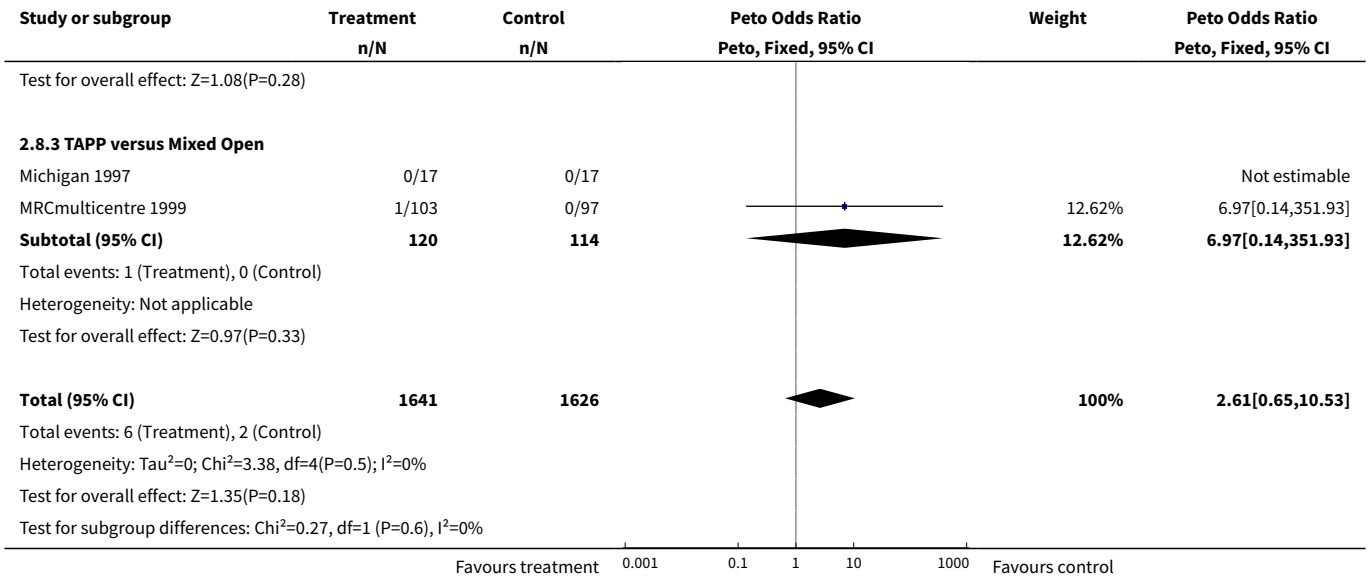
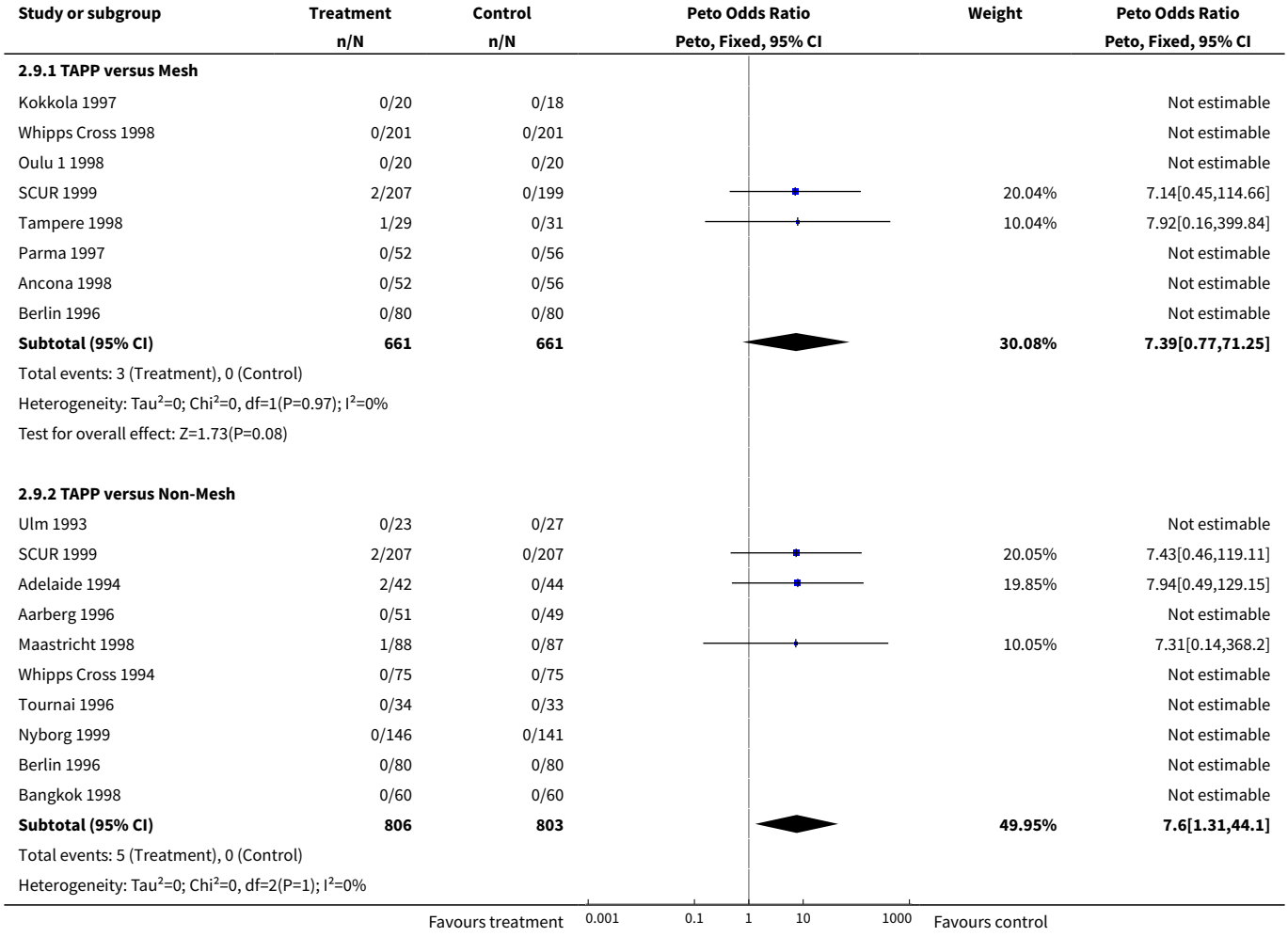


Analysis 2.9. Comparison 2 TAPP versus Open, Outcome 9 Visceral injury.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Z=2.26(P=0.02)					
2.9.3 TAPP versus Mixed Open					
MRCmulticentre 1999	2/103	0/97		19.98%	7.04[0.44,113.48]
Subtotal (95% CI)	**103**	**97**		**19.98%**	**7.04[0.44,113.48]**
Total events: 2 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.38(P=0.17)					
Total (95% CI)	**1570**	**1561**		**100%**	**7.42[2.14,25.72]**
Total events: 10 (Treatment), 0 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.01, df=5(P=1); I^2=0%					
Test for overall effect: Z=3.16(P=0)					
Test for subgroup differences: Chi^2=0, df=1 (P=1), I^2=0%					

Analysis 2.10. Comparison 2 TAPP versus Open, Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.10.1 TAPP versus Mesh					
Kokkola 1997	0/20	0/18			Not estimable
Oulu 1 1998	0/20	0/20			Not estimable
SCUR 1999	0/207	0/199			Not estimable
Whipps Cross 1998	1/200	0/200		16.8%	7.39[0.15,372.38]
Maastricht 1999	0/42	0/37			Not estimable
Ancona 1998	0/52	0/56			Not estimable
Berlin 1996	0/80	0/80			Not estimable
Parma 1997	0/52	0/56			Not estimable
Subtotal (95% CI)	**673**	**666**		**16.8%**	**7.39[0.15,372.38]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1(P=0.32)					
2.10.2 TAPP versus Non-Mesh					
Ulm 1993	0/23	0/27			Not estimable
SCUR 1999	0/207	0/207			Not estimable
Aarberg 1996	1/51	0/49		16.79%	7.1[0.14,358.35]
Whipps Cross 1994	0/75	0/75			Not estimable
Tournai 1996	0/34	0/33			Not estimable
Adelaide 1994	0/42	0/44			Not estimable
Linköping 1997	2/110	0/89		33.05%	6.16[0.38,100.76]
Berlin 1996	0/80	0/80			Not estimable
Nyborg 1999	0/146	0/141			Not estimable
Bangkok 1998	0/60	0/60			Not estimable
Subtotal (95% CI)	**828**	**805**		**49.84%**	**6.46[0.66,62.92]**
Total events: 3 (Treatment), 0 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0, df=1(P=0.95); I^2=0%					
Test for overall effect: Z=1.61(P=0.11)					

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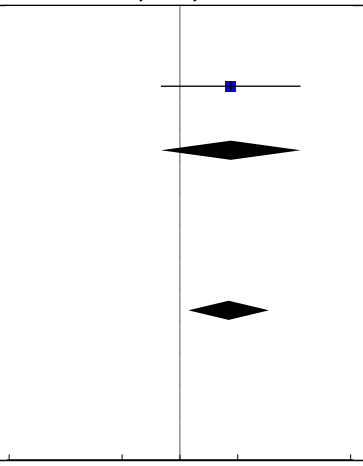
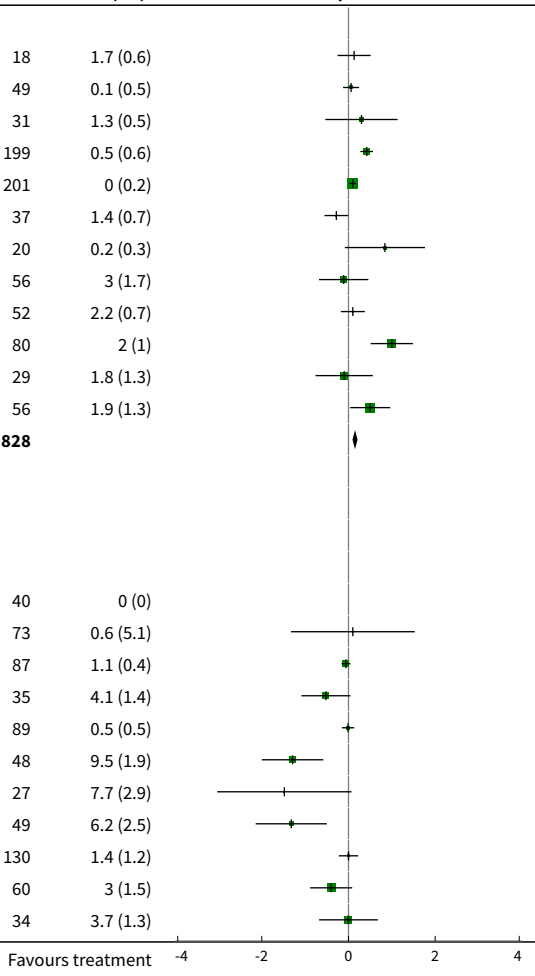
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.10.3 TAPP versus Mixed Open					
MRCmulticentre 1999	2/75	0/76		33.37%	7.59[0.47,122.49]
Michigan 1997	0/17	0/17			Not estimable
Subtotal (95% CI)	**92**	**93**		**33.37%**	**7.59[0.47,122.49]**
Total events: 2 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.43(P=0.15)					
Total (95% CI)	**1593**	**1564**		**100%**	**6.97[1.4,34.77]**
Total events: 6 (Treatment), 0 (Control)					
Heterogeneity: Tau²=0; Chi²=0.01, df=3(P=1); I²=0%					
Test for overall effect: Z=2.37(P=0.02)					
Test for subgroup differences: Chi²=0.01, df=1 (P=1), I²=0%					



Analysis 2.11. Comparison 2 TAPP versus Open, Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
2.11.1 TAPP versus Mesh							
Kokkola 1997	20	1.9 (0.7)	18	1.7 (0.6)		1.4%	0.13[-0.25,0.51]
Hawaii 1994	51	0.1 (0.5)	49	0.1 (0.5)		6.01%	0.06[-0.12,0.24]
Tampere 1998	29	1.6 (2.2)	31	1.3 (0.5)		0.29%	0.3[-0.53,1.13]
SCUR 1999	207	0.9 (0.9)	199	0.5 (0.6)		9.77%	0.42[0.28,0.56]
Whipps Cross 1998	200	0.1 (0.5)	201	0 (0.2)		33.84%	0.1[0.02,0.18]
Maastricht 1999	42	1.1 (0.5)	37	1.4 (0.7)		2.73%	-0.28[-0.55,-0.01]
Oulu 1 1998	20	1.1 (2.1)	20	0.2 (0.3)		0.24%	0.84[-0.08,1.76]
Ancona 1998	52	2.9 (1.3)	56	3 (1.7)		0.63%	-0.11[-0.68,0.46]
Riga 1999	52	2.3 (0.7)	52	2.2 (0.7)		2.67%	0.1[-0.18,0.38]
Berlin 1996	80	3 (2)	80	2 (1)		0.85%	1[0.51,1.49]
Omaha 1996	24	1.7 (1.2)	29	1.8 (1.3)		0.47%	-0.1[-0.76,0.56]
Parma 1997	52	2.4 (1.2)	56	1.9 (1.3)		0.96%	0.5[0.04,0.96]
Subtotal ***	**829**		**828**			**59.86%**	**0.15[0.09,0.21]**
Heterogeneity: Tau²=0; Chi²=42.91, df=11(P<0.0001); I²=74.36%							
Test for overall effect: Z=5.06(P<0.0001)							
2.11.2 TAPP versus Non-Mesh							
Adelaide 1994	37	0 (0.2)	40	0 (0)			Not estimable
Whipps Cross 1994	75	0.7 (3.6)	73	0.6 (5.1)		0.1%	0.1[-1.33,1.53]
Maastricht 1998	88	1 (0.3)	87	1.1 (0.4)		19.43%	-0.06[-0.16,0.04]
Tournai 1996	35	3.5 (1)	35	4.1 (1.4)		0.64%	-0.52[-1.08,0.04]
Linköping 1997	110	0.5 (0.5)	89	0.5 (0.5)		10.01%	-0.01[-0.15,0.13]
Stuttgart 1995	54	8.2 (1.8)	48	9.5 (1.9)		0.41%	-1.29[-2,-0.58]
Ulm 1993	23	6.2 (2.7)	27	7.7 (2.9)		0.09%	-1.48[-3.03,0.07]
Aarberg 1996	51	4.8 (1.6)	49	6.2 (2.5)		0.3%	-1.32[-2.14,-0.5]
Nyborg 1999	138	1.4 (0.5)	130	1.4 (1.2)		4.13%	0[-0.22,0.22]
Bangkok 1998	60	2.6 (1.2)	60	3 (1.5)		0.86%	-0.4[-0.89,0.09]
Linz 1996	28	3.7 (1.4)	34	3.7 (1.3)		0.44%	0[-0.68,0.68]



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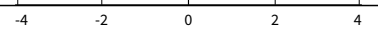
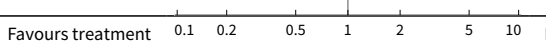
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Berlin 1996	80	3 (2)	80	4 (2)		0.53%	-1[-1.62,-0.38]
Caen 1998	25	4 (1.2)	30	4.2 (1.3)		0.49%	-0.2[-0.85,0.45]
Subtotal ***	**804**		**782**			**37.43%**	**-0.1[-0.17,-0.02]**
Heterogeneity: Tau²=0; Chi²=37.16, df=11(P=0); I²=70.4%							
Test for overall effect: Z=2.56(P=0.01)							
2.11.3 TAPP versus Mixed Open							
Michigan 1997	29	1.7 (1.6)	28	2.7 (4.4)		0.07%	-1.05[-2.78,0.68]
MRCmulticentre 1999	70	1.3 (1)	68	1.2 (0.7)		2.65%	0.14[-0.14,0.42]
Subtotal ***	**99**		**96**			**2.71%**	**0.11[-0.16,0.38]**
Heterogeneity: Tau²=0; Chi²=1.78, df=1(P=0.18); I²=43.66%							
Test for overall effect: Z=0.79(P=0.43)							
Total ***	**1732**		**1706**			**100%**	**0.06[0.01,0.1]**
Heterogeneity: Tau²=0; Chi²=108.52, df=25(P<0.0001); I²=76.96%							
Test for overall effect: Z=2.48(P=0.01)							
Test for subgroup differences: Chi²=26.68, df=1 (P<0.0001), I²=92.5%							



Analysis 2.12. Comparison 2 TAPP versus Open, Outcome 12 Time to return to usual activities (days).

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
2.12.1 TAPP versus Mesh					
Tampere 1998	21/21	19/19		2.44%	0.97[0.52,1.8]
Kokkola 1997	17/17	13/13		1.67%	0.39[0.18,0.82]
Oulu 1 1998	20/20	19/19		2.24%	0.57[0.3,1.09]
SCUR 1999	137/137	116/116		15.21%	0.67[0.52,0.86]
Whipps Cross 1998	193/193	189/189		22.37%	0.65[0.53,0.79]
Maastricht 1999	16/16	16/16		1.86%	0.63[0.31,1.28]
Hawaii 1994	51/51	49/49		5.49%	0.48[0.31,0.72]
Subtotal (95% CI)	**455**	**421**		**51.27%**	**0.63[0.55,0.72]**
Total events: 455 (Treatment), 421 (Control)					
Heterogeneity: Tau²=0; Chi²=5.59, df=6(P=0.47); I²=0%					
Test for overall effect: Z=6.72(P<0.0001)					
2.12.2 TAPP versus Non-Mesh					
Maastricht 1998	17/17	13/13		1.67%	0.39[0.18,0.82]
Stuttgart 1995	36/36	33/33		3.56%	0.36[0.21,0.6]
Ulm 1993	22/22	27/27		2.32%	0.38[0.2,0.72]
SCUR 1999	137/137	131/131		15.86%	0.67[0.53,0.86]
Aarberg 1996	51/51	49/49		5.32%	0.42[0.28,0.64]
Tournai 1996	34/34	33/33		3.08%	0.26[0.15,0.45]
Whipps Cross 1994	73/73	72/72		8.16%	0.54[0.38,0.76]
Subtotal (95% CI)	**370**	**358**		**39.96%**	**0.5[0.43,0.58]**
Total events: 370 (Treatment), 358 (Control)					
Heterogeneity: Tau²=0; Chi²=14.81, df=6(P=0.02); I²=59.49%					
Test for overall effect: Z=8.84(P<0.0001)					



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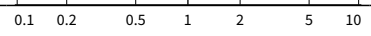
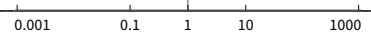
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
2.12.3 TAPP versus Mixed Open					
MRCmulticentre 1999	75/79	69/70		8.77%	0.86[0.62,1.19]
Subtotal (95% CI)	**79**	**70**		**8.77%**	**0.86[0.62,1.19]**
Total events: 75 (Treatment), 69 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.89(P=0.37)					
Total (95% CI)	**904**	**849**		**100%**	**0.59[0.54,0.65]**
Total events: 900 (Treatment), 848 (Control)					
Heterogeneity: Tau^2=0; Chi^2=30.75, df=14(P=0.01); I^2=54.47%					
Test for overall effect: Z=10.66(P<0.0001)					
Test for subgroup differences: Chi^2=10.34, df=1 (P=0.01), I^2=80.66%					



Favours treatment — Favours control

Analysis 2.13. Comparison 2 TAPP versus Open, Outcome 13 Persisting pain.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.13.1 TAPP versus Mesh					
SCUR 1999	1/176	7/169		2.55%	0.21[0.05,0.84]
Whipps Cross 1998	45/184	59/180		24.27%	0.67[0.42,1.05]
Maastricht 1999	4/42	3/37		2.1%	1.19[0.25,5.57]
Berlin 1996	2/80	1/80		0.97%	1.96[0.2,19.16]
Parma 1997	1/52	0/56		0.33%	7.98[0.16,403.24]
Bietigheim 1998	15/94	22/90		9.68%	0.59[0.29,1.21]
Ancona 1998	6/52	17/56		5.95%	0.33[0.13,0.82]
Subtotal (95% CI)	**680**	**668**		**45.84%**	**0.59[0.43,0.83]**
Total events: 74 (Treatment), 109 (Control)					
Heterogeneity: Tau^2=0; Chi^2=7.53, df=6(P=0.27); I^2=20.29%					
Test for overall effect: Z=3.09(P=0)					
2.13.2 TAPP versus Non-Mesh					
Ulm 1993	0/23	1/27		0.32%	0.16[0,8.01]
Maastricht 1998	19/84	23/82		10.28%	0.75[0.37,1.51]
Aarberg 1996	0/51	1/49		0.33%	0.13[0,6.55]
SCUR 1999	1/176	4/181		1.61%	0.31[0.05,1.78]
Bietigheim 1998	15/94	49/90		13.67%	0.18[0.1,0.34]
Bangkok 1998	0/60	1/60		0.33%	0.14[0,6.82]
Berlin 1996	2/80	3/80		1.59%	0.66[0.11,3.92]
Whipps Cross 1994	11/50	21/48		7.09%	0.38[0.16,0.87]
Subtotal (95% CI)	**618**	**617**		**35.22%**	**0.35[0.24,0.5]**
Total events: 48 (Treatment), 103 (Control)					
Heterogeneity: Tau^2=0; Chi^2=10.05, df=7(P=0.19); I^2=30.32%					
Test for overall effect: Z=5.52(P<0.0001)					
2.13.3 TAPP versus Mixed Open					
Michigan 1997	2/17	3/16		1.42%	0.59[0.09,3.85]
MRCmulticentre 1999	42/107	45/95		16.16%	0.72[0.41,1.26]
Adelaide 1994	2/14	3/12		1.36%	0.52[0.08,3.51]



Favours treatment — Favours control

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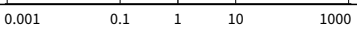
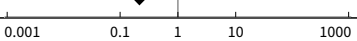
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Subtotal (95% CI)	**138**	**123**		**18.95%**	**0.69[0.41,1.16]**
Total events: 46 (Treatment), 51 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.14, df=2(P=0.93); I^2=0%					
Test for overall effect: Z=1.4(P=0.16)					
Total (95% CI)	**1436**	**1408**		**100%**	**0.51[0.4,0.63]**
Total events: 168 (Treatment), 263 (Control)					
Heterogeneity: Tau^2=0; Chi^2=23.96, df=17(P=0.12); I^2=29.06%					
Test for overall effect: Z=5.98(P<0.0001)					
Test for subgroup differences: Chi^2=6.25, df=1 (P=0.04), I^2=68.01%					



Analysis 2.14. Comparison 2 TAPP versus Open, Outcome 14 Persisting numbness.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
2.14.1 TAPP versus Mesh					
Whipps Cross 1998	2/201	30/202		27.16%	0.15[0.07,0.31]
Ancona 1998	0/52	0/56			Not estimable
Hawaii 1994	0/51	0/49			Not estimable
SCUR 1999	0/170	6/164		5.43%	0.13[0.03,0.63]
Maastricht 1999	0/42	0/37			Not estimable
Parma 1997	1/52	1/56		1.82%	1.08[0.07,17.49]
Berlin 1996	1/80	1/80		1.83%	1[0.06,16.13]
Subtotal (95% CI)	**648**	**644**		**36.24%**	**0.18[0.1,0.33]**
Total events: 4 (Treatment), 38 (Control)					
Heterogeneity: Tau^2=0; Chi^2=3.46, df=3(P=0.33); I^2=13.23%					
Test for overall effect: Z=5.41(P<0.0001)					
2.14.2 TAPP versus Non-Mesh					
SCUR 1999	0/170	9/178		8.08%	0.14[0.04,0.51]
Aarberg 1996	1/51	0/49		0.92%	7.1[0.14,358.35]
Maastricht 1998	1/83	9/82		8.69%	0.18[0.05,0.65]
Whipps Cross 1994	0/50	4/48		3.56%	0.12[0.02,0.89]
Berlin 1996	1/80	2/80		2.72%	0.51[0.05,4.96]
Subtotal (95% CI)	**434**	**437**		**23.98%**	**0.2[0.09,0.43]**
Total events: 3 (Treatment), 24 (Control)					
Heterogeneity: Tau^2=0; Chi^2=4.43, df=4(P=0.35); I^2=9.72%					
Test for overall effect: Z=4.1(P<0.0001)					
2.14.3 TAPP versus Mixed Open					
Michigan 1997	1/17	0/16		0.92%	6.97[0.14,351.74]
MRCmulticentre 1999	19/102	44/89		38.85%	0.25[0.14,0.46]
Subtotal (95% CI)	**119**	**105**		**39.77%**	**0.27[0.15,0.49]**
Total events: 20 (Treatment), 44 (Control)					
Heterogeneity: Tau^2=0; Chi^2=2.7, df=1(P=0.1); I^2=62.99%					
Test for overall effect: Z=4.31(P<0.0001)					
Total (95% CI)	**1201**	**1186**		**100%**	**0.22[0.15,0.32]**



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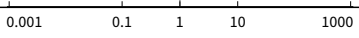
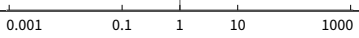
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total events: 27 (Treatment), 106 (Control)					
Heterogeneity: Tau²=0; Chi²=11.52, df=10(P=0.32); I²=13.21%					
Test for overall effect: Z=7.98(P<0.0001)					
Test for subgroup differences: Chi²=0.93, df=1 (P=0.63), I²=0%					



Analysis 2.15. Comparison 2 TAPP versus Open, Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
2.15.1 TAPP versus Mesh					
Maastricht 1999	6/42	1/37		5.86%	4.08[0.93,17.94]
Tampere 1998	5/28	1/31		4.96%	3.03[0.6,15.17]
SCUR 1999	3/207	13/199		13.4%	0.27[0.1,0.72]
Ancona 1998	2/52	0/56		1.68%	8[0.5,127.97]
Hawaii 1994	0/51	0/49			Not estimable
Whipps Cross 1998	1/200	1/200		1.68%	1[0.06,15.99]
Kokkola 1997	0/20	0/18			Not estimable
Parma 1997	2/52	1/56		2.45%	2.15[0.22,21.35]
Bydgoszcz 1998	2/62	1/73		2.45%	2.34[0.24,23.18]
Berlin 1996	0/80	0/80			Not estimable
Omaha 1996	0/24	2/29		1.64%	0.16[0.01,2.57]
Bietigheim 1998	1/94	1/90		1.68%	0.96[0.06,15.36]
Subtotal (95% CI)	**912**	**918**		**35.79%**	**1.01[0.56,1.85]**
Total events: 22 (Treatment), 21 (Control)					
Heterogeneity: Tau²=0; Chi²=16.95, df=8(P=0.03); I²=52.8%					
Test for overall effect: Z=0.05(P=0.96)					
2.15.2 TAPP versus Non-Mesh					
Maastricht 1998	7/88	22/87		24.26%	0.33[0.16,0.69]
SCUR 1999	3/207	4/207		5.86%	0.77[0.17,3.38]
Aarberg 1996	3/51	6/49		7.54%	0.49[0.13,1.81]
Ulm 1993	1/23	0/27		0.84%	8.67[0.17,437]
Adelaide 1994	1/42	0/44		0.84%	5.81[0.12,292.93]
Linköping 1997	2/110	5/89		5.7%	0.29[0.06,1.31]
Tournai 1996	1/34	3/33		3.35%	0.41[0.06,2.92]
Stuttgart 1995	0/54	0/48			Not estimable
Whipps Cross 1994	0/50	2/48		1.64%	0.12[0.01,2.05]
Linz 1996	1/28	0/34		0.84%	9.03[0.18,454.83]
Berlin 1996	0/80	0/80			Not estimable
Bietigheim 1998	1/94	2/90		2.48%	0.49[0.05,4.77]
Oxford 1995	1/58	0/66			Not estimable
Caen 1998	0/25	0/30			Not estimable
Nyborg 1999	4/138	3/130		4.09%	0.32[0.05,1.87]
Bangkok 1998	1/58	0/57		0.84%	7.39[0.15,372.38]
Subtotal (95% CI)	**1140**	**1119**		**58.28%**	**0.45[0.28,0.72]**
Total events: 26 (Treatment), 47 (Control)					
Heterogeneity: Tau²=0; Chi²=10.47, df=11(P=0.49); I²=0%					
Test for overall effect: Z=3.33(P=0)					



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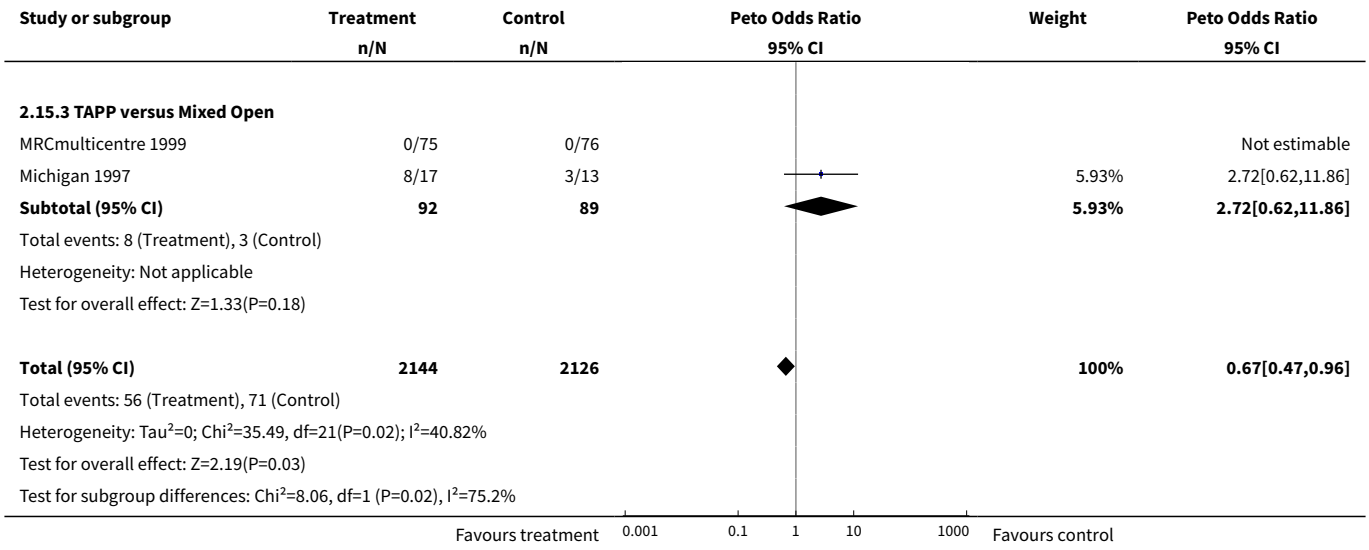

Comparison 3. TEP versus Open

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	9	2384	Mean Difference (IV, Fixed, 95% CI)	9.94 [8.54, 11.34]
1.1 TEP versus Mesh	5	566	Mean Difference (IV, Fixed, 95% CI)	5.29 [2.84, 7.73]
1.2 TEP versus Non-Mesh	3	1156	Mean Difference (IV, Fixed, 95% CI)	10.30 [8.20, 12.40]
1.3 TEP versus Mixed Open	1	662	Mean Difference (IV, Fixed, 95% CI)	15.91 [12.98, 18.84]
2 "Opposite" method initiated	7	2302	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.67 [2.13, 6.33]
2.1 TEP versus Mesh	4	526	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 TEP versus Non-Mesh	2	1098	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.11 [2.46, 15.15]
2.3 TEP versus Mixed Open	1	678	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.76 [1.40, 5.45]
3 Conversion	11	2672	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.80 [4.71, 12.95]
3.1 TEP versus Mesh	6	681	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.36 [1.47, 36.94]
3.2 TEP versus Non-Mesh	4	1340	Peto Odds Ratio (Peto, Fixed, 95% CI)	8.31 [4.02, 17.17]
3.3 TEP versus Mixed Open	1	651	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.36 [3.36, 16.13]
4 Haematoma	9	2347	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.55 [0.41, 0.75]
4.1 TEP versus Mesh	4	426	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.26 [0.14, 0.48]
4.2 TEP versus Non-Mesh	4	1337	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.27 [0.70, 2.33]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
4.3 TEP versus Mixed Open	1	584	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.53 [0.34, 0.83]
5 Seroma	8	2287	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.92 [0.57, 1.50]
5.1 TEP versus Mesh	4	426	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.12 [0.24, 5.09]
5.2 TEP versus Non-Mesh	3	1279	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.65 [2.33, 25.09]
5.3 TEP versus Mixed Open	1	582	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.55 [0.31, 0.98]
6 Wound/superficial infection	8	2288	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.56 [0.27, 1.19]
6.1 TEP versus Mesh	4	426	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.03 [0.21, 19.85]
6.2 TEP versus Non-Mesh	3	1279	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.14 [0.03, 0.61]
6.3 TEP versus Mixed Open	1	583	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.79 [0.31, 2.02]
7 Mesh/deep infection	6	1992	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 TEP versus Mesh	3	311	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TEP versus Non-Mesh	2	1098	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 TEP versus Mixed Open	1	583	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	7	2276	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.55 [0.06, 5.30]
8.1 TEP versus Mesh	3	323	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TEP versus Non-Mesh	3	1279	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.55 [0.06, 5.30]
8.3 TEP versus Mixed Open	1	674	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Visceral injury	5	2070	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.13 [0.00, 6.78]
9.1 TEP versus Mesh	2	298	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 TEP versus Non-Mesh	2	1098	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 TEP versus Mixed Open	1	674	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.13 [0.00, 6.78]
10 Port site hernia	5	1952	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 TEP versus Mesh	2	298	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 TEP versus Non-Mesh	2	1098	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 TEP versus Mixed Open	1	556	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	10	2563	Mean Difference (IV, Fixed, 95% CI)	-0.33 [-0.40, -0.25]

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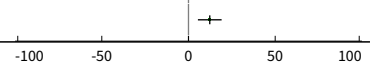
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
11.1 TEP versus Mesh	5	622	Mean Difference (IV, Fixed, 95% CI)	-0.34 [-0.45, -0.23]
11.2 TEP versus Non-Mesh	4	1338	Mean Difference (IV, Fixed, 95% CI)	-0.34 [-0.45, -0.22]
11.3 TEP versus Mixed Open	1	603	Mean Difference (IV, Fixed, 95% CI)	-0.15 [-0.48, 0.18]
12 Time to return to usual activities (days)	6	930	Peto Odds Ratio (95% CI)	0.51 [0.45, 0.59]
12.1 TEP versus Mesh	4	409	Peto Odds Ratio (95% CI)	0.26 [0.21, 0.33]
12.2 TEP versus Non-Mesh	1	94	Peto Odds Ratio (95% CI)	0.78 [0.52, 1.17]
12.3 TEP versus Mixed Open	1	427	Peto Odds Ratio (95% CI)	0.80 [0.66, 0.97]
13 Persisting pain	6	2006	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.47 [0.36, 0.60]
13.1 TEP versus Mesh	3	350	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.13 [0.05, 0.34]
13.2 TEP versus Non-Mesh	2	1015	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.22 [0.14, 0.35]
13.3 TEP versus Mixed Open	1	641	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.77 [0.57, 1.06]
14 Persisting numbness	4	906	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.57 [0.41, 0.80]
14.1 TEP versus Mesh	3	302	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.21 [0.04, 1.12]
14.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 TEP versus Mixed Open	1	604	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.60 [0.42, 0.85]
15 Hernia recurrence	12	2753	Peto Odds Ratio (95% CI)	0.91 [0.57, 1.46]
15.1 TEP versus Mesh	6	678	Peto Odds Ratio (95% CI)	0.97 [0.34, 2.77]
15.2 TEP versus Non-Mesh	5	1519	Peto Odds Ratio (95% CI)	0.67 [0.38, 1.18]
15.3 TEP versus Mixed Open	1	556	Peto Odds Ratio (95% CI)	7.10 [1.61, 31.24]

Analysis 3.1. Comparison 3 TEP versus Open, Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
3.1.1 TEP versus Mesh							
Oulu 2 1998	22	68.1 (13.8)	23	55.9 (9)		4.2%	12.27[5.44,19.1]



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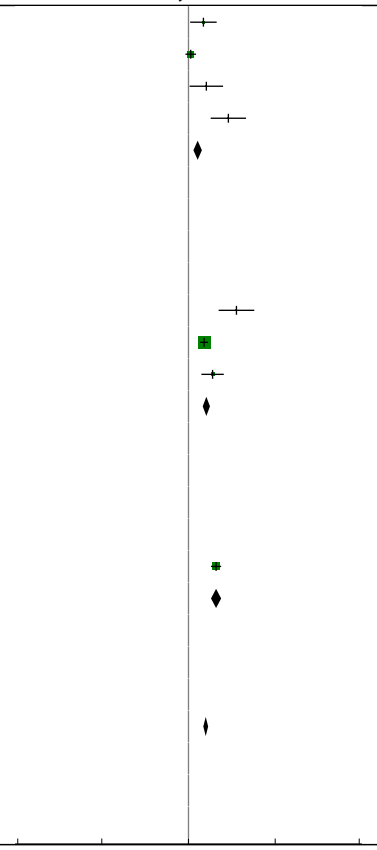
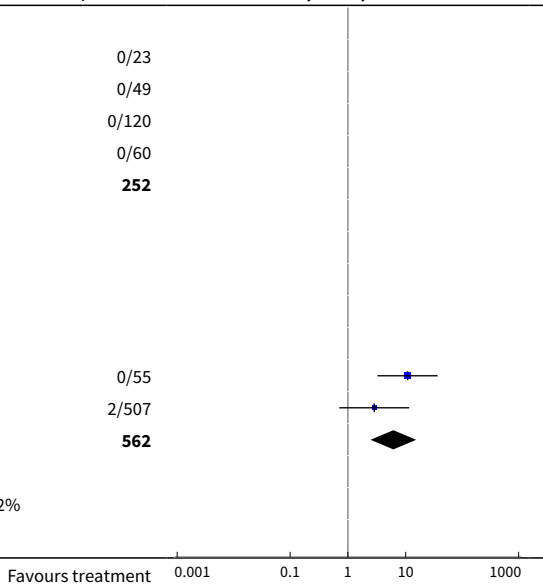
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Hawaii 1996	51	65.2 (20.7)	49	56.6 (18.3)		3.36%	8.61[0.97,16.25]
Quebec 1998	138	32.6 (14.3)	119	31.3 (10.5)		21.2%	1.3[-1.74,4.34]
Paris 1997	51	80.6 (31.3)	49	70.3 (15.7)		2.11%	10.3[0.65,19.95]
Denizli 1998	32	58 (23.8)	32	35 (17.3)		1.89%	23[12.82,33.18]
Subtotal * **	**294**		**272**			**32.76%**	**5.29[2.84,7.73]**
Heterogeneity: Tau²=0; Chi²=24.01, df=4(P<0.0001); I²=83.34%							
Test for overall effect: Z=4.24(P<0.0001)							
3.1.2 TEP versus Non-Mesh							
Woodville 1996	49	83.4 (32.3)	55	55.8 (18.4)		1.86%	27.66[17.39,37.93]
Coala Trial Gp 1997	487	49 (21)	507	40 (15)		37.82%	9[6.72,11.28]
Linz 1996	24	52.3 (13.9)	34	38.4 (9.7)		4.72%	13.9[7.45,20.35]
Subtotal * **	**560**		**596**			**44.4%**	**10.3[8.2,12.4]**
Heterogeneity: Tau²=0; Chi²=13.42, df=2(P=0); I²=85.09%							
Test for overall effect: Z=9.61(P<0.0001)							
3.1.3 TEP versus Mixed Open							
MRCmulticentre 1999	332	59.4 (21.9)	330	43.5 (16.2)		22.85%	15.91[12.98,18.84]
Subtotal * **	**332**		**330**			**22.85%**	**15.91[12.98,18.84]**
Heterogeneity: Not applicable							
Test for overall effect: Z=10.65(P<0.0001)							
Total * **	**1186**		**1198**			**100%**	**9.94[8.54,11.34]**
Heterogeneity: Tau²=0; Chi²=67.39, df=8(P<0.0001); I²=88.13%							
Test for overall effect: Z=13.91(P<0.0001)							
Test for subgroup differences: Chi²=29.96, df=1 (P<0.0001), I²=93.33%							



Analysis 3.2. Comparison 3 TEP versus Open, Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
3.2.1 TEP versus Mesh					
Oulu 2 1998	0/22	0/23			Not estimable
Hawaii 1996	0/51	0/49			Not estimable
Quebec 1998	0/141	0/120			Not estimable
Madrid 1997	0/60	0/60			Not estimable
Subtotal (95% CI)	**274**	**252**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
3.2.2 TEP versus Non-Mesh					
Woodville 1996	12/49	0/55		20.6%	10.76[3.24,35.71]
Coala Trial Gp 1997	6/487	2/507		15.31%	2.85[0.71,11.46]
Subtotal (95% CI)	**536**	**562**		**35.91%**	**6.11[2.46,15.15]**
Total events: 18 (Treatment), 2 (Control)					
Heterogeneity: Tau²=0; Chi²=2.01, df=1(P=0.16); I²=50.22%					
Test for overall effect: Z=3.91(P<0.0001)					



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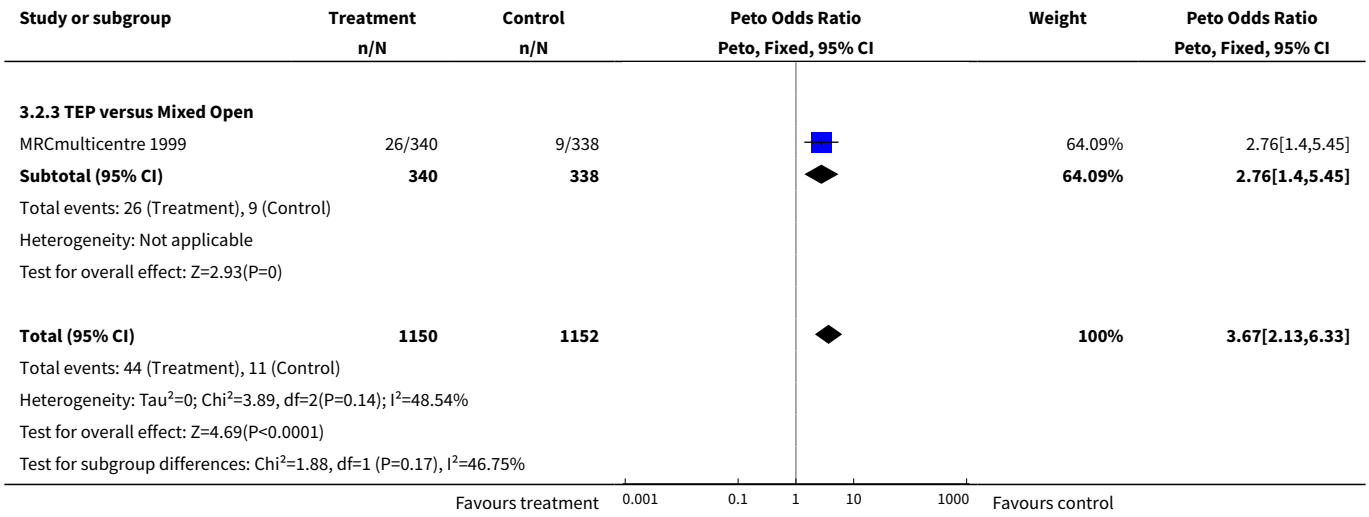
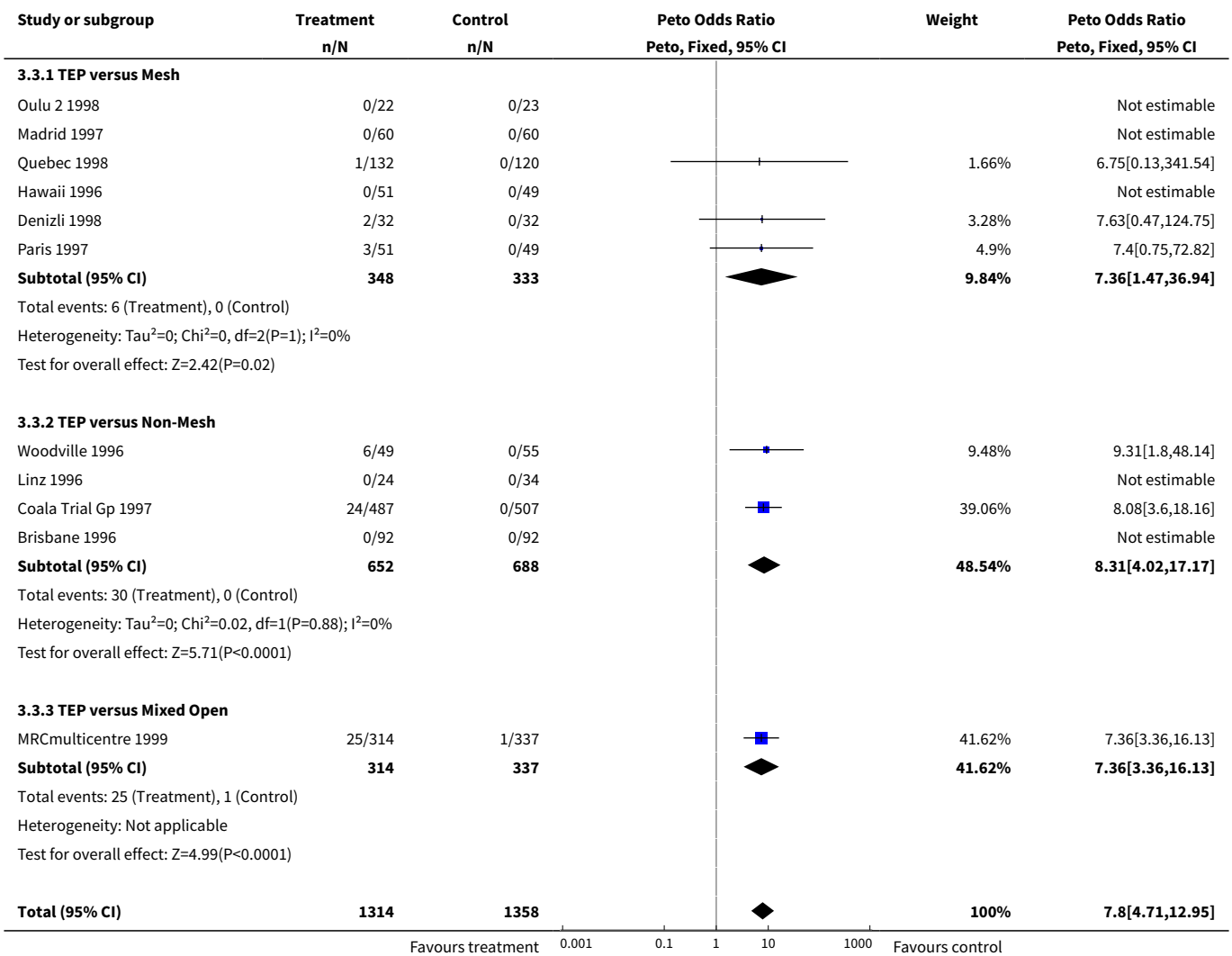


Analysis 3.3. Comparison 3 TEP versus Open, Outcome 3 Conversion.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total events: 61 (Treatment), 1 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.08, df=5(P=1); I^2=0%					
Test for overall effect: Z=7.96(P<0.0001)					
Test for subgroup differences: Chi^2=0.05, df=1 (P=0.97), I^2=0%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 3.4. Comparison 3 TEP versus Open, Outcome 4 Haematoma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
3.4.1 TEP versus Mesh					
Quebec 1998	6/136	27/117		17.82%	0.19[0.09,0.4]
Oulu 2 1998	4/22	6/23		4.95%	0.64[0.16,2.57]
Madrid 1997	2/39	3/25		2.77%	0.39[0.06,2.5]
Denizli 1998	0/32	1/32		0.62%	0.14[0,6.82]
Subtotal (95% CI)	**229**	**197**		**26.17%**	**0.26[0.14,0.48]**
Total events: 12 (Treatment), 37 (Control)					
Heterogeneity: Tau^2=0; Chi^2=2.51, df=3(P=0.47); I^2=0%					
Test for overall effect: Z=4.37(P<0.0001)					
3.4.2 TEP versus Non-Mesh					
Woodville 1996	0/49	4/55		2.41%	0.14[0.02,1.05]
Coala Trial Gp 1997	24/487	14/507		22.75%	1.8[0.94,3.45]
Linz 1996	0/24	1/34		0.6%	0.18[0,9.71]
Paris 1994	0/92	1/89		0.62%	0.13[0,6.6]
Subtotal (95% CI)	**652**	**685**		**26.39%**	**1.27[0.7,2.33]**
Total events: 24 (Treatment), 20 (Control)					
Heterogeneity: Tau^2=0; Chi^2=7.95, df=3(P=0.05); I^2=62.28%					
Test for overall effect: Z=0.79(P=0.43)					
3.4.3 TEP versus Mixed Open					
MRCmulticentre 1999	33/293	57/291		47.45%	0.53[0.34,0.83]
Subtotal (95% CI)	**293**	**291**		**47.45%**	**0.53[0.34,0.83]**
Total events: 33 (Treatment), 57 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.78(P=0.01)					
Total (95% CI)	**1174**	**1173**		**100%**	**0.55[0.41,0.75]**
Total events: 69 (Treatment), 114 (Control)					
Heterogeneity: Tau^2=0; Chi^2=23.91, df=8(P=0); I^2=66.54%					
Test for overall effect: Z=3.75(P=0)					
Test for subgroup differences: Chi^2=13.44, df=1 (P=0), I^2=85.12%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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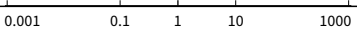
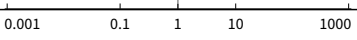
Analysis 3.5. Comparison 3 TEP versus Open, Outcome 5 Seroma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
3.5.1 TEP versus Mesh					
Oulu 2 1998	1/22	0/23		1.54%	7.73[0.15,390.08]
Madrid 1997	1/39	2/25		4.26%	0.3[0.03,3.19]
Quebec 1998	0/136	0/117			Not estimable
Denizli 1998	2/32	1/32		4.47%	1.99[0.2,19.86]
Subtotal (95% CI)	**229**	**197**		**10.26%**	**1.12[0.24,5.09]**
Total events: 4 (Treatment), 3 (Control)					
Heterogeneity: Tau^2=0; Chi^2=2.36, df=2(P=0.31); I^2=15.31%					
Test for overall effect: Z=0.14(P=0.89)					
3.5.2 TEP versus Non-Mesh					
Woodville 1996	0/49	0/55			Not estimable
Paris 1994	4/92	0/89		6.05%	7.39[1.02,53.38]
Coala Trial Gp 1997	7/487	0/507		10.7%	7.79[1.76,34.46]
Subtotal (95% CI)	**628**	**651**		**16.75%**	**7.65[2.33,25.09]**
Total events: 11 (Treatment), 0 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0, df=1(P=0.97); I^2=0%					
Test for overall effect: Z=3.36(P=0)					
3.5.3 TEP versus Mixed Open					
MRCmulticentre 1999	19/291	33/291		72.99%	0.55[0.31,0.98]
Subtotal (95% CI)	**291**	**291**		**72.99%**	**0.55[0.31,0.98]**
Total events: 19 (Treatment), 33 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.03(P=0.04)					
Total (95% CI)	**1148**	**1139**		**100%**	**0.92[0.57,1.5]**
Total events: 34 (Treatment), 36 (Control)					
Heterogeneity: Tau^2=0; Chi^2=17.68, df=5(P=0); I^2=71.72%					
Test for overall effect: Z=0.32(P=0.75)					
Test for subgroup differences: Chi^2=15.32, df=1 (P=0), I^2=86.94%					



Analysis 3.6. Comparison 3 TEP versus Open, Outcome 6 Wound/superficial infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
3.6.1 TEP versus Mesh					
Quebec 1998	0/136	0/117			Not estimable
Madrid 1997	0/39	0/25			Not estimable
Oulu 2 1998	2/22	0/23		7.13%	8.11[0.49,133.96]
Denizli 1998	0/32	1/32		3.65%	0.14[0,6.82]
Subtotal (95% CI)	**229**	**197**		**10.78%**	**2.03[0.21,19.85]**
Total events: 2 (Treatment), 1 (Control)					
Heterogeneity: Tau^2=0; Chi^2=2.77, df=1(P=0.1); I^2=63.9%					
Test for overall effect: Z=0.61(P=0.54)					
3.6.2 TEP versus Non-Mesh					



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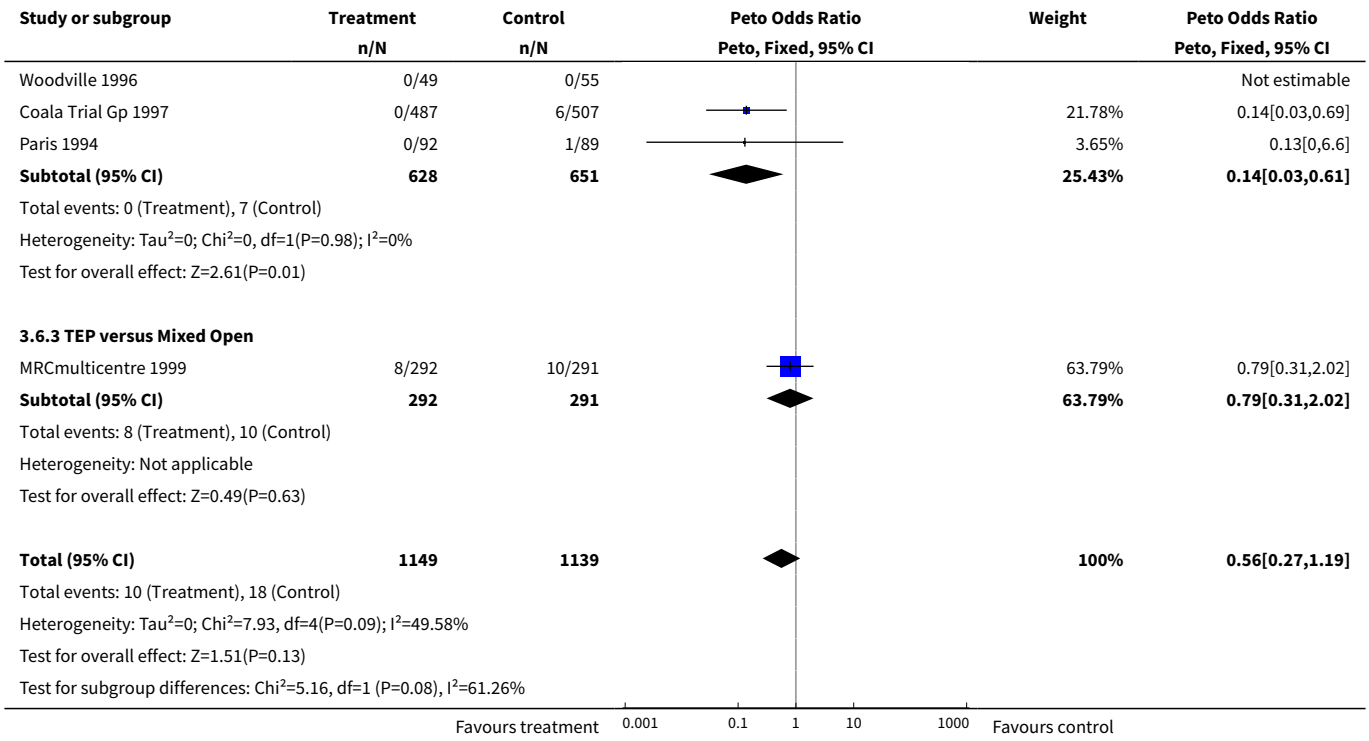
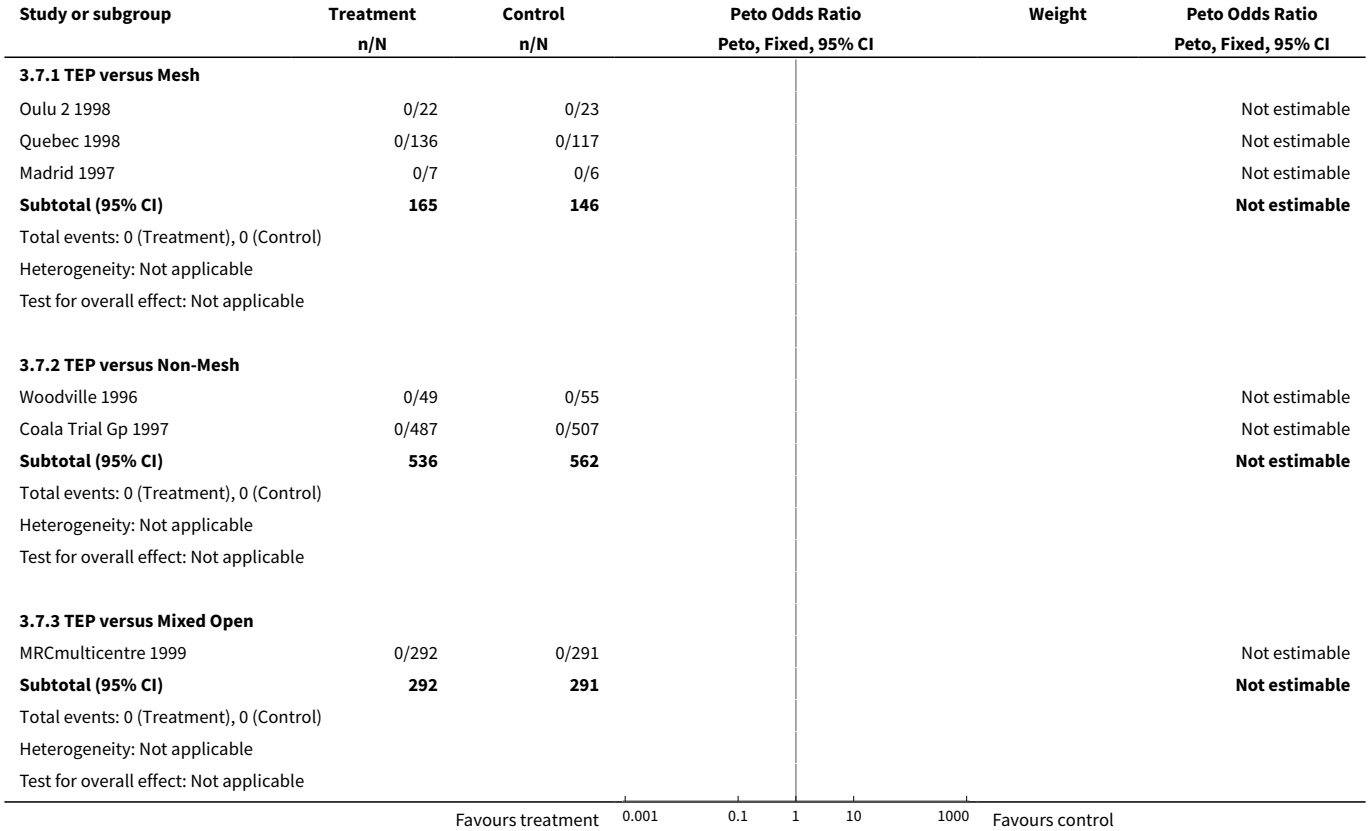


Analysis 3.7. Comparison 3 TEP versus Open, Outcome 7 Mesh/deep infection.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total (95% CI)	**993**	**999**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 3.8. Comparison 3 TEP versus Open, Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
3.8.1 TEP versus Mesh					
Madrid 1997	0/20	0/5			Not estimable
Quebec 1998	0/136	0/117			Not estimable
Oulu 2 1998	0/22	0/23			Not estimable
Subtotal (95% CI)	**178**	**145**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
3.8.2 TEP versus Non-Mesh					
Coala Trial Gp 1997	0/487	0/507			Not estimable
Paris 1994	0/92	1/89		33.62%	0.13[0,6.6]
Woodville 1996	1/49	1/55		66.38%	1.12[0.07,18.3]
Subtotal (95% CI)	**628**	**651**		**100%**	**0.55[0.06,5.3]**
Total events: 1 (Treatment), 2 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.77, df=1(P=0.38); I^2=0%					
Test for overall effect: Z=0.52(P=0.6)					
3.8.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/338	0/336			Not estimable
Subtotal (95% CI)	**338**	**336**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**1144**	**1132**		**100%**	**0.55[0.06,5.3]**
Total events: 1 (Treatment), 2 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.77, df=1(P=0.38); I^2=0%					
Test for overall effect: Z=0.52(P=0.6)					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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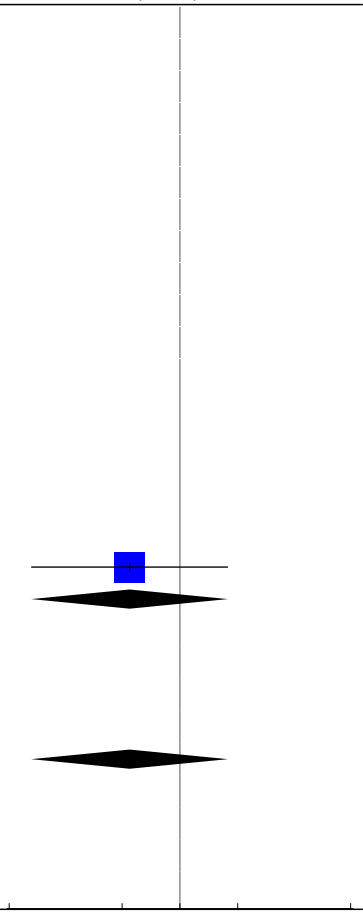
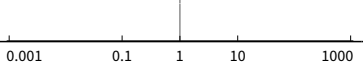
Analysis 3.9. Comparison 3 TEP versus Open, Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
3.9.1 TEP versus Mesh					
Quebec 1998	0/136	0/117			Not estimable
Oulu 2 1998	0/22	0/23			Not estimable
Subtotal (95% CI)	**158**	**140**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
3.9.2 TEP versus Non-Mesh					
Woodville 1996	0/49	0/55			Not estimable
Coala Trial Gp 1997	0/487	0/507			Not estimable
Subtotal (95% CI)	**536**	**562**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
3.9.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/338	1/336		100%	0.13[0,6.78]
Subtotal (95% CI)	**338**	**336**		**100%**	**0.13[0,6.78]**
Total events: 0 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1(P=0.32)					
Total (95% CI)	**1032**	**1038**		**100%**	**0.13[0,6.78]**
Total events: 0 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1(P=0.32)					
Test for subgroup differences: Not applicable					



Analysis 3.10. Comparison 3 TEP versus Open, Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
3.10.1 TEP versus Mesh					
Quebec 1998	0/136	0/117			Not estimable
Oulu 2 1998	0/22	0/23			Not estimable
Subtotal (95% CI)	**158**	**140**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
3.10.2 TEP versus Non-Mesh					
Woodville 1996	0/49	0/55			Not estimable
Coala Trial Gp 1997	0/487	0/507			Not estimable
Subtotal (95% CI)	**536**	**562**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Not applicable					
3.10.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/285	0/271			Not estimable
Subtotal (95% CI)	**285**	**271**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**979**	**973**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 3.11. Comparison 3 TEP versus Open, Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
3.11.1 TEP versus Mesh							
Hawaii 1996	51	0 (0.1)	49	0 (0)			Not estimable
Oulu 2 1998	22	0.4 (0.3)	22	0.3 (0.4)		13.35%	0.12[-0.09,0.33]
Quebec 1998	140	0 (0)	118	0.3 (0.6)			Not estimable
Madrid 1997	60	1.1 (0.2)	60	1.3 (0.5)		34.19%	-0.25[-0.38,-0.12]
Paris 1997	51	3.2 (1.2)	49	7.3 (1.3)		2.46%	-4.1[-4.58,-3.62]
Subtotal ***	**324**		**298**			**50%**	**-0.34[-0.45,-0.23]**
Heterogeneity: Tau^2=0; Chi^2=255.22, df=2(P<0.0001); I^2=99.22%							
Test for overall effect: Z=6.25(P<0.0001)							
3.11.2 TEP versus Non-Mesh							
Woodville 1996	47	0.1 (0.4)	55	0.2 (0.5)		23.56%	-0.06[-0.22,0.1]
Coala Trial Gp 1997	487	1 (1)	507	2 (2)		14.9%	-1[-1.2,-0.8]
Linz 1996	24	4.4 (0.9)	34	3.7 (1.3)		1.78%	0.7[0.13,1.27]
Brisbane 1996	92	1 (1.2)	92	1 (1.3)		4.53%	0[-0.35,0.35]
Subtotal ***	**650**		**688**			**44.77%**	**-0.34[-0.45,-0.22]**
Heterogeneity: Tau^2=0; Chi^2=72.77, df=3(P<0.0001); I^2=95.88%							
Test for overall effect: Z=5.85(P<0.0001)							
3.11.3 TEP versus Mixed Open							
MRCmulticentre 1999	302	1.4 (2.1)	301	1.6 (2)		5.24%	-0.15[-0.48,0.18]
Subtotal ***	**302**		**301**			**5.24%**	**-0.15[-0.48,0.18]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.89(P=0.37)							
Total ***	**1276**		**1287**			**100%**	**-0.33[-0.4,-0.25]**
Heterogeneity: Tau^2=0; Chi^2=329.18, df=7(P<0.0001); I^2=97.87%							
Test for overall effect: Z=8.54(P<0.0001)							
Test for subgroup differences: Chi^2=1.19, df=1 (P=0.55), I^2=0%							

Favours treatment -4 -2 0 2 4 Favours control

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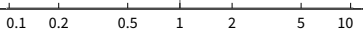
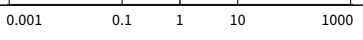
Analysis 3.12. Comparison 3 TEP versus Open, Outcome 12 Time to return to usual activities (days).

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
3.12.1 TEP versus Mesh					
Madrid 1997	7/7	5/5		1.33%	0.34[0.1,1.11]
Quebec 1998	136/136	116/116		23.53%	0.22[0.16,0.29]
Hawaii 1996	51/51	49/49		9.59%	0.28[0.18,0.43]
Oulu 2 1998	22/22	23/23		5.1%	0.56[0.3,1.03]
Subtotal (95% CI)	**216**	**193**		**39.55%**	**0.26[0.21,0.33]**
Total events: 216 (Treatment), 193 (Control)					
Heterogeneity: Tau²=0; Chi²=7.79, df=3(P=0.05); I²=61.49%					
Test for overall effect: Z=11.88(P<0.0001)					
3.12.2 TEP versus Non-Mesh					
Woodville 1996	44/44	50/50		11.24%	0.78[0.52,1.17]
Subtotal (95% CI)	**44**	**50**		**11.24%**	**0.78[0.52,1.17]**
Total events: 44 (Treatment), 50 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.19(P=0.23)					
3.12.3 TEP versus Mixed Open					
MRCmulticentre 1999	215/228	183/199		49.21%	0.8[0.66,0.97]
Subtotal (95% CI)	**228**	**199**		**49.21%**	**0.8[0.66,0.97]**
Total events: 215 (Treatment), 183 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.26(P=0.02)					
Total (95% CI)	**488**	**442**		**100%**	**0.51[0.45,0.59]**
Total events: 475 (Treatment), 426 (Control)					
Heterogeneity: Tau²=0; Chi²=66.02, df=5(P<0.0001); I²=92.43%					
Test for overall effect: Z=9.45(P<0.0001)					
Test for subgroup differences: Chi²=58.23, df=1 (P<0.0001), I²=96.57%					



Analysis 3.13. Comparison 3 TEP versus Open, Outcome 13 Persisting pain.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
3.13.1 TEP versus Mesh					
Quebec 1998	2/137	11/117		4.89%	0.2[0.06,0.6]
Madrid 1997	0/34	5/17		1.63%	0.04[0.01,0.27]
Oulu 2 1998	0/22	1/23		0.4%	0.14[0,7.13]
Subtotal (95% CI)	**193**	**157**		**6.92%**	**0.13[0.05,0.34]**
Total events: 2 (Treatment), 17 (Control)					
Heterogeneity: Tau²=0; Chi²=2.04, df=2(P=0.36); I²=2.19%					
Test for overall effect: Z=4.24(P<0.0001)					
3.13.2 TEP versus Non-Mesh					
Woodville 1996	3/11	3/10		1.79%	0.88[0.14,5.6]



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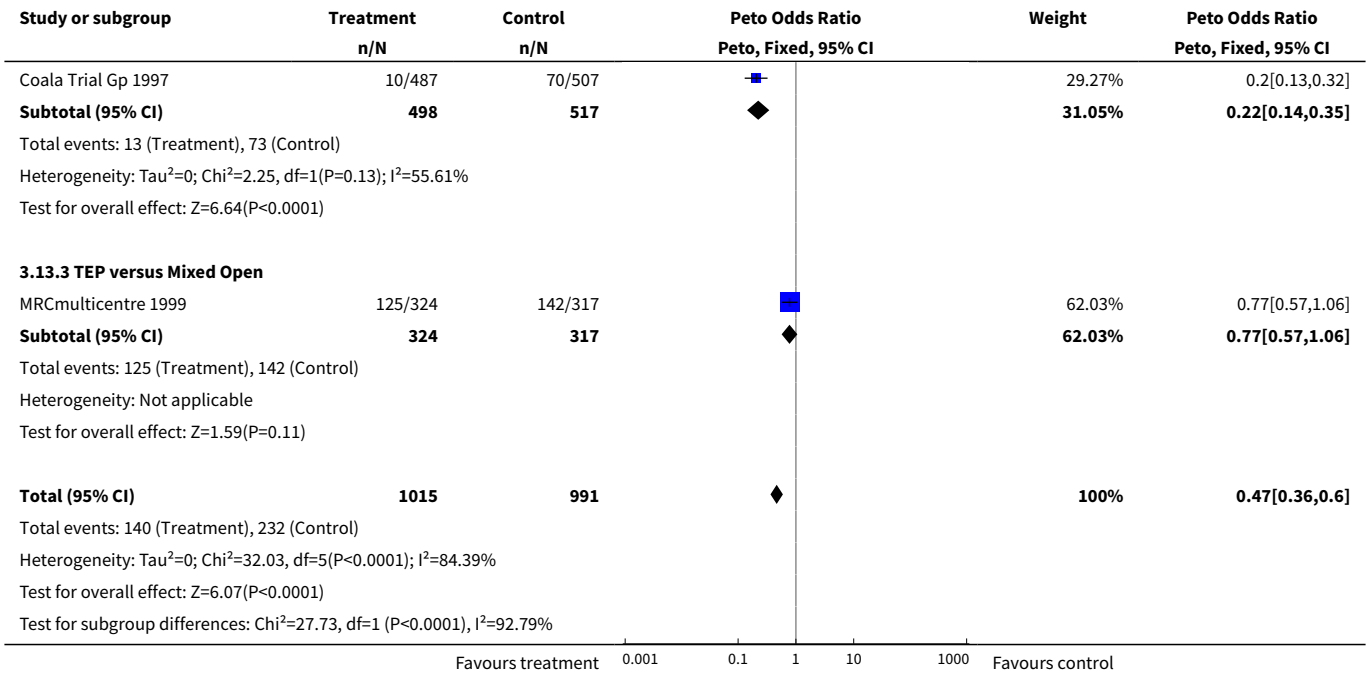
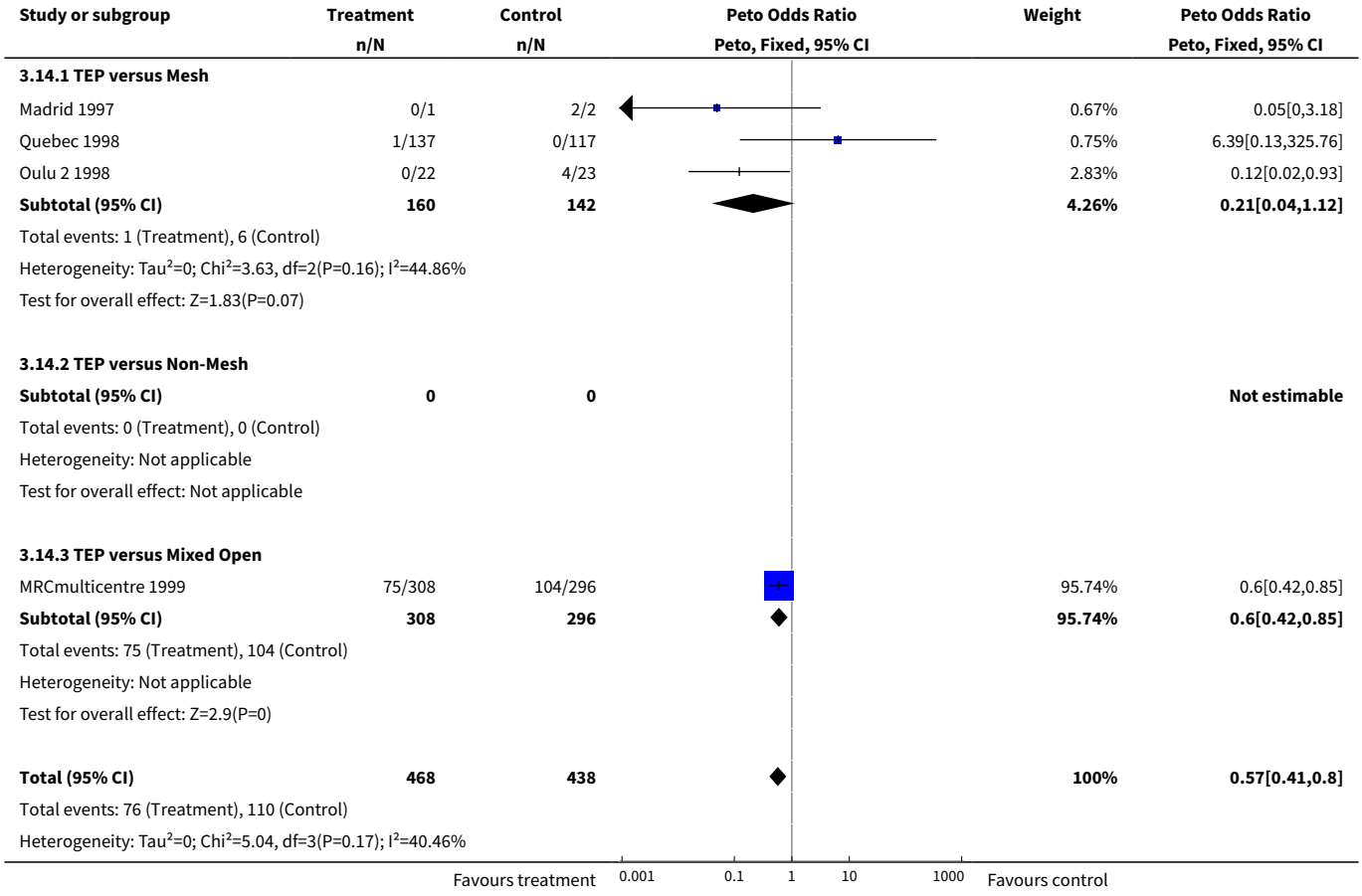


Analysis 3.14. Comparison 3 TEP versus Open, Outcome 14 Persisting numbness.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Z=3.21(P=0)					
Test for subgroup differences: Chi²=1.41, df=1 (P=0.23), I²=29.15%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 3.15. Comparison 3 TEP versus Open, Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
3.15.1 TEP versus Mesh					
Quebec 1998	3/137	6/116		12.94%	0.5[0.13,1.83]
Madrid 1997	0/59	0/57			Not estimable
Oulu 2 1998	0/22	0/23			Not estimable
Paris 1997	3/51	1/49		5.58%	2.69[0.37,19.68]
Denizli 1998	0/32	0/32			Not estimable
Hawaii 1996	1/50	0/50		1.44%	7.39[0.15,372.38]
Subtotal (95% CI)	**351**	**327**		**19.95%**	**0.97[0.34,2.77]**
Total events: 7 (Treatment), 7 (Control)					
Heterogeneity: Tau²=0; Chi²=3.06, df=2(P=0.22); I²=34.54%					
Test for overall effect: Z=0.06(P=0.95)					
3.15.2 TEP versus Non-Mesh					
Woodville 1996	2/47	0/55		2.82%	10.67[0.65,175.44]
Linz 1996	0/24	0/34			Not estimable
Brisbane 1996	1/92	0/92		1.44%	7.39[0.15,372.38]
Coala Trial Gp 1997	17/487	31/507		65.73%	0.57[0.32,1.01]
Paris 1994	0/89	0/92			Not estimable
Subtotal (95% CI)	**739**	**780**		**69.98%**	**0.67[0.38,1.18]**
Total events: 20 (Treatment), 31 (Control)					
Heterogeneity: Tau²=0; Chi²=5.52, df=2(P=0.06); I²=63.8%					
Test for overall effect: Z=1.39(P=0.16)					
3.15.3 TEP versus Mixed Open					
MRCmulticentre 1999	7/285	0/271		10.06%	7.1[1.61,31.24]
Subtotal (95% CI)	**285**	**271**		**10.06%**	**7.1[1.61,31.24]**
Total events: 7 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.59(P=0.01)					
Total (95% CI)	**1375**	**1378**		**100%**	**0.91[0.57,1.46]**
Total events: 34 (Treatment), 38 (Control)					
Heterogeneity: Tau²=0; Chi²=17.11, df=6(P=0.01); I²=64.93%					
Test for overall effect: Z=0.37(P=0.71)					
Test for subgroup differences: Chi²=8.53, df=1 (P=0.01), I²=76.55%					

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Comparison 4. Laparoscopic versus Open (Recurrent hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	13	448	Mean Difference (IV, Fixed, 95% CI)	14.31 [10.77, 17.85]
1.1 TAPP versus Open	10	280	Mean Difference (IV, Fixed, 95% CI)	14.24 [9.48, 18.99]
1.2 TEP versus Open	4	168	Mean Difference (IV, Fixed, 95% CI)	14.40 [9.10, 19.70]
1.3 Miscellaneous Laparosopic versus Open	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 "Opposite" method initiated	8	268	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.50 [0.64, 9.81]
2.1 TAPP versus Open	6	139	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.86 [0.85, 55.10]
2.2 TEP versus Open	3	129	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.17 [0.19, 7.15]
2.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Conversion	11	328	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.91 [1.19, 12.82]
3.1 TAPP versus Open	9	203	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.48 [0.24, 25.38]
3.2 TEP versus Open	3	125	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.59 [1.15, 18.27]
3.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Haematoma	10	383	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.60 [0.34, 1.06]
4.1 TAPP versus Open	9	266	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.24 [0.58, 2.62]
4.2 TEP versus Open	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.22 [0.09, 0.54]
4.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Seroma	10	379	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.39 [0.67, 2.90]
5.1 TAPP versus Open	9	262	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.80 [0.79, 4.12]
5.2 TEP versus Open	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.57 [0.12, 2.70]
5.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Wound/superficial infection	10	383	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.50 [0.17, 1.46]
6.1 TAPP versus Open	9	266	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.50 [0.17, 1.46]
6.2 TEP versus Open	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
6.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Mesh/deep infection	8	358	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.22 [0.00, 13.53]
7.1 TAPP versus Open	7	241	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.22 [0.00, 13.53]
7.2 TEP versus Open	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	9	312	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 TAPP versus Open	8	189	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TEP versus Open	2	123	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Visceral injury	8	306	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.47 [0.10, 293.66]
9.1 TAPP versus Open	7	183	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.47 [0.10, 293.66]
9.2 TEP versus Open	2	123	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	9	361	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 TAPP versus Open	8	250	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 TEP versus Open	2	111	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	11	367	Mean Difference (IV, Fixed, 95% CI)	0.01 [-0.13, 0.15]
11.1 TAPP versus Open	10	279	Mean Difference (IV, Fixed, 95% CI)	-0.00 [-0.14, 0.14]
11.2 TEP versus Open	2	88	Mean Difference (IV, Fixed, 95% CI)	0.24 [-0.45, 0.93]
11.3 Miscellaneous Laparosopic versus Open	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Time to return to usual activities (days)	10	262	Peto Odds Ratio (95% CI)	0.60 [0.46, 0.78]
12.1 TAPP versus Open	8	165	Peto Odds Ratio (95% CI)	0.62 [0.45, 0.87]
12.2 TEP versus Open	3	97	Peto Odds Ratio (95% CI)	0.55 [0.35, 0.89]

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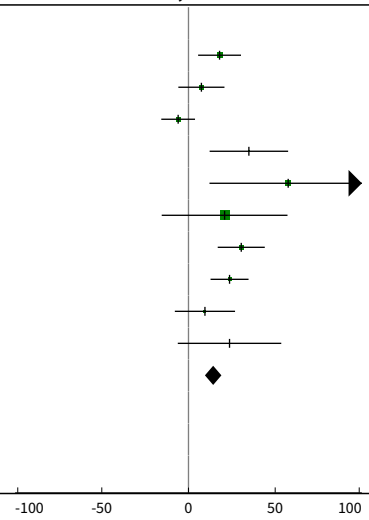
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
13 Persisting pain	8	331	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.90 [0.50, 1.59]
13.1 TAPP versus Open	7	209	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.00 [0.44, 2.25]
13.2 TEP versus Open	2	122	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.80 [0.36, 1.81]
13.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Persisting numbness	8	332	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.79 [0.39, 1.61]
14.1 TAPP versus Open	7	215	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.39 [0.13, 1.17]
14.2 TEP versus Open	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.33 [0.52, 3.38]
14.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
15 Hernia recurrence	11	387	Peto Odds Ratio (95% CI)	1.04 [0.45, 2.43]
15.1 TAPP versus Open	10	276	Peto Odds Ratio (95% CI)	0.99 [0.39, 2.51]
15.2 TEP versus Open	2	111	Peto Odds Ratio (95% CI)	1.33 [0.18, 10.06]
15.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]

Analysis 4.1. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
4.1.1 TAPP versus Open							
MRCmulticentre 1999	6	54.2 (14.3)	4	36.3 (4.8)		8.2%	17.92[5.56,30.28]
Tampere 1998	8	49.9 (17.5)	7	42.4 (7.3)		7.08%	7.45[-5.85,20.75]
Whipps Cross 1998	20	48.6 (14.8)	25	54.6 (18.5)		13.24%	-5.96[-15.69,3.77]
Hawaii 1994	6	88.3 (19.2)	2	53.5 (12)		2.44%	34.83[12.2,57.46]
Aarberg 1996	8	122.5 (56.7)	7	65 (30.7)		0.61%	57.5[12.11,102.89]
Michigan 1997	6	92.5 (36)	6	71.7 (27.5)		0.95%	20.83[-15.44,57.1]
SCUR 1999	23	76.5 (30.5)	44	46.1 (18.1)		6.8%	30.43[16.86,44]
Maastricht 1999	42	79.4 (31.7)	37	55.7 (16.5)		10.44%	23.68[12.73,34.63]
Whipps Cross 1994	8	63.1 (16.7)	11	53.6 (21.9)		4.16%	9.49[-7.87,26.85]
Adelaide 1994	4	62.5 (27.2)	6	38.8 (16.7)		1.41%	23.67[-6.17,53.51]
Subtotal ***	**131**		**149**			**55.34%**	**14.24[9.48,18.99]**
Heterogeneity: Tau²=0; Chi²=33.7, df=9(P=0); I²=73.29%							
Test for overall effect: Z=5.86(P<0.0001)							



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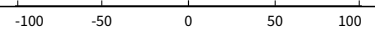
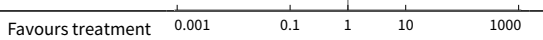
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
4.1.2 TEP versus Open							
Hawaii 1996	4	77.5 (15)	1	65 (0)			Not estimable
Quebec 1998	14	29.8 (14)	23	34.1 (11)		16.95%	-4.34[-12.94,4.26]
MRCmulticentre 1999	47	64 (20.3)	36	47 (21.1)		15.44%	17.01[8,26.02]
Paris 1997	20	100 (19)	23	63 (14)		12.27%	37[26.9,47.1]
Subtotal ***	**85**		**83**			**44.66%**	**14.4[9.1,19.7]**
Heterogeneity: Tau²=0; Chi²=37.8, df=2(P<0.0001); I²=94.71%							
Test for overall effect: Z=5.33(P<0.0001)							
4.1.3 Miscellaneous Laparosopic versus Open							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Total ***	**216**		**232**			**100%**	**14.31[10.77,17.85]**
Heterogeneity: Tau²=0; Chi²=71.5, df=12(P<0.0001); I²=83.22%							
Test for overall effect: Z=7.92(P<0.0001)							
Test for subgroup differences: Chi²=0, df=1 (P=0.96), I²=0%							



Analysis 4.2. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.2.1 TAPP versus Open					
Hawaii 1994	0/6	0/2			Not estimable
MRCmulticentre 1999	0/6	0/4			Not estimable
Adelaide 1994	0/4	0/6			Not estimable
Maastricht 1999	1/42	0/37		12.1%	6.56[0.13,333.2]
Tampere 1998	3/10	0/7		30.9%	6.98[0.6,81.52]
Aarberg 1996	0/8	0/7			Not estimable
Subtotal (95% CI)	**76**	**63**		**43%**	**6.86[0.85,55.1]**
Total events: 4 (Treatment), 0 (Control)					
Heterogeneity: Tau²=0; Chi²=0, df=1(P=0.98); I²=0%					
Test for overall effect: Z=1.81(P=0.07)					
4.2.2 TEP versus Open					
MRCmulticentre 1999	3/49	2/38		57%	1.17[0.19,7.15]
Quebec 1998	0/14	0/23			Not estimable
Hawaii 1996	0/4	0/1			Not estimable
Subtotal (95% CI)	**67**	**62**		**57%**	**1.17[0.19,7.15]**
Total events: 3 (Treatment), 2 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.17(P=0.87)					
4.2.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					



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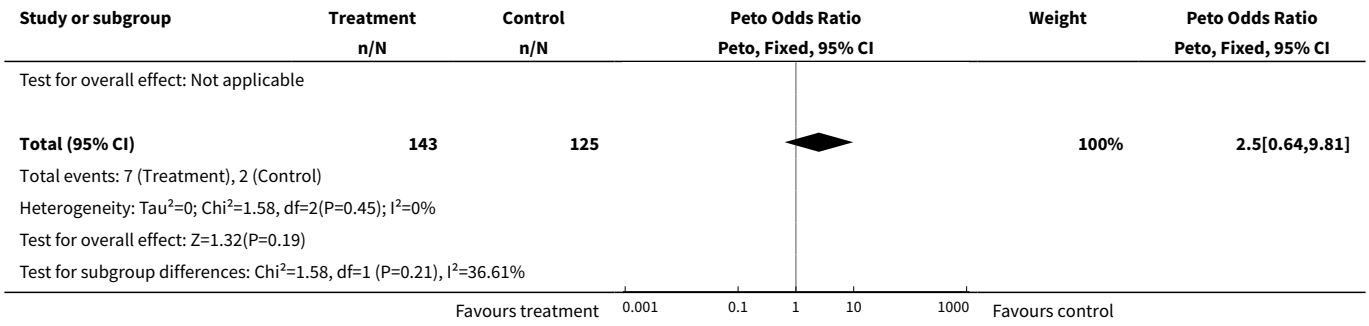
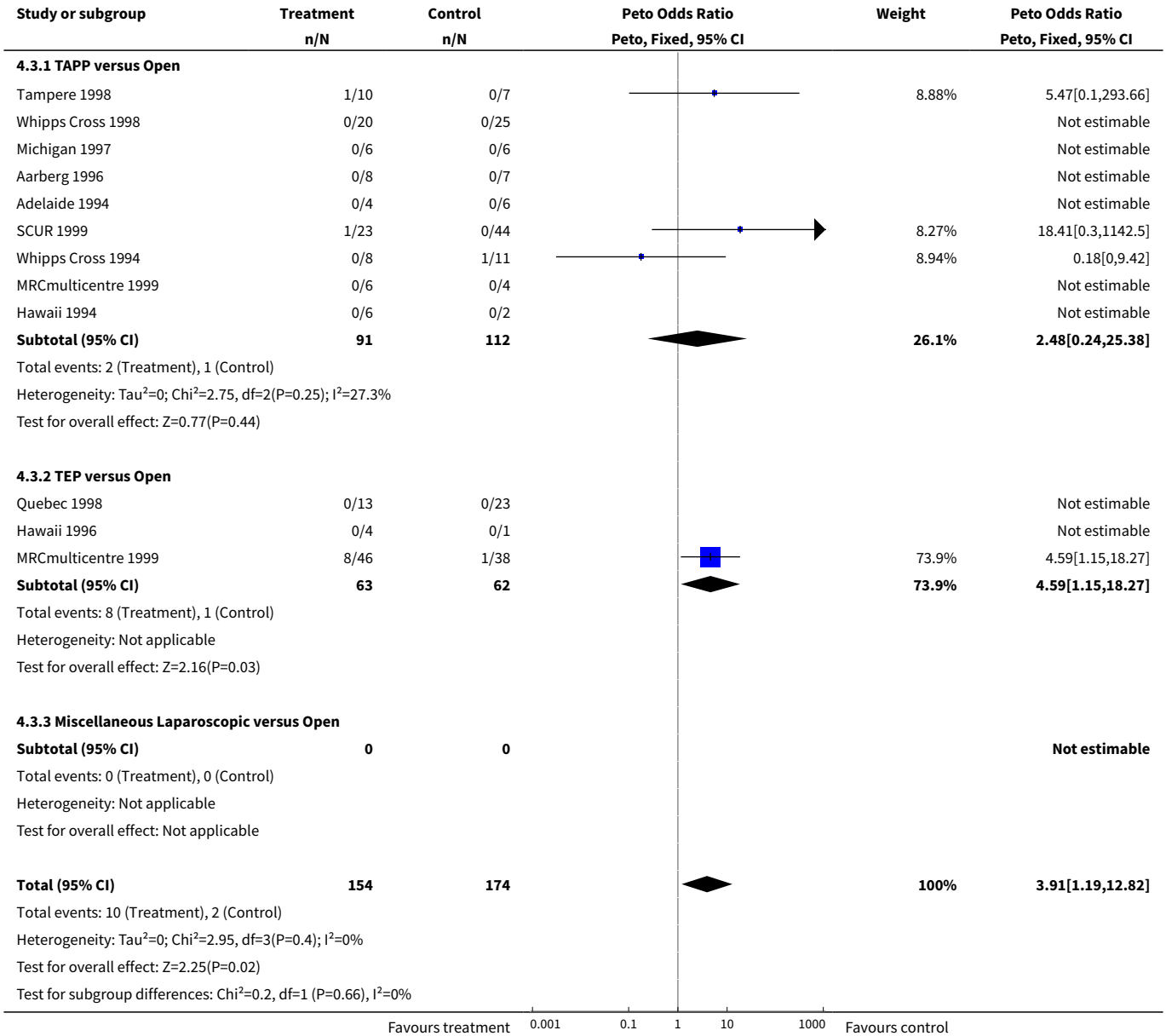


Analysis 4.3. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 3 Conversion.



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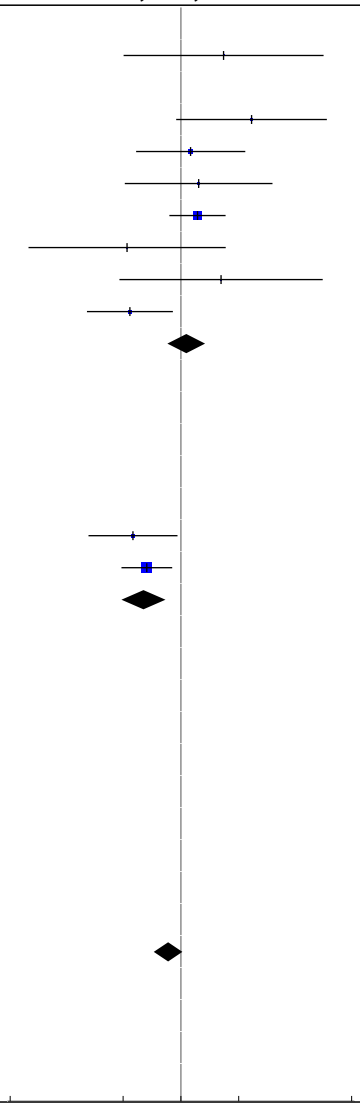
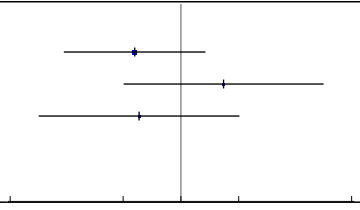
Analysis 4.4. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 4 Haematoma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.4.1 TAPP versus Open					
Tampere 1998	1/10	0/7		2.06%	5.47[0.1,293.66]
Michigan 1997	0/4	0/2			Not estimable
Adelaide 1994	2/4	0/6		3.62%	16.65[0.83,334.64]
Whipps Cross 1994	2/8	2/11		6.9%	1.47[0.17,12.97]
SCUR 1999	1/23	1/44		3.77%	2.03[0.11,38.36]
Maastricht 1999	10/42	5/37		26.03%	1.94[0.63,5.93]
Aarberg 1996	0/8	1/7		2.11%	0.12[0,5.96]
MRCmulticentre 1999	1/5	0/3		1.99%	4.95[0.09,283.86]
Whipps Cross 1998	0/20	6/25		11.15%	0.13[0.02,0.73]
Subtotal (95% CI)	**124**	**142**		**57.64%**	**1.24[0.58,2.62]**
Total events: 17 (Treatment), 15 (Control)					
Heterogeneity: Tau^2=0; Chi^2=12.61, df=7(P=0.08); I^2=44.49%					
Test for overall effect: Z=0.55(P=0.58)					
4.4.2 TEP versus Open					
Quebec 1998	0/14	6/22		10.38%	0.15[0.03,0.87]
MRCmulticentre 1999	6/45	14/36		31.98%	0.26[0.09,0.71]
Subtotal (95% CI)	**59**	**58**		**42.36%**	**0.22[0.09,0.54]**
Total events: 6 (Treatment), 20 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.28, df=1(P=0.6); I^2=0%					
Test for overall effect: Z=3.33(P=0)					
4.4.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**183**	**200**		**100%**	**0.6[0.34,1.06]**
Total events: 23 (Treatment), 35 (Control)					
Heterogeneity: Tau^2=0; Chi^2=21.25, df=9(P=0.01); I^2=57.64%					
Test for overall effect: Z=1.75(P=0.08)					
Test for subgroup differences: Chi^2=8.36, df=1 (P=0), I^2=88.03%					



Analysis 4.5. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 5 Seroma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.5.1 TAPP versus Open					
Whipps Cross 1998	0/20	2/25		6.7%	0.16[0.01,2.66]
Tampere 1998	1/10	0/7		3.36%	5.47[0.1,293.66]
Adelaide 1994	0/4	1/6		3.33%	0.19[0,10.32]
Michigan 1997	0/4	0/2			Not estimable
SCUR 1999	0/23	0/44			Not estimable



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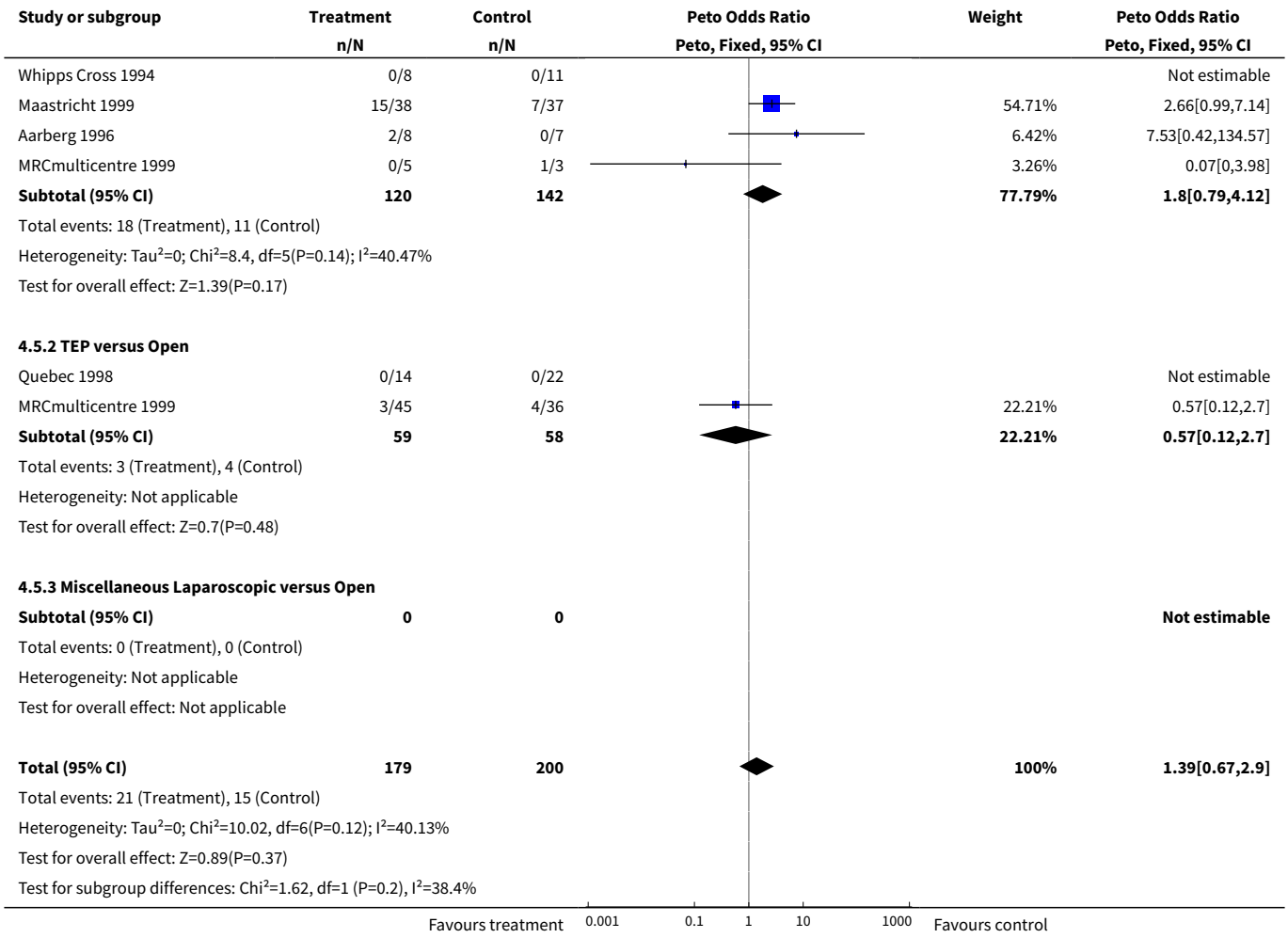
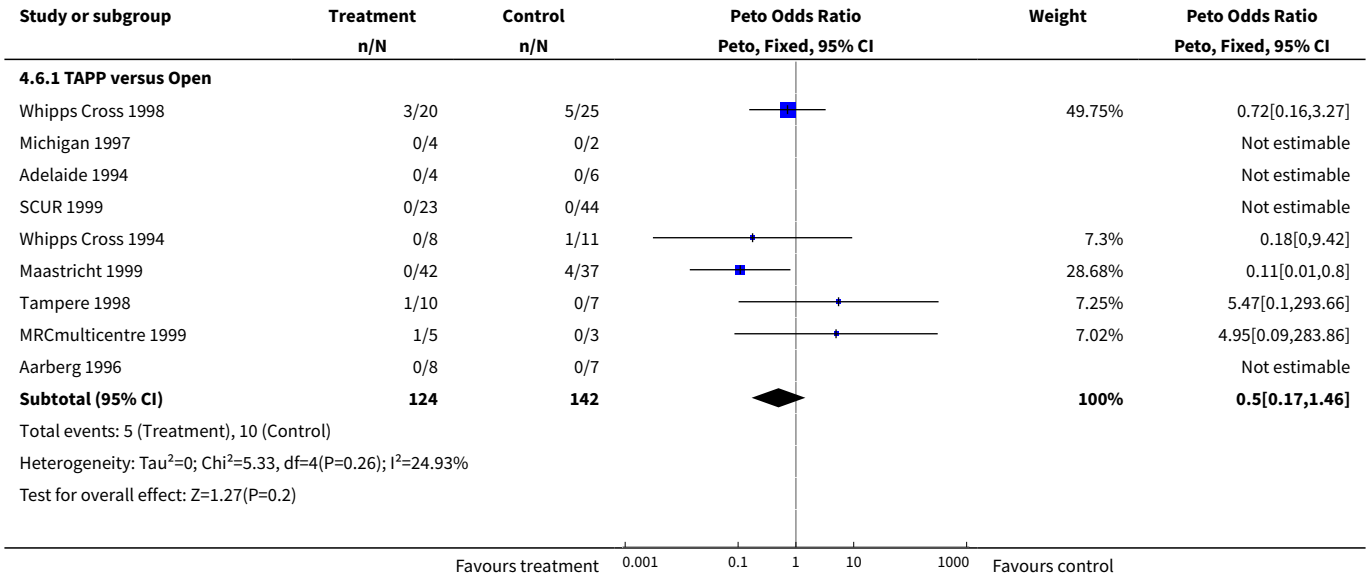


Analysis 4.6. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 6 Wound/superficial infection.



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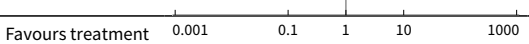
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.6.2 TEP versus Open					
Quebec 1998	0/14	0/22			Not estimable
MRCmulticentre 1999	0/45	0/36			Not estimable
Subtotal (95% CI)	**59**	**58**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.6.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**183**	**200**		**100%**	**0.5[0.17,1.46]**
Total events: 5 (Treatment), 10 (Control)					
Heterogeneity: Tau^2=0; Chi^2=5.33, df=4(P=0.26); I^2=24.93%					
Test for overall effect: Z=1.27(P=0.2)					
Test for subgroup differences: Not applicable					

Analysis 4.7. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 7 Mesh/deep infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.7.1 TAPP versus Open					
Whipps Cross 1994	0/8	0/11			Not estimable
SCUR 1999	0/23	1/44		100%	0.22[0,13.53]
Michigan 1997	0/4	0/2			Not estimable
MRCmulticentre 1999	0/5	0/3			Not estimable
Tampere 1998	0/10	0/7			Not estimable
Whipps Cross 1998	0/20	0/25			Not estimable
Maastricht 1999	0/42	0/37			Not estimable
Subtotal (95% CI)	**112**	**129**		**100%**	**0.22[0,13.53]**
Total events: 0 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.72(P=0.47)					
4.7.2 TEP versus Open					
MRCmulticentre 1999	0/45	0/36			Not estimable
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**59**	**58**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.7.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**171**	**187**		**100%**	**0.22[0,13.53]**
Total events: 0 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.72(P=0.47)					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 4.8. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.8.1 TAPP versus Open					
Aarberg 1996	0/8	0/7			Not estimable
MRCmulticentre 1999	0/6	0/4			Not estimable
Tampere 1998	0/10	0/7			Not estimable
Michigan 1997	0/4	0/2			Not estimable
Whipps Cross 1998	0/20	0/25			Not estimable
SCUR 1999	0/23	0/44			Not estimable
Adelaide 1994	0/4	0/6			Not estimable
Whipps Cross 1994	0/8	0/11			Not estimable
Subtotal (95% CI)	**83**	**106**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.8.2 TEP versus Open					
MRCmulticentre 1999	0/49	0/38			Not estimable
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**63**	**60**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.8.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**146**	**166**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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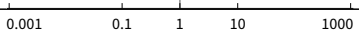
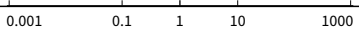
Analysis 4.9. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.9.1 TAPP versus Open					
Adelaide 1994	0/4	0/6			Not estimable
Whipps Cross 1998	0/20	0/25			Not estimable
SCUR 1999	0/23	0/44			Not estimable
MRCmulticentre 1999	0/6	0/4			Not estimable
Tampere 1998	1/10	0/7		100%	5.47[0.1,293.66]
Aarberg 1996	0/8	0/7			Not estimable
Whipps Cross 1994	0/8	0/11			Not estimable
Subtotal (95% CI)	**79**	**104**		**100%**	**5.47[0.1,293.66]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.84(P=0.4)					
4.9.2 TEP versus Open					
MRCmulticentre 1999	0/49	0/38			Not estimable
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**63**	**60**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.9.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**142**	**164**		**100%**	**5.47[0.1,293.66]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.84(P=0.4)					
Test for subgroup differences: Not applicable					



Analysis 4.10. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.10.1 TAPP versus Open					
SCUR 1999	0/23	0/44			Not estimable
Aarberg 1996	0/8	0/7			Not estimable
Whipps Cross 1998	0/20	0/25			Not estimable
Michigan 1997	0/4	0/2			Not estimable
Adelaide 1994	0/4	0/6			Not estimable
Whipps Cross 1994	0/8	0/11			Not estimable
MRCmulticentre 1999	0/5	0/4			Not estimable
Maastricht 1999	0/42	0/37			Not estimable



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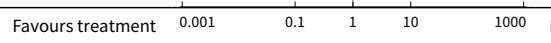
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Subtotal (95% CI)	**114**	**136**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.10.2 TEP versus Open					
Quebec 1998	0/14	0/22			Not estimable
MRCmulticentre 1999	0/41	0/34			Not estimable
Subtotal (95% CI)	**55**	**56**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
4.10.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**169**	**192**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					



Analysis 4.11. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
4.11.1 TAPP versus Open							
SCUR 1999	23	1.1 (1.2)	44	0.6 (0.6)		6.84%	0.56[0.03,1.09]
Whipps Cross 1994	8	0.3 (0.5)	11	0.3 (0.5)		10.84%	-0.02[-0.44,0.4]
Michigan 1997	6	2.2 (1.6)	6	1.7 (0.5)		1.07%	0.5[-0.85,1.85]
Aarberg 1996	8	5.6 (1.1)	7	7.6 (2.6)		0.44%	-1.95[-4.04,0.14]
Tampere 1998	10	2.5 (3.8)	7	1.6 (0.5)		0.35%	0.93[-1.43,3.29]
Hawaii 1994	6	0.3 (0.8)	2	0 (0)			Not estimable
Whipps Cross 1998	20	0.2 (0.4)	25	0.1 (0.3)		50.54%	0.07[-0.13,0.27]
MRCmulticentre 1999	5	1 (0)	3	1 (0)			Not estimable
Maastricht 1999	42	1.1 (0.5)	37	1.4 (0.7)		25.87%	-0.28[-0.55,-0.01]
Adelaide 1994	3	0 (0)	6	0 (0)			Not estimable
Subtotal ***	**131**		**148**			**95.96%**	**-0[-0.14,0.14]**
Heterogeneity: Tau^2=0; Chi^2=13.25, df=6(P=0.04); I^2=54.71%							
Test for overall effect: Z=0.01(P=0.99)							
4.11.2 TEP versus Open							
Hawaii 1996	4	0.3 (0.5)	1	0 (0)			Not estimable
MRCmulticentre 1999	47	1.7 (2)	36	1.5 (1.2)		4.04%	0.24[-0.45,0.93]
Subtotal ***	**51**		**37**			**4.04%**	**0.24[-0.45,0.93]**

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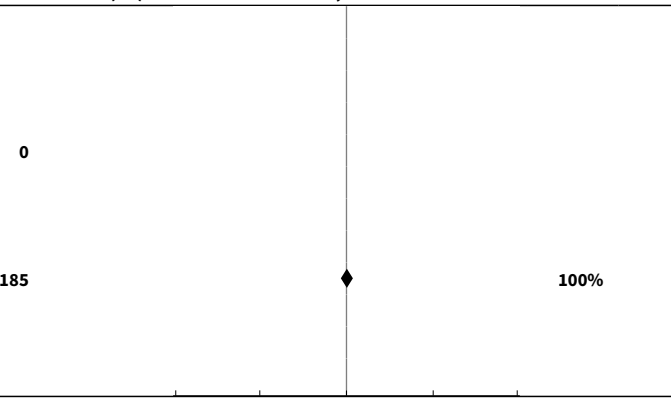
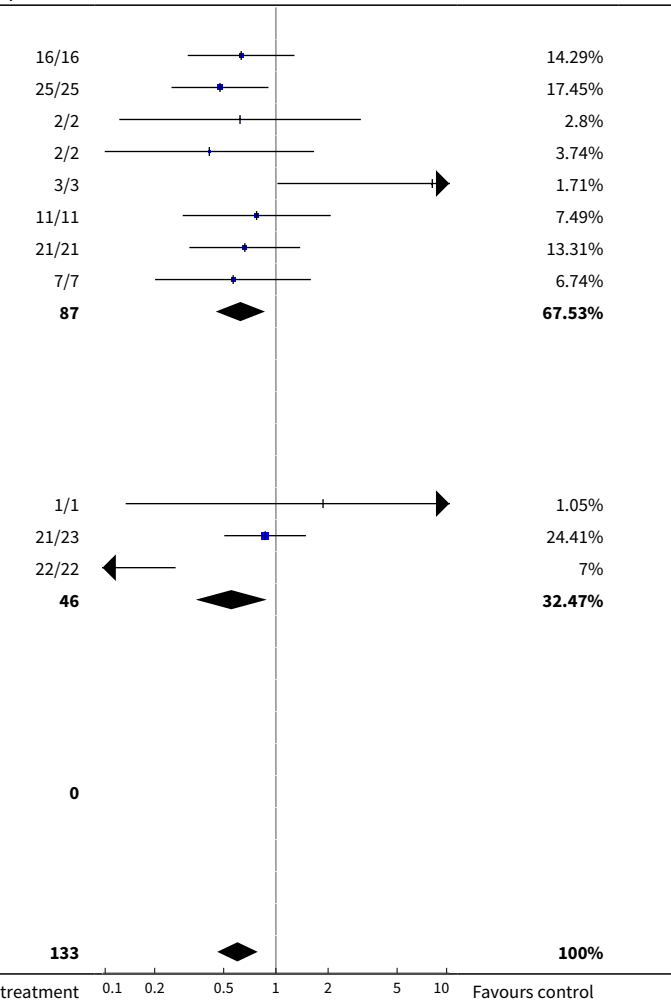
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Heterogeneity: Not applicable							
Test for overall effect: Z=0.68(P=0.5)							
4.11.3 Miscellaneous Laparosopic versus Open							
Subtotal * **	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Total * **	**182**		**185**			**100%**	**0.01[-0.13,0.15]**
Heterogeneity: Tau²=0; Chi²=13.69, df=7(P=0.06); I²=48.88%							
Test for overall effect: Z=0.12(P=0.9)							
Test for subgroup differences: Chi²=0.45, df=1 (P=0.5), I²=0%							



Analysis 4.12. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 12 Time to return to usual activities (days).

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
4.12.1 TAPP versus Open					
Maastricht 1999	16/16	16/16		14.29%	0.63[0.31,1.28]
Whipps Cross 1998	20/20	25/25		17.45%	0.48[0.25,0.91]
Tampere 1998	4/4	2/2		2.8%	0.62[0.12,3.09]
Hawaii 1994	6/6	2/2		3.74%	0.41[0.1,1.66]
MRCmulticentre 1999	3/4	3/3		1.71%	7.98[1.02,62.27]
Whipps Cross 1994	7/7	11/11		7.49%	0.77[0.29,2.07]
SCUR 1999	13/13	21/21		13.31%	0.66[0.32,1.38]
Aarberg 1996	8/8	7/7		6.74%	0.57[0.2,1.59]
Subtotal (95% CI)	**78**	**87**		**67.53%**	**0.62[0.45,0.87]**
Total events: 77 (Treatment), 87 (Control)					
Heterogeneity: Tau²=0; Chi²=7.17, df=7(P=0.41); I²=2.41%					
Test for overall effect: Z=2.83(P=0)					
4.12.2 TEP versus Open					
Hawaii 1996	4/4	1/1		1.05%	1.87[0.14,25.64]
MRCmulticentre 1999	32/34	21/23		24.41%	0.87[0.5,1.49]
Quebec 1998	13/13	22/22		7%	0.1[0.03,0.26]
Subtotal (95% CI)	**51**	**46**		**32.47%**	**0.55[0.35,0.89]**
Total events: 49 (Treatment), 44 (Control)					
Heterogeneity: Tau²=0; Chi²=14.98, df=2(P=0); I²=86.65%					
Test for overall effect: Z=2.47(P=0.01)					
4.12.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**129**	**133**		**100%**	**0.6[0.46,0.78]**



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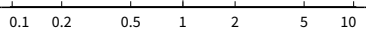
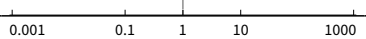
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
Total events: 126 (Treatment), 131 (Control)					
Heterogeneity: Tau²=0; Chi²=22.32, df=10(P=0.01); I²=55.2%					
Test for overall effect: Z=3.73(P=0)					
Test for subgroup differences: Chi²=0.17, df=1 (P=0.68), I²=0%					



Favours treatment — Favours control

Analysis 4.13. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 13 Persisting pain.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.13.1 TAPP versus Open					
Maastricht 1999	4/42	3/37		13.84%	1.19[0.25,5.57]
SCUR 1999	0/16	3/36		5.28%	0.22[0.02,2.71]
Michigan 1997	1/4	0/2		1.91%	4.48[0.07,286.49]
Aarberg 1996	0/8	0/7			Not estimable
MRCmulticentre 1999	1/7	2/4		4.78%	0.19[0.01,2.7]
Whipps Cross 1998	9/20	7/24		22.22%	1.95[0.58,6.61]
Adelaide 1994	0/1	1/1		2.15%	0.14[0,6.82]
Subtotal (95% CI)	**98**	**111**		**50.17%**	**1[0.44,2.25]**
Total events: 15 (Treatment), 16 (Control)					
Heterogeneity: Tau²=0; Chi²=5.58, df=5(P=0.35); I²=10.38%					
Test for overall effect: Z=0(P=1)					
4.13.2 TEP versus Open					
MRCmulticentre 1999	24/49	19/37		45.86%	0.91[0.39,2.13]
Quebec 1998	0/14	2/22		3.97%	0.19[0.01,3.32]
Subtotal (95% CI)	**63**	**59**		**49.83%**	**0.8[0.36,1.81]**
Total events: 24 (Treatment), 21 (Control)					
Heterogeneity: Tau²=0; Chi²=1.08, df=1(P=0.3); I²=7%					
Test for overall effect: Z=0.53(P=0.6)					
4.13.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**161**	**170**		**100%**	**0.9[0.5,1.59]**
Total events: 39 (Treatment), 37 (Control)					
Heterogeneity: Tau²=0; Chi²=6.8, df=7(P=0.45); I²=0%					
Test for overall effect: Z=0.37(P=0.71)					
Test for subgroup differences: Chi²=0.14, df=1 (P=0.71), I²=0%					



Favours treatment — Favours control

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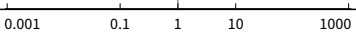
Analysis 4.14. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 14 Persisting numbness.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
4.14.1 TAPP versus Open					
Aarberg 1996	0/8	0/7			Not estimable
MRCmulticentre 1999	2/7	0/3		4.89%	4.99[0.2,123.33]
Maastricht 1999	0/42	0/37			Not estimable
Hawaii 1994	0/6	0/2			Not estimable
SCUR 1999	0/16	6/36		15.11%	0.2[0.03,1.25]
Whipps Cross 1998	1/20	6/25		19.57%	0.24[0.05,1.21]
Michigan 1997	1/4	0/2		2.91%	4.48[0.07,286.49]
Subtotal (95% CI)	**103**	**112**		**42.49%**	**0.39[0.13,1.17]**
Total events: 4 (Treatment), 12 (Control)					
Heterogeneity: Tau^2=0; Chi^2=4.59, df=3(P=0.2); I^2=34.57%					
Test for overall effect: Z=1.68(P=0.09)					
4.14.2 TEP versus Open					
Quebec 1998	0/14	0/22			Not estimable
MRCmulticentre 1999	16/46	10/35		57.51%	1.33[0.52,3.38]
Subtotal (95% CI)	**60**	**57**		**57.51%**	**1.33[0.52,3.38]**
Total events: 16 (Treatment), 10 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.59(P=0.56)					
4.14.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**163**	**169**		**100%**	**0.79[0.39,1.61]**
Total events: 20 (Treatment), 22 (Control)					
Heterogeneity: Tau^2=0; Chi^2=7.33, df=4(P=0.12); I^2=45.46%					
Test for overall effect: Z=0.65(P=0.52)					
Test for subgroup differences: Chi^2=2.75, df=1 (P=0.1), I^2=63.62%					



Favours treatment — Favours control

Analysis 4.15. Comparison 4 Laparoscopic versus Open (Recurrent hernias), Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
4.15.1 TAPP versus Open					
Whipps Cross 1998	0/20	1/25		4.64%	0.17[0,8.67]
SCUR 1999	0/23	4/44		13.73%	0.1[0.01,1.01]
Maastricht 1999	6/42	1/37		32.47%	4.08[0.93,17.94]
Tampere 1998	4/10	1/7		18.18%	1.41[0.2,10.25]
Aarberg 1996	1/8	2/7		13.54%	0.37[0.04,3.7]
Hawaii 1994	0/6	0/2			Not estimable
Michigan 1997	3/4	1/3			Not estimable
Whipps Cross 1994	0/8	0/11			Not estimable
Adelaide 1994	0/4	0/6			Not estimable

Favours treatment — Favours control

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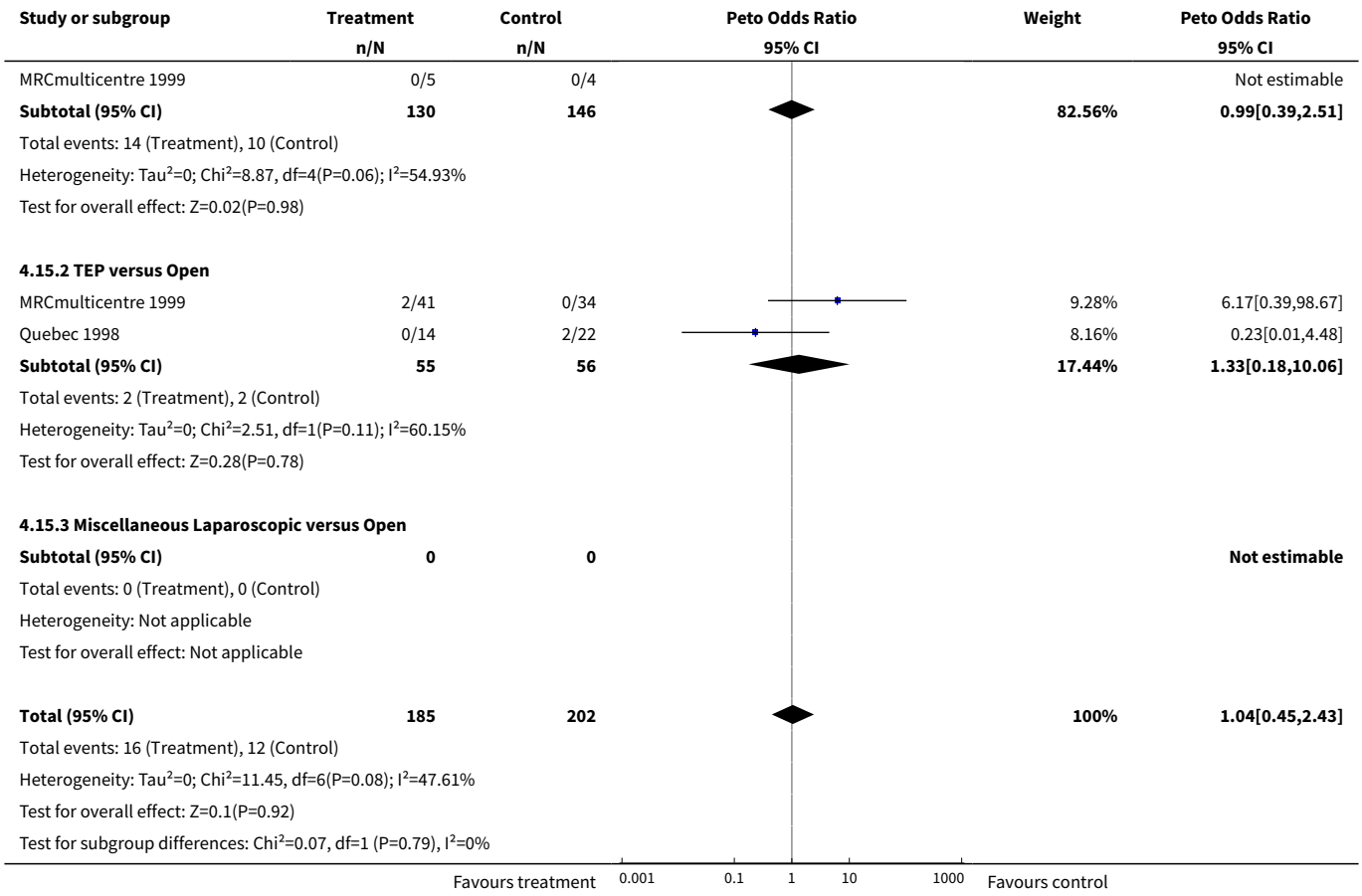

Comparison 5. TAPP versus Open (Recurrent hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	10	303	Mean Difference (IV, Fixed, 95% CI)	15.55 [10.99, 20.11]
1.1 TAPP versus Mesh	5	188	Mean Difference (IV, Fixed, 95% CI)	12.32 [6.64, 18.00]
1.2 TAPP versus Non-Mesh	4	93	Mean Difference (IV, Fixed, 95% CI)	23.79 [13.67, 33.91]
1.3 TAPP versus Mixed Open	2	22	Mean Difference (IV, Fixed, 95% CI)	18.22 [6.52, 29.92]
2 "Opposite" method initiated	6	139	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.86 [0.85, 55.10]
2.1 TAPP versus Mesh	3	104	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.86 [0.85, 55.10]
2.2 TAPP versus Non-Mesh	2	25	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 TAPP versus Mixed Open	1	10	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3 Conversion	9	226	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.66 [0.37, 19.24]
3.1 TAPP versus Mesh	4	111	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.71 [0.35, 94.25]
3.2 TAPP versus Non-Mesh	4	93	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.25 [0.08, 20.37]
3.3 TAPP versus Mixed Open	2	22	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Haematoma	9	289	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.26 [0.60, 2.63]
4.1 TAPP versus Mesh	4	182	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.04 [0.43, 2.54]
4.2 TAPP versus Non-Mesh	4	93	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.70 [0.42, 6.84]
4.3 TAPP versus Mixed Open	2	14	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.95 [0.09, 283.86]
5 Seroma	9	285	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.80 [0.79, 4.12]
5.1 TAPP versus Mesh	4	178	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.06 [0.83, 5.11]
5.2 TAPP versus Non-Mesh	4	93	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.14 [0.21, 22.16]
5.3 TAPP versus Mixed Open	2	14	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.07 [0.00, 3.98]
6 Wound/superficial infection	9	289	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.50 [0.17, 1.46]
6.1 TAPP versus Mesh	4	182	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.45 [0.14, 1.44]
6.2 TAPP versus Non-Mesh	4	93	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.18 [0.00, 9.42]
6.3 TAPP versus Mixed Open	2	14	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.95 [0.09, 283.86]
7 Mesh/deep infection	7	264	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.15 [0.00, 7.71]
7.1 TAPP versus Mesh	4	182	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TAPP versus Non-Mesh	2	68	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.15 [0.00, 7.71]
7.3 TAPP versus Mixed Open	2	14	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	8	212	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 TAPP versus Mesh	3	103	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TAPP versus Non-Mesh	4	93	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 TAPP versus Mixed Open	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
9 Visceral injury	7	206	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.47 [0.10, 293.66]
9.1 TAPP versus Mesh	3	103	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.47 [0.10, 293.66]
9.2 TAPP versus Non-Mesh	4	93	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 TAPP versus Mixed Open	1	10	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	8	273	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 TAPP versus Mesh	3	165	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 TAPP versus Non-Mesh	4	93	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 TAPP versus Mixed Open	2	15	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	10	302	Mean Difference (IV, Fixed, 95% CI)	0.04 [-0.10, 0.17]
11.1 TAPP versus Mesh	5	190	Mean Difference (IV, Fixed, 95% CI)	0.02 [-0.13, 0.17]
11.2 TAPP versus Non-Mesh	4	92	Mean Difference (IV, Fixed, 95% CI)	0.08 [-0.25, 0.41]
11.3 TAPP versus Mixed Open	2	20	Mean Difference (IV, Fixed, 95% CI)	0.5 [-0.85, 1.85]
12 Time to return to usual activities (days)	8	178	Peto Odds Ratio (95% CI)	0.63 [0.47, 0.86]
12.1 TAPP versus Mesh	5	114	Peto Odds Ratio (95% CI)	0.55 [0.37, 0.80]
12.2 TAPP versus Non-Mesh	3	57	Peto Odds Ratio (95% CI)	0.70 [0.41, 1.20]
12.3 TAPP versus Mixed Open	1	7	Peto Odds Ratio (95% CI)	7.98 [1.02, 62.27]
13 Persisting pain	6	223	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.99 [0.44, 2.25]
13.1 TAPP versus Mesh	3	153	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.22 [0.49, 3.03]
13.2 TAPP versus Non-Mesh	2	53	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.18 [0.00, 9.42]
13.3 TAPP versus Mixed Open	2	17	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.48 [0.05, 4.40]
14 Persisting numbness	7	231	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.31 [0.11, 0.89]
14.1 TAPP versus Mesh	4	162	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.18 [0.05, 0.69]

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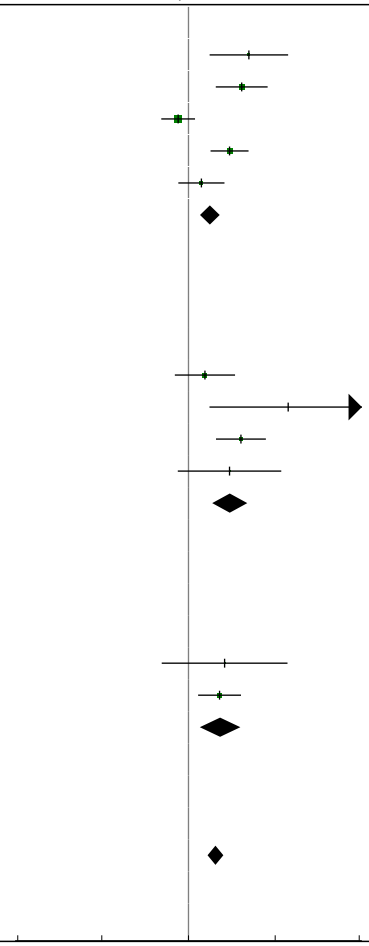
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
14.2 TAPP versus Non-Mesh	2	53	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.16 [0.02, 1.70]
14.3 TAPP versus Mixed Open	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.79 [0.38, 60.76]
15 Hernia recurrence	10	299	Peto Odds Ratio (95% CI)	0.91 [0.37, 2.24]
15.1 TAPP versus Mesh	5	190	Peto Odds Ratio (95% CI)	1.20 [0.43, 3.32]
15.2 TAPP versus Non-Mesh	4	93	Peto Odds Ratio (95% CI)	0.31 [0.04, 2.26]
15.3 TAPP versus Mixed Open	2	16	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]

Analysis 5.1. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
5.1.1 TAPP versus Mesh							
Hawaii 1994	6	88.3 (19.2)	2	53.5 (12)		4.06%	34.83[12.2,57.46]
SCUR 1999	23	76.5 (30.5)	18	45.8 (17.8)		9.31%	30.69[15.74,45.64]
Whipps Cross 1998	20	48.6 (14.8)	25	54.6 (18.5)		21.99%	-5.96[-15.69,3.77]
Maastricht 1999	42	79.4 (31.7)	37	55.7 (16.5)		17.35%	23.68[12.73,34.63]
Tampere 1998	8	49.9 (17.5)	7	42.4 (7.3)		11.77%	7.45[-5.85,20.75]
Subtotal ***	**99**		**89**			**64.48%**	**12.32[6.64,18]**
Heterogeneity: Tau²=0; Chi²=27.82, df=4(P<0.0001); I²=85.62%							
Test for overall effect: Z=4.25(P<0.0001)							
5.1.2 TAPP versus Non-Mesh							
Whipps Cross 1994	8	63.1 (16.7)	11	53.6 (21.9)		6.9%	9.49[-7.87,26.85]
Aarberg 1996	8	122.5 (56.7)	7	65 (30.7)		1.01%	57.5[12.11,102.89]
SCUR 1999	23	76.5 (30.5)	26	46.3 (18.6)		10.07%	30.25[15.87,44.63]
Adelaide 1994	4	62.5 (27.2)	6	38.8 (16.7)		2.34%	23.67[-6.17,53.51]
Subtotal ***	**43**		**50**			**20.32%**	**23.79[13.67,33.91]**
Heterogeneity: Tau²=0; Chi²=5.5, df=3(P=0.14); I²=45.46%							
Test for overall effect: Z=4.61(P<0.0001)							
5.1.3 TAPP versus Mixed Open							
Michigan 1997	6	92.5 (36)	6	71.7 (27.5)		1.58%	20.83[-15.44,57.1]
MRCmulticentre 1999	6	54.2 (14.3)	4	36.3 (4.8)		13.62%	17.92[5.56,30.28]
Subtotal ***	**12**		**10**			**15.2%**	**18.22[6.52,29.92]**
Heterogeneity: Tau²=0; Chi²=0.02, df=1(P=0.88); I²=0%							
Test for overall effect: Z=3.05(P=0)							
Total ***	**154**		**149**			**100%**	**15.55[10.99,20.11]**
Heterogeneity: Tau²=0; Chi²=37.33, df=10(P<0.0001); I²=73.21%							
Test for overall effect: Z=6.68(P<0.0001)							



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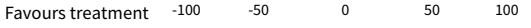
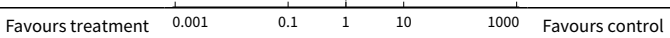
Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
Test for subgroup differences: Chi²=3.99, df=1 (P=0.14), I²=49.86%							



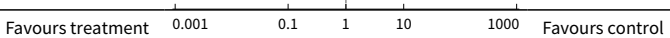
Analysis 5.2. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
5.2.1 TAPP versus Mesh					
Hawaii 1994	0/6	0/2			Not estimable
Tampere 1998	3/10	0/7		71.86%	6.98[0.6,81.52]
Maastricht 1999	1/42	0/37		28.14%	6.56[0.13,333.2]
Subtotal (95% CI)	**58**	**46**		**100%**	**6.86[0.85,55.1]**
Total events: 4 (Treatment), 0 (Control)					
Heterogeneity: Tau²=0; Chi²=0, df=1(P=0.98); I²=0%					
Test for overall effect: Z=1.81(P=0.07)					
5.2.2 TAPP versus Non-Mesh					
Aarberg 1996	0/8	0/7			Not estimable
Adelaide 1994	0/4	0/6			Not estimable
Subtotal (95% CI)	**12**	**13**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
5.2.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/6	0/4			Not estimable
Subtotal (95% CI)	**6**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**76**	**63**		**100%**	**6.86[0.85,55.1]**
Total events: 4 (Treatment), 0 (Control)					
Heterogeneity: Tau²=0; Chi²=0, df=1(P=0.98); I²=0%					
Test for overall effect: Z=1.81(P=0.07)					
Test for subgroup differences: Not applicable					



Analysis 5.3. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 3 Conversion.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
5.3.1 TAPP versus Mesh					
SCUR 1999	1/23	0/18		25.1%	5.95[0.11,308.59]
Hawaii 1994	0/6	0/2			Not estimable
Whipps Cross 1998	0/20	0/25			Not estimable
Tampere 1998	1/10	0/7		24.68%	5.47[0.1,293.66]



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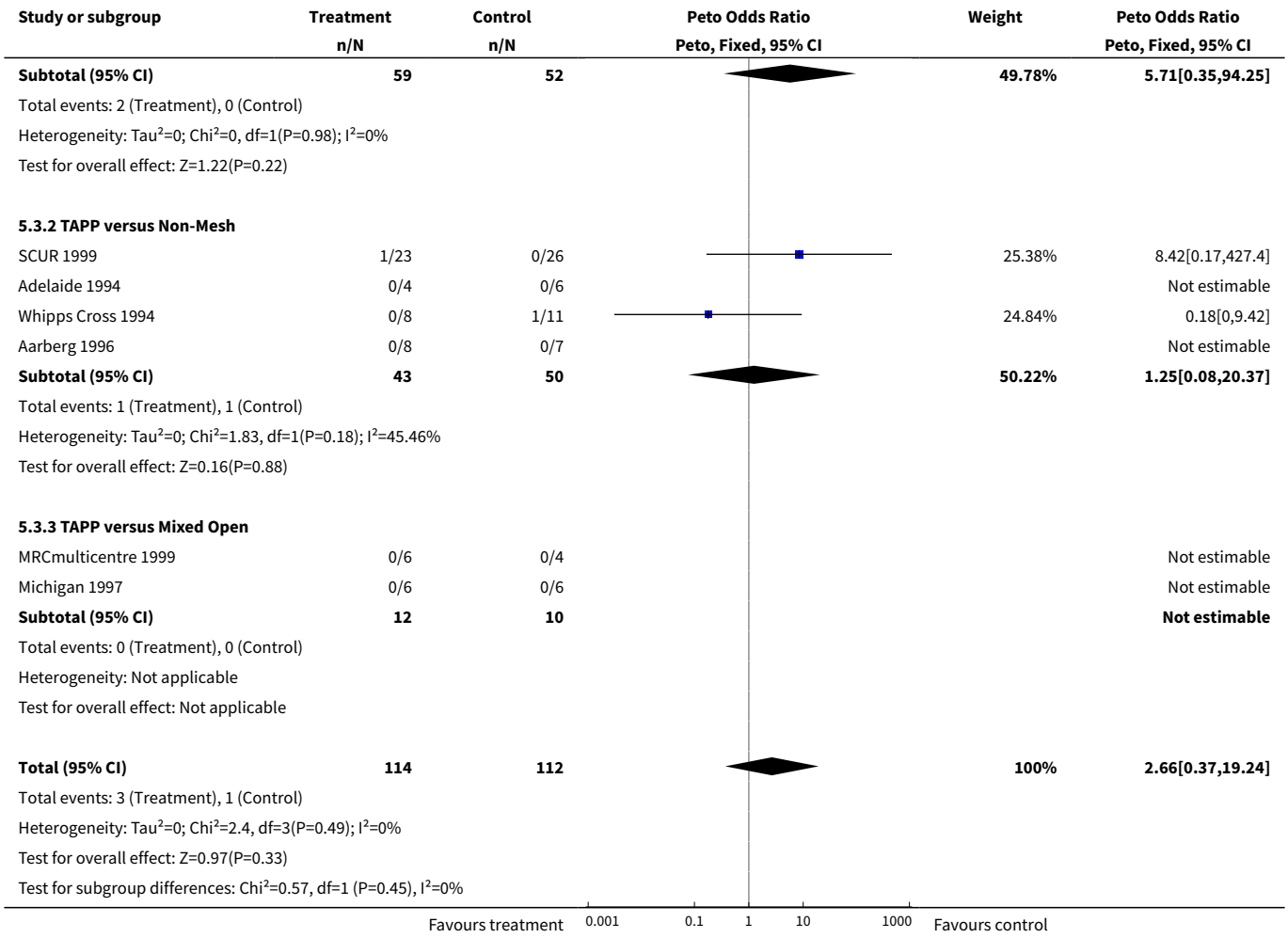
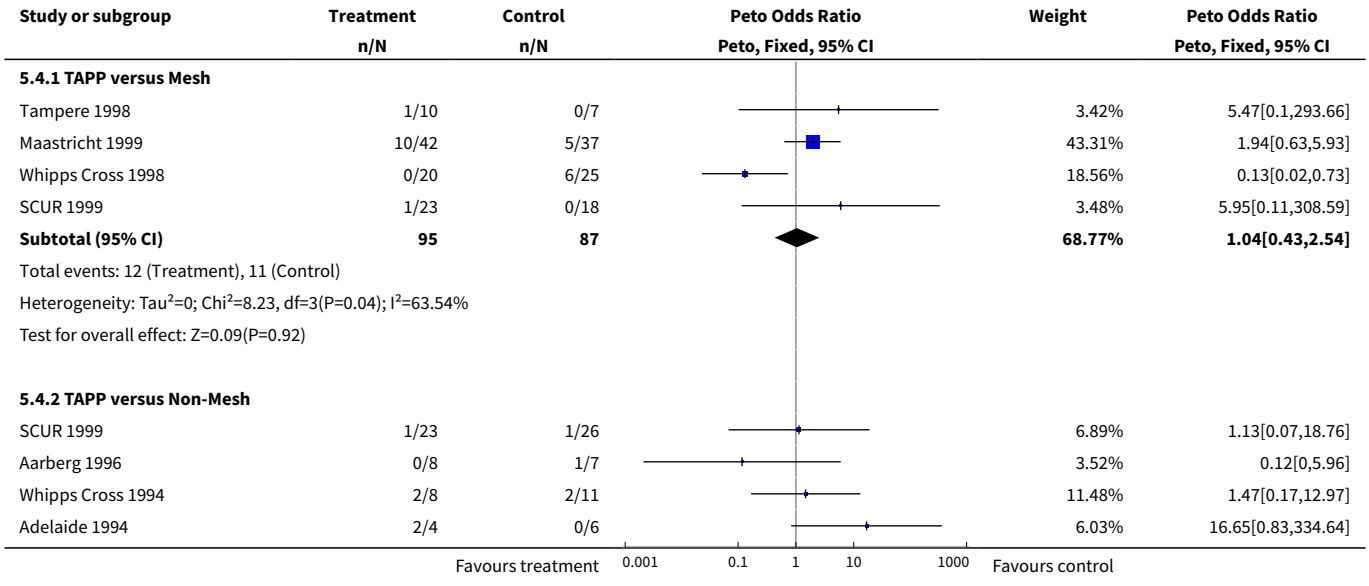


Analysis 5.4. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 4 Haematoma.



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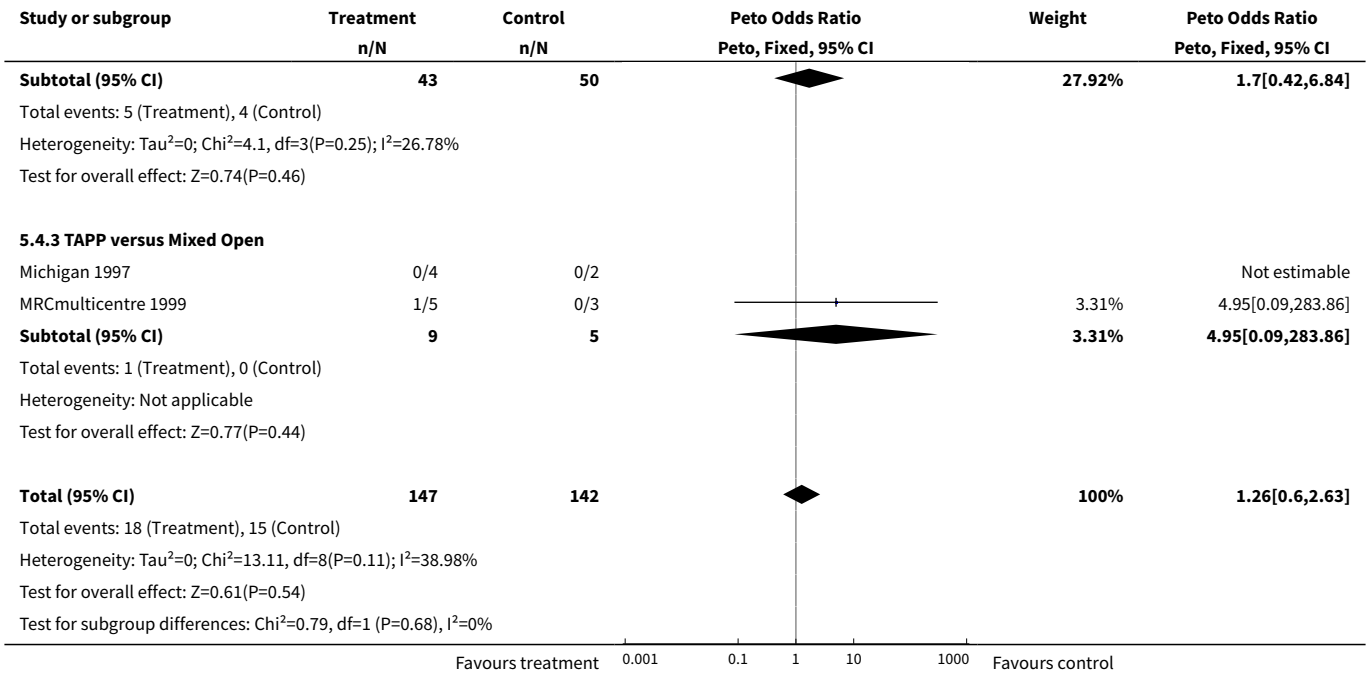
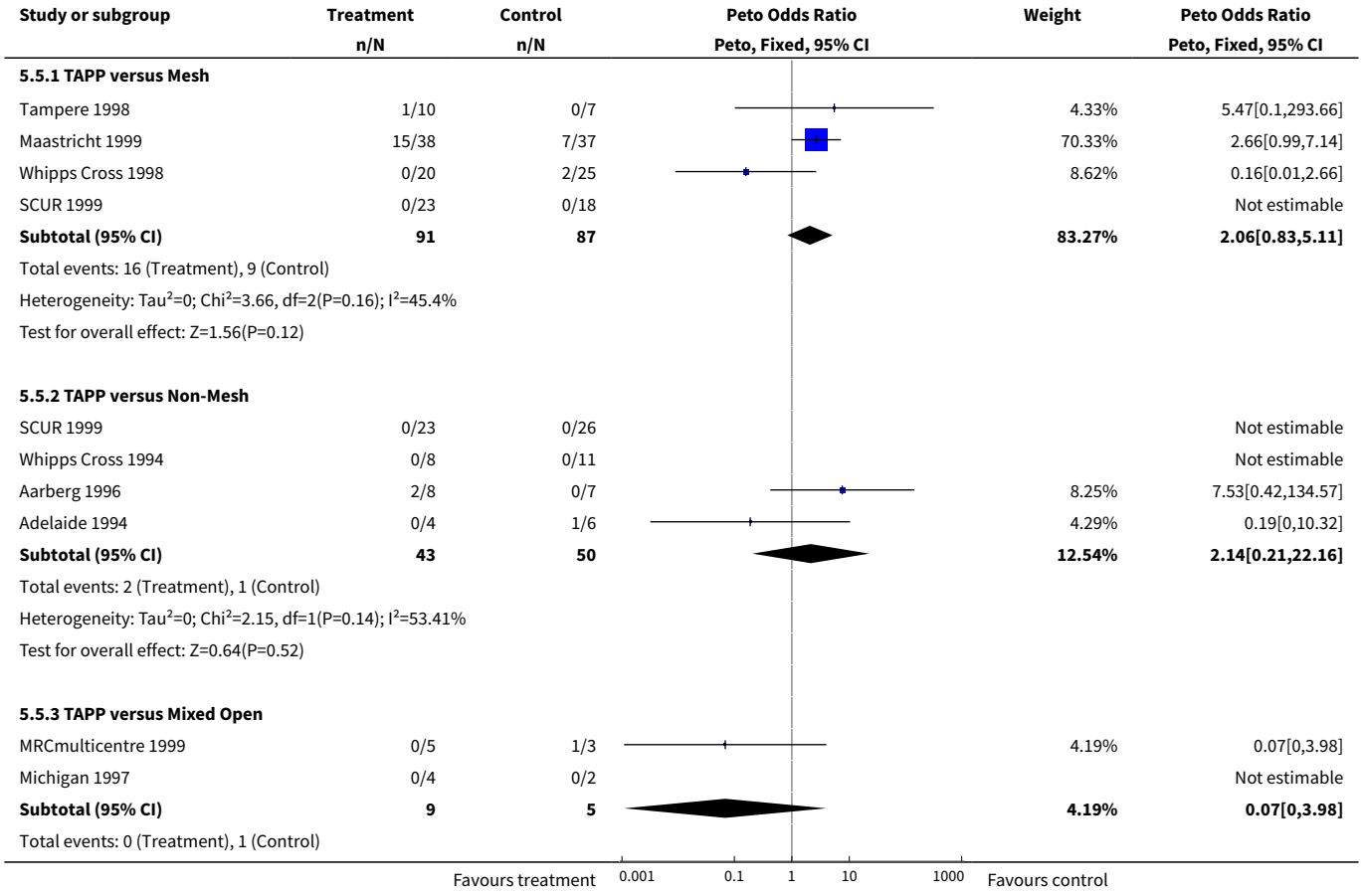


Analysis 5.5. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 5 Seroma.



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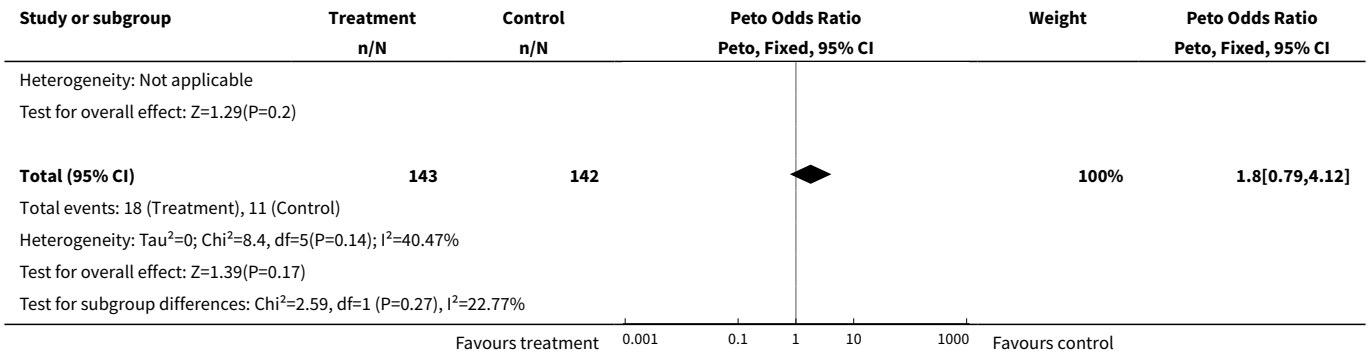
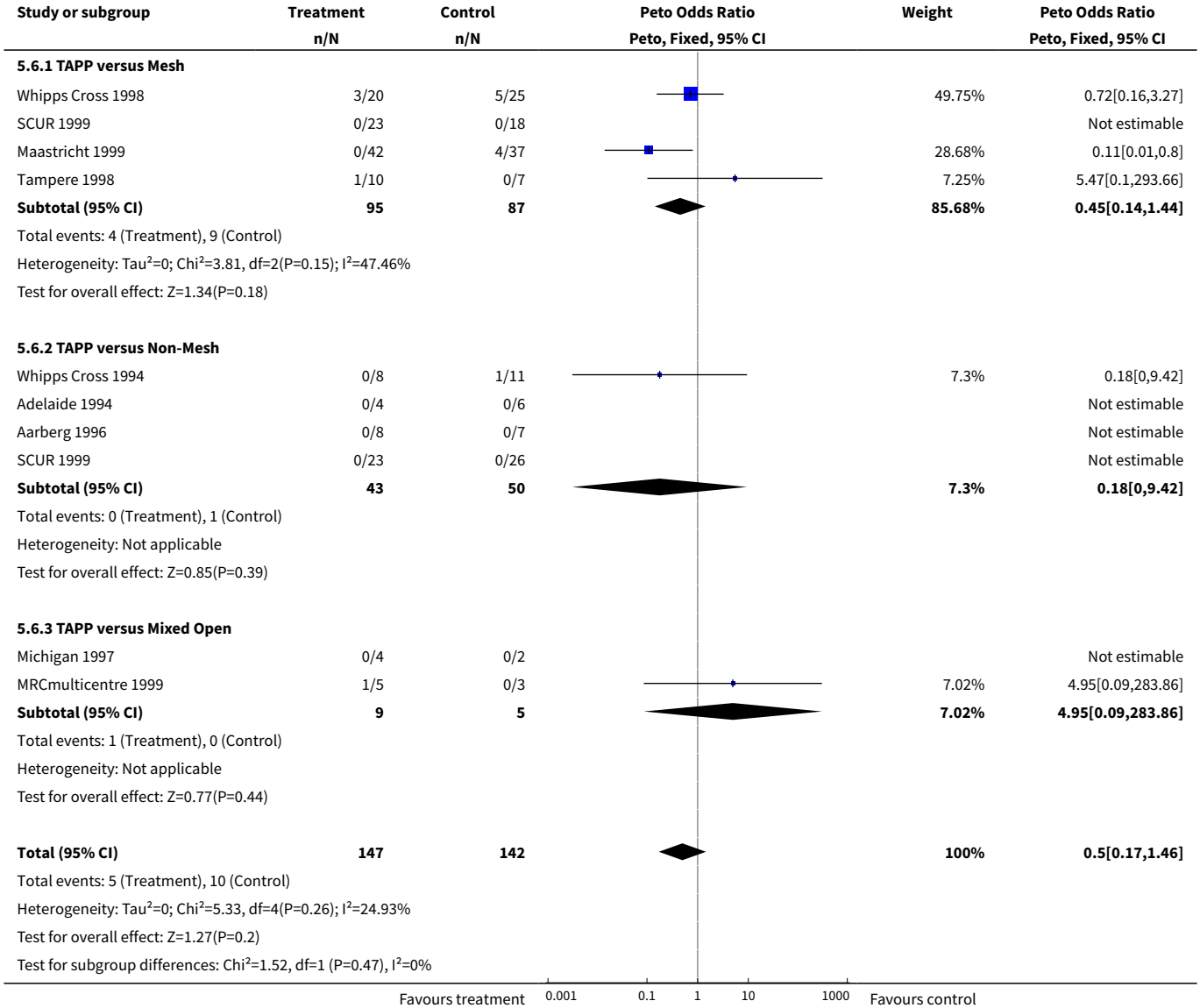


Analysis 5.6. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 6 Wound/superficial infection.



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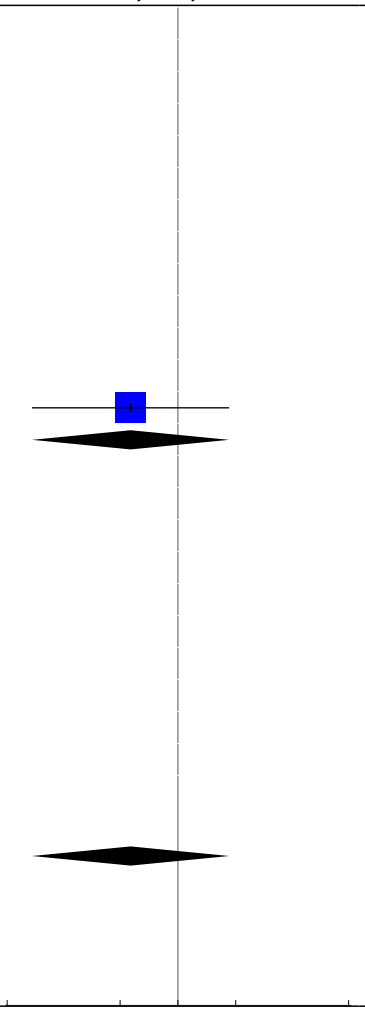
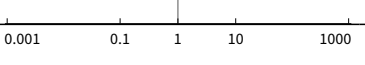
Analysis 5.7. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 7 Mesh/deep infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
5.7.1 TAPP versus Mesh					
Tampere 1998	0/10	0/7			Not estimable
SCUR 1999	0/23	0/18			Not estimable
Whipps Cross 1998	0/20	0/25			Not estimable
Maastricht 1999	0/42	0/37			Not estimable
Subtotal (95% CI)	**95**	**87**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
5.7.2 TAPP versus Non-Mesh					
Whipps Cross 1994	0/8	0/11			Not estimable
SCUR 1999	0/23	1/26		100%	0.15[0,7.71]
Subtotal (95% CI)	**31**	**37**		**100%**	**0.15[0,7.71]**
Total events: 0 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.94(P=0.35)					
5.7.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/5	0/3			Not estimable
Michigan 1997	0/4	0/2			Not estimable
Subtotal (95% CI)	**9**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**135**	**129**		**100%**	**0.15[0,7.71]**
Total events: 0 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.94(P=0.35)					
Test for subgroup differences: Not applicable					



Analysis 5.8. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
5.8.1 TAPP versus Mesh					
Tampere 1998	0/10	0/7			Not estimable
SCUR 1999	0/23	0/18			Not estimable
Whipps Cross 1998	0/20	0/25			Not estimable
Subtotal (95% CI)	**53**	**50**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
5.8.2 TAPP versus Non-Mesh					



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Whipps Cross 1994	0/8	0/11			Not estimable
Aarberg 1996	0/8	0/7			Not estimable
Adelaide 1994	0/4	0/6			Not estimable
SCUR 1999	0/23	0/26			Not estimable
Subtotal (95% CI)	**43**	**50**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
5.8.3 TAPP versus Mixed Open					
Michigan 1997	0/4	0/2			Not estimable
MRCmulticentre 1999	0/6	0/4			Not estimable
Subtotal (95% CI)	**10**	**6**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**106**	**106**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 5.9. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
5.9.1 TAPP versus Mesh					
Tampere 1998	1/10	0/7		100%	5.47[0.1,293.66]
Whipps Cross 1998	0/20	0/25			Not estimable
SCUR 1999	0/23	0/18			Not estimable
Subtotal (95% CI)	**53**	**50**		**100%**	**5.47[0.1,293.66]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.84(P=0.4)					
5.9.2 TAPP versus Non-Mesh					
SCUR 1999	0/23	0/26			Not estimable
Adelaide 1994	0/4	0/6			Not estimable
Whipps Cross 1994	0/8	0/11			Not estimable
Aarberg 1996	0/8	0/7			Not estimable
Subtotal (95% CI)	**43**	**50**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
5.9.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/6	0/4			Not estimable

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Subtotal (95% CI)	**6**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**102**	**104**		**100%**	**5.47[0.1,293.66]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.84(P=0.4)					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 5.10. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
5.10.1 TAPP versus Mesh					
SCUR 1999	0/23	0/18			Not estimable
Whipps Cross 1998	0/20	0/25			Not estimable
Maastricht 1999	0/42	0/37			Not estimable
Subtotal (95% CI)	**85**	**80**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
5.10.2 TAPP versus Non-Mesh					
Aarberg 1996	0/8	0/7			Not estimable
SCUR 1999	0/23	0/26			Not estimable
Whipps Cross 1994	0/8	0/11			Not estimable
Adelaide 1994	0/4	0/6			Not estimable
Subtotal (95% CI)	**43**	**50**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
5.10.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/5	0/4			Not estimable
Michigan 1997	0/4	0/2			Not estimable
Subtotal (95% CI)	**9**	**6**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**137**	**136**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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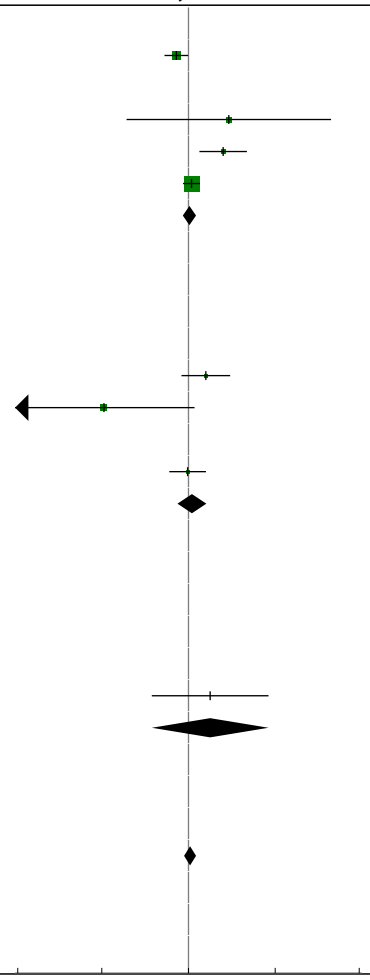
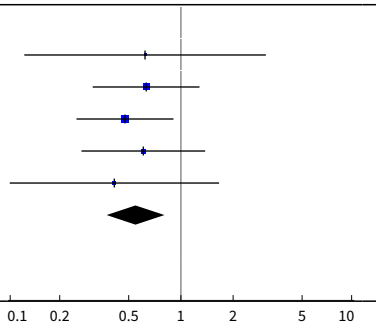
Analysis 5.11. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
5.11.1 TAPP versus Mesh							
Maastricht 1999	42	1.1 (0.5)	37	1.4 (0.7)		25.43%	-0.28[-0.55,-0.01]
Hawaii 1994	6	0.3 (0.8)	2	0 (0)			Not estimable
Tampere 1998	10	2.5 (3.8)	7	1.6 (0.5)		0.34%	0.93[-1.43,3.29]
SCUR 1999	23	1.1 (1.2)	18	0.3 (0.5)		6.35%	0.8[0.25,1.35]
Whipps Cross 1998	20	0.2 (0.4)	25	0.1 (0.3)		49.68%	0.07[-0.13,0.27]
Subtotal ***	**101**		**89**			**81.81%**	**0.02[-0.13,0.17]**
Heterogeneity: Tau^2=0; Chi^2=13.23, df=3(P=0); I^2=77.33%							
Test for overall effect: Z=0.28(P=0.78)							
5.11.2 TAPP versus Non-Mesh							
SCUR 1999	23	1.1 (1.2)	26	0.7 (0.7)		6.05%	0.4[-0.16,0.96]
Aarberg 1996	8	5.6 (1.1)	7	7.6 (2.6)		0.44%	-1.95[-4.04,0.14]
Adelaide 1994	3	0 (0)	6	0 (0)			Not estimable
Whipps Cross 1994	8	0.3 (0.5)	11	0.3 (0.5)		10.66%	-0.02[-0.44,0.4]
Subtotal ***	**42**		**50**			**17.14%**	**0.08[-0.25,0.41]**
Heterogeneity: Tau^2=0; Chi^2=5.09, df=2(P=0.08); I^2=60.72%							
Test for overall effect: Z=0.46(P=0.64)							
5.11.3 TAPP versus Mixed Open							
MRCmulticentre 1999	5	1 (0)	3	1 (0)			Not estimable
Michigan 1997	6	2.2 (1.6)	6	1.7 (0.5)		1.05%	0.5[-0.85,1.85]
Subtotal ***	**11**		**9**			**1.05%**	**0.5[-0.85,1.85]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.73(P=0.47)							
Total ***	**154**		**148**			**100%**	**0.04[-0.1,0.17]**
Heterogeneity: Tau^2=0; Chi^2=18.88, df=7(P=0.01); I^2=62.92%							
Test for overall effect: Z=0.52(P=0.61)							
Test for subgroup differences: Chi^2=0.56, df=1 (P=0.76), I^2=0%							



Analysis 5.12. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 12 Time to return to usual activities (days).

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
5.12.1 TAPP versus Mesh					
Tampere 1998	4/4	2/2		3.68%	0.62[0.12,3.09]
Maastricht 1999	16/16	16/16		18.78%	0.63[0.31,1.28]
Whipps Cross 1998	20/20	25/25		22.93%	0.48[0.25,0.91]
SCUR 1999	13/13	10/10		13.99%	0.61[0.27,1.38]
Hawaii 1994	6/6	2/2		4.91%	0.41[0.1,1.66]
Subtotal (95% CI)	**59**	**55**		**64.29%**	**0.55[0.37,0.8]**
Total events: 59 (Treatment), 55 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.57, df=4(P=0.97); I^2=0%					



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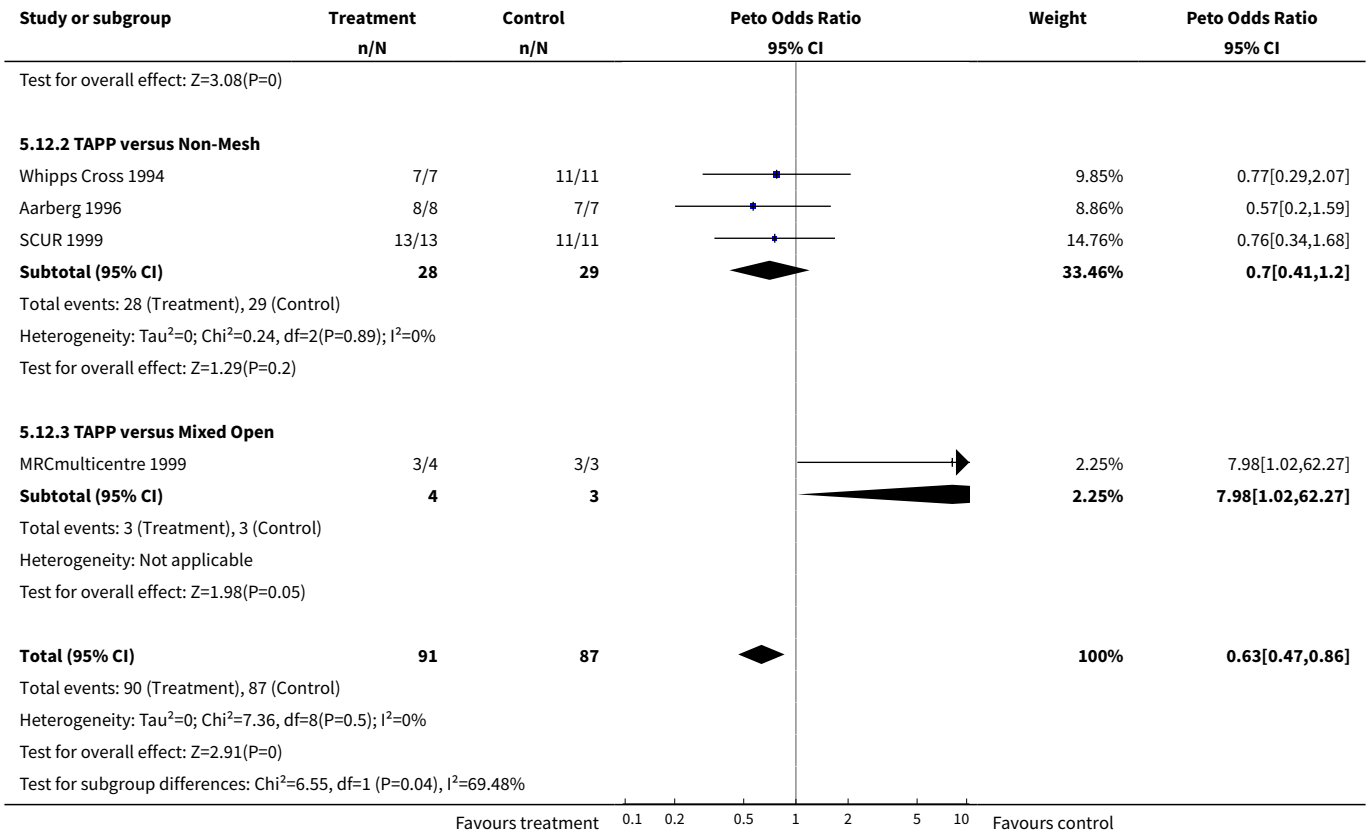
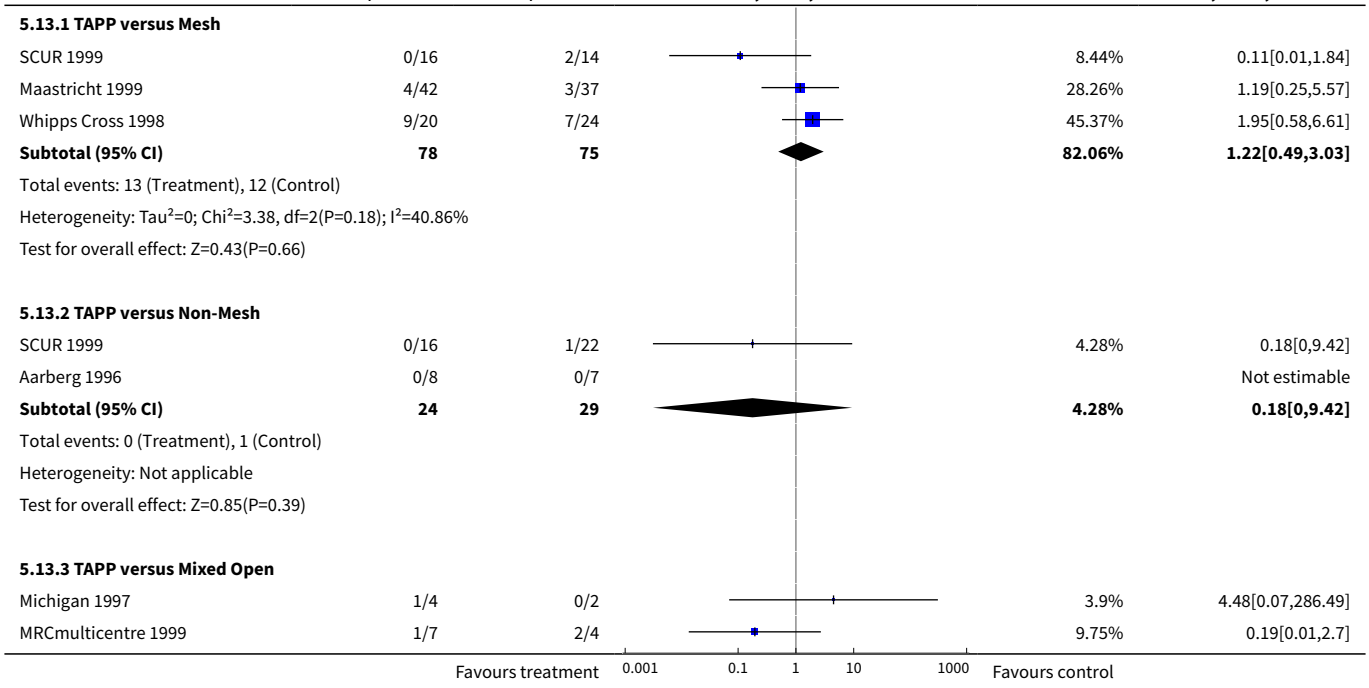


Analysis 5.13. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 13 Persisting pain.



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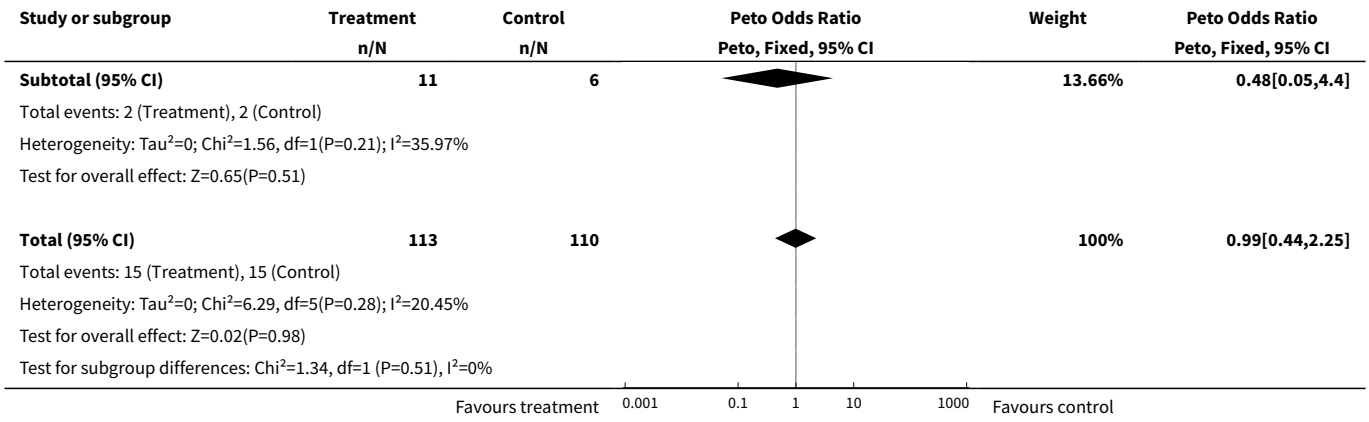
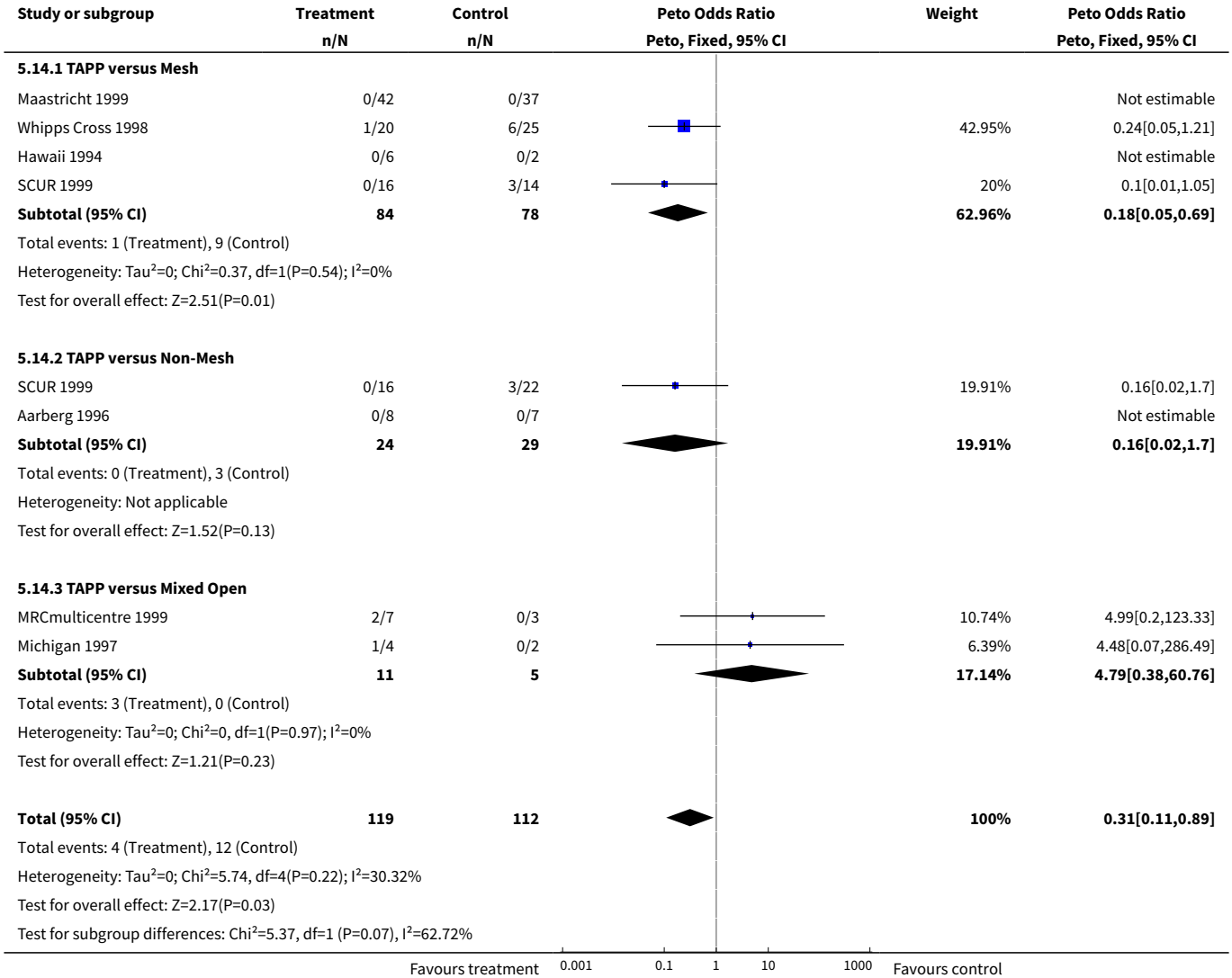


Analysis 5.14. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 14 Persisting numbness.



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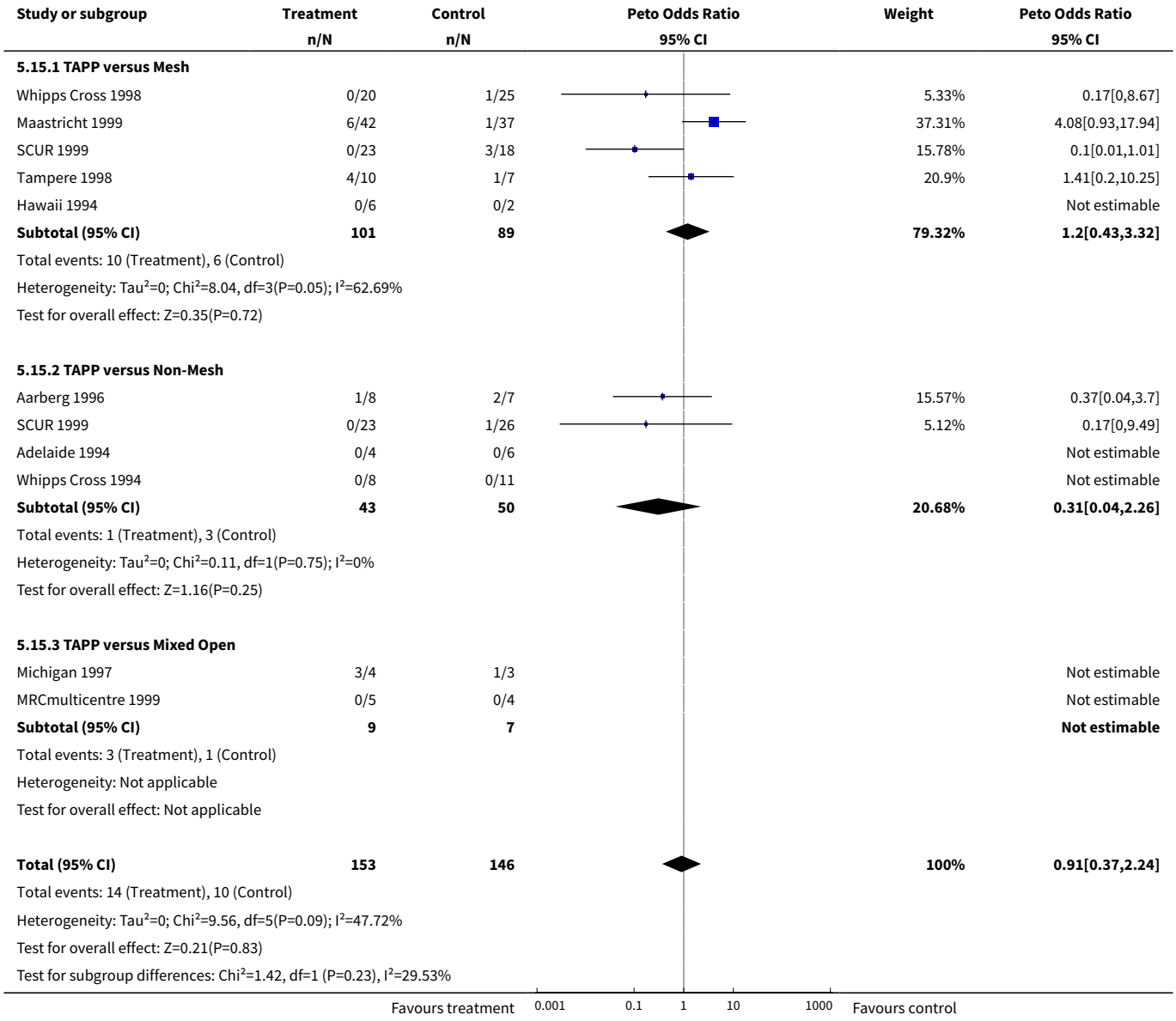
Analysis 5.15. Comparison 5 TAPP versus Open (Recurrent hernias), Outcome 15 Hernia recurrence.



Comparison 6. TEP versus Open (Recurrent hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	4	168	Mean Difference (IV, Fixed, 95% CI)	14.40 [9.10, 19.70]
1.1 TEP versus Mesh	3	85	Mean Difference (IV, Fixed, 95% CI)	13.02 [6.47, 19.57]
1.2 TEP versus Non-Mesh	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.3 TEP versus Mixed Open	1	83	Mean Difference (IV, Fixed, 95% CI)	17.01 [8.00, 26.02]
2 "Opposite" method initiated	3	129	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.17 [0.19, 7.15]
2.1 TEP versus Mesh	2	42	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 TEP versus Mixed Open	1	87	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.17 [0.19, 7.15]
3 Conversion	3	125	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.59 [1.15, 18.27]
3.1 TEP versus Mesh	2	41	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.3 TEP versus Mixed Open	1	84	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.59 [1.15, 18.27]
4 Haematoma	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.22 [0.09, 0.54]
4.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.15 [0.03, 0.87]
4.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.3 TEP versus Mixed Open	1	81	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.26 [0.09, 0.71]
5 Seroma	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.57 [0.12, 2.70]
5.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.3 TEP versus Mixed Open	1	81	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.57 [0.12, 2.70]
6 Wound/superficial infection	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.3 TEP versus Mixed Open	1	81	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Mesh/deep infection	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 TEP versus Mixed Open	1	81	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	2	123	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
8.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 TEP versus Mixed Open	1	87	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Visceral injury	2	123	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 TEP versus Mixed Open	1	87	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	2	111	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 TEP versus Mixed Open	1	75	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	2	88	Mean Difference (IV, Fixed, 95% CI)	0.24 [-0.45, 0.93]
11.1 TEP versus Mesh	1	5	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 TEP versus Non-Mesh	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 TEP versus Mixed Open	1	83	Mean Difference (IV, Fixed, 95% CI)	0.24 [-0.45, 0.93]
12 Time to return to usual activities (days)	3	97	Peto Odds Ratio (95% CI)	0.55 [0.35, 0.89]
12.1 TEP versus Mesh	2	40	Peto Odds Ratio (95% CI)	0.14 [0.05, 0.36]
12.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
12.3 TEP versus Mixed Open	1	57	Peto Odds Ratio (95% CI)	0.87 [0.50, 1.49]
13 Persisting pain	2	122	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.80 [0.36, 1.81]
13.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.19 [0.01, 3.32]
13.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.3 TEP versus Mixed Open	1	86	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.91 [0.39, 2.13]
14 Persisting numbness	2	117	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.33 [0.52, 3.38]
14.1 TEP versus Mesh	1	36	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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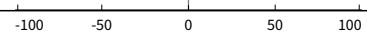
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
14.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 TEP versus Mixed Open	1	81	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.33 [0.52, 3.38]
15 Hernia recurrence	2	111	Peto Odds Ratio (95% CI)	1.33 [0.18, 10.06]
15.1 TEP versus Mesh	1	36	Peto Odds Ratio (95% CI)	0.23 [0.01, 4.48]
15.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
15.3 TEP versus Mixed Open	1	75	Peto Odds Ratio (95% CI)	6.17 [0.39, 98.67]

Analysis 6.1. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
6.1.1 TEP versus Mesh							
Hawaii 1996	4	77.5 (15)	1	65 (0)			Not estimable
Quebec 1998	14	29.8 (14)	23	34.1 (11)		37.95%	-4.34[-12.94,4.26]
Paris 1997	20	100 (19)	23	63 (14)		27.48%	37[26.9,47.1]
Subtotal ***	**38**		**47**			**65.42%**	**13.02[6.47,19.57]**
Heterogeneity: Tau^2=0; Chi^2=37.31, df=1(P<0.0001); I^2=97.32%							
Test for overall effect: Z=3.9(P<0.0001)							
6.1.2 TEP versus Non-Mesh							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
6.1.3 TEP versus Mixed Open							
MRCmulticentre 1999	47	64 (20.3)	36	47 (21.1)		34.58%	17.01[8,26.02]
Subtotal ***	**47**		**36**			**34.58%**	**17.01[8,26.02]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.7(P=0)							
Total ***	**85**		**83**			**100%**	**14.4[9.1,19.7]**
Heterogeneity: Tau^2=0; Chi^2=37.8, df=2(P<0.0001); I^2=94.71%							
Test for overall effect: Z=5.33(P<0.0001)							
Test for subgroup differences: Chi^2=0.49, df=1 (P=0.48), I^2=0%							



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Analysis 6.2. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.2.1 TEP versus Mesh					
Quebec 1998	0/14	0/23			Not estimable
Hawaii 1996	0/4	0/1			Not estimable
Subtotal (95% CI)	**18**	**24**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.2.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.2.3 TEP versus Mixed Open					
MRCmulticentre 1999	3/49	2/38		100%	1.17[0.19,7.15]
Subtotal (95% CI)	**49**	**38**		**100%**	**1.17[0.19,7.15]**
Total events: 3 (Treatment), 2 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.17(P=0.87)					
Total (95% CI)	**67**	**62**		**100%**	**1.17[0.19,7.15]**
Total events: 3 (Treatment), 2 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.17(P=0.87)					
Test for subgroup differences: Not applicable					

Analysis 6.3. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 3 Conversion.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.3.1 TEP versus Mesh					
Hawaii 1996	0/4	0/1			Not estimable
Quebec 1998	0/13	0/23			Not estimable
Subtotal (95% CI)	**17**	**24**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.3.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.3.3 TEP versus Mixed Open					
MRCmulticentre 1999	8/46	1/38		100%	4.59[1.15,18.27]

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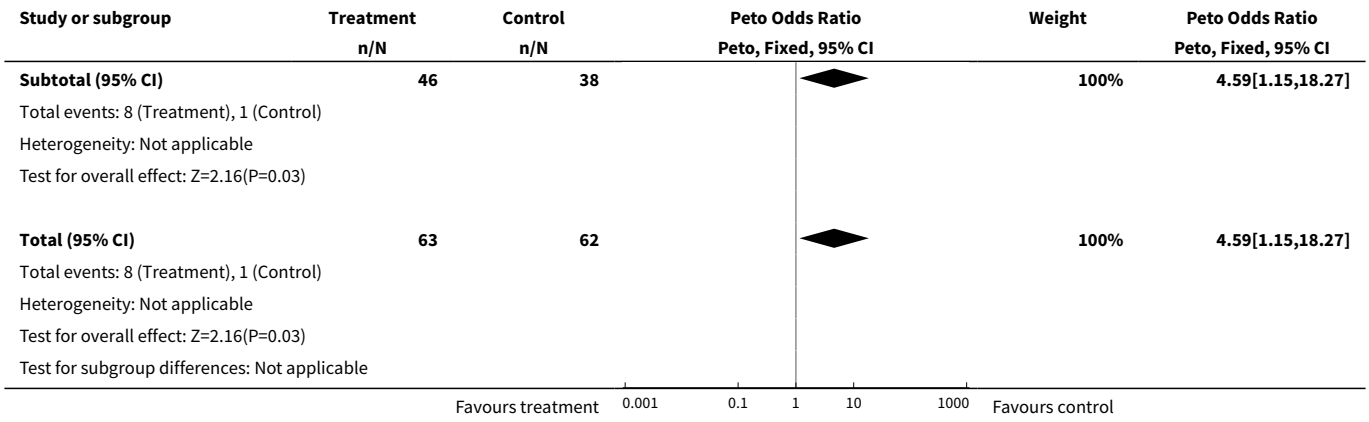
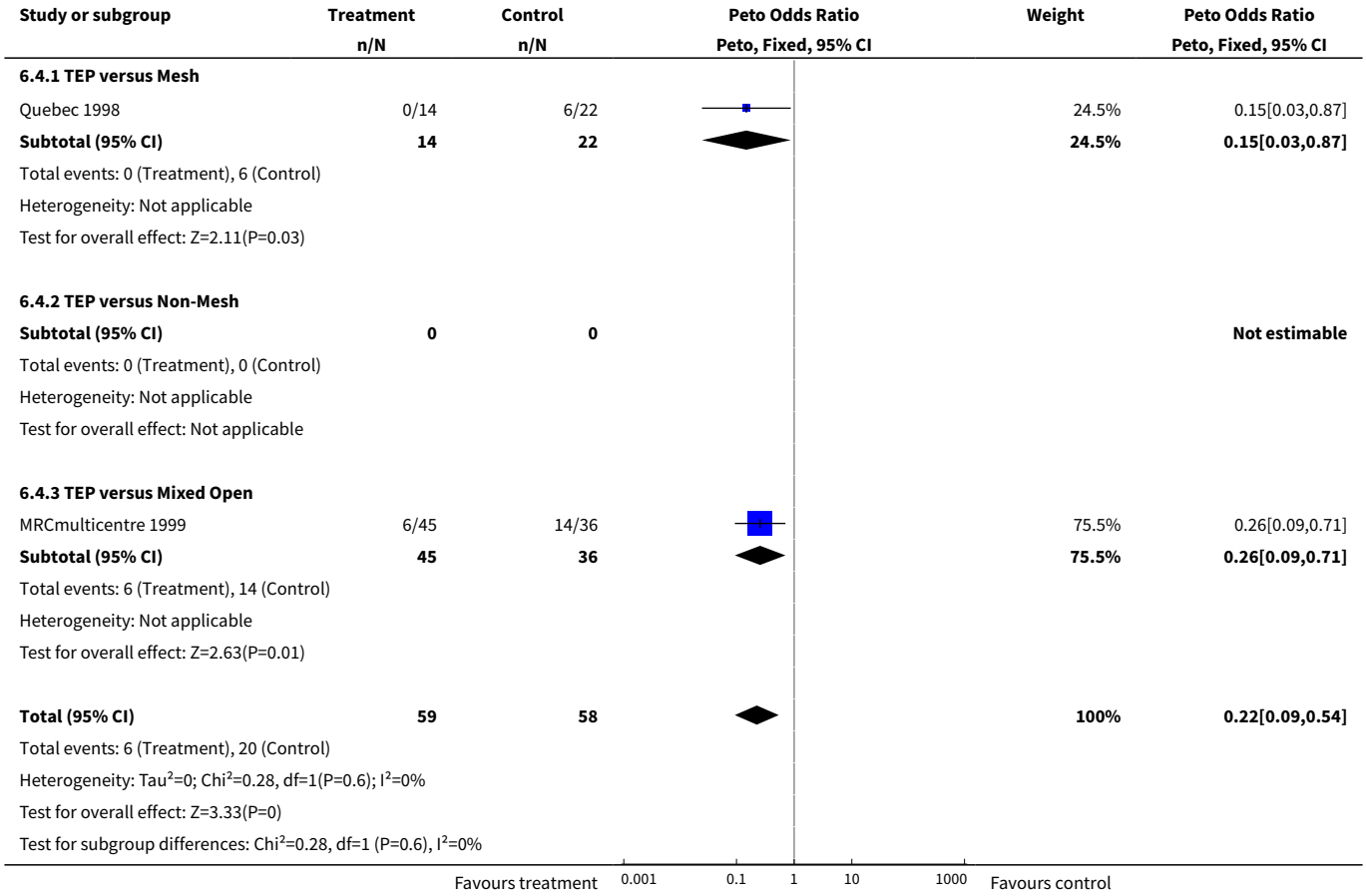


Analysis 6.4. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 4 Haematoma.



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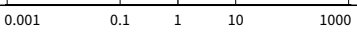
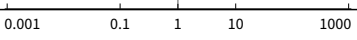
Analysis 6.5. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 5 Seroma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.5.1 TEP versus Mesh					
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**14**	**22**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.5.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.5.3 TEP versus Mixed Open					
MRCmulticentre 1999	3/45	4/36		100%	0.57[0.12,2.7]
Subtotal (95% CI)	**45**	**36**		**100%**	**0.57[0.12,2.7]**
Total events: 3 (Treatment), 4 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.7(P=0.48)					
Total (95% CI)	**59**	**58**		**100%**	**0.57[0.12,2.7]**
Total events: 3 (Treatment), 4 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.7(P=0.48)					
Test for subgroup differences: Not applicable					



Analysis 6.6. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 6 Wound/superficial infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.6.1 TEP versus Mesh					
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**14**	**22**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.6.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.6.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/45	0/36			Not estimable
Subtotal (95% CI)	**45**	**36**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**59**	**58**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 6.7. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 7 Mesh/deep infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.7.1 TEP versus Mesh					
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**14**	**22**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.7.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.7.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/45	0/36			Not estimable
Subtotal (95% CI)	**45**	**36**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**59**	**58**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 6.8. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.8.1 TEP versus Mesh					
Quebec 1998	0/14	0/22			Not estimable

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Subtotal (95% CI)	**14**	**22**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.8.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.8.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/49	0/38			Not estimable
Subtotal (95% CI)	**49**	**38**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**63**	**60**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 6.9. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.9.1 TEP versus Mesh					
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**14**	**22**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.9.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.9.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/49	0/38			Not estimable
Subtotal (95% CI)	**49**	**38**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total (95% CI)	**63**	**60**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 6.10. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.10.1 TEP versus Mesh					
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**14**	**22**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.10.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.10.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/41	0/34			Not estimable
Subtotal (95% CI)	**41**	**34**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**55**	**56**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 6.11. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
6.11.1 TEP versus Mesh							
Hawaii 1996	4	0.3 (0.5)	1	0 (0)			Not estimable
Subtotal * **	**4**		**1**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							

Favours treatment -4 -2 0 2 4 Favours control

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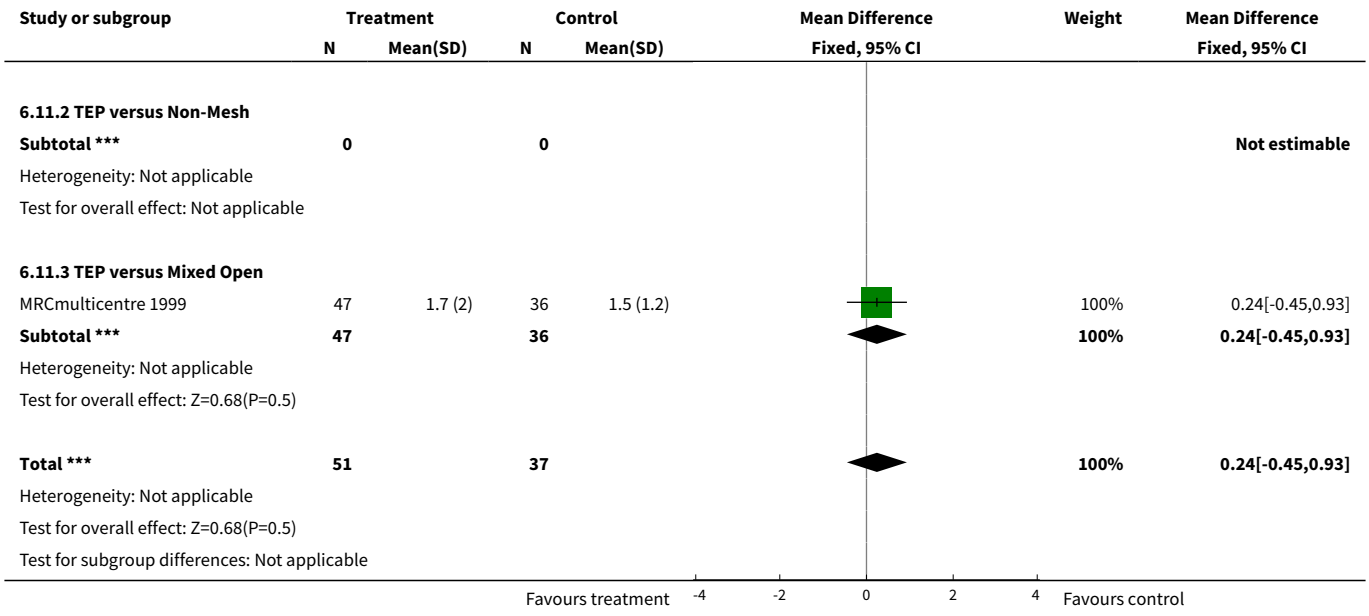
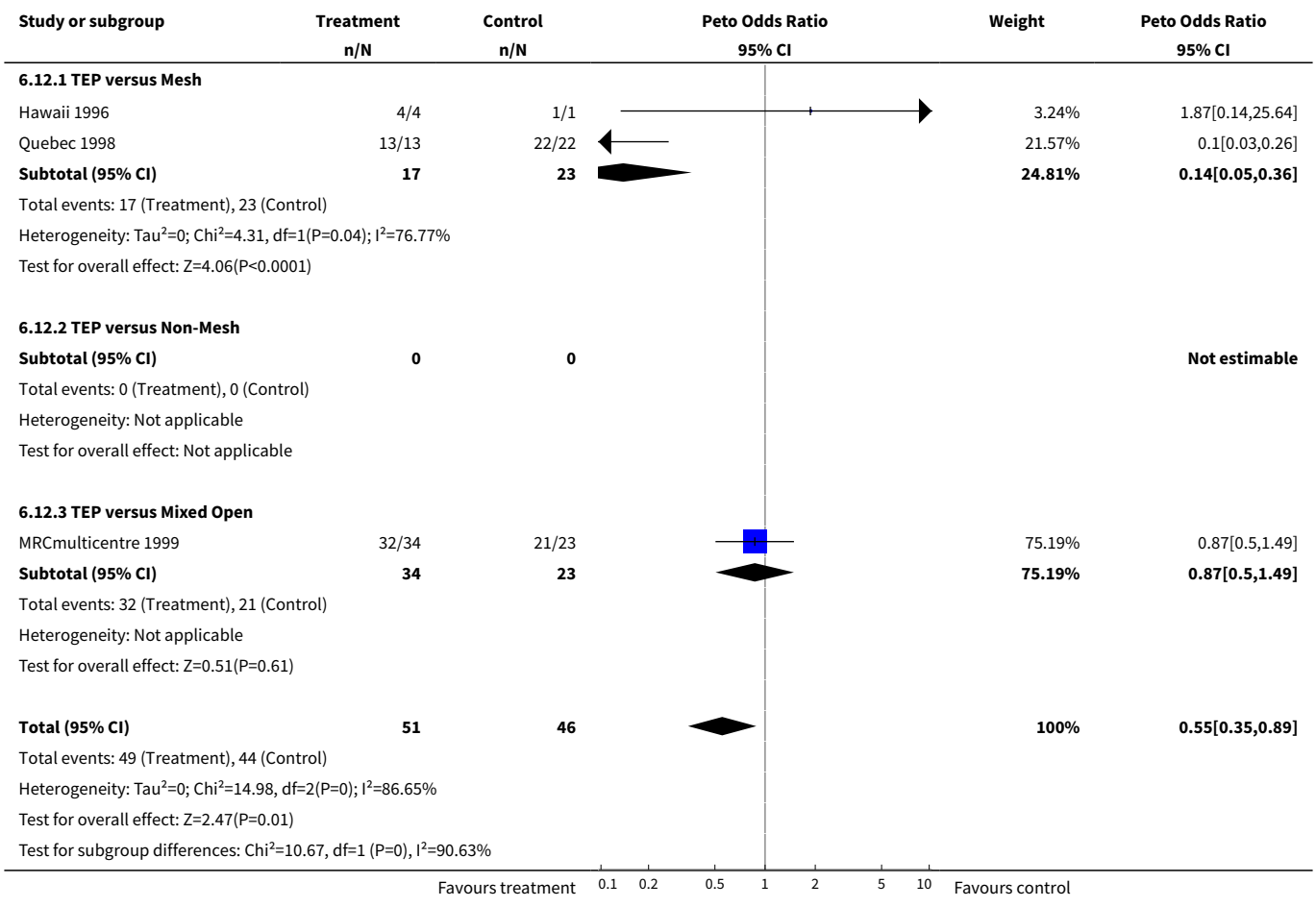


Analysis 6.12. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 12 Time to return to usual activities (days).



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Analysis 6.13. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 13 Persisting pain.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.13.1 TEP versus Mesh					
Quebec 1998	0/14	2/22		7.97%	0.19[0.01,3.32]
Subtotal (95% CI)	**14**	**22**		**7.97%**	**0.19[0.01,3.32]**
Total events: 0 (Treatment), 2 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.14(P=0.25)					
6.13.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.13.3 TEP versus Mixed Open					
MRCmulticentre 1999	24/49	19/37		92.03%	0.91[0.39,2.13]
Subtotal (95% CI)	**49**	**37**		**92.03%**	**0.91[0.39,2.13]**
Total events: 24 (Treatment), 19 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.22(P=0.83)					
Total (95% CI)	**63**	**59**		**100%**	**0.8[0.36,1.81]**
Total events: 24 (Treatment), 21 (Control)					
Heterogeneity: Tau^2=0; Chi^2=1.08, df=1(P=0.3); I^2=7%					
Test for overall effect: Z=0.53(P=0.6)					
Test for subgroup differences: Chi^2=1.08, df=1 (P=0.3), I^2=7%					

Favours treatment — Favours control

Analysis 6.14. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 14 Persisting numbness.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
6.14.1 TEP versus Mesh					
Quebec 1998	0/14	0/22			Not estimable
Subtotal (95% CI)	**14**	**22**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.14.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
6.14.3 TEP versus Mixed Open					
MRCmulticentre 1999	16/46	10/35		100%	1.33[0.52,3.38]

Favours treatment — Favours control

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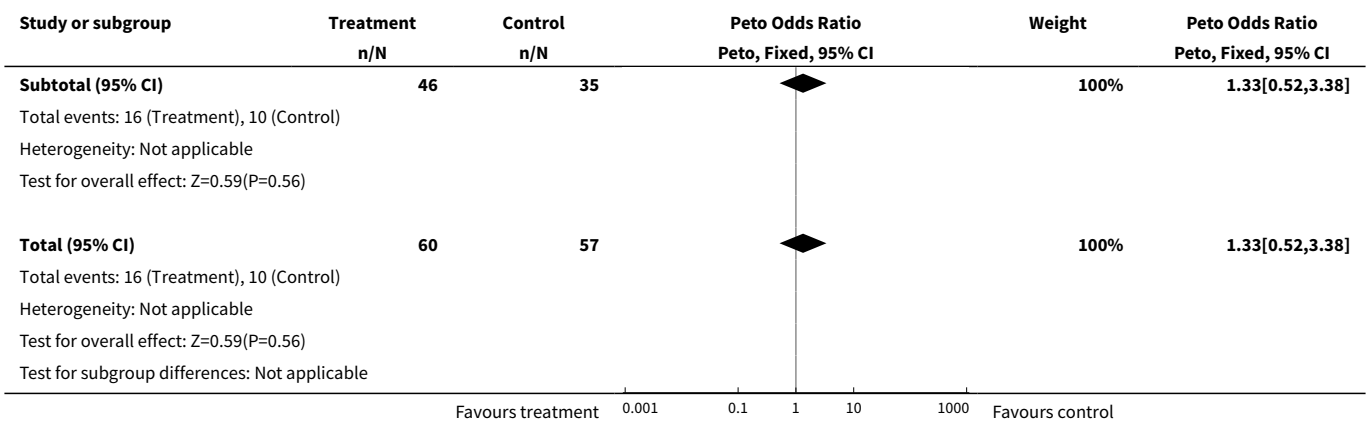
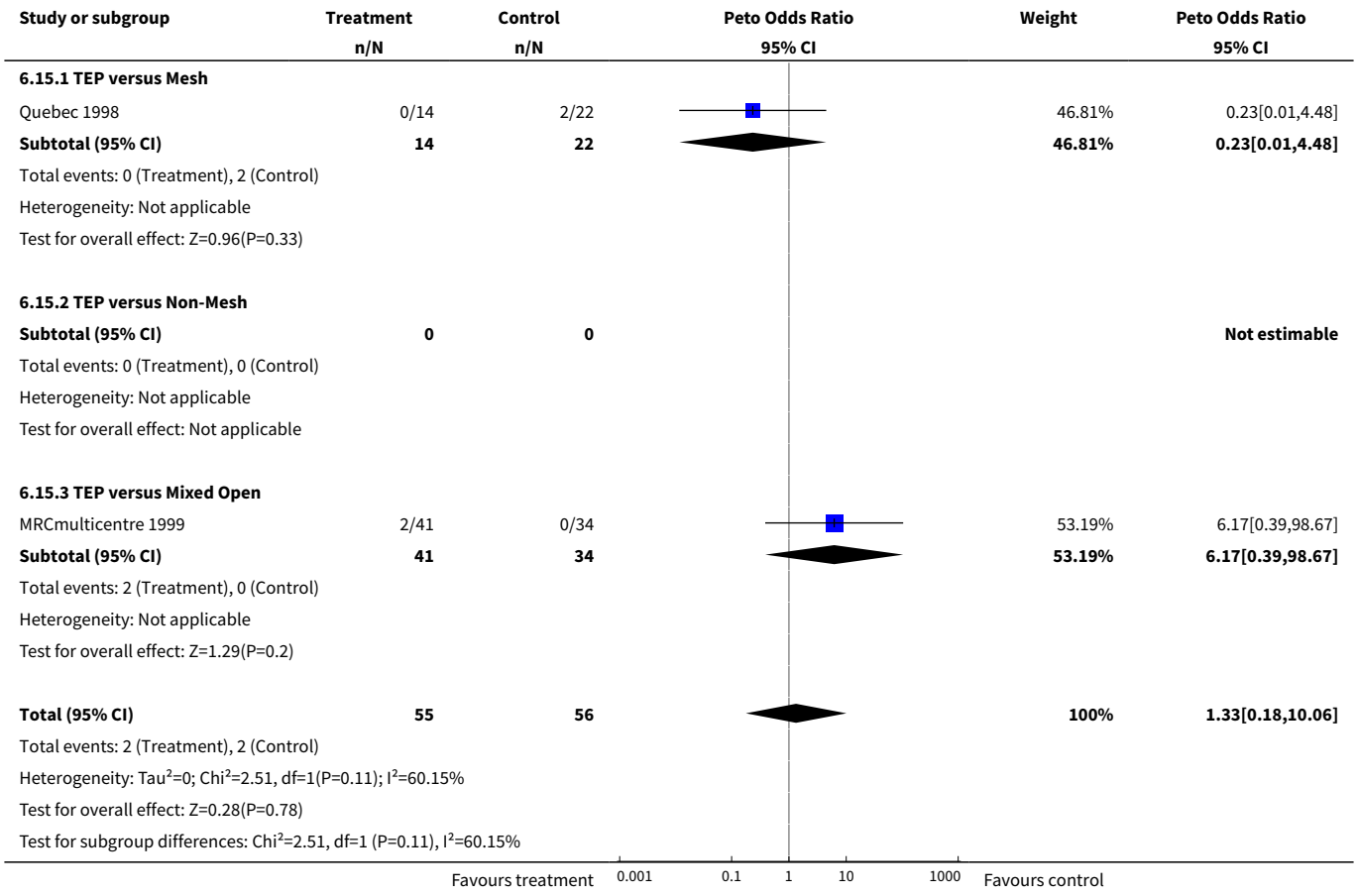


Analysis 6.15. Comparison 6 TEP versus Open (Recurrent hernias), Outcome 15 Hernia recurrence.



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Comparison 7. Laparoscopic versus Open (Bilateral hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	13	341	Mean Difference (IV, Fixed, 95% CI)	12.12 [7.98, 16.26]
1.1 TAPP versus Open	10	208	Mean Difference (IV, Fixed, 95% CI)	8.12 [3.06, 13.19]
1.2 TEP versus Open	4	133	Mean Difference (IV, Fixed, 95% CI)	20.19 [13.00, 27.38]
1.3 Miscellaneous Laparosopic versus Open	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 "Opposite" method initiated	10	235	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.13 [0.59, 63.42]
2.1 TAPP versus Open	8	144	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.42 [0.30, 99.54]
2.2 TEP versus Open	3	91	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.66 [0.15, 386.16]
2.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Conversion	11	270	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.34 [0.90, 59.47]
3.1 TAPP versus Open	9	181	Peto Odds Ratio (Peto, Fixed, 95% CI)	9.03 [0.18, 462.31]
3.2 TEP versus Open	3	89	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.76 [0.57, 80.00]
3.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Haematoma	10	266	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.38 [0.67, 2.83]
4.1 TAPP versus Open	9	194	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.09 [0.48, 2.48]
4.2 TEP versus Open	2	72	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.03 [0.67, 13.75]
4.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Seroma	9	250	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.24 [0.56, 2.75]
5.1 TAPP versus Open	8	179	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.55 [0.63, 3.83]
5.2 TEP versus Open	2	71	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.56 [0.10, 3.06]
5.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Wound/superficial infection	10	265	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.27 [0.10, 0.75]
6.1 TAPP versus Open	9	194	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.28 [0.10, 0.81]
6.2 TEP versus Open	2	71	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.16 [0.00, 7.96]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
6.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Mesh/deep infection	7	185	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 TAPP versus Open	6	114	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TEP versus Open	2	71	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	7	191	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 TAPP versus Open	6	116	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TEP versus Open	2	75	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Visceral injury	8	232	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.16 [0.09, 286.55]
9.1 TAPP versus Open	7	157	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.16 [0.09, 286.55]
9.2 TEP versus Open	2	75	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	8	212	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.49 [0.03, 468.68]
10.1 TAPP versus Open	7	141	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.49 [0.03, 468.68]
10.2 TEP versus Open	2	71	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	12	292	Mean Difference (IV, Fixed, 95% CI)	-0.09 [-0.19, 0.01]
11.1 TAPP versus Open	10	204	Mean Difference (IV, Fixed, 95% CI)	-0.09 [-0.19, 0.02]
11.2 TEP versus Open	3	88	Mean Difference (IV, Fixed, 95% CI)	-0.15 [-0.62, 0.32]
11.3 Miscellaneous Laparosopic versus Open	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Time to return to usual activities (days)	10	217	Peto Odds Ratio (95% CI)	0.59 [0.44, 0.79]
12.1 TAPP versus Open	8	144	Peto Odds Ratio (95% CI)	0.51 [0.36, 0.73]
12.2 TEP versus Open	3	73	Peto Odds Ratio (95% CI)	0.79 [0.47, 1.32]

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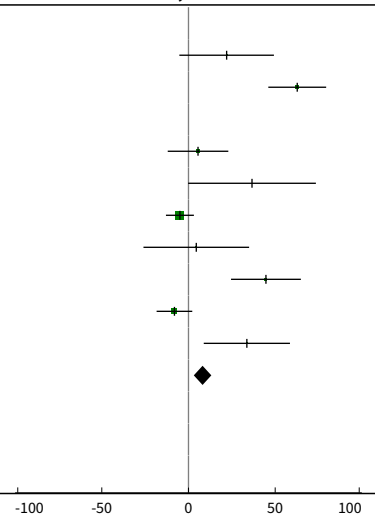
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
13 Persisting pain	6	223	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.70 [0.38, 1.30]
13.1 TAPP versus Open	5	149	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.58 [0.27, 1.24]
13.2 TEP versus Open	2	74	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.01 [0.36, 2.86]
13.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Persisting numbness	7	228	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.56 [0.24, 1.31]
14.1 TAPP versus Open	6	158	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.23 [0.06, 0.80]
14.2 TEP versus Open	2	70	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.18 [0.38, 3.66]
14.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
15 Hernia recurrence	11	277	Peto Odds Ratio (95% CI)	1.36 [0.55, 3.37]
15.1 TAPP versus Open	10	206	Peto Odds Ratio (95% CI)	1.09 [0.42, 2.84]
15.2 TEP versus Open	2	71	Peto Odds Ratio (95% CI)	8.85 [0.55, 141.43]
15.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]

Analysis 7.1. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
7.1.1 TAPP versus Open							
Whipps Cross 1994	8	85 (36.1)	9	63 (16.7)		2.31%	22[-5.26,49.26]
Maastricht 1998	25	110.6 (35.7)	16	47.9 (18.5)		6.16%	62.72[46.04,79.4]
Kokkola 1997	1	140 (0)	1	77 (0)			Not estimable
Hawaii 1994	4	93 (11.5)	6	87.5 (16.7)		5.62%	5.5[-11.97,22.97]
MRCmulticentre 1999	5	94.2 (39.7)	7	57.6 (16.5)		1.26%	36.63[-0.21,73.47]
Whipps Cross 1998	23	62.5 (15)	24	67.5 (13.1)		26.44%	-4.94[-12.99,3.11]
Linköping 1997	12	61.2 (34.2)	3	56.7 (20.8)		1.85%	4.5[-25.96,34.96]
Maastricht 1999	14	100.4 (35.6)	13	55.7 (14)		4.23%	44.67[24.54,64.8]
Tampere 1998	10	56.9 (13.9)	3	65 (5)		16.22%	-8.1[-18.38,2.18]
Aarberg 1996	15	115.3 (45)	9	81.7 (15.2)		2.77%	33.66[8.8,58.52]
Subtotal ***	**117**		**91**			**66.86%**	**8.12[3.06,13.19]**
Heterogeneity: Tau^2=0; Chi^2=80.98, df=8(P<0.0001); I^2=90.12%							
Test for overall effect: Z=3.14(P=0)							



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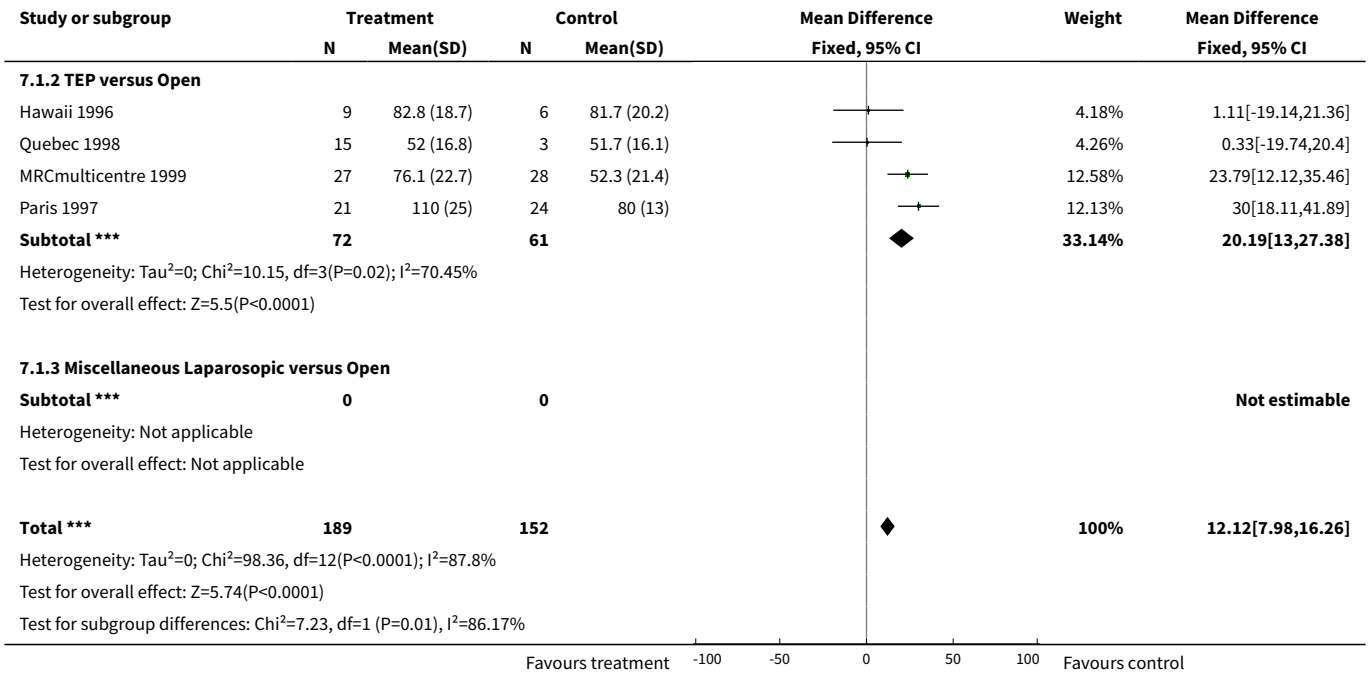
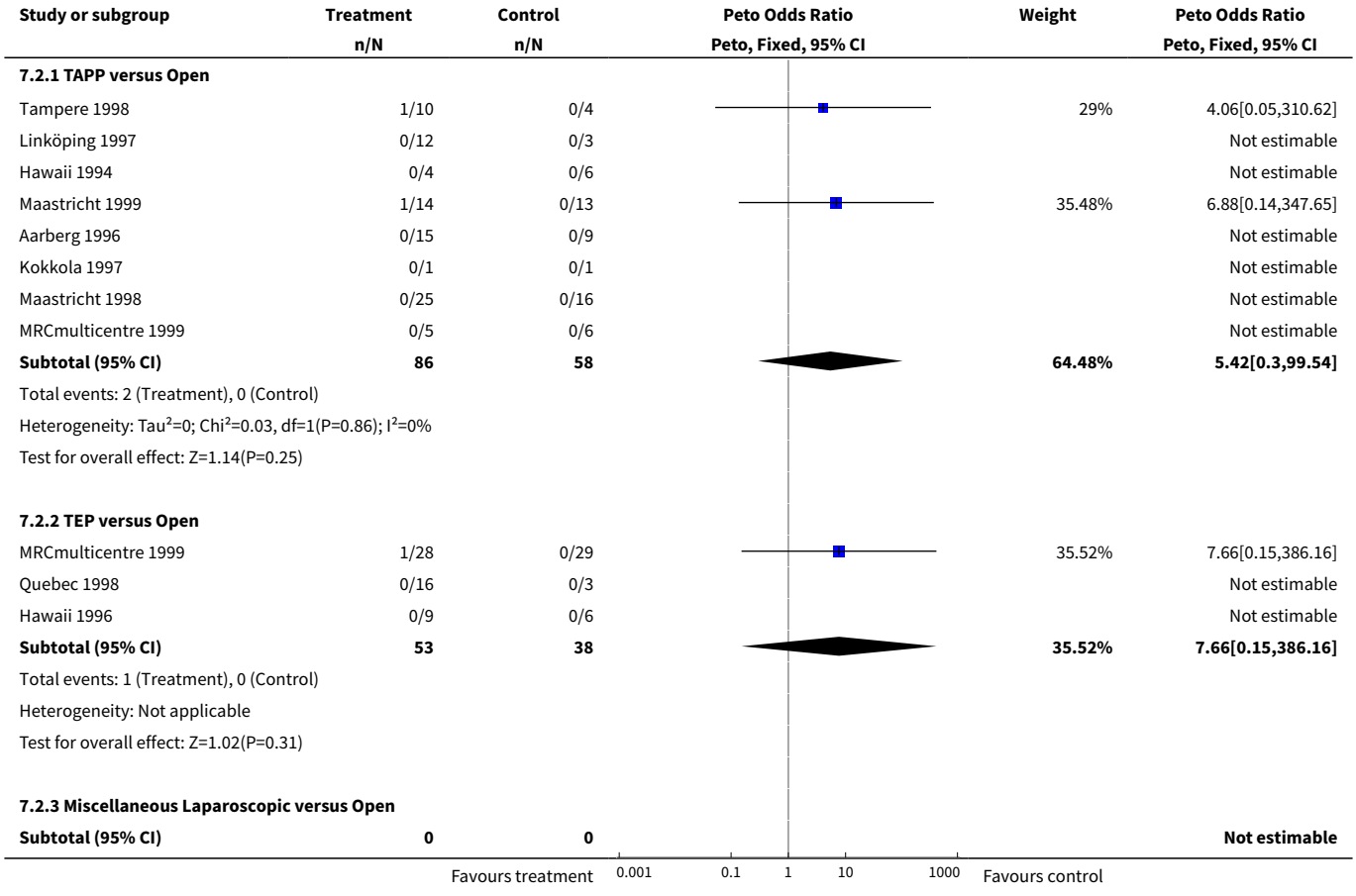


Analysis 7.2. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 2 "Opposite" method initiated.



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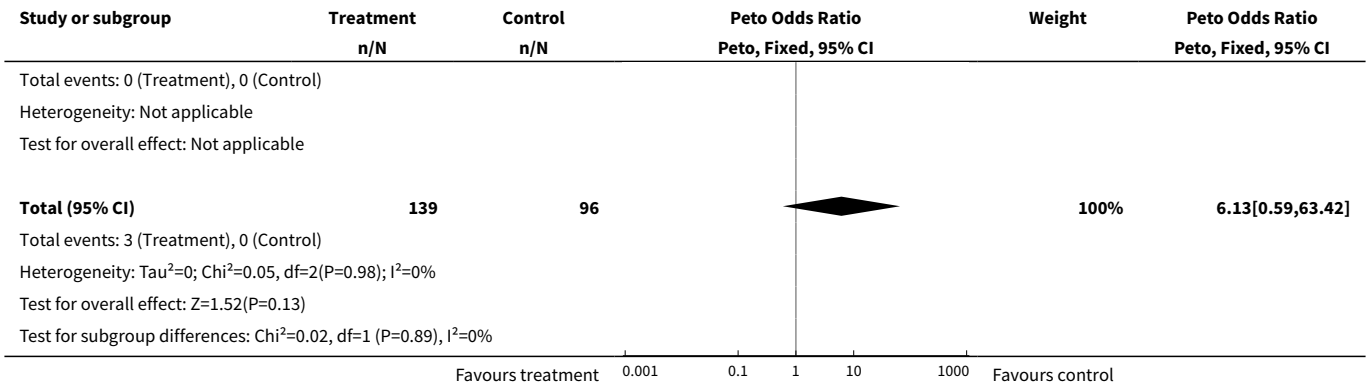
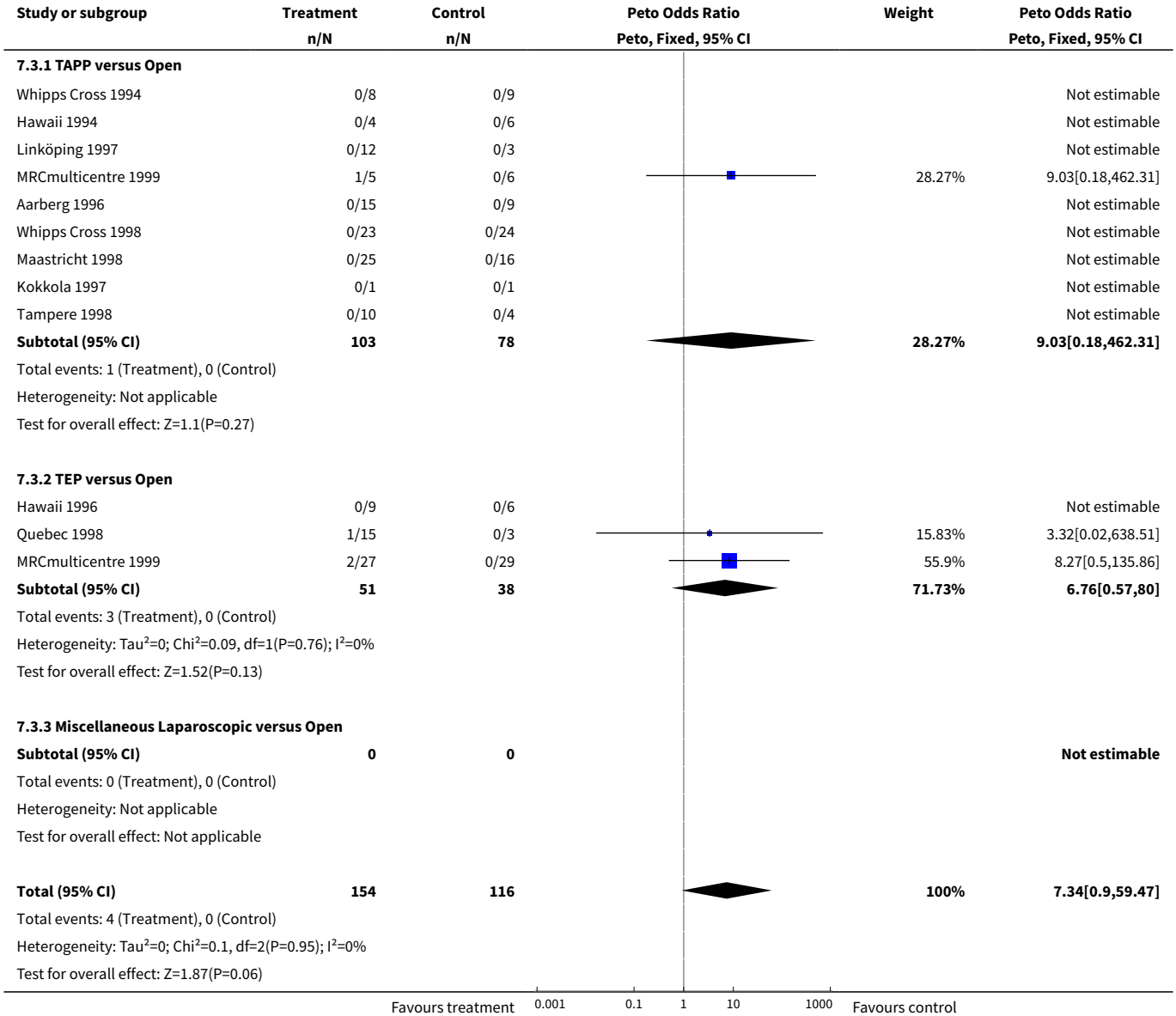


Analysis 7.3. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 3 Conversion.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for subgroup differences: Chi²=0.01, df=1 (P=0.9), I²=0%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 7.4. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 4 Haematoma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
7.4.1 TAPP versus Open					
Tampere 1998	1/10	1/4		5.11%	0.32[0.01,7.81]
Maastricht 1998	8/25	4/16		28.05%	1.39[0.36,5.43]
Whipps Cross 1998	2/23	2/24		12.66%	1.05[0.14,7.95]
Kokkola 1997	0/1	1/1		3.39%	0.14[0,6.82]
Aarberg 1996	1/15	0/9		3.18%	4.95[0.09,283.86]
MRCmulticentre 1999	1/4	0/3		3.32%	5.75[0.11,302.04]
Maastricht 1999	4/14	3/13		18.22%	1.32[0.24,7.14]
Whipps Cross 1994	0/8	1/9		3.38%	0.15[0,7.67]
Linköping 1997	0/12	0/3			Not estimable
Subtotal (95% CI)	**112**	**82**		**77.29%**	**1.09[0.48,2.48]**
Total events: 17 (Treatment), 12 (Control)					
Heterogeneity: Tau²=0; Chi²=4.01, df=7(P=0.78); I²=0%					
Test for overall effect: Z=0.21(P=0.83)					
7.4.2 TEP versus Open					
Quebec 1998	1/16	0/3		1.8%	3.28[0.02,708.06]
MRCmulticentre 1999	5/25	2/28		20.91%	3.01[0.62,14.56]
Subtotal (95% CI)	**41**	**31**		**22.71%**	**3.03[0.67,13.75]**
Total events: 6 (Treatment), 2 (Control)					
Heterogeneity: Tau²=0; Chi²=0, df=1(P=0.98); I²=0%					
Test for overall effect: Z=1.43(P=0.15)					
7.4.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**153**	**113**		**100%**	**1.38[0.67,2.83]**
Total events: 23 (Treatment), 14 (Control)					
Heterogeneity: Tau²=0; Chi²=5.36, df=9(P=0.8); I²=0%					
Test for overall effect: Z=0.87(P=0.39)					
Test for subgroup differences: Chi²=1.35, df=1 (P=0.25), I²=25.75%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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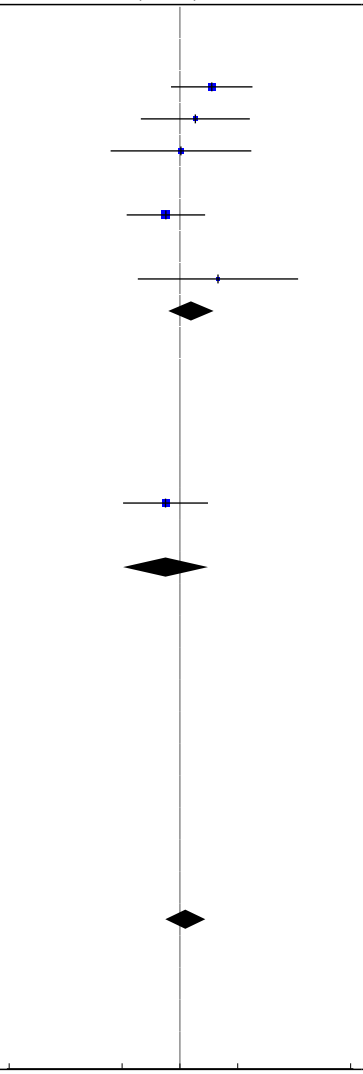
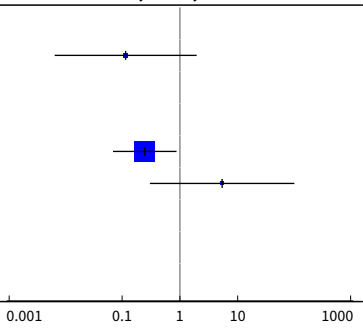
Analysis 7.5. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 5 Seroma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
7.5.1 TAPP versus Open					
Whipps Cross 1994	0/8	0/9			Not estimable
Maastricht 1999	6/14	2/13		24.1%	3.56[0.7,18.01]
Aarberg 1996	3/15	1/9		13.46%	1.85[0.21,16.19]
Whipps Cross 1998	1/23	1/24		8.07%	1.04[0.06,17.23]
MRCmulticentre 1999	0/4	0/3			Not estimable
Maastricht 1998	4/25	4/16		25.93%	0.57[0.12,2.73]
Kokkola 1997	0/1	0/1			Not estimable
Tampere 1998	2/10	0/4		6.22%	4.56[0.19,111.03]
Subtotal (95% CI)	**100**	**79**		**77.79%**	**1.55[0.63,3.83]**
Total events: 16 (Treatment), 8 (Control)					
Heterogeneity: Tau^2=0; Chi^2=3.11, df=4(P=0.54); I^2=0%					
Test for overall effect: Z=0.95(P=0.34)					
7.5.2 TEP versus Open					
MRCmulticentre 1999	2/24	4/28		22.21%	0.56[0.1,3.06]
Quebec 1998	0/16	0/3			Not estimable
Subtotal (95% CI)	**40**	**31**		**22.21%**	**0.56[0.1,3.06]**
Total events: 2 (Treatment), 4 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.66(P=0.51)					
7.5.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**140**	**110**		**100%**	**1.24[0.56,2.75]**
Total events: 18 (Treatment), 12 (Control)					
Heterogeneity: Tau^2=0; Chi^2=4.18, df=5(P=0.52); I^2=0%					
Test for overall effect: Z=0.53(P=0.6)					
Test for subgroup differences: Chi^2=1.07, df=1 (P=0.3), I^2=6.42%					



Analysis 7.6. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 6 Wound/superficial infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
7.6.1 TAPP versus Open					
Maastricht 1999	0/14	2/13		12.79%	0.12[0.01,1.95]
Tampere 1998	0/10	0/4			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Whipps Cross 1998	3/23	10/24		63.97%	0.25[0.07,0.87]
Maastricht 1998	2/25	0/16		12.36%	5.38[0.3,95.52]
Whipps Cross 1994	0/8	0/9			Not estimable
MRCmulticentre 1999	0/4	0/3			Not estimable
Aarberg 1996	0/15	0/9			Not estimable



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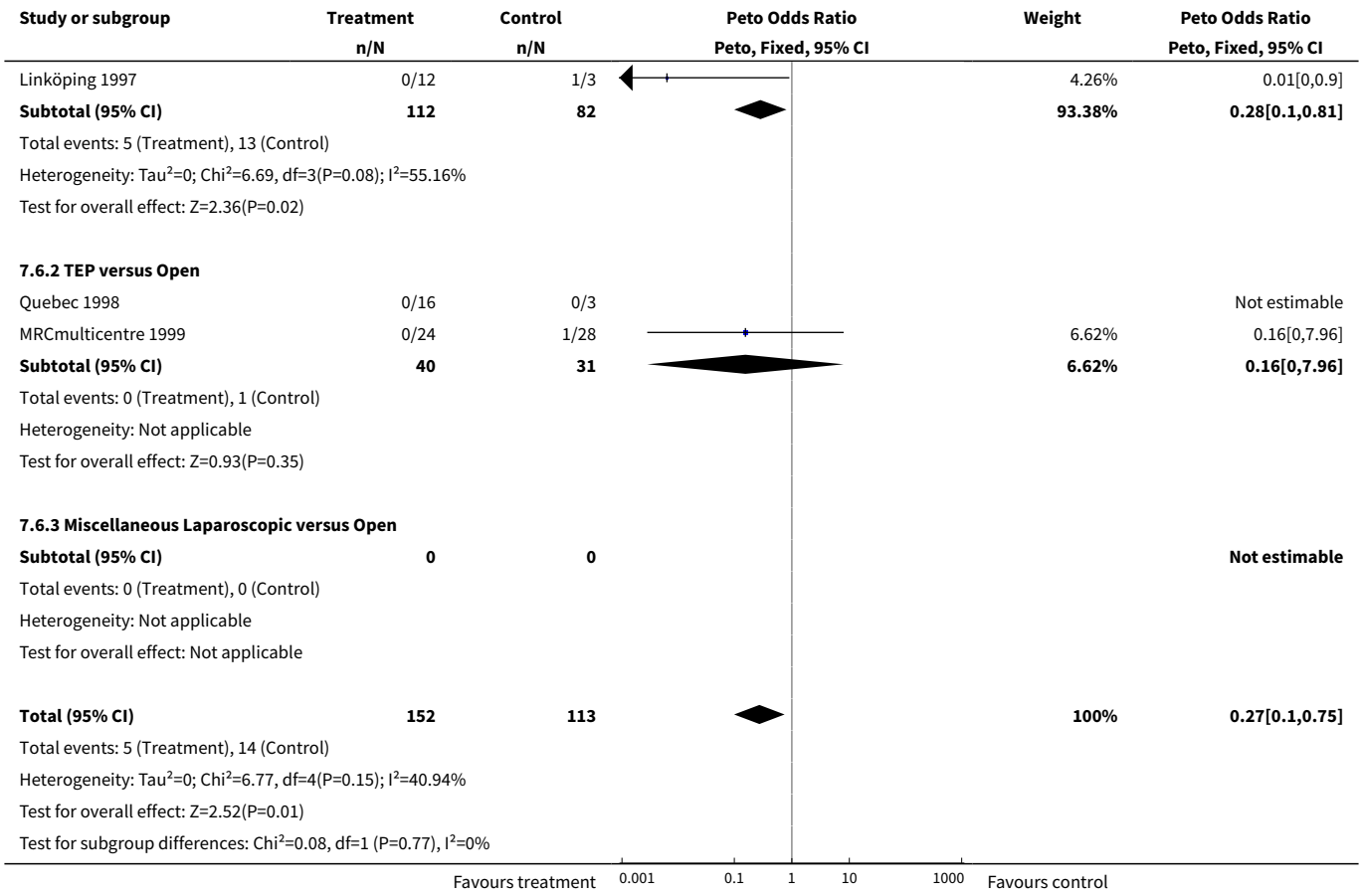
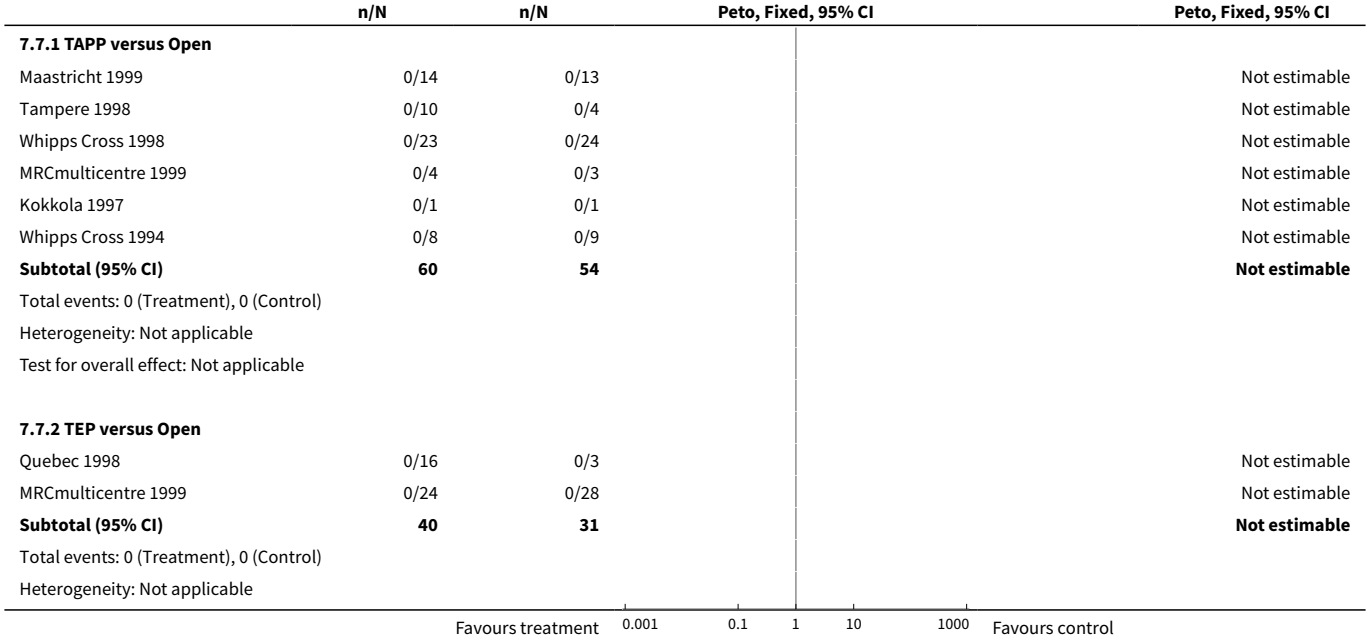


Analysis 7.7. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 7 Mesh/deep infection.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Not applicable					
7.7.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**100**	**85**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 7.8. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
7.8.1 TAPP versus Open					
MRCmulticentre 1999	0/5	0/7			Not estimable
Whipps Cross 1994	0/8	0/9			Not estimable
Tampere 1998	0/10	0/4			Not estimable
Aarberg 1996	0/15	0/9			Not estimable
Whipps Cross 1998	0/23	0/24			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Subtotal (95% CI)	**62**	**54**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.8.2 TEP versus Open					
Quebec 1998	0/16	0/3			Not estimable
MRCmulticentre 1999	0/27	0/29			Not estimable
Subtotal (95% CI)	**43**	**32**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.8.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**105**	**86**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 7.9. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
7.9.1 TAPP versus Open					
Maastricht 1998	1/25	0/16		100%	5.16[0.09,286.55]
Tampere 1998	0/10	0/4			Not estimable
Whipps Cross 1994	0/8	0/9			Not estimable
Aarberg 1996	0/15	0/9			Not estimable
MRCmulticentre 1999	0/5	0/7			Not estimable
Whipps Cross 1998	0/23	0/24			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Subtotal (95% CI)	**87**	**70**		**100%**	**5.16[0.09,286.55]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.8(P=0.42)					
7.9.2 TEP versus Open					
Quebec 1998	0/16	0/3			Not estimable
MRCmulticentre 1999	0/27	0/29			Not estimable
Subtotal (95% CI)	**43**	**32**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
7.9.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**130**	**102**		**100%**	**5.16[0.09,286.55]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.8(P=0.42)					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 7.10. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
7.10.1 TAPP versus Open					
Whipps Cross 1998	0/23	0/24			Not estimable

Favours treatment 0.001 0.1 1 10 1000 Favours control

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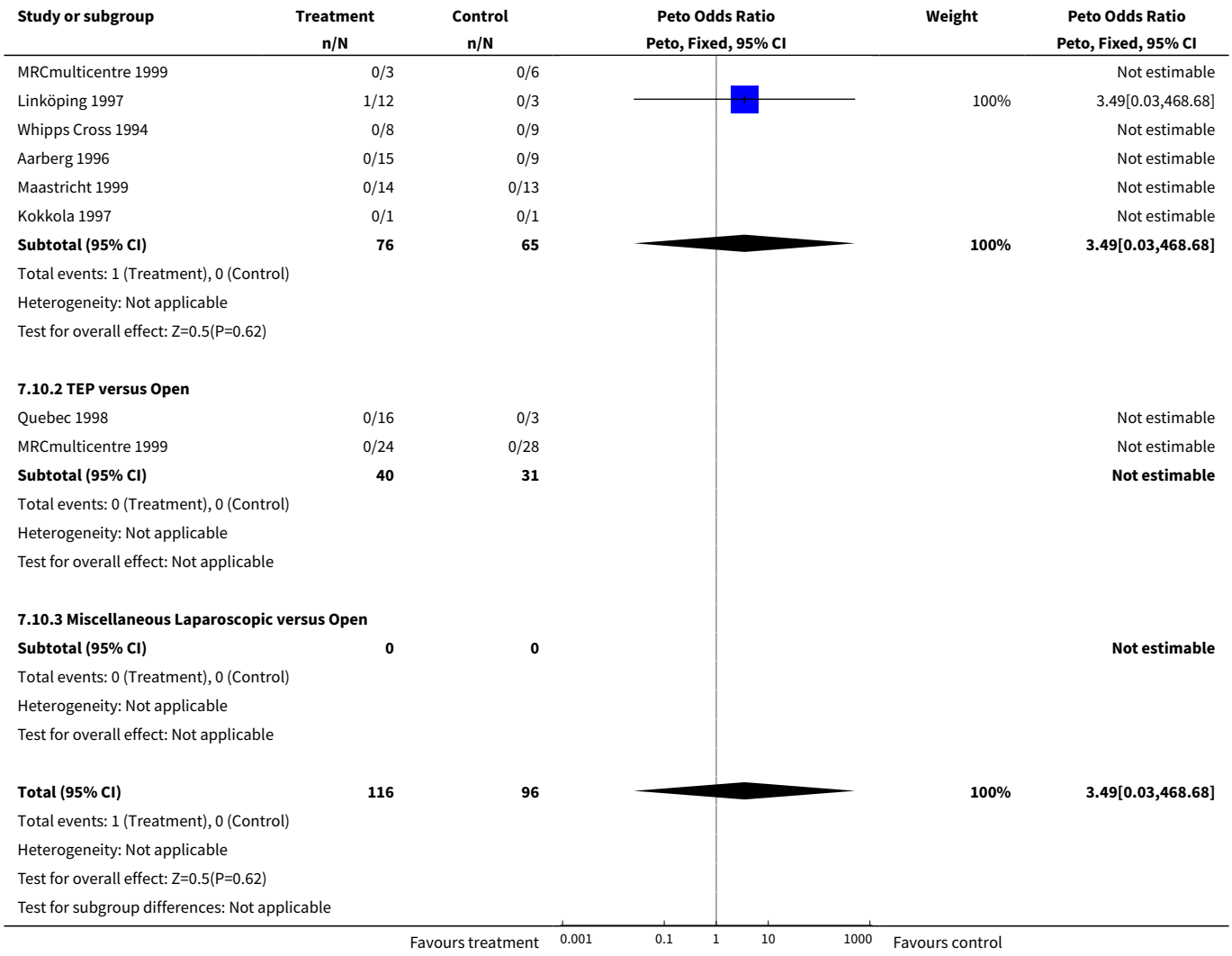
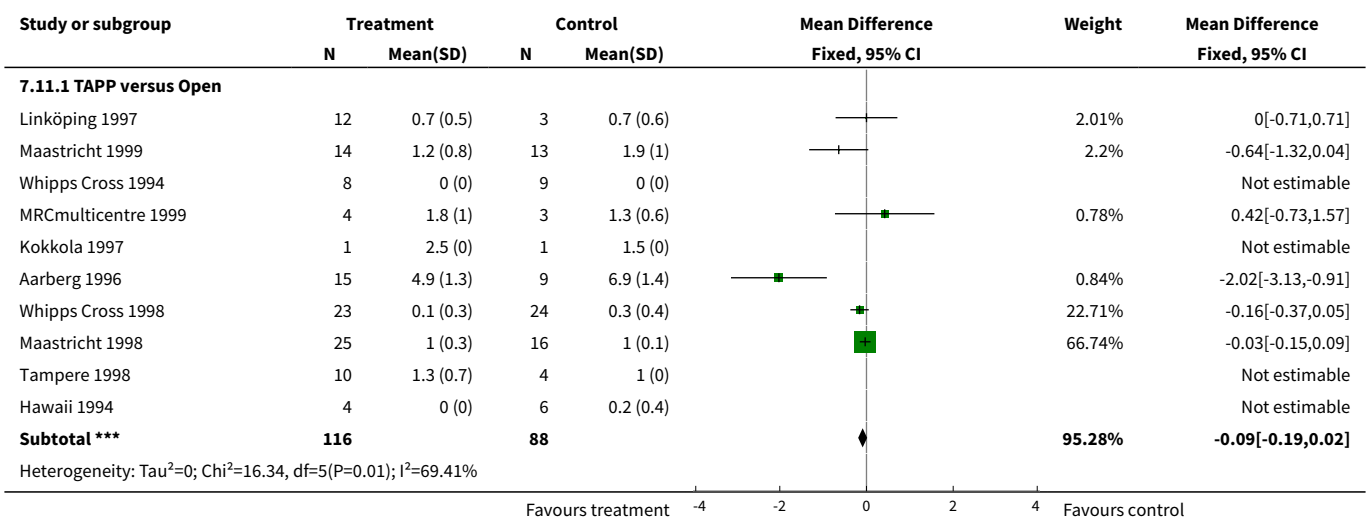


Analysis 7.11. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 11 Length of stay (days).



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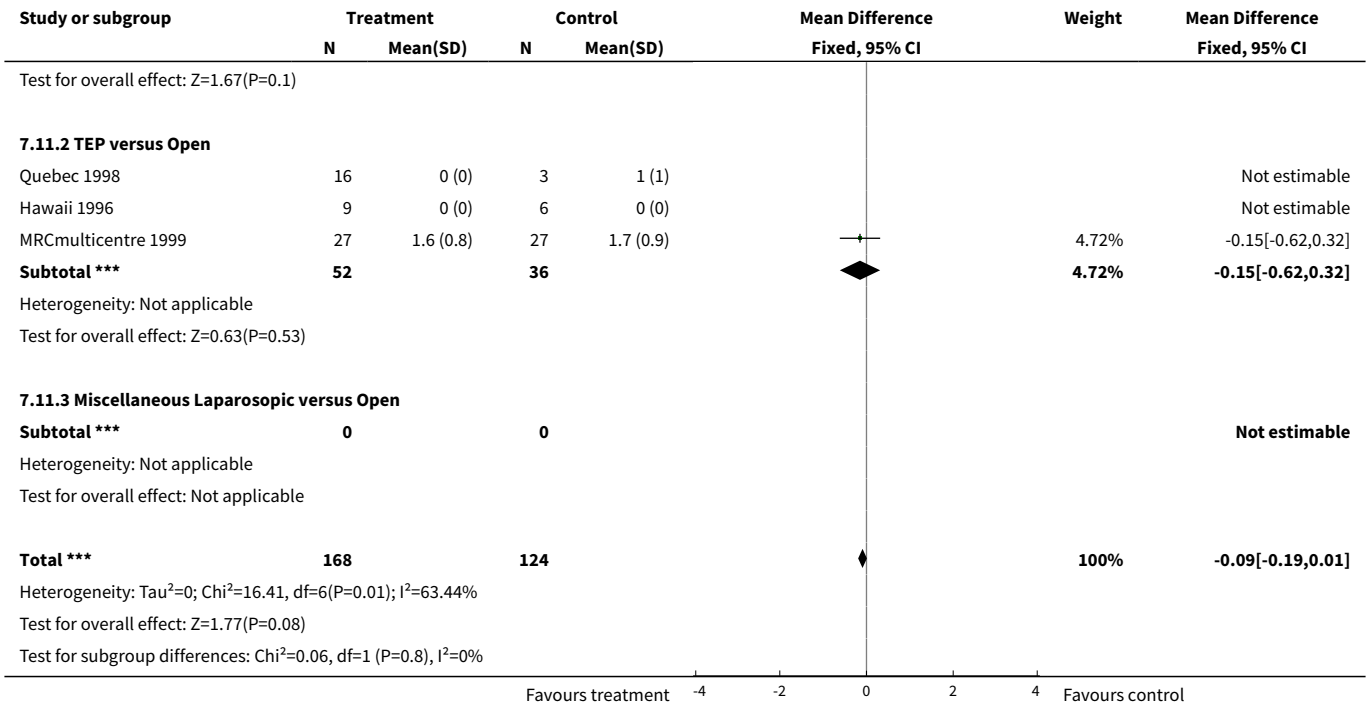
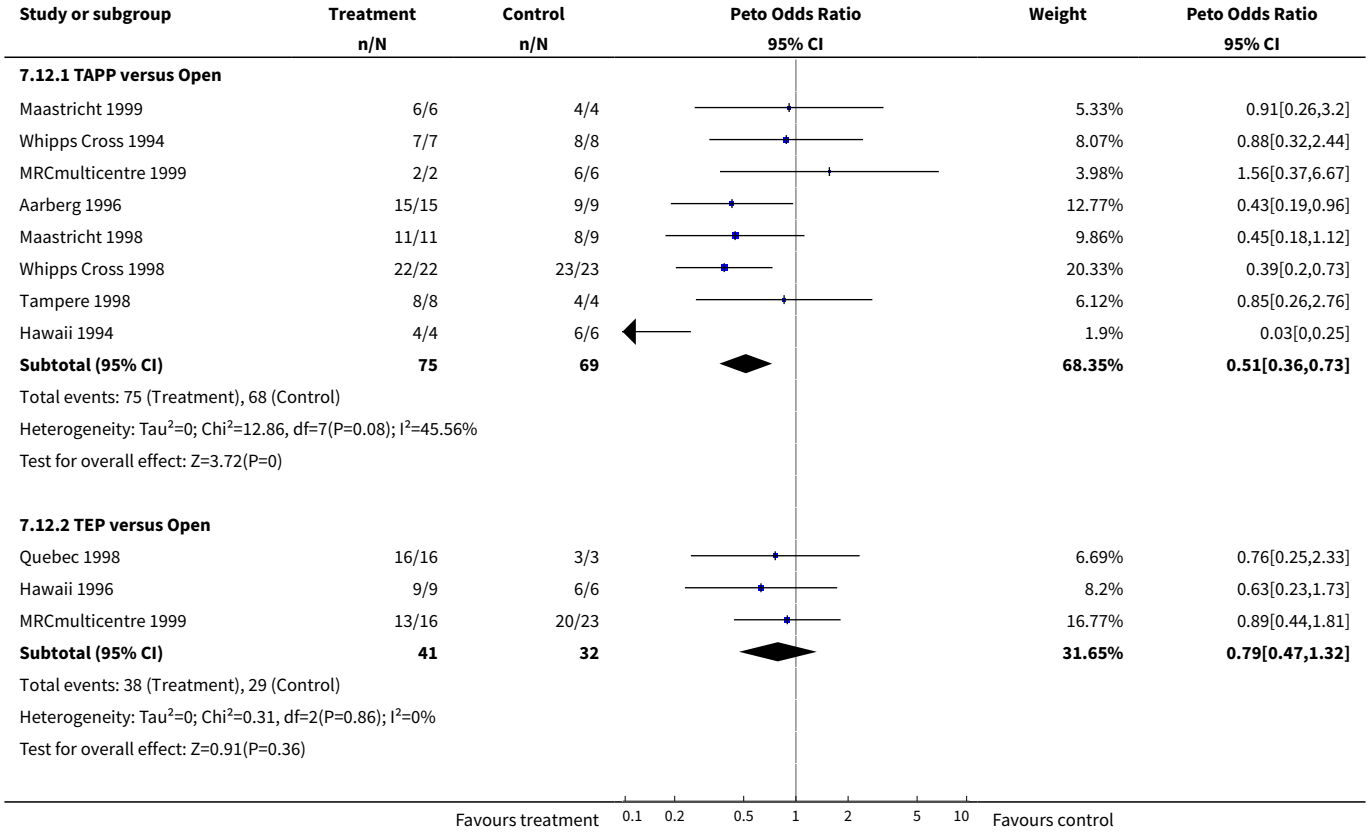


Analysis 7.12. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 12 Time to return to usual activities (days).



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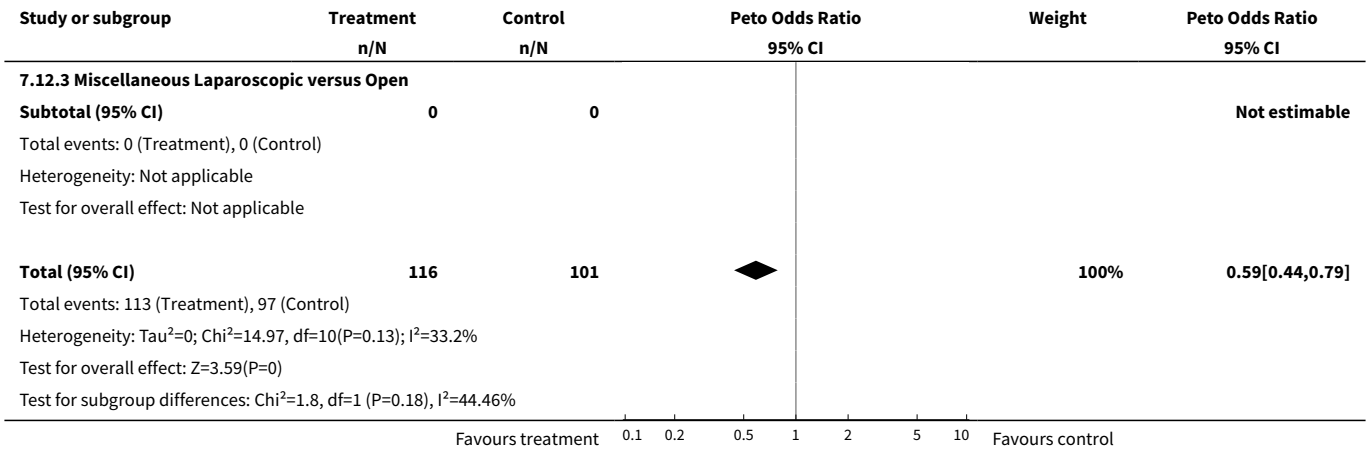
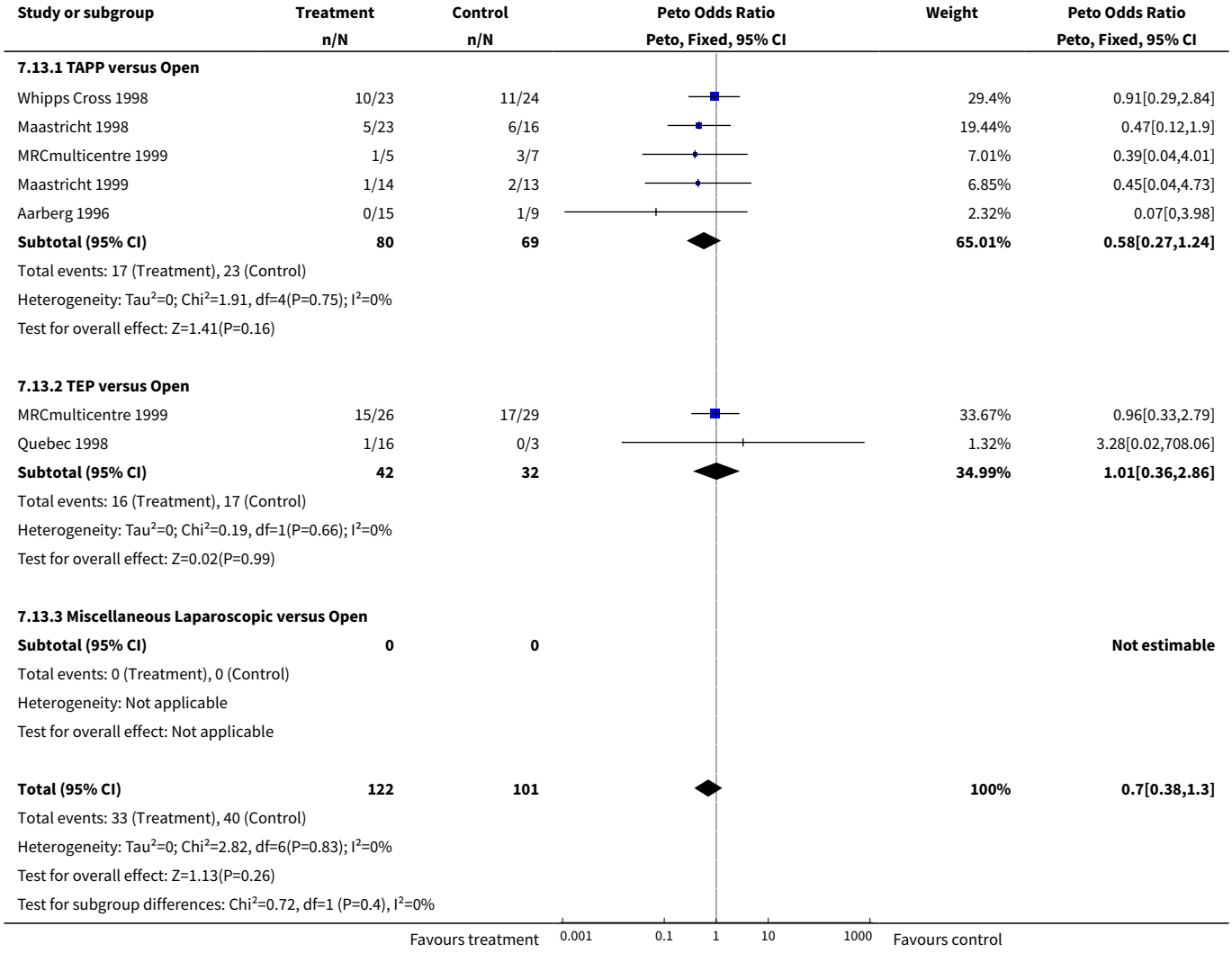


Analysis 7.13. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 13 Persisting pain.



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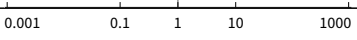
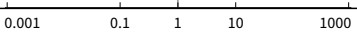
Analysis 7.14. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 14 Persisting numbness.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
7.14.1 TAPP versus Open					
Hawaii 1994	0/4	0/6			Not estimable
Maastricht 1999	0/14	0/13			Not estimable
Whipps Cross 1998	1/23	7/24		31.4%	0.18[0.04,0.81]
Aarberg 1996	0/15	0/9			Not estimable
Maastricht 1998	0/22	0/16			Not estimable
MRCmulticentre 1999	1/5	3/7		13.1%	0.39[0.04,4.01]
Subtotal (95% CI)	**83**	**75**		**44.5%**	**0.23[0.06,0.8]**
Total events: 2 (Treatment), 10 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.3, df=1(P=0.58); I^2=0%					
Test for overall effect: Z=2.31(P=0.02)					
7.14.2 TEP versus Open					
Quebec 1998	1/16	0/3		2.46%	3.28[0.02,708.06]
MRCmulticentre 1999	8/23	9/28		53.03%	1.12[0.35,3.58]
Subtotal (95% CI)	**39**	**31**		**55.5%**	**1.18[0.38,3.66]**
Total events: 9 (Treatment), 9 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.15, df=1(P=0.7); I^2=0%					
Test for overall effect: Z=0.28(P=0.78)					
7.14.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**122**	**106**		**100%**	**0.56[0.24,1.31]**
Total events: 11 (Treatment), 19 (Control)					
Heterogeneity: Tau^2=0; Chi^2=4.1, df=3(P=0.25); I^2=26.8%					
Test for overall effect: Z=1.33(P=0.18)					
Test for subgroup differences: Chi^2=3.65, df=1 (P=0.06), I^2=72.61%					



Analysis 7.15. Comparison 7 Laparoscopic versus Open (Bilateral hernias), Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
7.15.1 TAPP versus Open					
Aarberg 1996	2/15	1/9		15.17%	1.27[0.12,13.01]
Linköping 1997	2/12	0/3		7.26%	3.54[0.12,102.11]
Maastricht 1999	4/14	1/13		26.71%	3.68[0.64,21.26]
Whipps Cross 1998	1/23	0/24		5.34%	7.69[0.15,387.58]
Maastricht 1998	2/25	5/16		34.83%	0.23[0.05,1.07]
Kokkola 1997	0/1	0/1			Not estimable
MRCmulticentre 1999	0/3	0/6			Not estimable
Whipps Cross 1994	0/8	0/9			Not estimable
Tampere 1998	0/10	0/4			Not estimable



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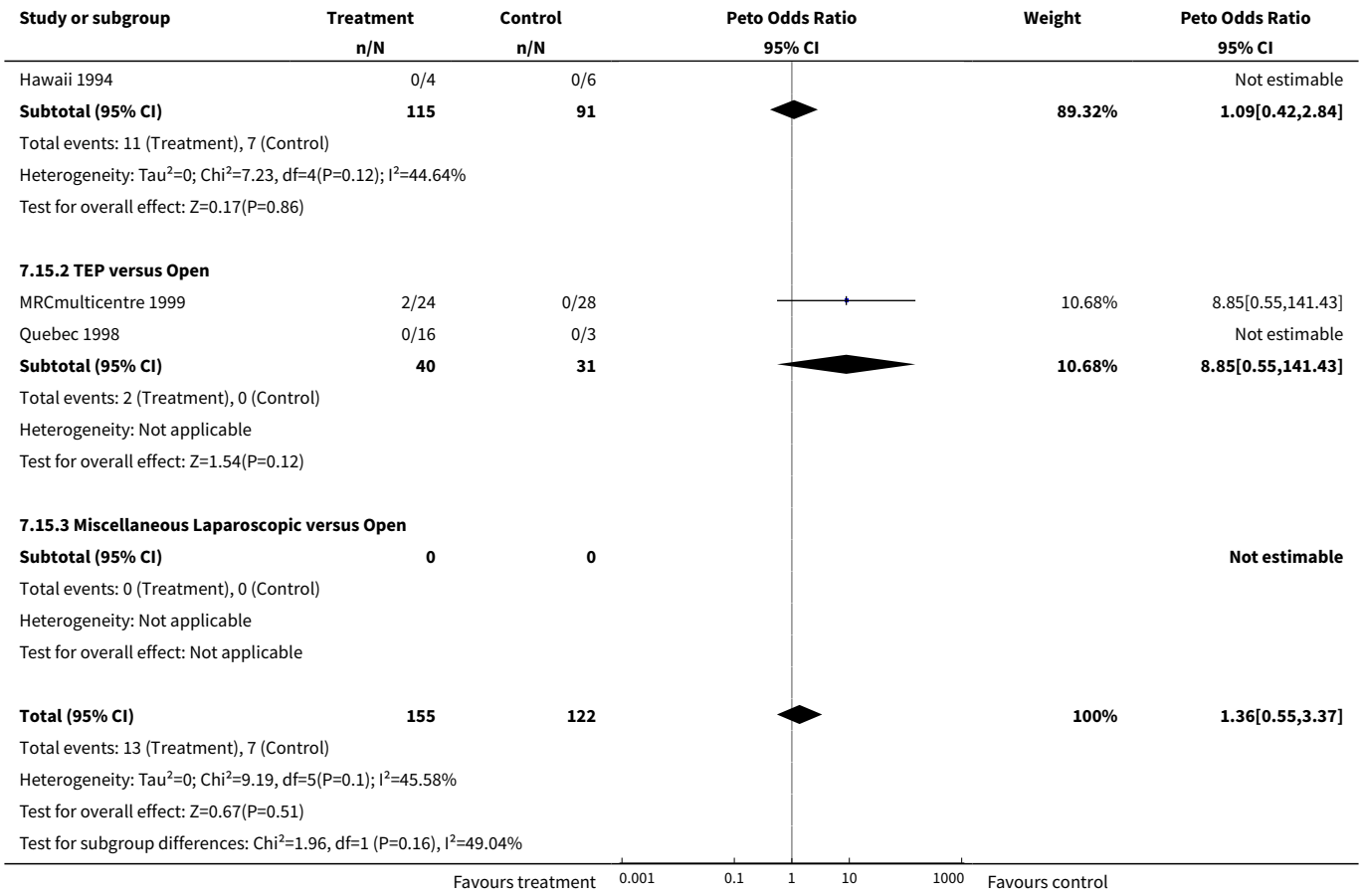

Comparison 8. TAPP versus Open (Bilateral hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	10	208	Mean Difference (IV, Fixed, 95% CI)	8.12 [3.06, 13.19]
1.1 TAPP versus Mesh	5	99	Mean Difference (IV, Fixed, 95% CI)	-0.80 [-6.52, 4.91]
1.2 TAPP versus Non-Mesh	4	97	Mean Difference (IV, Fixed, 95% CI)	41.17 [29.72, 52.61]
1.3 TAPP versus Mixed Open	1	12	Mean Difference (IV, Fixed, 95% CI)	36.63 [-0.21, 73.47]
2 "Opposite" method initiated	8	144	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.42 [0.30, 99.54]
2.1 TAPP versus Mesh	4	53	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.42 [0.30, 99.54]
2.2 TAPP versus Non-Mesh	3	80	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 TAPP versus Mixed Open	1	11	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3 Conversion	9	181	Peto Odds Ratio (Peto, Fixed, 95% CI)	9.03 [0.18, 462.31]
3.1 TAPP versus Mesh	4	73	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.2 TAPP versus Non-Mesh	4	97	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.3 TAPP versus Mixed Open	1	11	Peto Odds Ratio (Peto, Fixed, 95% CI)	9.03 [0.18, 462.31]
4 Haematoma	9	194	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.09 [0.48, 2.48]
4.1 TAPP versus Mesh	4	90	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.84 [0.27, 2.64]
4.2 TAPP versus Non-Mesh	4	97	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.26 [0.37, 4.29]
4.3 TAPP versus Mixed Open	1	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.75 [0.11, 302.04]
5 Seroma	8	179	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.55 [0.63, 3.83]
5.1 TAPP versus Mesh	4	90	Peto Odds Ratio (Peto, Fixed, 95% CI)	2.86 [0.79, 10.35]
5.2 TAPP versus Non-Mesh	3	82	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.85 [0.24, 3.04]
5.3 TAPP versus Mixed Open	1	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Wound/superficial infection	9	194	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.28 [0.10, 0.81]
6.1 TAPP versus Mesh	4	90	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.22 [0.07, 0.69]
6.2 TAPP versus Non-Mesh	4	97	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.97 [0.08, 11.59]
6.3 TAPP versus Mixed Open	1	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Mesh/deep infection	6	114	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 TAPP versus Mesh	4	90	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TAPP versus Non-Mesh	1	17	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 TAPP versus Mixed Open	1	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	6	116	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 TAPP versus Mesh	3	63	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TAPP versus Non-Mesh	2	41	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 TAPP versus Mixed Open	1	12	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
9 Visceral injury	7	157	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.16 [0.09, 286.55]
9.1 TAPP versus Mesh	3	63	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 TAPP versus Non-Mesh	3	82	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.16 [0.09, 286.55]
9.3 TAPP versus Mixed Open	1	12	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	7	141	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.49 [0.03, 468.68]
10.1 TAPP versus Mesh	3	76	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 TAPP versus Non-Mesh	3	56	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.49 [0.03, 468.68]
10.3 TAPP versus Mixed Open	1	9	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	10	204	Mean Difference (IV, Fixed, 95% CI)	-0.09 [-0.19, 0.02]
11.1 TAPP versus Mesh	5	100	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-0.40, 0.00]
11.2 TAPP versus Non-Mesh	4	97	Mean Difference (IV, Fixed, 95% CI)	-0.05 [-0.17, 0.07]
11.3 TAPP versus Mixed Open	1	7	Mean Difference (IV, Fixed, 95% CI)	0.42 [-0.73, 1.57]
12 Time to return to usual activities (days)	9	146	Peto Odds Ratio (95% CI)	0.51 [0.36, 0.73]
12.1 TAPP versus Mesh	5	79	Peto Odds Ratio (95% CI)	0.44 [0.27, 0.73]
12.2 TAPP versus Non-Mesh	3	59	Peto Odds Ratio (95% CI)	0.52 [0.31, 0.88]
12.3 TAPP versus Mixed Open	1	8	Peto Odds Ratio (95% CI)	1.56 [0.37, 6.67]
13 Persisting pain	5	149	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.58 [0.27, 1.24]
13.1 TAPP versus Mesh	2	74	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.80 [0.29, 2.22]
13.2 TAPP versus Non-Mesh	2	63	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.38 [0.10, 1.43]
13.3 TAPP versus Mixed Open	1	12	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.39 [0.04, 4.01]
14 Persisting numbness	6	158	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.23 [0.06, 0.80]
14.1 TAPP versus Mesh	3	84	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.18 [0.04, 0.81]

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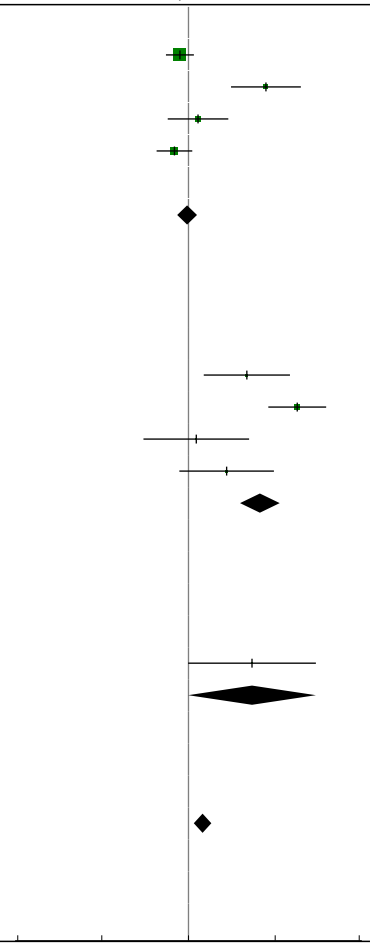
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
14.2 TAPP versus Non-Mesh	2	62	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 TAPP versus Mixed Open	1	12	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.39 [0.04, 4.01]
15 Hernia recurrence	10	206	Peto Odds Ratio (95% CI)	1.09 [0.42, 2.84]
15.2 TAPP versus Mesh	5	100	Peto Odds Ratio (95% CI)	4.16 [0.84, 20.63]
15.3 TAPP versus Non-Mesh	4	97	Peto Odds Ratio (95% CI)	0.51 [0.15, 1.70]
15.4 TAPP versus Mixed Open	1	9	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]

Analysis 8.1. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
8.1.1 TAPP versus Mesh							
Whipps Cross 1998	23	62.5 (15)	24	67.5 (13.1)		39.54%	-4.94[-12.99,3.11]
Maastricht 1999	14	100.4 (35.6)	13	55.7 (14)		6.33%	44.67[24.54,64.8]
Hawaii 1994	4	93 (11.5)	6	87.5 (16.7)		8.4%	5.5[-11.97,22.97]
Tampere 1998	10	56.9 (13.9)	3	65 (5)		24.26%	-8.1[-18.38,2.18]
Kokkola 1997	1	140 (0)	1	77 (0)			Not estimable
Subtotal ***	**52**		**47**			**78.53%**	**-0.8[-6.52,4.91]**
Heterogeneity: Tau^2=0; Chi^2=23.05, df=3(P<0.0001); I^2=86.98%							
Test for overall effect: Z=0.28(P=0.78)							
8.1.2 TAPP versus Non-Mesh							
Aarberg 1996	15	115.3 (45)	9	81.7 (15.2)		4.15%	33.66[8.8,58.52]
Maastricht 1998	25	110.6 (35.7)	16	47.9 (18.5)		9.22%	62.72[46.04,79.4]
Linköping 1997	12	61.2 (34.2)	3	56.7 (20.8)		2.76%	4.5[-25.96,34.96]
Whipps Cross 1994	8	85 (36.1)	9	63 (16.7)		3.45%	22[-5.26,49.26]
Subtotal ***	**60**		**37**			**19.58%**	**41.17[29.72,52.61]**
Heterogeneity: Tau^2=0; Chi^2=14.23, df=3(P=0); I^2=78.92%							
Test for overall effect: Z=7.05(P<0.0001)							
8.1.3 TAPP versus Mixed Open							
MRCmulticentre 1999	5	94.2 (39.7)	7	57.6 (16.5)		1.89%	36.63[-0.21,73.47]
Subtotal ***	**5**		**7**			**1.89%**	**36.63[-0.21,73.47]**
Heterogeneity: Not applicable							
Test for overall effect: Z=1.95(P=0.05)							
Total ***	**117**		**91**			**100%**	**8.12[3.06,13.19]**
Heterogeneity: Tau^2=0; Chi^2=80.98, df=8(P<0.0001); I^2=90.12%							
Test for overall effect: Z=3.14(P=0)							
Test for subgroup differences: Chi^2=43.7, df=1 (P<0.0001), I^2=95.42%							



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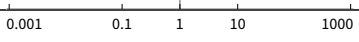
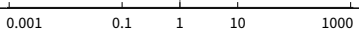
Analysis 8.2. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
8.2.1 TAPP versus Mesh					
Tampere 1998	1/10	0/4		44.98%	4.06[0.05,310.62]
Kokkola 1997	0/1	0/1			Not estimable
Maastricht 1999	1/14	0/13		55.02%	6.88[0.14,347.65]
Hawaii 1994	0/4	0/6			Not estimable
Subtotal (95% CI)	**29**	**24**		**100%**	**5.42[0.3,99.54]**
Total events: 2 (Treatment), 0 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.03, df=1(P=0.86); I^2=0%					
Test for overall effect: Z=1.14(P=0.25)					
8.2.2 TAPP versus Non-Mesh					
Aarberg 1996	0/15	0/9			Not estimable
Maastricht 1998	0/25	0/16			Not estimable
Linköping 1997	0/12	0/3			Not estimable
Subtotal (95% CI)	**52**	**28**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
8.2.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/5	0/6			Not estimable
Subtotal (95% CI)	**5**	**6**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**86**	**58**		**100%**	**5.42[0.3,99.54]**
Total events: 2 (Treatment), 0 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.03, df=1(P=0.86); I^2=0%					
Test for overall effect: Z=1.14(P=0.25)					
Test for subgroup differences: Not applicable					



Analysis 8.3. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 3 Conversion.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
8.3.1 TAPP versus Mesh					
Tampere 1998	0/10	0/4			Not estimable
Hawaii 1994	0/4	0/6			Not estimable
Whipps Cross 1998	0/23	0/24			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Subtotal (95% CI)	**38**	**35**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					



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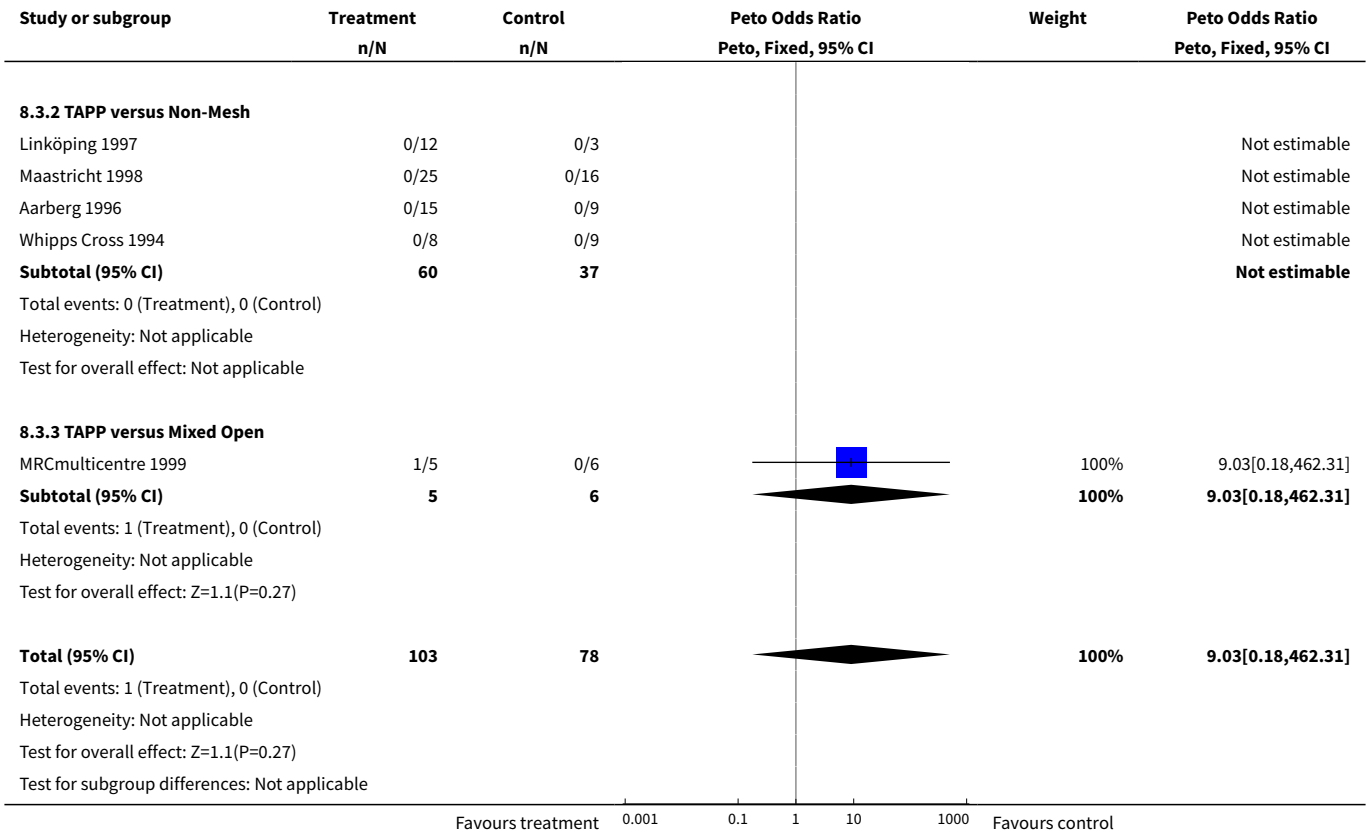
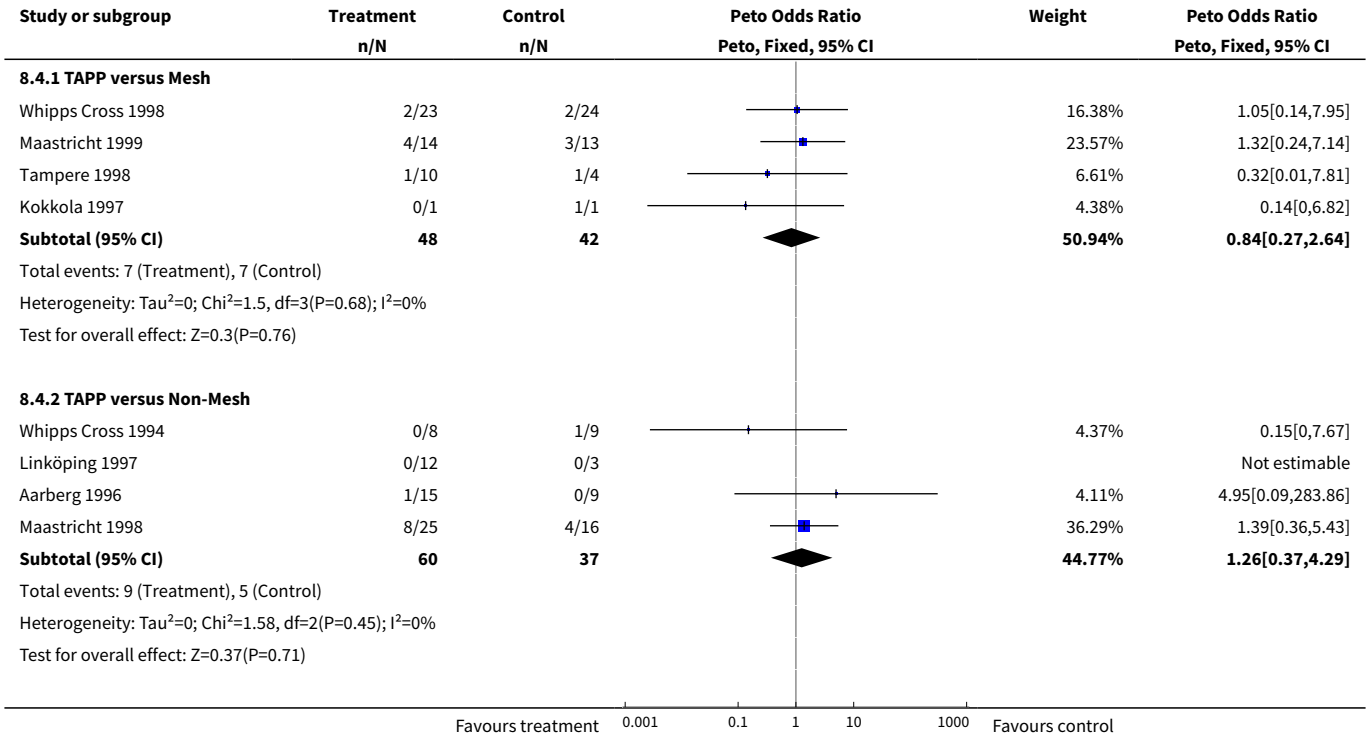


Analysis 8.4. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 4 Haematoma.



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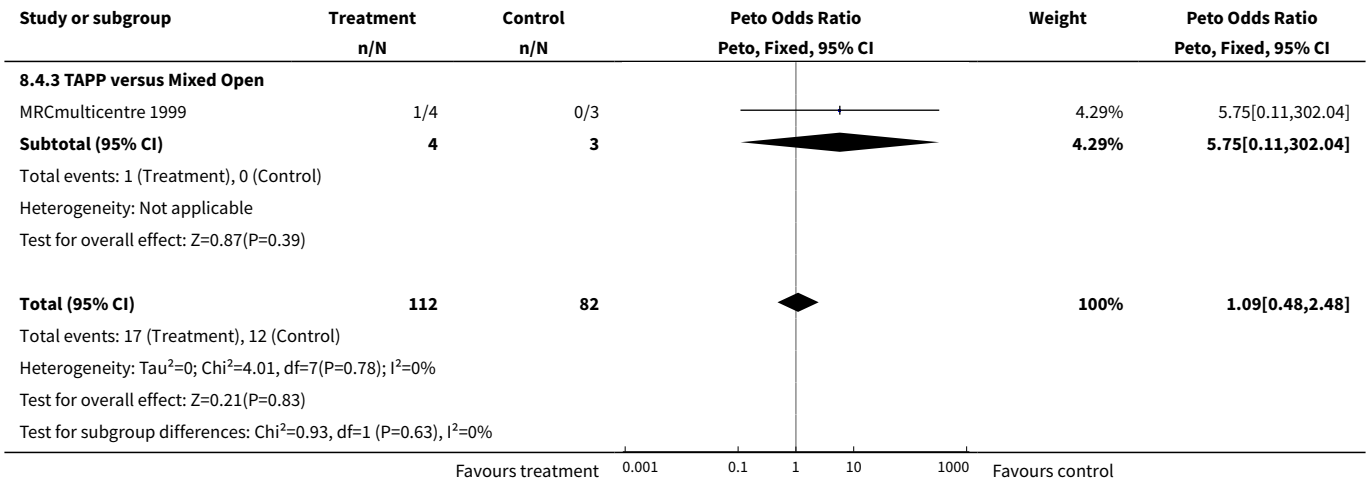
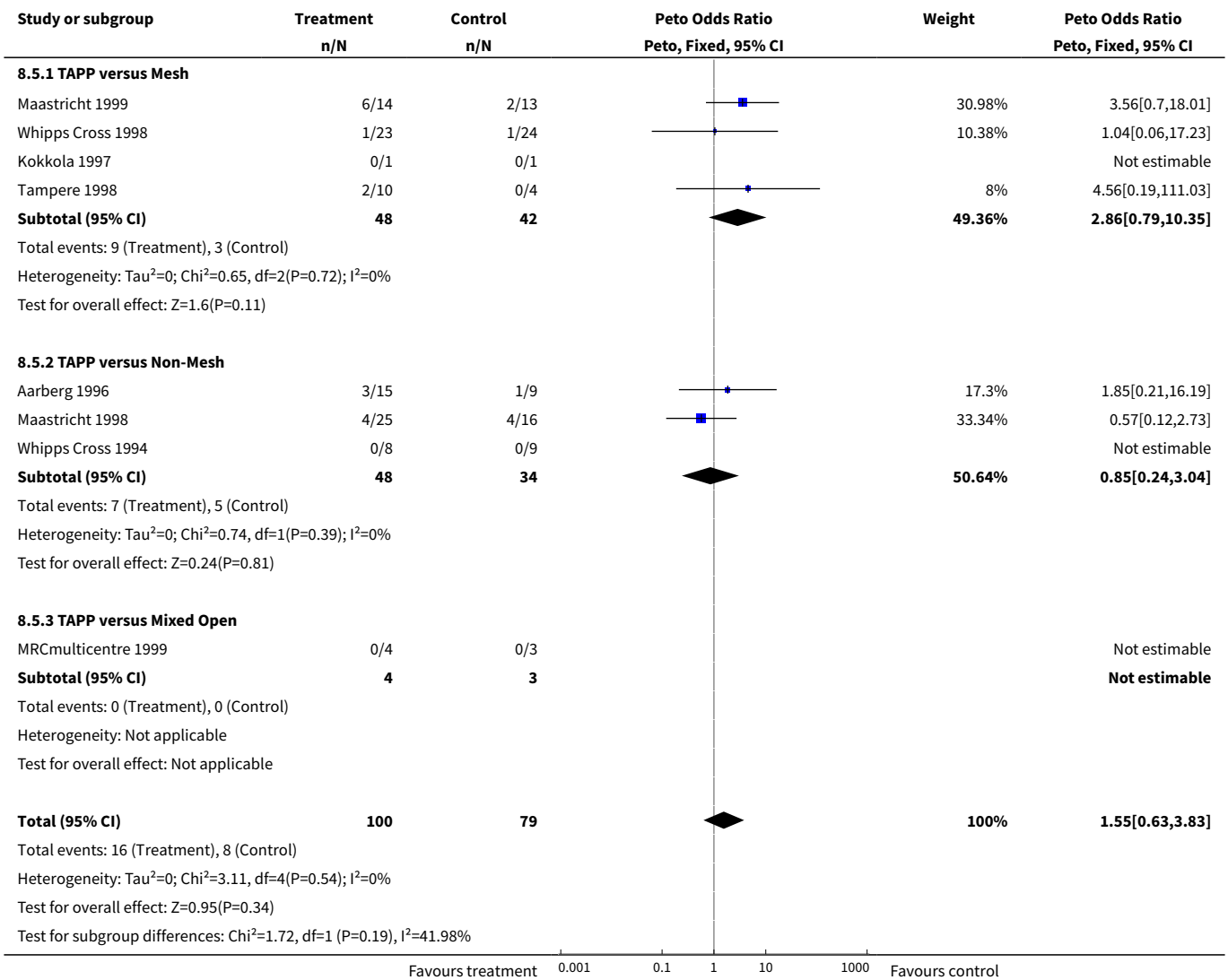


Analysis 8.5. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 5 Seroma.



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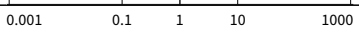
Analysis 8.6. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 6 Wound/superficial infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
8.6.1 TAPP versus Mesh					
Kokkola 1997	0/1	0/1			Not estimable
Whipps Cross 1998	3/23	10/24		68.5%	0.25[0.07,0.87]
Maastricht 1999	0/14	2/13		13.7%	0.12[0.01,1.95]
Tampere 1998	0/10	0/4			Not estimable
Subtotal (95% CI)	**48**	**42**		**82.2%**	**0.22[0.07,0.69]**
Total events: 3 (Treatment), 12 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.23, df=1(P=0.63); I^2=0%					
Test for overall effect: Z=2.59(P=0.01)					
8.6.2 TAPP versus Non-Mesh					
Linköping 1997	0/12	1/3		4.56%	0.01[0,0.9]
Whipps Cross 1994	0/8	0/9			Not estimable
Aarberg 1996	0/15	0/9			Not estimable
Maastricht 1998	2/25	0/16		13.24%	5.38[0.3,95.52]
Subtotal (95% CI)	**60**	**37**		**17.8%**	**0.97[0.08,11.59]**
Total events: 2 (Treatment), 1 (Control)					
Heterogeneity: Tau^2=0; Chi^2=5.31, df=1(P=0.02); I^2=81.18%					
Test for overall effect: Z=0.02(P=0.98)					
8.6.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/4	0/3			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**112**	**82**		**100%**	**0.28[0.1,0.81]**
Total events: 5 (Treatment), 13 (Control)					
Heterogeneity: Tau^2=0; Chi^2=6.69, df=3(P=0.08); I^2=55.16%					
Test for overall effect: Z=2.36(P=0.02)					
Test for subgroup differences: Chi^2=1.15, df=1 (P=0.28), I^2=12.82%					

Favours treatment Favours control

Analysis 8.7. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 7 Mesh/deep infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
8.7.1 TAPP versus Mesh					
Tampere 1998	0/10	0/4			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Whipps Cross 1998	0/23	0/24			Not estimable
Maastricht 1999	0/14	0/13			Not estimable
Subtotal (95% CI)	**48**	**42**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					



Favours treatment Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Not applicable					
8.7.2 TAPP versus Non-Mesh					
Whipps Cross 1994	0/8	0/9			Not estimable
Subtotal (95% CI)	**8**	**9**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
8.7.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/4	0/3			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**60**	**54**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 8.8. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
8.8.1 TAPP versus Mesh					
Whipps Cross 1998	0/23	0/24			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Tampere 1998	0/10	0/4			Not estimable
Subtotal (95% CI)	**34**	**29**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
8.8.2 TAPP versus Non-Mesh					
Whipps Cross 1994	0/8	0/9			Not estimable
Aarberg 1996	0/15	0/9			Not estimable
Subtotal (95% CI)	**23**	**18**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
8.8.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/5	0/7			Not estimable
Subtotal (95% CI)	**5**	**7**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Not applicable					
Total (95% CI)	**62**	**54**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 8.9. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
8.9.1 TAPP versus Mesh					
Whipps Cross 1998	0/23	0/24			Not estimable
Tampere 1998	0/10	0/4			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Subtotal (95% CI)	**34**	**29**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
8.9.2 TAPP versus Non-Mesh					
Aarberg 1996	0/15	0/9			Not estimable
Whipps Cross 1994	0/8	0/9			Not estimable
Maastricht 1998	1/25	0/16		100%	5.16[0.09,286.55]
Subtotal (95% CI)	**48**	**34**		**100%**	**5.16[0.09,286.55]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.8(P=0.42)					
8.9.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/5	0/7			Not estimable
Subtotal (95% CI)	**5**	**7**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**87**	**70**		**100%**	**5.16[0.09,286.55]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.8(P=0.42)					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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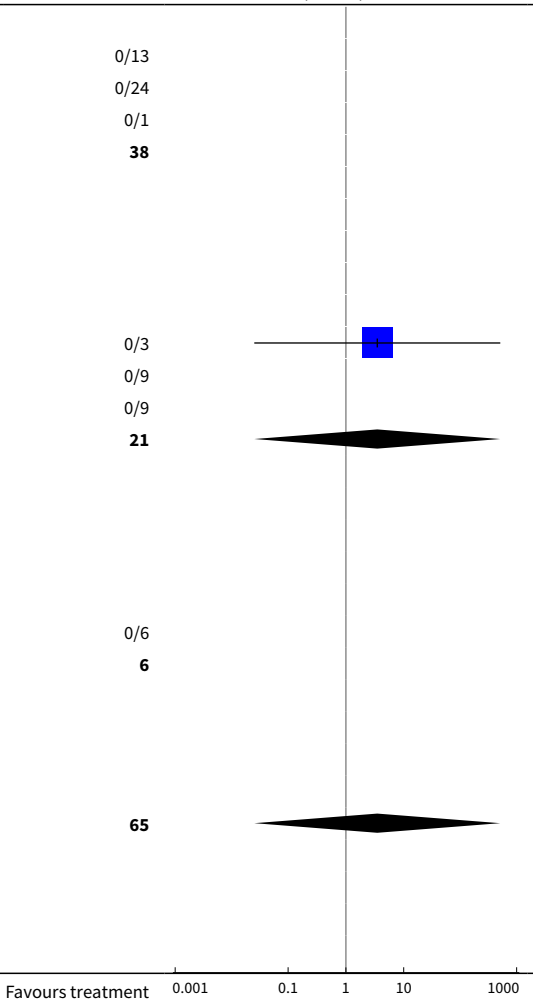
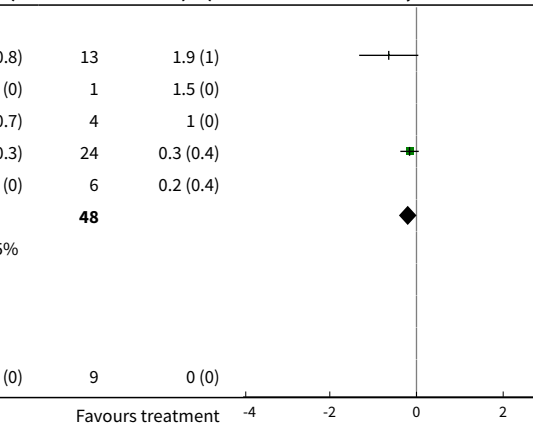
Analysis 8.10. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
8.10.1 TAPP versus Mesh					
Maastricht 1999	0/14	0/13			Not estimable
Whipps Cross 1998	0/23	0/24			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Subtotal (95% CI)	**38**	**38**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
8.10.2 TAPP versus Non-Mesh					
Linköping 1997	1/12	0/3		100%	3.49[0.03,468.68]
Aarberg 1996	0/15	0/9			Not estimable
Whipps Cross 1994	0/8	0/9			Not estimable
Subtotal (95% CI)	**35**	**21**		**100%**	**3.49[0.03,468.68]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.5(P=0.62)					
8.10.3 TAPP versus Mixed Open					
MRCmulticentre 1999	0/3	0/6			Not estimable
Subtotal (95% CI)	**3**	**6**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**76**	**65**		**100%**	**3.49[0.03,468.68]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.5(P=0.62)					
Test for subgroup differences: Not applicable					



Analysis 8.11. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
8.11.1 TAPP versus Mesh							
Maastricht 1999	14	1.2 (0.8)	13	1.9 (1)		2.31%	-0.64[-1.32,0.04]
Kokkola 1997	1	2.5 (0)	1	1.5 (0)			Not estimable
Tampere 1998	10	1.3 (0.7)	4	1 (0)			Not estimable
Whipps Cross 1998	23	0.1 (0.3)	24	0.3 (0.4)		23.84%	-0.16[-0.37,0.05]
Hawaii 1994	4	0 (0)	6	0.2 (0.4)			Not estimable
Subtotal ***	**52**		**48**			**26.14%**	**-0.2[-0.4,0]**
Heterogeneity: Tau^2=0; Chi^2=1.73, df=1(P=0.19); I^2=42.35%							
Test for overall effect: Z=1.96(P=0.05)							
8.11.2 TAPP versus Non-Mesh							
Whipps Cross 1994	8	0 (0)	9	0 (0)			Not estimable



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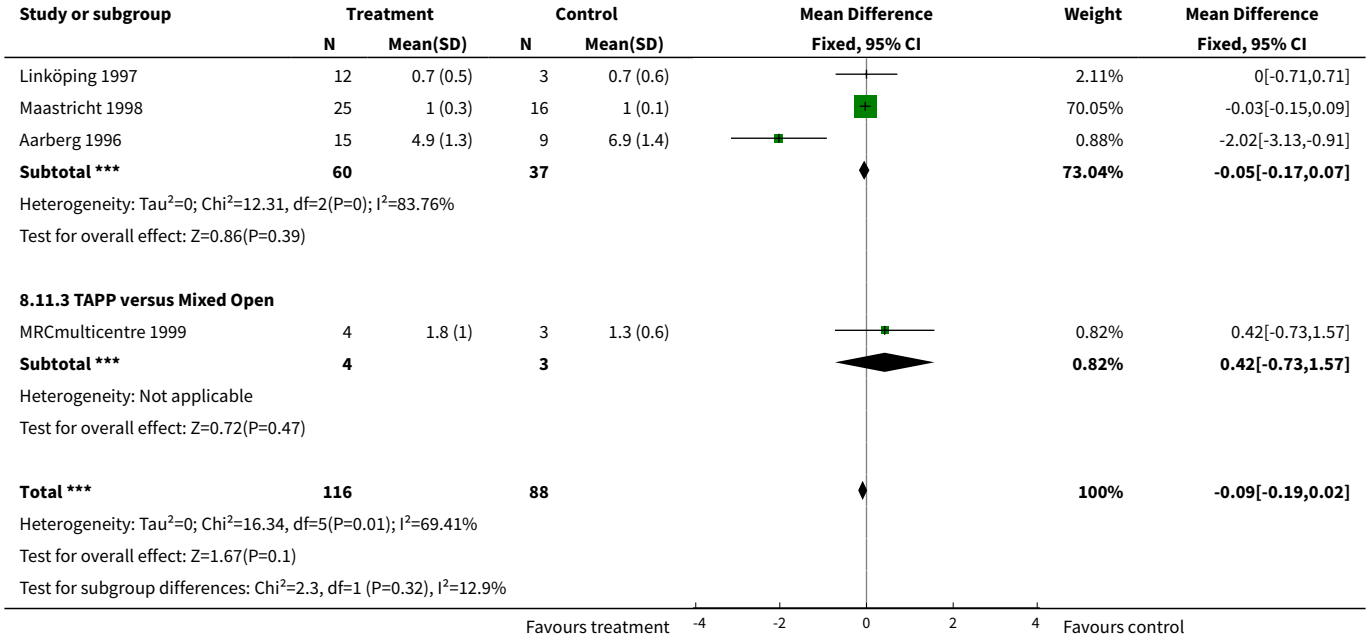
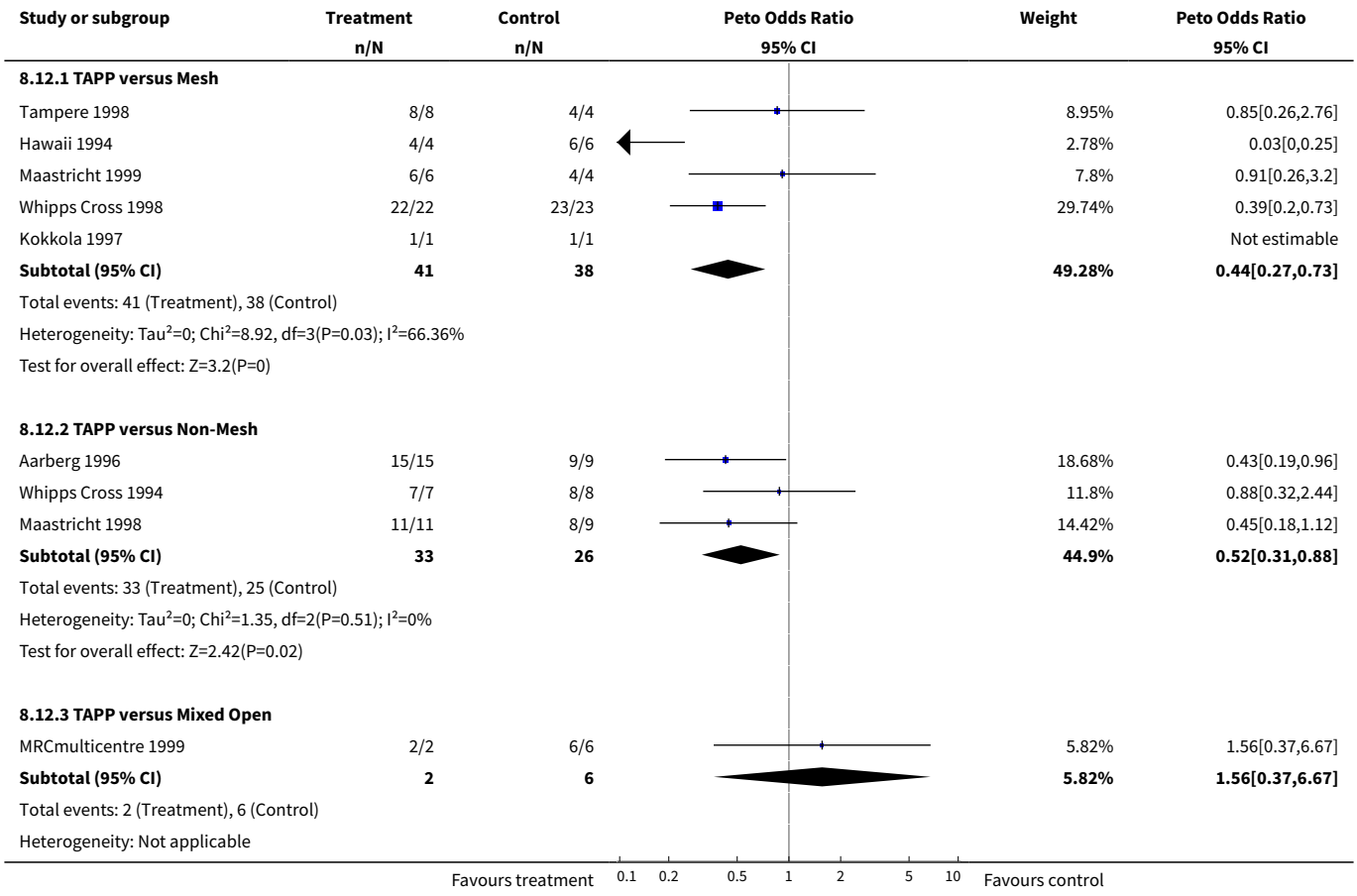


Analysis 8.12. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 12 Time to return to usual activities (days).



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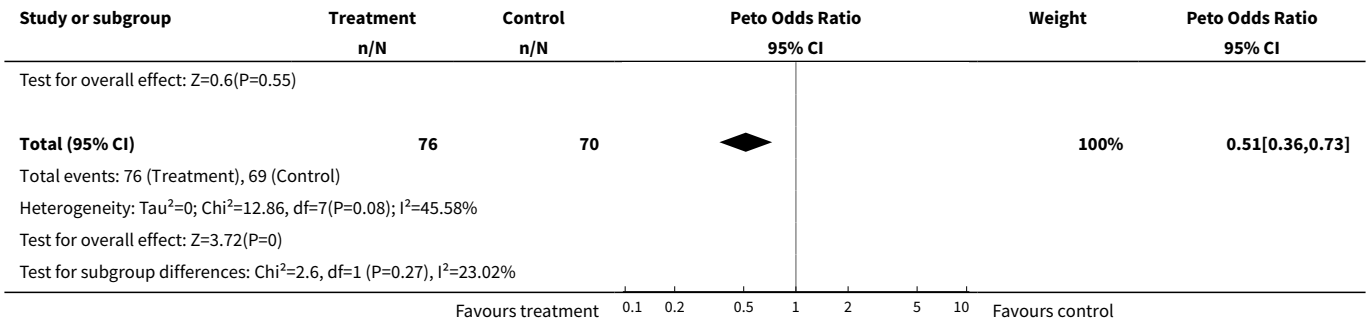
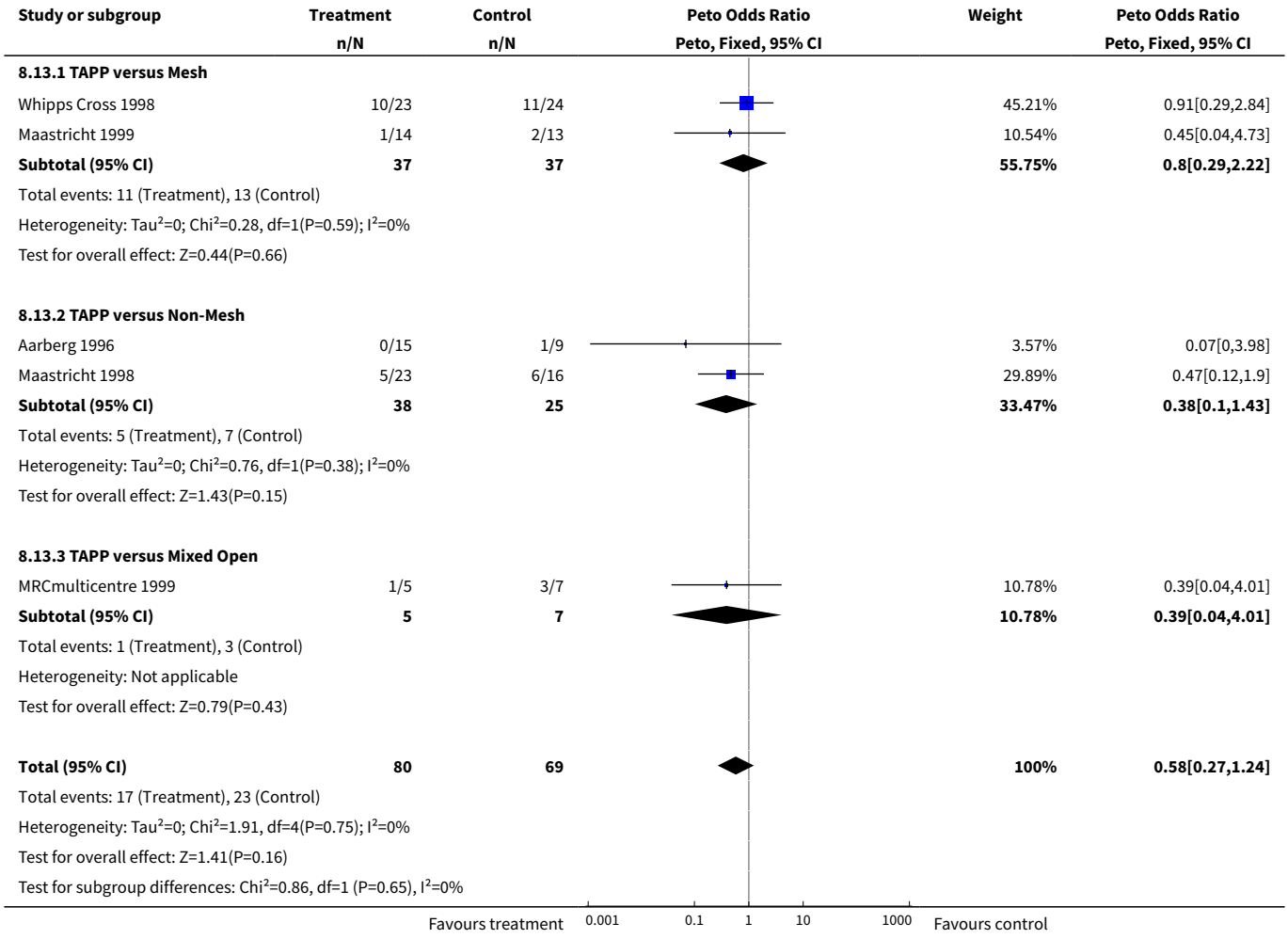


Analysis 8.13. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 13 Persisting pain.



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Analysis 8.14. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 14 Persisting numbness.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
8.14.1 TAPP versus Mesh					
Maastricht 1999	0/14	0/13			Not estimable
Whipps Cross 1998	1/23	7/24		70.56%	0.18[0.04,0.81]
Hawaii 1994	0/4	0/6			Not estimable
Subtotal (95% CI)	**41**	**43**		**70.56%**	**0.18[0.04,0.81]**
Total events: 1 (Treatment), 7 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=2.24(P=0.03)					
8.14.2 TAPP versus Non-Mesh					
Aarberg 1996	0/15	0/9			Not estimable
Maastricht 1998	0/22	0/16			Not estimable
Subtotal (95% CI)	**37**	**25**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
8.14.3 TAPP versus Mixed Open					
MRCmulticentre 1999	1/5	3/7		29.44%	0.39[0.04,4.01]
Subtotal (95% CI)	**5**	**7**		**29.44%**	**0.39[0.04,4.01]**
Total events: 1 (Treatment), 3 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.79(P=0.43)					
Total (95% CI)	**83**	**75**		**100%**	**0.23[0.06,0.8]**
Total events: 2 (Treatment), 10 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.3, df=1(P=0.58); I^2=0%					
Test for overall effect: Z=2.31(P=0.02)					
Test for subgroup differences: Chi^2=0.3, df=1 (P=0.58), I^2=0%					

Analysis 8.15. Comparison 8 TAPP versus Open (Bilateral hernias), Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
8.15.2 TAPP versus Mesh					
Whipps Cross 1998	1/23	0/24		5.98%	7.69[0.15,387.58]
Maastricht 1999	4/14	1/13		29.9%	3.68[0.64,21.26]
Tampere 1998	0/10	0/4			Not estimable
Kokkola 1997	0/1	0/1			Not estimable
Hawaii 1994	0/4	0/6			Not estimable
Subtotal (95% CI)	**52**	**48**		**35.89%**	**4.16[0.84,20.63]**
Total events: 5 (Treatment), 1 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.11, df=1(P=0.74); I^2=0%					
Test for overall effect: Z=1.75(P=0.08)					
8.15.3 TAPP versus Non-Mesh					
Maastricht 1998	2/25	5/16		39%	0.23[0.05,1.07]

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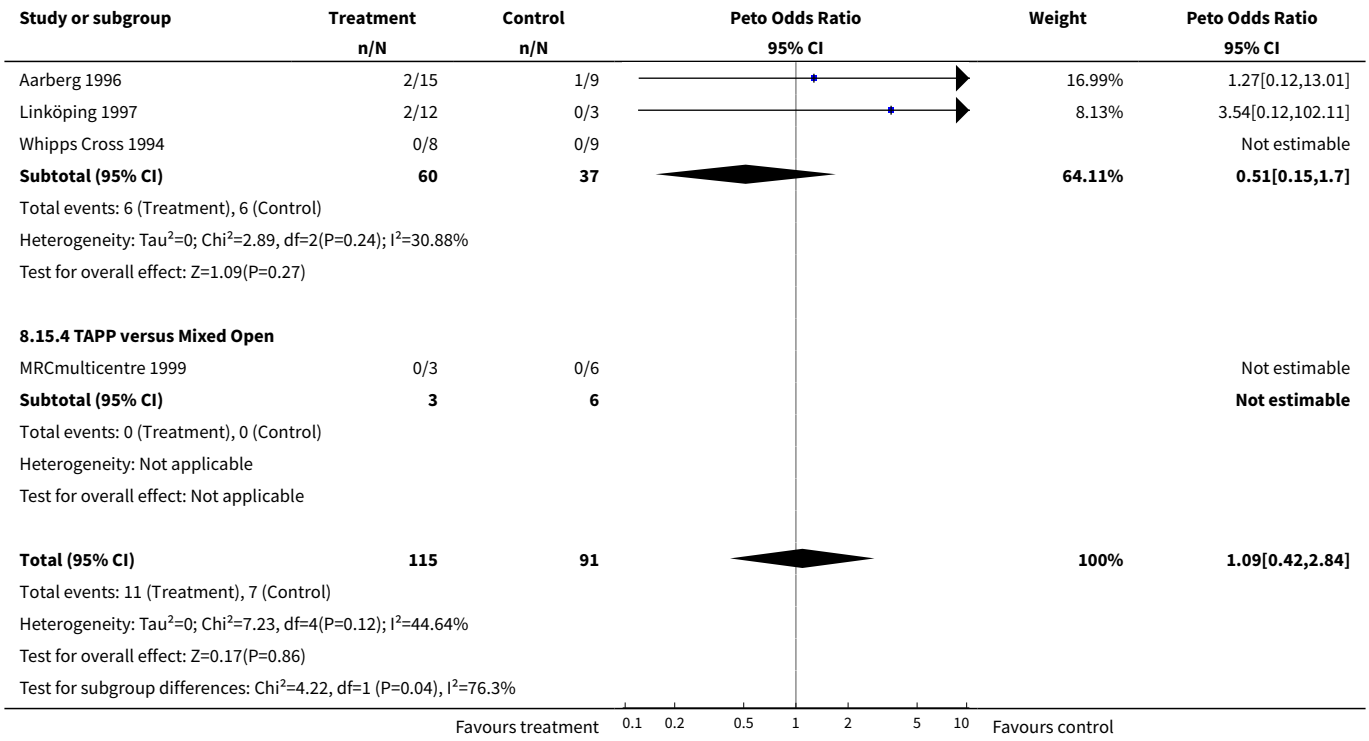

Comparison 9. TEP versus Open (Bilateral hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	4	133	Mean Difference (IV, Fixed, 95% CI)	20.19 [13.00, 27.38]
1.1 TEP versus Mesh	3	78	Mean Difference (IV, Fixed, 95% CI)	17.99 [8.86, 27.12]
1.2 TEP versus Non-Mesh	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.3 TEP versus Mixed Open	1	55	Mean Difference (IV, Fixed, 95% CI)	23.79 [12.12, 35.46]
2 "Opposite" method initiated	3	91	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.66 [0.15, 386.16]
2.1 TEP versus Mesh	2	34	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 TEP versus Mixed Open	1	57	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.66 [0.15, 386.16]
3 Conversion	3	89	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.76 [0.57, 80.00]
3.1 TEP versus Mesh	2	33	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.32 [0.02, 638.51]
3.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.3 TEP versus Mixed Open	1	56	Peto Odds Ratio (Peto, Fixed, 95% CI)	8.27 [0.50, 135.86]
4 Haematoma	2	72	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.03 [0.67, 13.75]
4.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.28 [0.02, 708.06]
4.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.3 TEP versus Mixed Open	1	53	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.01 [0.62, 14.56]
5 Seroma	2	71	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.56 [0.10, 3.06]
5.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.3 TEP versus Mixed Open	1	52	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.56 [0.10, 3.06]
6 Wound/superficial infection	2	71	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.16 [0.00, 7.96]
6.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.3 TEP versus Mixed Open	1	52	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.16 [0.00, 7.96]
7 Mesh/deep infection	2	71	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 TEP versus Mixed Open	1	52	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	2	75	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 TEP versus Mixed Open	1	56	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Visceral injury	2	75	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 TEP versus Mixed Open	1	56	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	2	71	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
10.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 TEP versus Mixed Open	1	52	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	3	88	Mean Difference (IV, Fixed, 95% CI)	-0.15 [-0.62, 0.32]
11.1 TEP versus Mesh	2	34	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 TEP versus Non-Mesh	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 TEP versus Mixed Open	1	54	Mean Difference (IV, Fixed, 95% CI)	-0.15 [-0.62, 0.32]
12 Time to return to usual activities (days)	3	73	Peto Odds Ratio (95% CI)	0.79 [0.47, 1.32]
12.1 TEP versus Mesh	2	34	Peto Odds Ratio (95% CI)	0.68 [0.32, 1.45]
12.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
12.3 TEP versus Mixed Open	1	39	Peto Odds Ratio (95% CI)	0.89 [0.44, 1.81]
13 Persisting pain	2	74	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.01 [0.36, 2.86]
13.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.28 [0.02, 708.06]
13.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.3 TEP versus Mixed Open	1	55	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.96 [0.33, 2.79]
14 Persisting numbness	2	70	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.18 [0.38, 3.66]
14.1 TEP versus Mesh	1	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.28 [0.02, 708.06]
14.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 TEP versus Mixed Open	1	51	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.12 [0.35, 3.58]
15 Hernia recurrence	2	71	Peto Odds Ratio (95% CI)	8.85 [0.55, 141.43]
15.1 TEP versus Mesh	1	19	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
15.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
15.3 TEP versus Mixed Open	1	52	Peto Odds Ratio (95% CI)	8.85 [0.55, 141.43]

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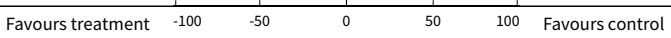
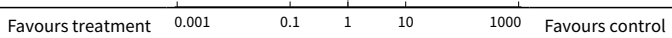
Analysis 9.1. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
9.1.1 TEP versus Mesh							
Hawaii 1996	9	82.8 (18.7)	6	81.7 (20.2)		12.61%	1.11[-19.14,21.36]
Quebec 1998	15	52 (16.8)	3	51.7 (16.1)		12.84%	0.33[-19.74,20.4]
Paris 1997	21	110 (25)	24	80 (13)		36.59%	30[18.11,41.89]
Subtotal ***	**45**		**33**			**62.04%**	**17.99[8.86,27.12]**
Heterogeneity: Tau^2=0; Chi^2=9.56, df=2(P=0.01); I^2=79.08%							
Test for overall effect: Z=3.86(P=0)							
9.1.2 TEP versus Non-Mesh							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
9.1.3 TEP versus Mixed Open							
MRCmulticentre 1999	27	76.1 (22.7)	28	52.3 (21.4)		37.96%	23.79[12.12,35.46]
Subtotal ***	**27**		**28**			**37.96%**	**23.79[12.12,35.46]**
Heterogeneity: Not applicable							
Test for overall effect: Z=3.99(P<0.0001)							
Total ***	**72**		**61**			**100%**	**20.19[13,27.38]**
Heterogeneity: Tau^2=0; Chi^2=10.15, df=3(P=0.02); I^2=70.45%							
Test for overall effect: Z=5.5(P<0.0001)							
Test for subgroup differences: Chi^2=0.59, df=1 (P=0.44), I^2=0%							



Analysis 9.2. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
9.2.1 TEP versus Mesh					
Hawaii 1996	0/9	0/6			Not estimable
Quebec 1998	0/16	0/3			Not estimable
Subtotal (95% CI)	**25**	**9**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.2.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.2.3 TEP versus Mixed Open					
MRCmulticentre 1999	1/28	0/29		100%	7.66[0.15,386.16]
Subtotal (95% CI)	**28**	**29**		**100%**	**7.66[0.15,386.16]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					



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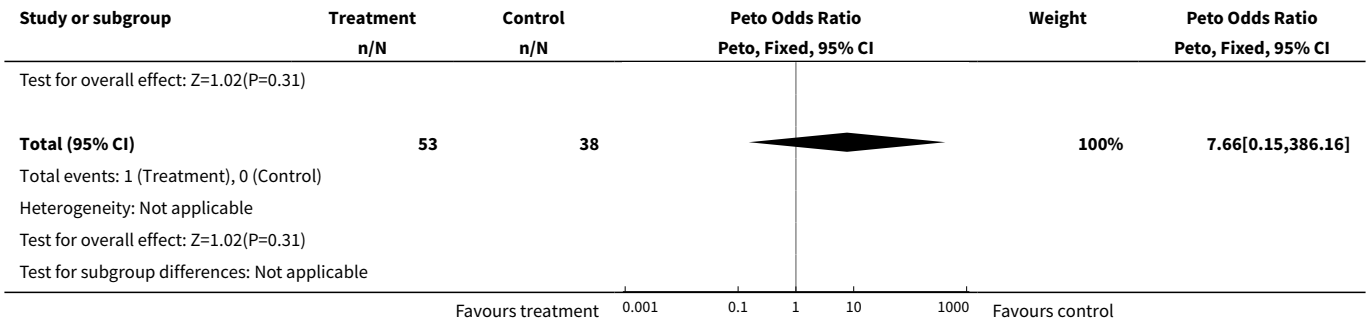
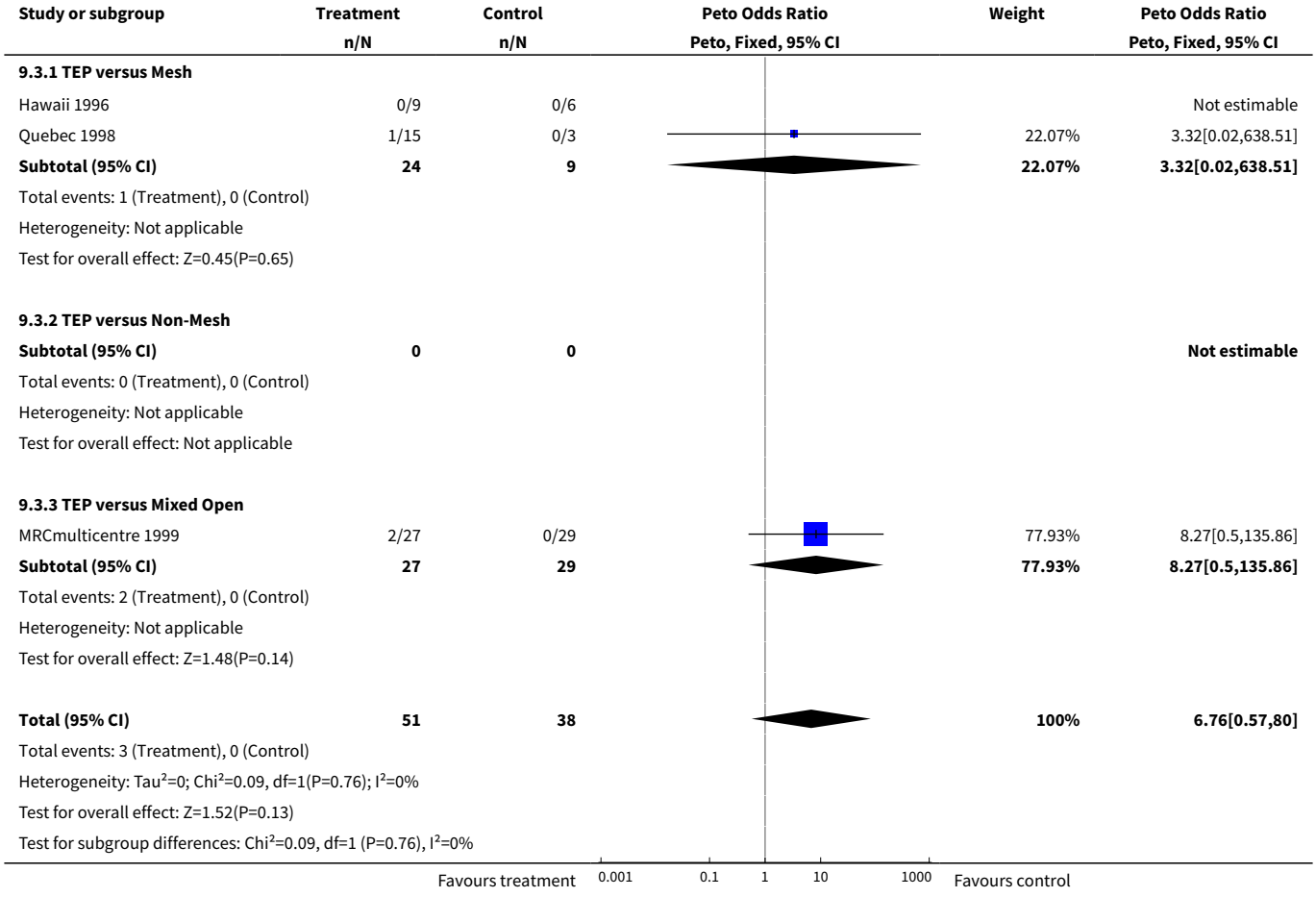
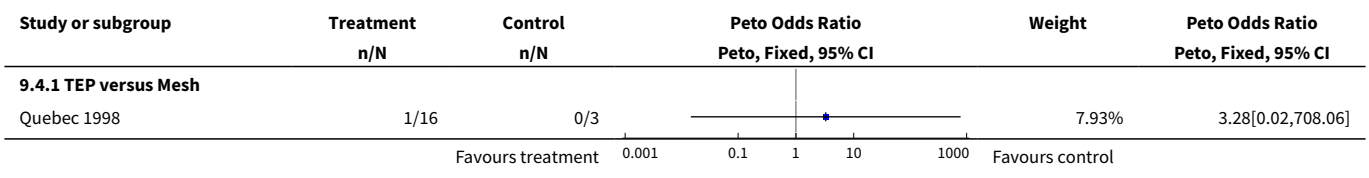


Analysis 9.3. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 3 Conversion.



Analysis 9.4. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 4 Haematoma.



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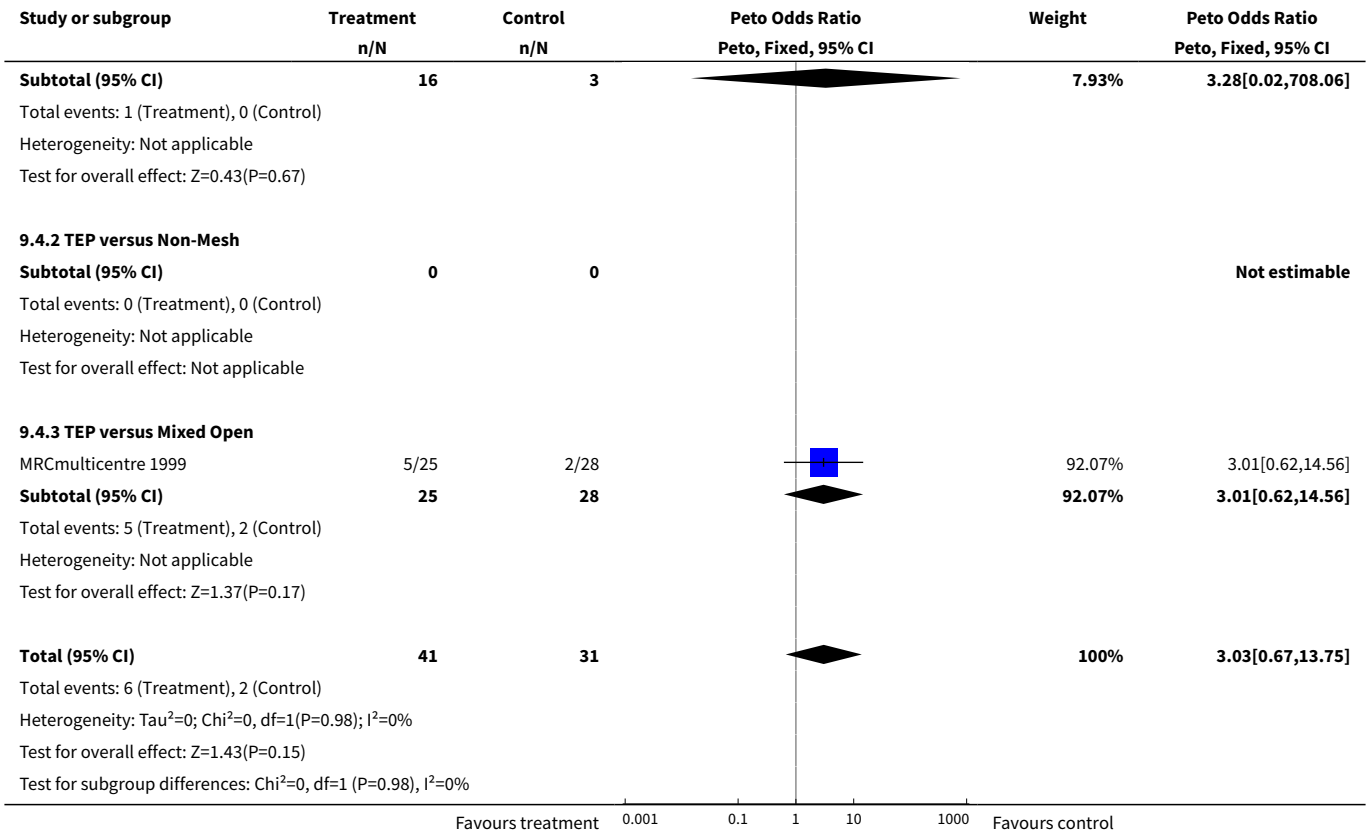
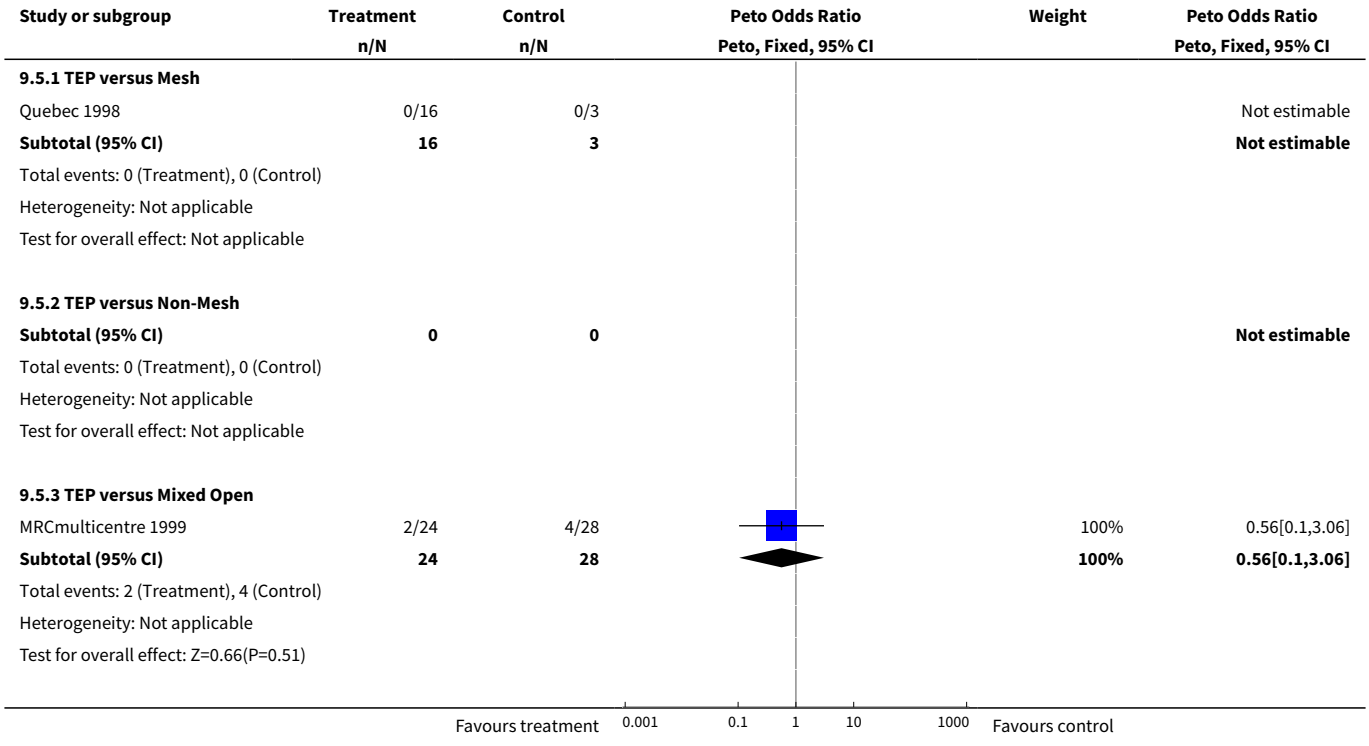


Analysis 9.5. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 5 Seroma.



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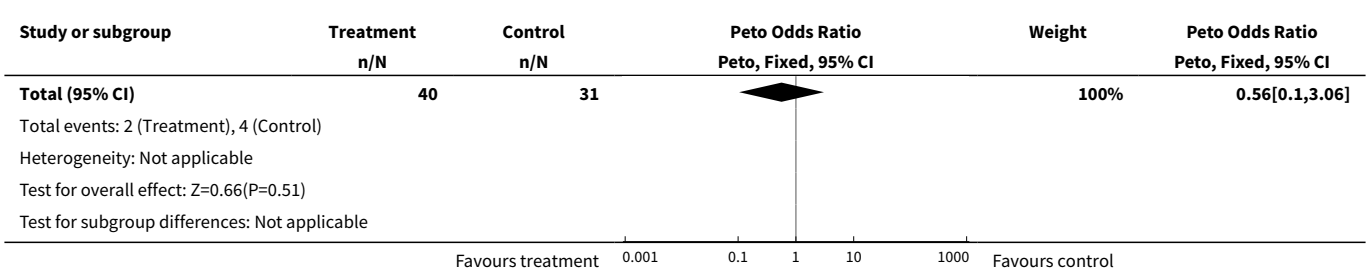
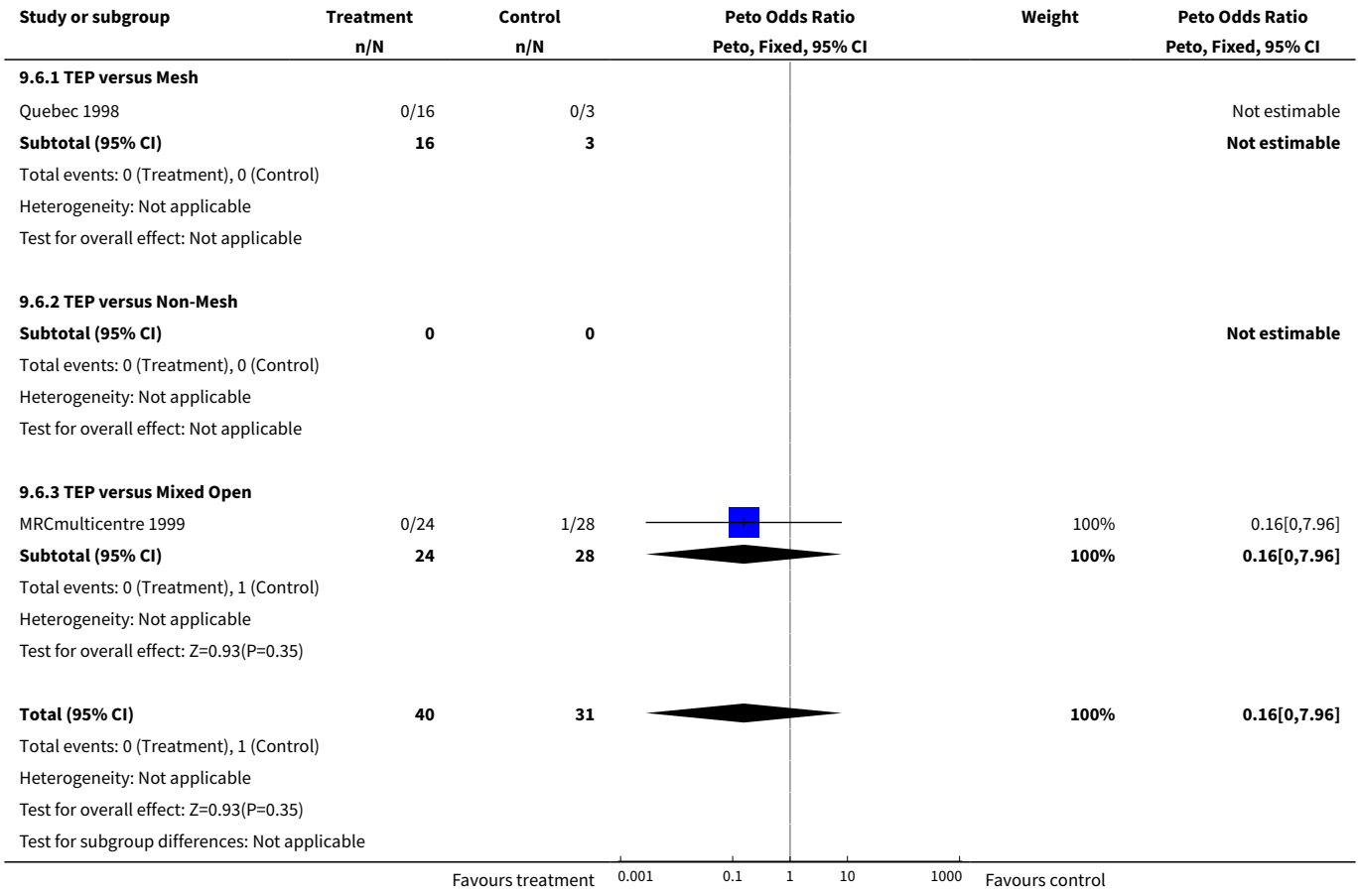
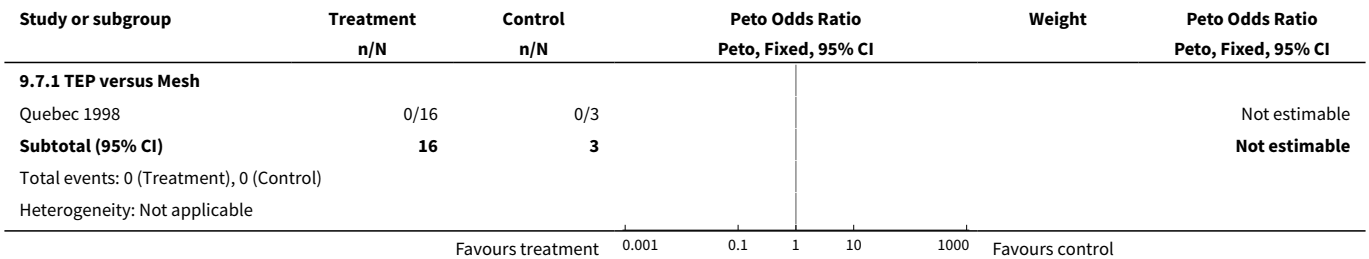


Analysis 9.6. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 6 Wound/superficial infection.



Analysis 9.7. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 7 Mesh/deep infection.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Not applicable					
9.7.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.7.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/24	0/28			Not estimable
Subtotal (95% CI)	**24**	**28**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**40**	**31**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 9.8. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
9.8.1 TEP versus Mesh					
Quebec 1998	0/16	0/3			Not estimable
Subtotal (95% CI)	**16**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.8.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.8.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/27	0/29			Not estimable
Subtotal (95% CI)	**27**	**29**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**43**	**32**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 9.9. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
9.9.1 TEP versus Mesh					
Quebec 1998	0/16	0/3			Not estimable
Subtotal (95% CI)	**16**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.9.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.9.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/27	0/29			Not estimable
Subtotal (95% CI)	**27**	**29**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**43**	**32**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 9.10. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
9.10.1 TEP versus Mesh					
Quebec 1998	0/16	0/3			Not estimable
Subtotal (95% CI)	**16**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.10.2 TEP versus Non-Mesh					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.10.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/24	0/28			Not estimable
Subtotal (95% CI)	**24**	**28**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**40**	**31**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 9.11. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
9.11.1 TEP versus Mesh							
Quebec 1998	16	0 (0)	3	1 (1)			Not estimable
Hawaii 1996	9	0 (0)	6	0 (0)			Not estimable
Subtotal ***	**25**		**9**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
9.11.2 TEP versus Non-Mesh							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
9.11.3 TEP versus Mixed Open							
MRCmulticentre 1999	27	1.6 (0.8)	27	1.7 (0.9)		100%	-0.15[-0.62,0.32]
Subtotal ***	**27**		**27**			**100%**	**-0.15[-0.62,0.32]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.63(P=0.53)							
Total ***	**52**		**36**			**100%**	**-0.15[-0.62,0.32]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.63(P=0.53)							
Test for subgroup differences: Not applicable							

Favours treatment -4 -2 0 2 4 Favours control

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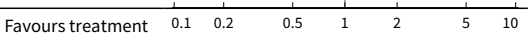
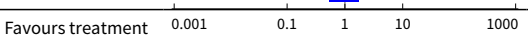
Analysis 9.12. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 12 Time to return to usual activities (days).

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
9.12.1 TEP versus Mesh					
Hawaii 1996	9/9	6/6		25.9%	0.63[0.23,1.73]
Quebec 1998	16/16	3/3		21.13%	0.76[0.25,2.33]
Subtotal (95% CI)	**25**	**9**		**47.03%**	**0.68[0.32,1.45]**
Total events: 25 (Treatment), 9 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.06, df=1(P=0.81); I^2=0%					
Test for overall effect: Z=0.99(P=0.32)					
9.12.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.12.3 TEP versus Mixed Open					
MRCmulticentre 1999	13/16	20/23		52.97%	0.89[0.44,1.81]
Subtotal (95% CI)	**16**	**23**		**52.97%**	**0.89[0.44,1.81]**
Total events: 13 (Treatment), 20 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.32(P=0.75)					
Total (95% CI)	**41**	**32**		**100%**	**0.79[0.47,1.32]**
Total events: 38 (Treatment), 29 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0.31, df=2(P=0.86); I^2=0%					
Test for overall effect: Z=0.91(P=0.36)					
Test for subgroup differences: Chi^2=0.25, df=1 (P=0.62), I^2=0%					



Analysis 9.13. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 13 Persisting pain.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
9.13.1 TEP versus Mesh					
Quebec 1998	1/16	0/3		3.77%	3.28[0.02,708.06]
Subtotal (95% CI)	**16**	**3**		**3.77%**	**3.28[0.02,708.06]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.43(P=0.67)					
9.13.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
9.13.3 TEP versus Mixed Open					
MRCmulticentre 1999	15/26	17/29		96.23%	0.96[0.33,2.79]



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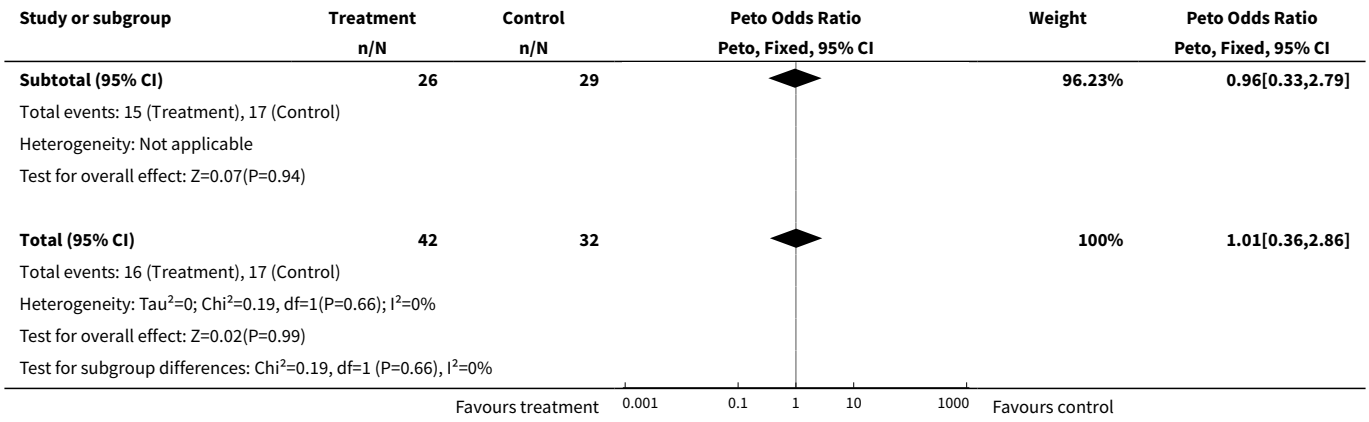
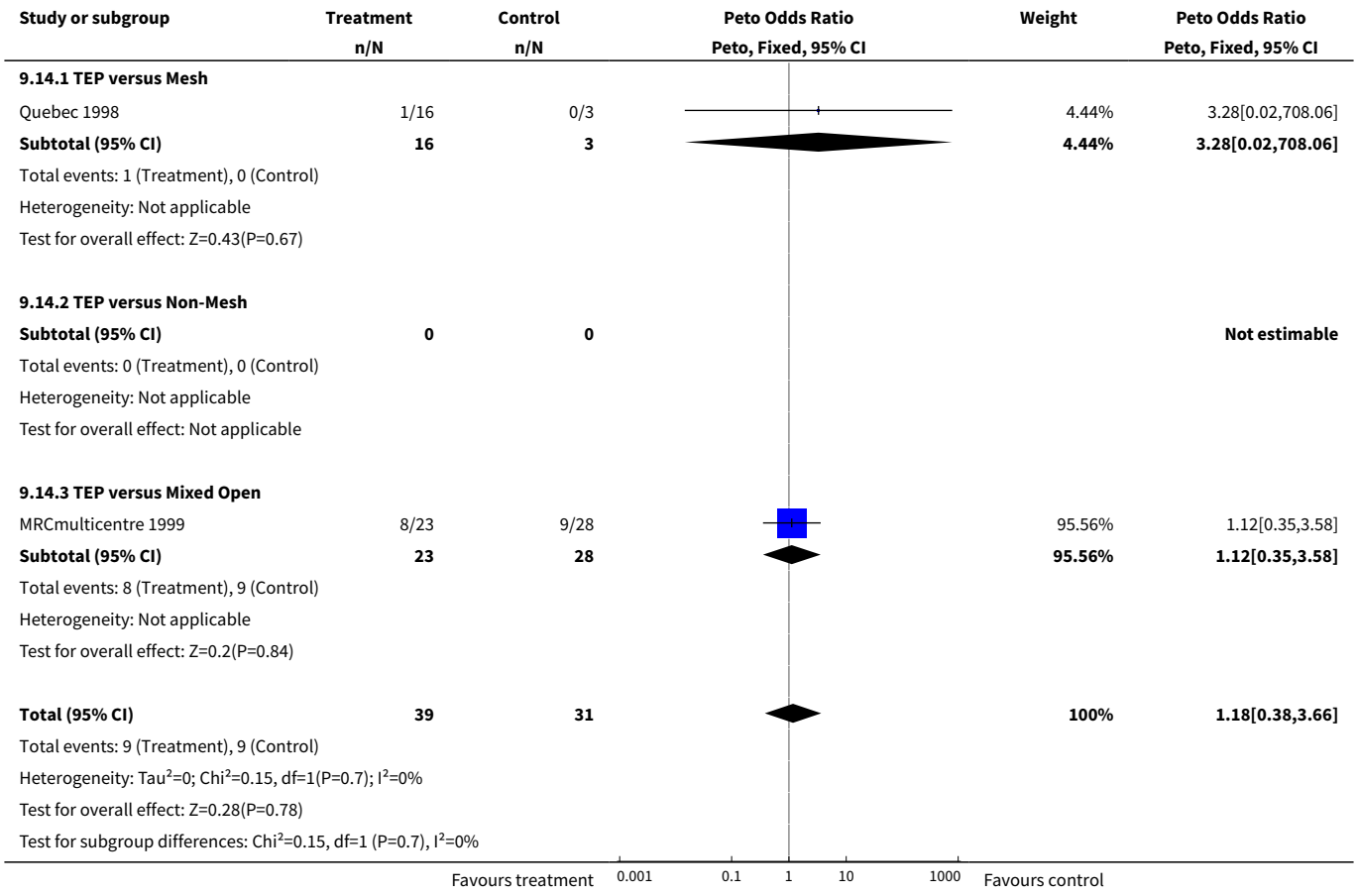


Analysis 9.14. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 14 Persisting numbness.



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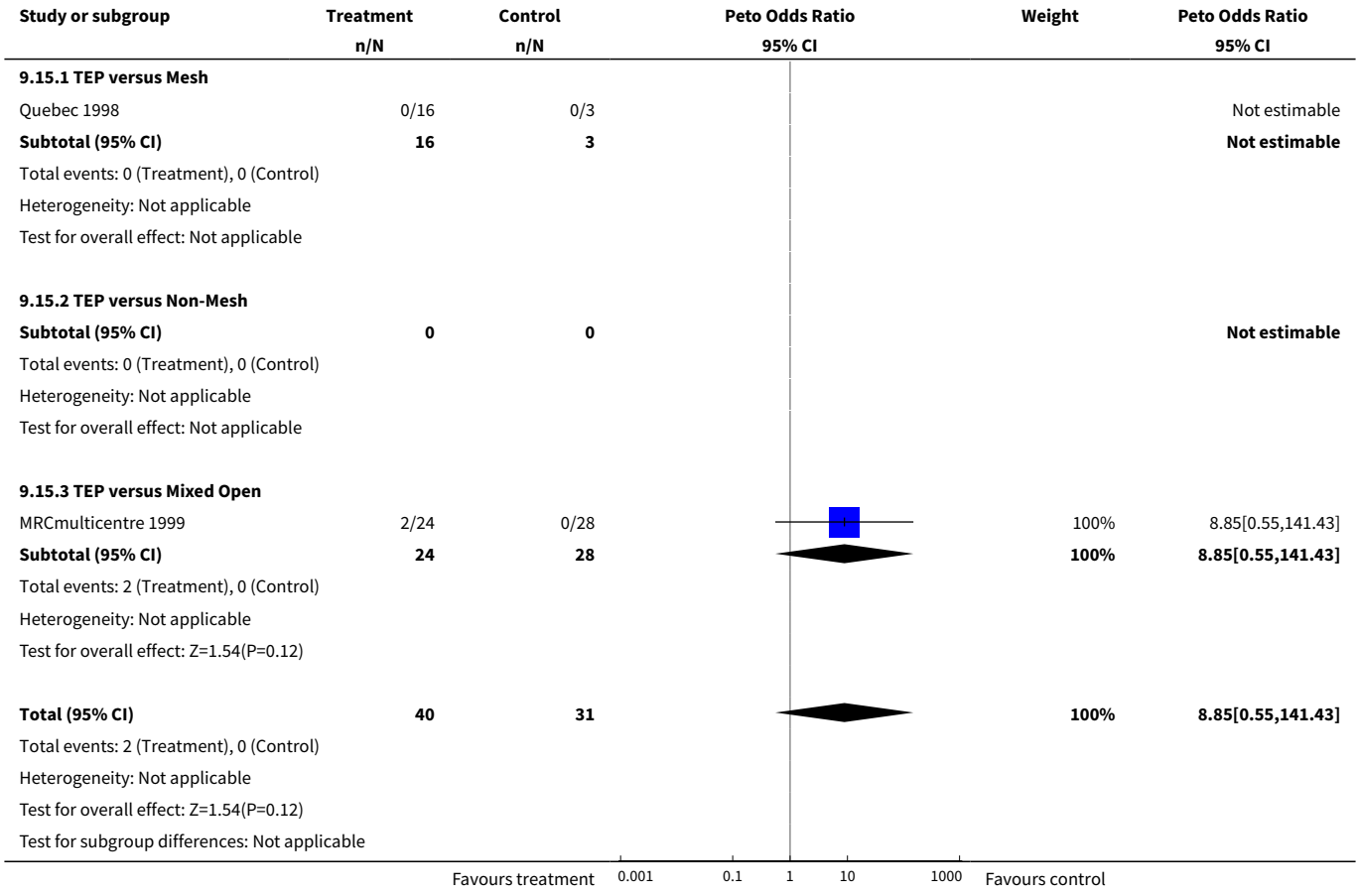
Analysis 9.15. Comparison 9 TEP versus Open (Bilateral hernias), Outcome 15 Hernia recurrence.



Comparison 10. Laparoscopic versus Open (Femoral hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	4	27	Mean Difference (IV, Fixed, 95% CI)	23.33 [1.51, 45.14]
1.1 TAPP versus Open	2	7	Mean Difference (IV, Fixed, 95% CI)	0.83 [-39.61, 41.27]
1.2 TEP versus Open	2	20	Mean Difference (IV, Fixed, 95% CI)	32.56 [6.65, 58.47]
1.3 Miscellaneous Laparosopic versus Open	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 "Opposite" method initiated	4	27	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.24 [0.06, 296.20]
2.1 TAPP versus Open	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 TEP versus Open	2	20	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.24 [0.06, 296.20]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Conversion	4	26	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.25 [0.44, 88.87]
3.1 TAPP versus Open	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.2 TEP versus Open	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.25 [0.44, 88.87]
3.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Haematoma	4	24	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.06 [0.30, 54.29]
4.1 TAPP versus Open	2	8	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.48 [0.07, 286.49]
4.2 TEP versus Open	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.81 [0.14, 105.19]
4.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Seroma	4	23	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.29 [0.10, 289.29]
5.1 TAPP versus Open	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.29 [0.10, 289.29]
5.2 TEP versus Open	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Wound/superficial infection	4	23	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.17 [0.06, 300.53]
6.1 TAPP versus Open	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.2 TEP versus Open	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.17 [0.06, 300.53]
6.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Mesh/deep infection	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.1 TAPP versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TEP versus Open	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	3	24	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 TAPP versus Open	1	5	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TEP versus Open	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Visceral injury	4	26	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.1 TAPP versus Open	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 TEP versus Open	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	3	23	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 TAPP versus Open	1	5	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 TEP versus Open	2	18	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	4	23	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.1 TAPP versus Open	2	7	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 TEP versus Open	2	16	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 Miscellaneous Laparosopic versus Open	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12 Time to return to usual activities (days)	2	13	Peto Odds Ratio (95% CI)	0.46 [0.14, 1.44]
12.1 TAPP versus Open	1	5	Peto Odds Ratio (95% CI)	0.14 [0.02, 1.11]
12.2 TEP versus Open	1	8	Peto Odds Ratio (95% CI)	0.78 [0.19, 3.15]
12.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
13 Persisting pain	4	26	Peto Odds Ratio (Peto, Fixed, 95% CI)	1.19 [0.16, 8.82]
13.1 TAPP versus Open	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.39 [0.15, 372.38]
13.2 TEP versus Open	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.62 [0.06, 6.42]
13.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Persisting numbness	4	26	Peto Odds Ratio (Peto, Fixed, 95% CI)	10.56 [1.03, 108.64]
14.1 TAPP versus Open	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.2 TEP versus Open	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	10.56 [1.03, 108.64]
14.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
15 Hernia recurrence	4	26	Peto Odds Ratio (95% CI)	5.29 [0.10, 289.29]
15.1 TAPP versus Open	2	7	Peto Odds Ratio (95% CI)	5.29 [0.10, 289.29]
15.2 TEP versus Open	2	19	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
15.3 Miscellaneous Laparoscopic versus Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]

Analysis 10.1. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
10.1.1 TAPP versus Open							
Aarberg 1996	3	73.3 (28.4)	2	72.5 (17.7)		29.1%	0.83[-39.61,41.27]
Maastricht 1998	1	75 (0)	1	45 (0)			Not estimable

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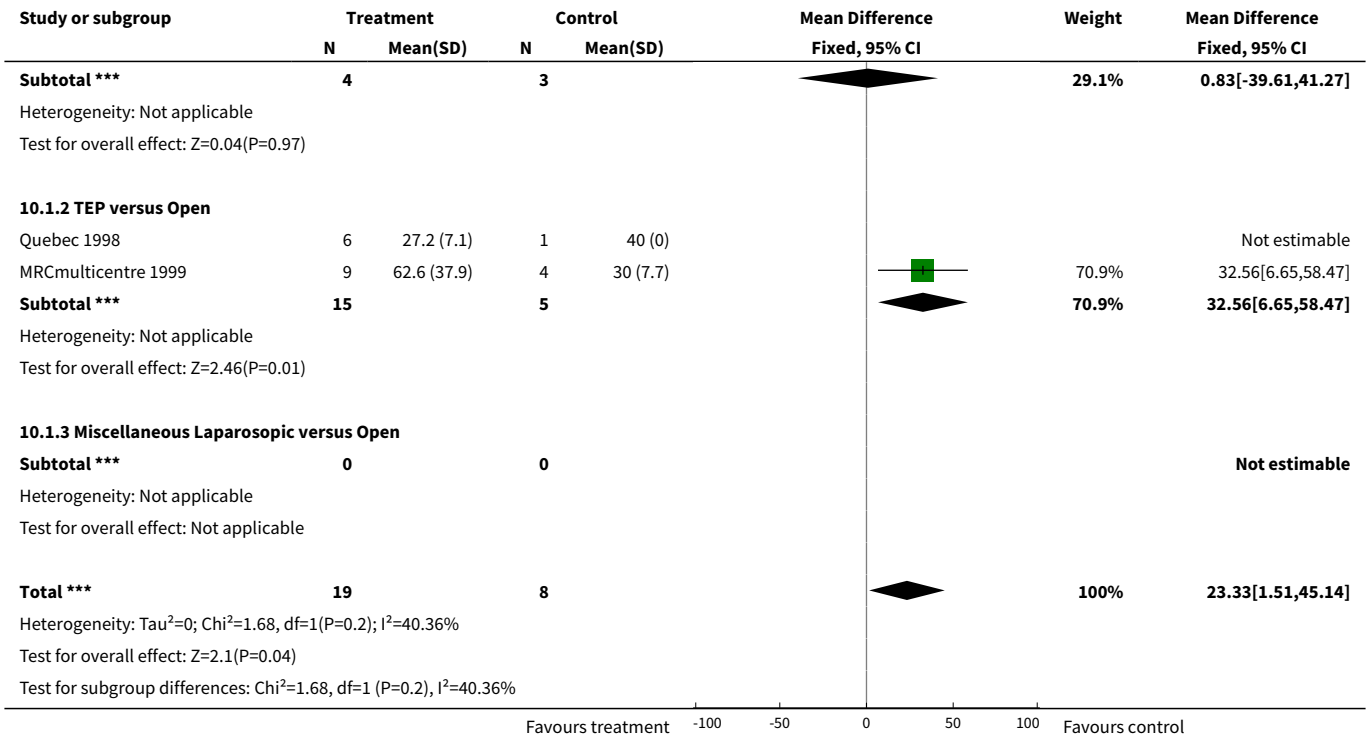
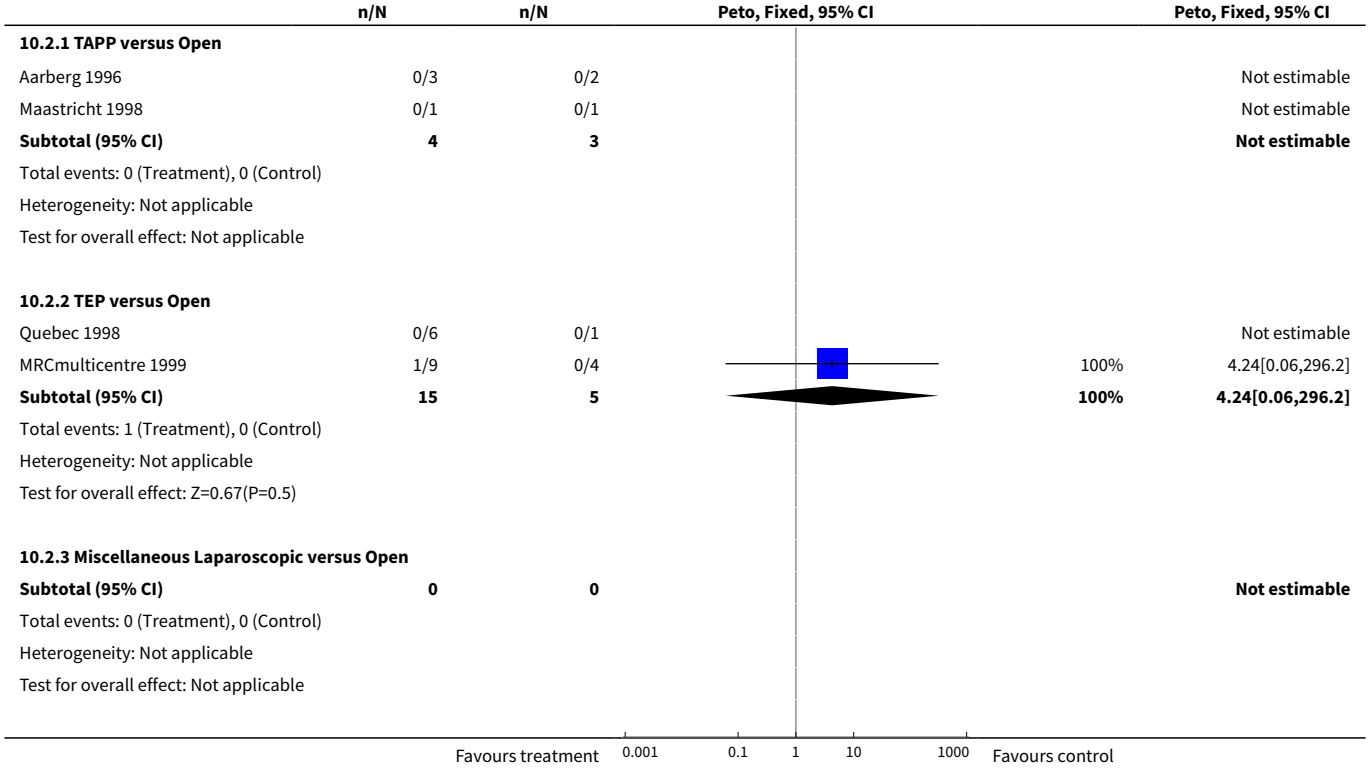


Analysis 10.2. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 2 "Opposite" method initiated.



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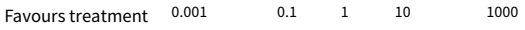
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total (95% CI)	**19**	**8**		**100%**	**4.24[0.06,296.2]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.67(P=0.5)					
Test for subgroup differences: Not applicable					

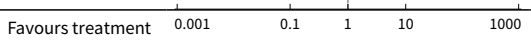


Analysis 10.3. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 3 Conversion.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
10.3.1 TAPP versus Open					
Maastricht 1998	0/1	0/1			Not estimable
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.3.2 TEP versus Open					
MRCmulticentre 1999	3/8	0/4		100%	6.25[0.44,88.87]
Quebec 1998	0/6	0/1			Not estimable
Subtotal (95% CI)	**14**	**5**		**100%**	**6.25[0.44,88.87]**
Total events: 3 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.35(P=0.18)					
10.3.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**18**	**8**		**100%**	**6.25[0.44,88.87]**
Total events: 3 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.35(P=0.18)					
Test for subgroup differences: Not applicable					

Analysis 10.4. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 4 Haematoma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
10.4.1 TAPP versus Open					
Maastricht 1998	1/1	1/2		38.91%	4.48[0.07,286.49]
Aarberg 1996	0/3	0/2			Not estimable



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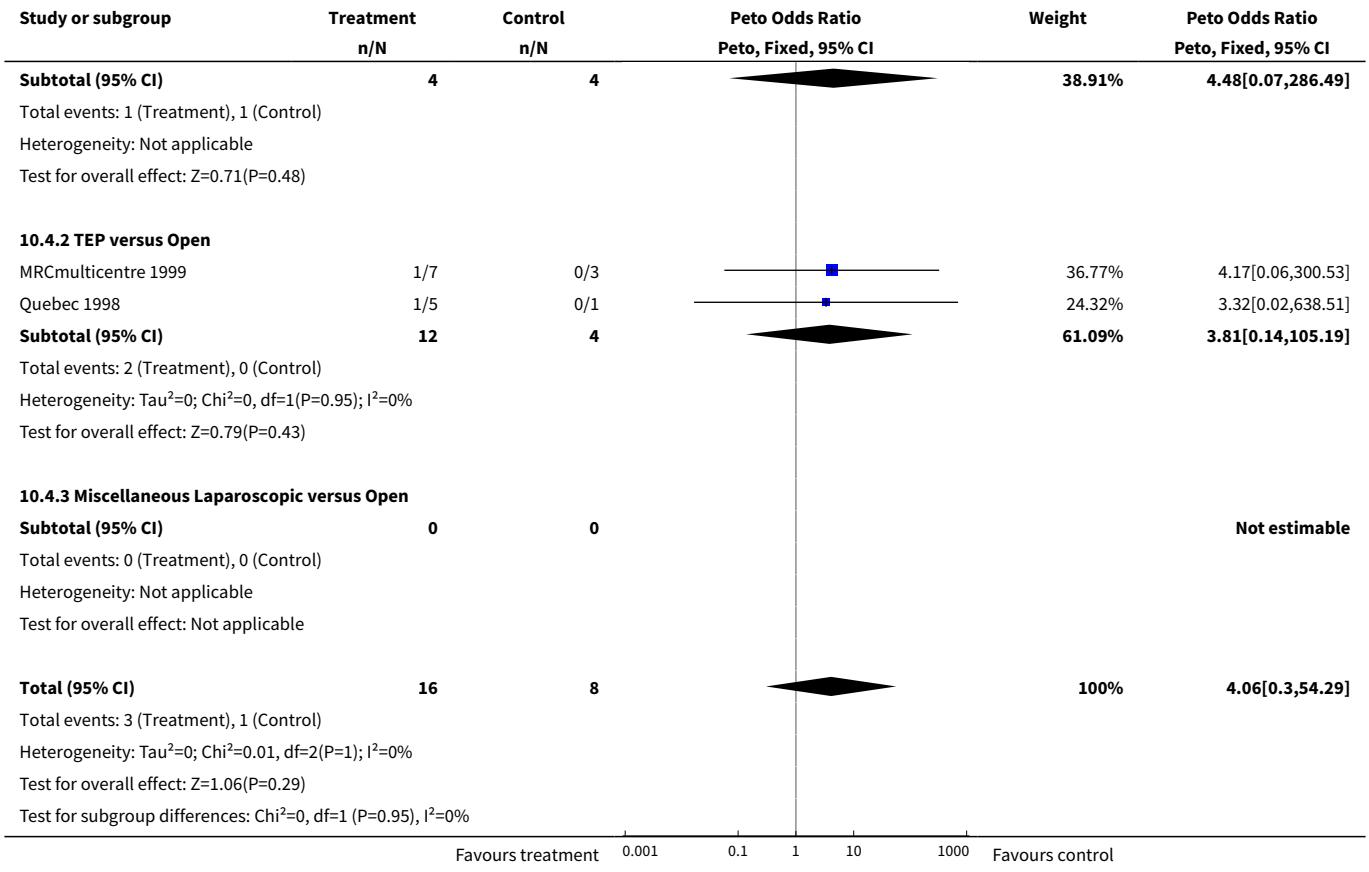
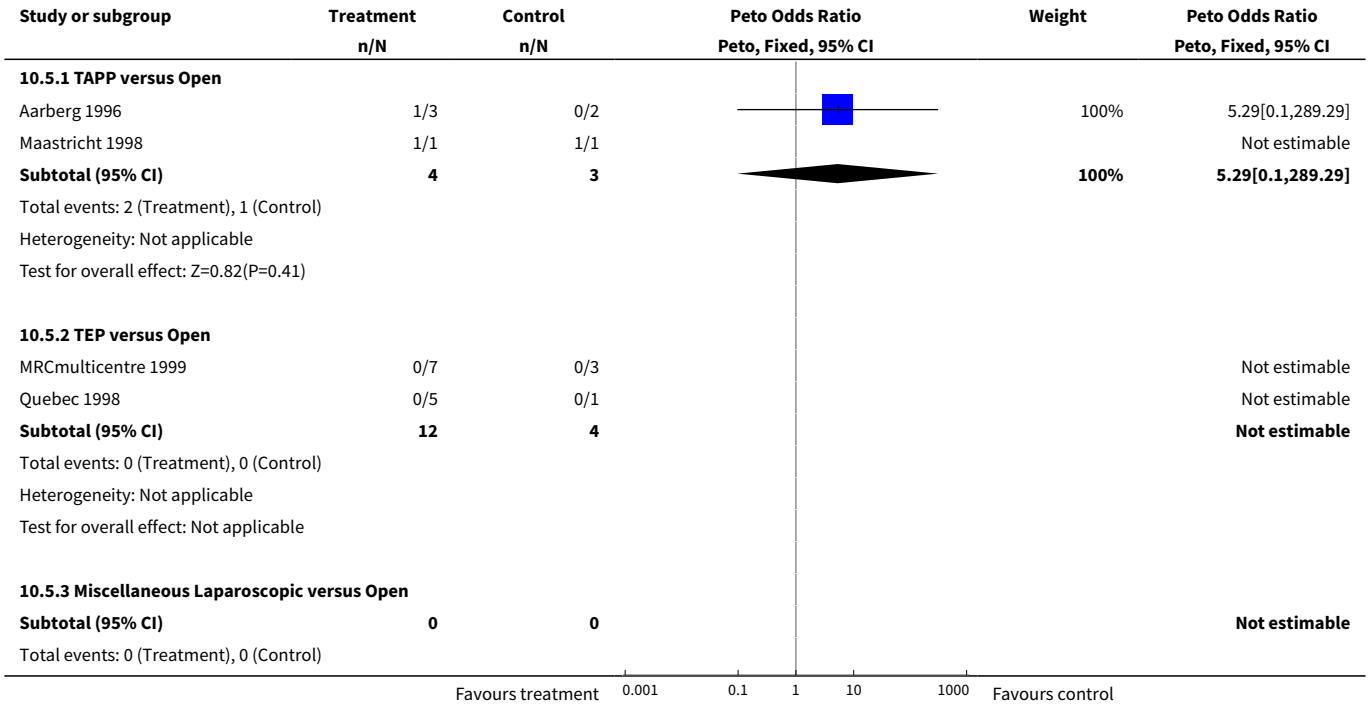


Analysis 10.5. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 5 Seroma.



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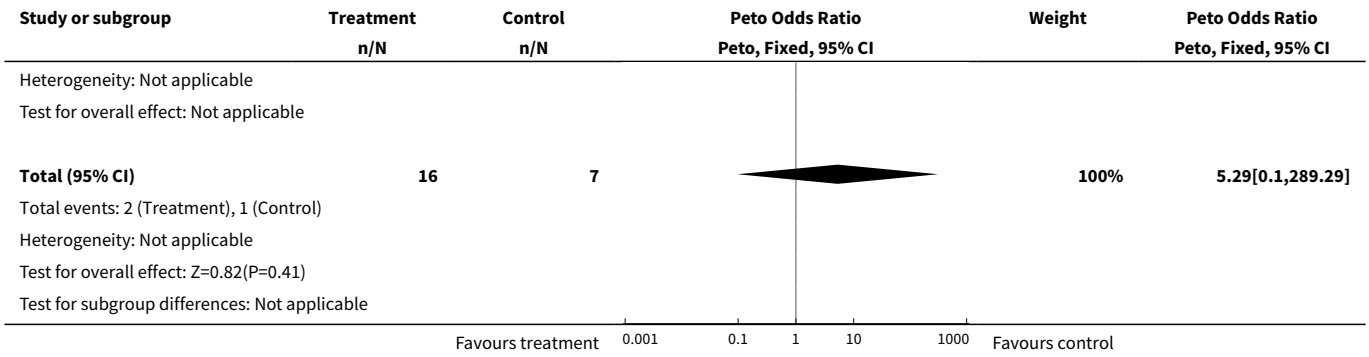
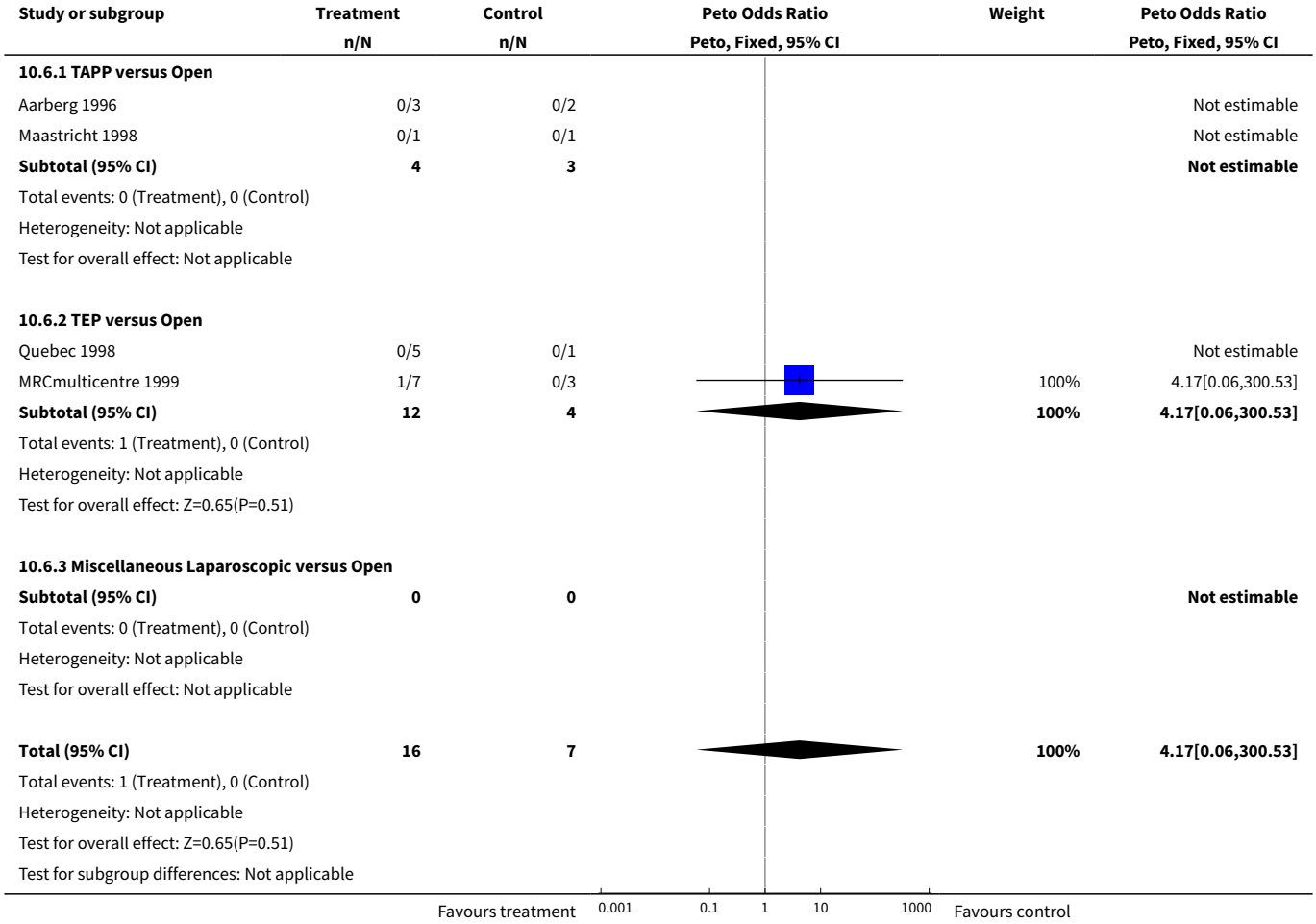


Analysis 10.6. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 6 Wound/superficial infection.



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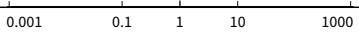
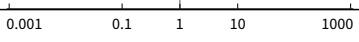
Analysis 10.7. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 7 Mesh/deep infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
10.7.1 TAPP versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.7.2 TEP versus Open					
MRCmulticentre 1999	0/7	0/3			Not estimable
Quebec 1998	0/5	0/1			Not estimable
Subtotal (95% CI)	**12**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.7.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**12**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					



Analysis 10.8. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
10.8.1 TAPP versus Open					
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**3**	**2**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.8.2 TEP versus Open					
Quebec 1998	0/5	0/1			Not estimable
MRCmulticentre 1999	0/9	0/4			Not estimable
Subtotal (95% CI)	**14**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.8.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**17**	**7**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 10.9. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
10.9.1 TAPP versus Open					
Aarberg 1996	0/3	0/2			Not estimable
Maastricht 1998	0/1	0/1			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.9.2 TEP versus Open					
MRCmulticentre 1999	0/9	0/4			Not estimable
Quebec 1998	0/5	0/1			Not estimable
Subtotal (95% CI)	**14**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.9.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**18**	**8**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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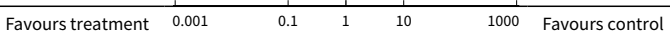
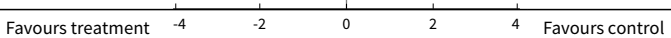
Analysis 10.10. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
10.10.1 TAPP versus Open					
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**3**	**2**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.10.2 TEP versus Open					
MRCmulticentre 1999	0/8	0/4			Not estimable
Quebec 1998	0/5	0/1			Not estimable
Subtotal (95% CI)	**13**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.10.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**16**	**7**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					



Analysis 10.11. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
10.11.1 TAPP versus Open							
Aarberg 1996	3	4.7 (1.2)	2	7 (0)			Not estimable
Maastricht 1998	1	1 (0)	1	1 (0)			Not estimable
Subtotal ***	**4**		**3**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
10.11.2 TEP versus Open							
MRCmulticentre 1999	7	1 (0)	3	1 (0)			Not estimable
Quebec 1998	5	0 (0)	1	0 (0)			Not estimable
Subtotal ***	**12**		**4**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
10.11.3 Miscellaneous Laparosopic versus Open							
Subtotal ***	**0**		**0**				**Not estimable**



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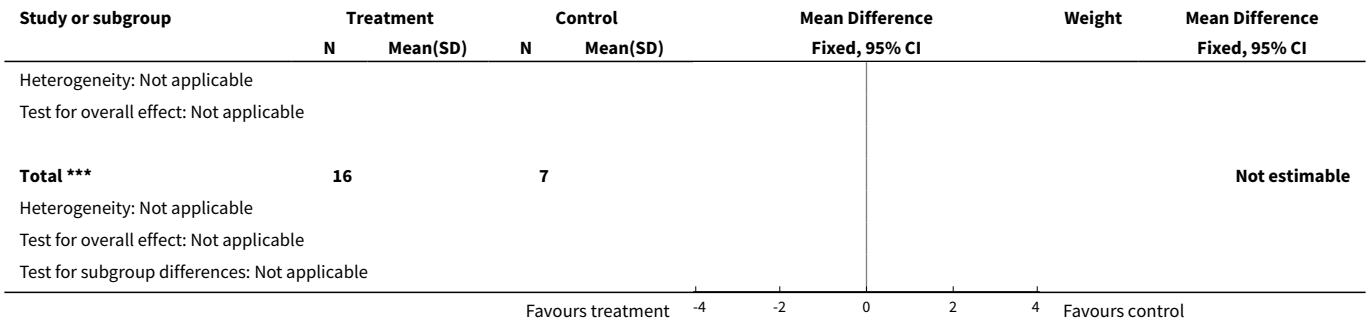
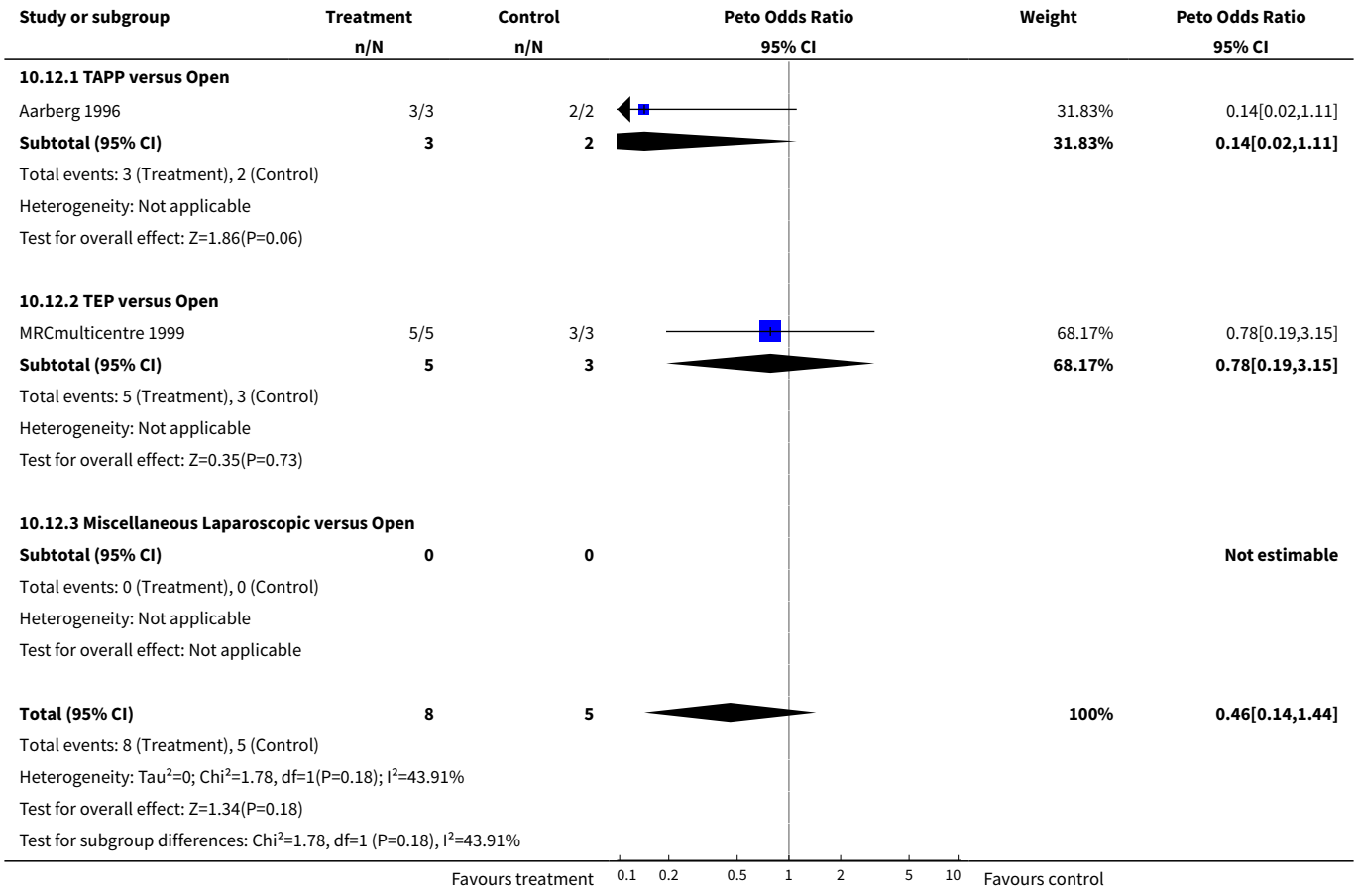
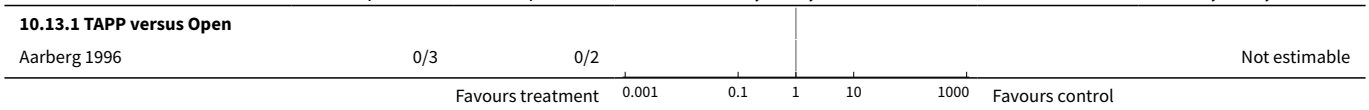


Analysis 10.12. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 12 Time to return to usual activities (days).



Analysis 10.13. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 13 Persisting pain.



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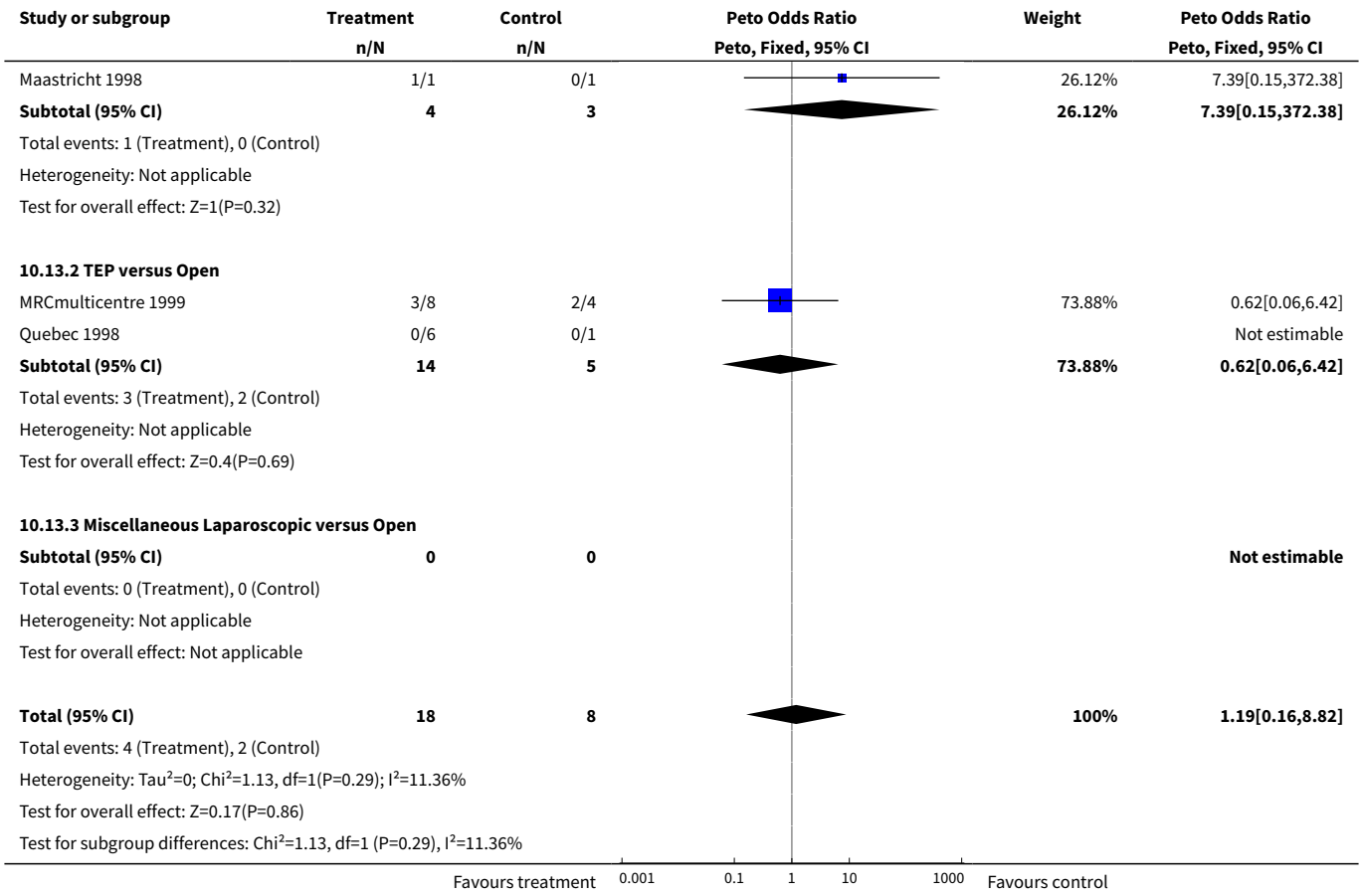
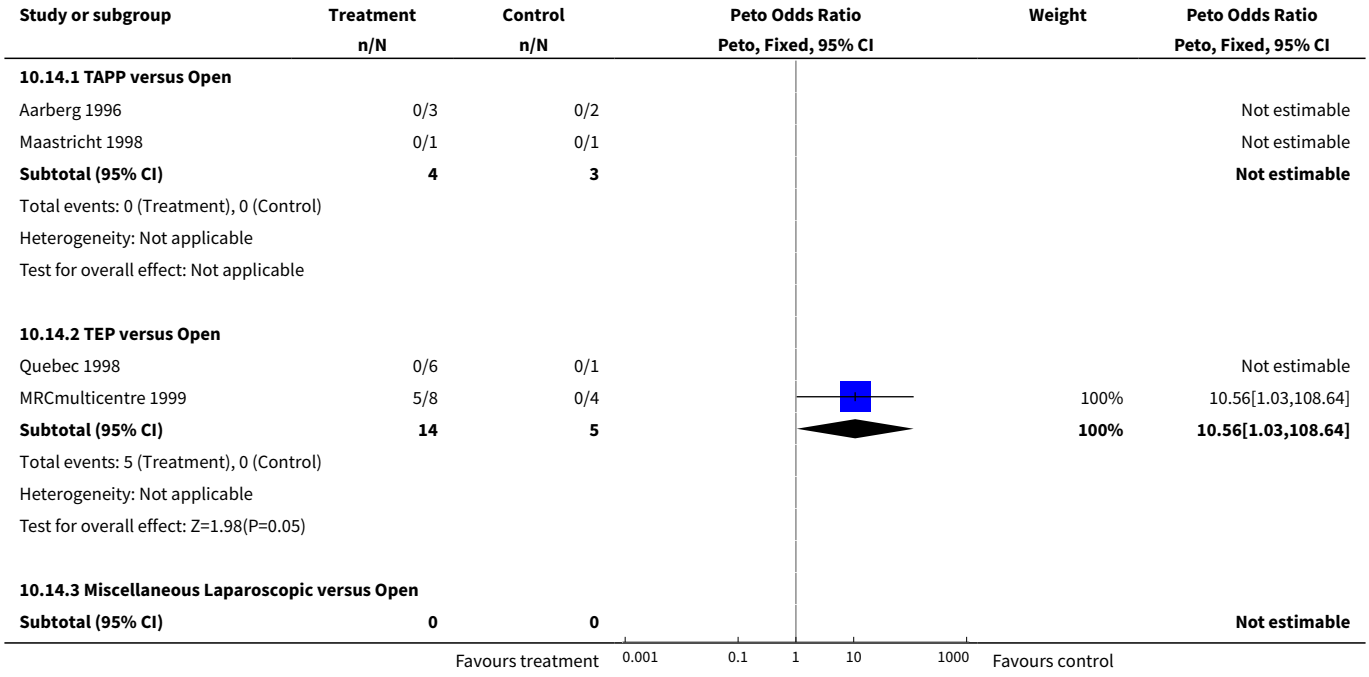


Analysis 10.14. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 14 Persisting numbness.



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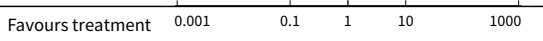
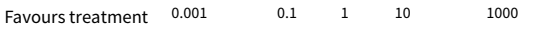
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**18**	**8**		**100%**	**10.56[1.03,108.64]**
Total events: 5 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.98(P=0.05)					
Test for subgroup differences: Not applicable					



Analysis 10.15. Comparison 10 Laparoscopic versus Open (Femoral hernias), Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
10.15.1 TAPP versus Open					
Aarberg 1996	1/3	0/2		100%	5.29[0.1,289.29]
Maastricht 1998	0/1	0/1			Not estimable
Subtotal (95% CI)	**4**	**3**		**100%**	**5.29[0.1,289.29]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.82(P=0.41)					
10.15.2 TEP versus Open					
MRCmulticentre 1999	0/8	0/4			Not estimable
Quebec 1998	0/6	0/1			Not estimable
Subtotal (95% CI)	**14**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
10.15.3 Miscellaneous Laparoscopic versus Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**18**	**8**		**100%**	**5.29[0.1,289.29]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.82(P=0.41)					
Test for subgroup differences: Not applicable					



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Comparison 11. TAPP versus Open (Femoral hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	2	7	Mean Difference (IV, Fixed, 95% CI)	0.83 [-39.61, 41.27]
1.1 TAPP versus Mesh	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.2 TAPP versus Non-Mesh	2	7	Mean Difference (IV, Fixed, 95% CI)	0.83 [-39.61, 41.27]
1.3 TAPP versus Mixed Open	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
2 "Opposite" method initiated	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 TAPP versus Non-Mesh	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3 Conversion	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.2 TAPP versus Non-Mesh	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4 Haematoma	2	8	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.48 [0.07, 286.49]
4.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.2 TAPP versus Non-Mesh	2	8	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.48 [0.07, 286.49]
4.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5 Seroma	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.29 [0.10, 289.29]
5.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.2 TAPP versus Non-Mesh	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	5.29 [0.10, 289.29]
5.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Wound/superficial infection	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.2 TAPP versus Non-Mesh	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Mesh/deep infection	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
7.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TAPP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	1	5	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TAPP versus Non-Mesh	1	5	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Visceral injury	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 TAPP versus Non-Mesh	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	1	5	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 TAPP versus Non-Mesh	1	5	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	2	7	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.1 TAPP versus Mesh	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 TAPP versus Non-Mesh	2	7	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 TAPP versus Mixed Open	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
12 Time to return to usual activities (days)	1	5	Peto Odds Ratio (95% CI)	0.14 [0.02, 1.11]
12.1 TAPP versus Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
12.2 TAPP versus Non-Mesh	1	5	Peto Odds Ratio (95% CI)	0.14 [0.02, 1.11]
12.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
13 Persisting pain	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.39 [0.15, 372.38]
13.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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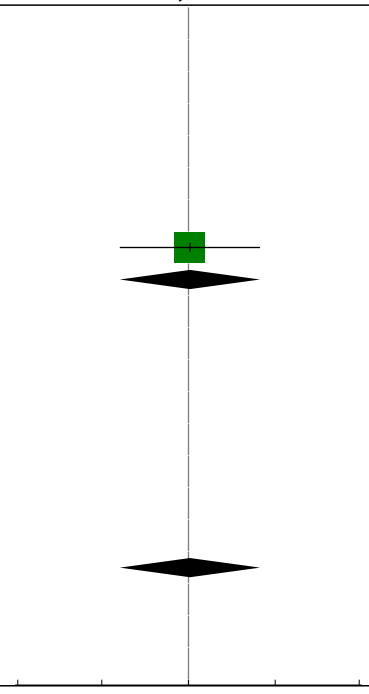
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
13.2 TAPP versus Non-Mesh	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	7.39 [0.15, 372.38]
13.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14 Persisting numbness	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.1 TAPP versus Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.2 TAPP versus Non-Mesh	2	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
15 Hernia recurrence	2	7	Peto Odds Ratio (95% CI)	5.29 [0.10, 289.29]
15.1 TAPP versus Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
15.2 TAPP versus Non-Mesh	2	7	Peto Odds Ratio (95% CI)	5.29 [0.10, 289.29]
15.3 TAPP versus Mixed Open	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]

Analysis 11.1. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
11.1.1 TAPP versus Mesh							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
11.1.2 TAPP versus Non-Mesh							
Maastricht 1998	1	75 (0)	1	45 (0)			Not estimable
Aarberg 1996	3	73.3 (28.4)	2	72.5 (17.7)		100%	0.83[-39.61,41.27]
Subtotal ***	**4**		**3**			**100%**	**0.83[-39.61,41.27]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.04(P=0.97)							
11.1.3 TAPP versus Mixed Open							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Total ***	**4**		**3**			**100%**	**0.83[-39.61,41.27]**
Heterogeneity: Not applicable							
Test for overall effect: Z=0.04(P=0.97)							
Test for subgroup differences: Not applicable							



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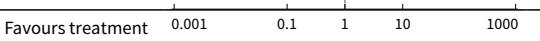
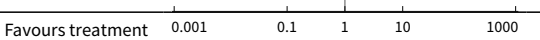
Analysis 11.2. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 2 "Opposite" method initiated.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.2.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.2.2 TAPP versus Non-Mesh					
Maastricht 1998	0/1	0/1			Not estimable
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.2.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					



Analysis 11.3. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 3 Conversion.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.3.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.3.2 TAPP versus Non-Mesh					
Aarberg 1996	0/3	0/2			Not estimable
Maastricht 1998	0/1	0/1			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.3.3 TAPP versus Mixed Open					



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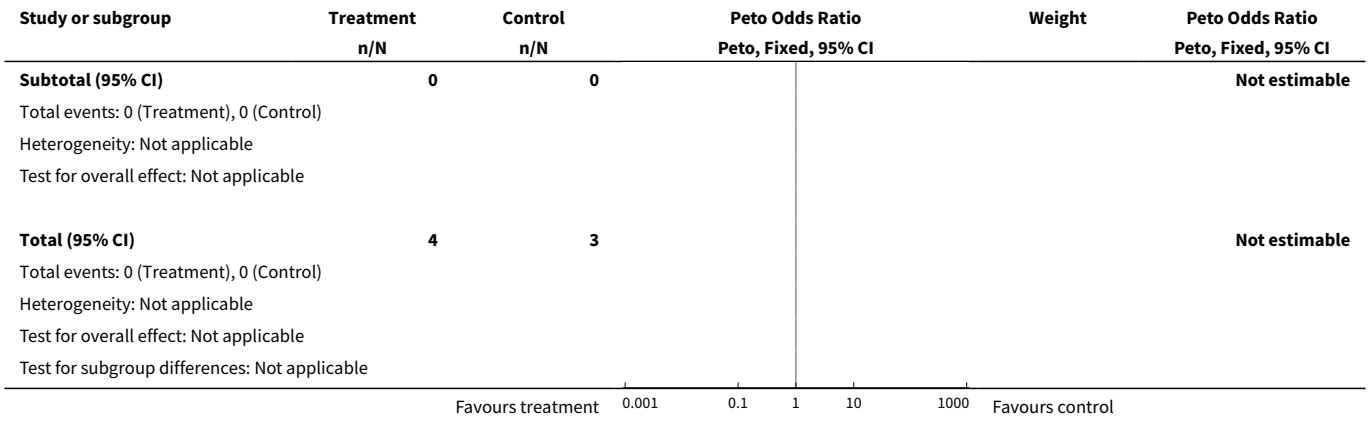
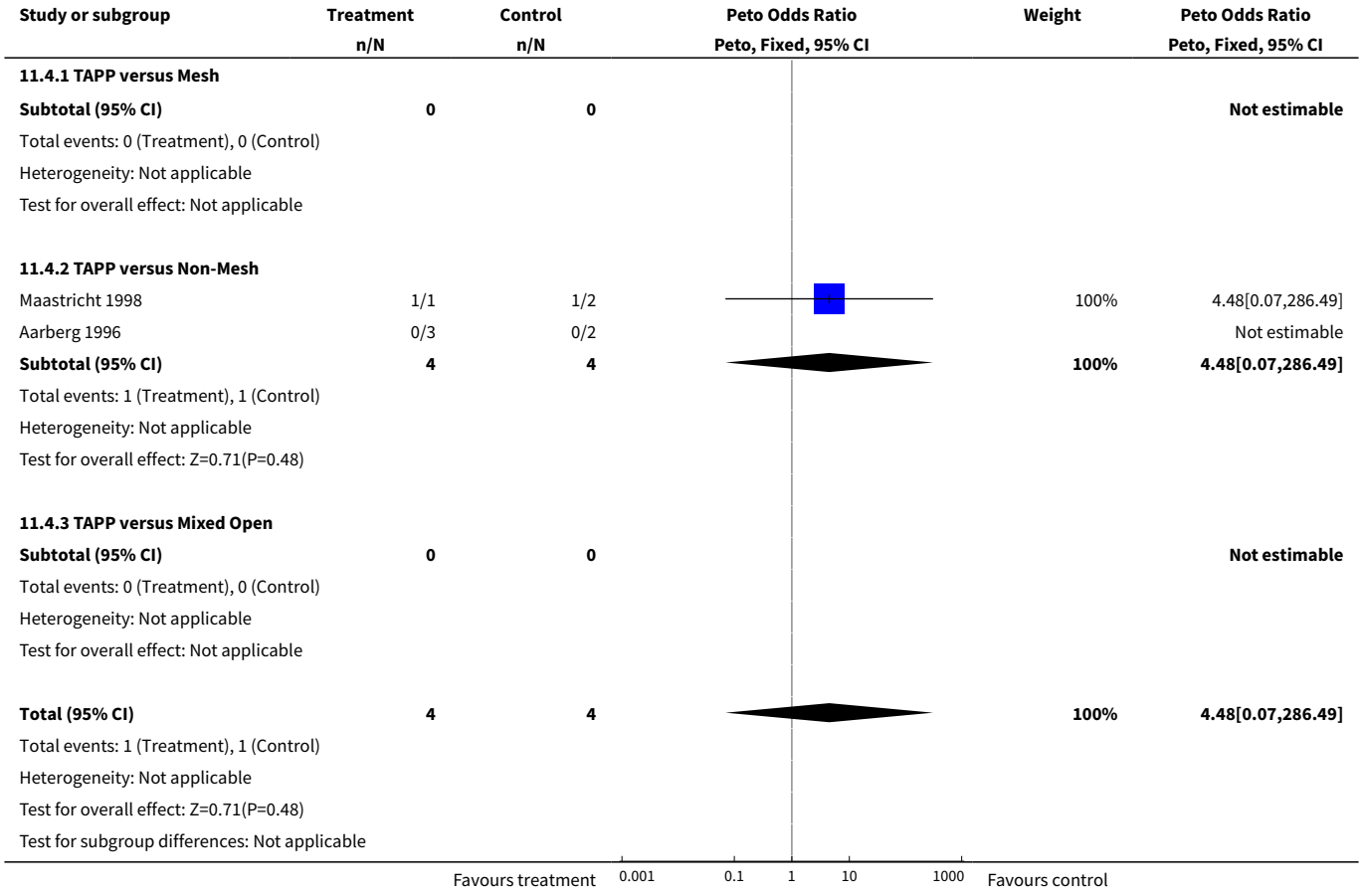


Analysis 11.4. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 4 Haematoma.



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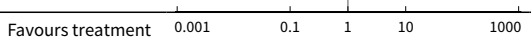
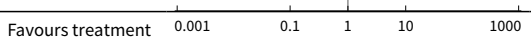
Analysis 11.5. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 5 Seroma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.5.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.5.2 TAPP versus Non-Mesh					
Aarberg 1996	1/3	0/2		100%	5.29[0.1,289.29]
Maastricht 1998	1/1	1/1			Not estimable
Subtotal (95% CI)	**4**	**3**		**100%**	**5.29[0.1,289.29]**
Total events: 2 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.82(P=0.41)					
11.5.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**4**	**3**		**100%**	**5.29[0.1,289.29]**
Total events: 2 (Treatment), 1 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.82(P=0.41)					
Test for subgroup differences: Not applicable					



Analysis 11.6. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 6 Wound/superficial infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.6.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.6.2 TAPP versus Non-Mesh					
Maastricht 1998	0/1	0/1			Not estimable
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.6.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 11.8. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.8.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.8.2 TAPP versus Non-Mesh					
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**3**	**2**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.8.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**3**	**2**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 11.9. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.9.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.9.2 TAPP versus Non-Mesh					
Maastricht 1998	0/1	0/1			Not estimable
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.9.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 11.10. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.10.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.10.2 TAPP versus Non-Mesh					
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**3**	**2**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.10.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**3**	**2**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 11.11. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
11.11.1 TAPP versus Mesh							
Subtotal * **	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
11.11.2 TAPP versus Non-Mesh							
Aarberg 1996	3	4.7 (1.2)	2	7 (0)			Not estimable
Maastricht 1998	1	1 (0)	1	1 (0)			Not estimable
Subtotal * **	**4**		**3**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
11.11.3 TAPP versus Mixed Open							
Subtotal * **	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Total * **	**4**		**3**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Test for subgroup differences: Not applicable							

Favours treatment -4 -2 0 2 4 Favours control

Analysis 11.12. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 12 Time to return to usual activities (days).

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
11.12.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.12.2 TAPP versus Non-Mesh					
Aarberg 1996	3/3	2/2		100%	0.14[0.02,1.11]
Subtotal (95% CI)	**3**	**2**		**100%**	**0.14[0.02,1.11]**
Total events: 3 (Treatment), 2 (Control)					

Favours treatment 0.1 0.2 0.5 1 2 5 10 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Z=1.86(P=0.06)					
11.12.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**3**	**2**		**100%**	**0.14[0.02,1.11]**
Total events: 3 (Treatment), 2 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.86(P=0.06)					
Test for subgroup differences: Not applicable					

Favours treatment — Favours control

Analysis 11.13. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 13 Persisting pain.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.13.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.13.2 TAPP versus Non-Mesh					
Maastricht 1998	1/1	0/1		100%	7.39[0.15,372.38]
Aarberg 1996	0/3	0/2			Not estimable
Subtotal (95% CI)	**4**	**3**		**100%**	**7.39[0.15,372.38]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1(P=0.32)					
11.13.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**4**	**3**		**100%**	**7.39[0.15,372.38]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1(P=0.32)					
Test for subgroup differences: Not applicable					

Favours treatment — Favours control

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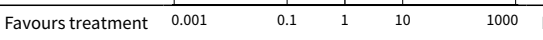
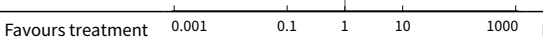
Analysis 11.14. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 14 Persisting numbness.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
11.14.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.14.2 TAPP versus Non-Mesh					
Aarberg 1996	0/3	0/2			Not estimable
Maastricht 1998	0/1	0/1			Not estimable
Subtotal (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.14.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**4**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					



Analysis 11.15. Comparison 11 TAPP versus Open (Femoral hernias), Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
11.15.1 TAPP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
11.15.2 TAPP versus Non-Mesh					
Aarberg 1996	1/3	0/2		100%	5.29[0.1,289.29]
Maastricht 1998	0/1	0/1			Not estimable
Subtotal (95% CI)	**4**	**3**		**100%**	**5.29[0.1,289.29]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.82(P=0.41)					
11.15.3 TAPP versus Mixed Open					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					



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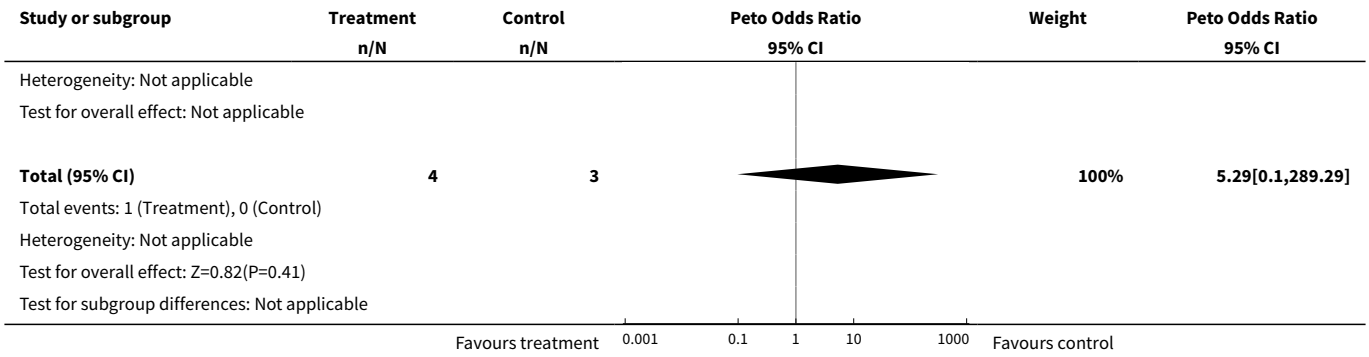

Comparison 12. TEP versus Open (Femoral hernias)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Duration of operation (minutes)	2	20	Mean Difference (IV, Fixed, 95% CI)	32.56 [6.65, 58.47]
1.1 TEP versus Mesh	1	7	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.2 TEP versus Non-Mesh	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
1.3 TEP versus Mixed Open	1	13	Mean Difference (IV, Fixed, 95% CI)	32.56 [6.65, 58.47]
2 "Opposite" method initiated	2	20	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.24 [0.06, 296.20]
2.1 TEP versus Mesh	1	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
2.3 TEP versus Mixed Open	1	13	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.24 [0.06, 296.20]
3 Conversion	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.25 [0.44, 88.87]
3.1 TEP versus Mesh	1	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
3.3 TEP versus Mixed Open	1	12	Peto Odds Ratio (Peto, Fixed, 95% CI)	6.25 [0.44, 88.87]
4 Haematoma	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.81 [0.14, 105.19]
4.1 TEP versus Mesh	1	6	Peto Odds Ratio (Peto, Fixed, 95% CI)	3.32 [0.02, 638.51]
4.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
4.3 TEP versus Mixed Open	1	10	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.17 [0.06, 300.53]
5 Seroma	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.1 TEP versus Mesh	1	6	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
5.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
5.3 TEP versus Mixed Open	1	10	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6 Wound/superficial infection	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.17 [0.06, 300.53]
6.1 TEP versus Mesh	1	6	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
6.3 TEP versus Mixed Open	1	10	Peto Odds Ratio (Peto, Fixed, 95% CI)	4.17 [0.06, 300.53]
7 Mesh/deep infection	2	16	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.1 TEP versus Mesh	1	6	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
7.3 TEP versus Mixed Open	1	10	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8 Vascular injury	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.1 TEP versus Mesh	1	6	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
8.3 TEP versus Mixed Open	1	13	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9 Visceral injury	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.1 TEP versus Mesh	1	6	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
9.3 TEP versus Mixed Open	1	13	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10 Port site hernia	2	18	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.1 TEP versus Mesh	1	6	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
10.3 TEP versus Mixed Open	1	12	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
11 Length of stay (days)	2	16	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.1 TEP versus Mesh	1	6	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.2 TEP versus Non-Mesh	0	0	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
11.3 TEP versus Mixed Open	1	10	Mean Difference (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

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Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
12 Time to return to usual activities (days)	1	8	Peto Odds Ratio (95% CI)	0.78 [0.19, 3.15]
12.1 TEP versus Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
12.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
12.3 TEP versus Mixed Open	1	8	Peto Odds Ratio (95% CI)	0.78 [0.19, 3.15]
13 Persisting pain	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.62 [0.06, 6.42]
13.1 TEP versus Mesh	1	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
13.3 TEP versus Mixed Open	1	12	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.62 [0.06, 6.42]
14 Persisting numbness	2	19	Peto Odds Ratio (Peto, Fixed, 95% CI)	10.56 [1.03, 108.64]
14.1 TEP versus Mesh	1	7	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (Peto, Fixed, 95% CI)	0.0 [0.0, 0.0]
14.3 TEP versus Mixed Open	1	12	Peto Odds Ratio (Peto, Fixed, 95% CI)	10.56 [1.03, 108.64]
15 Hernia recurrence	2	19	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
15.1 TEP versus Mesh	1	7	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
15.2 TEP versus Non-Mesh	0	0	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]
15.3 TEP versus Mixed Open	1	12	Peto Odds Ratio (95% CI)	0.0 [0.0, 0.0]

Analysis 12.1. Comparison 12 TEP versus Open (Femoral hernias), Outcome 1 Duration of operation (minutes).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
12.1.1 TEP versus Mesh							
Quebec 1998	6	27.2 (7.1)	1	40 (0)			Not estimable
Subtotal ***	**6**		**1**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
12.1.2 TEP versus Non-Mesh							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							

Favours treatment -100 -50 0 50 100 Favours control

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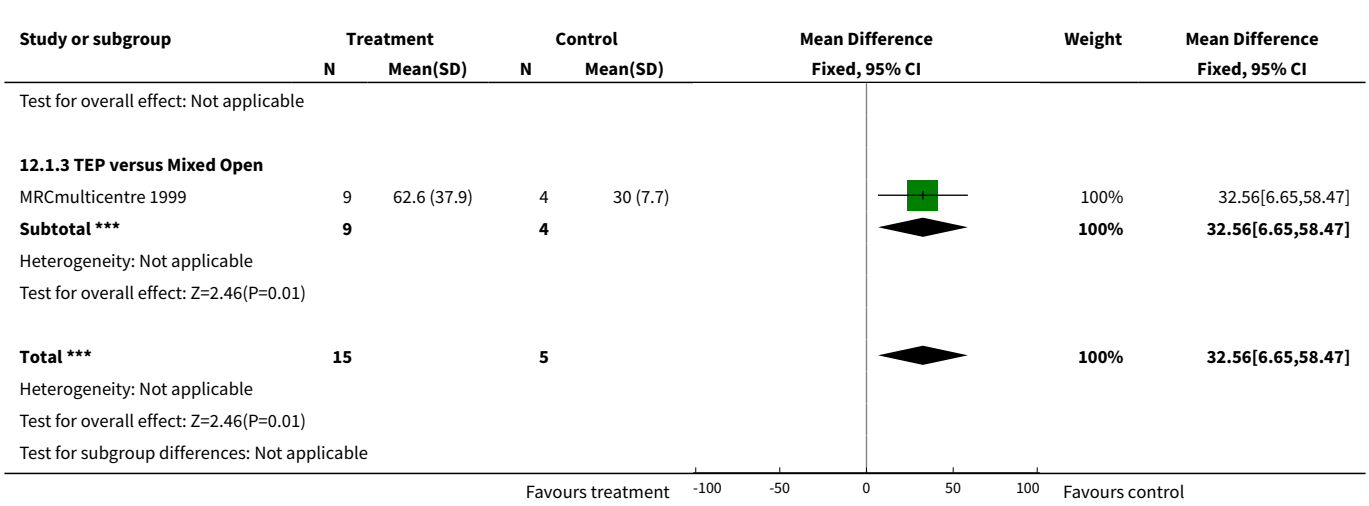
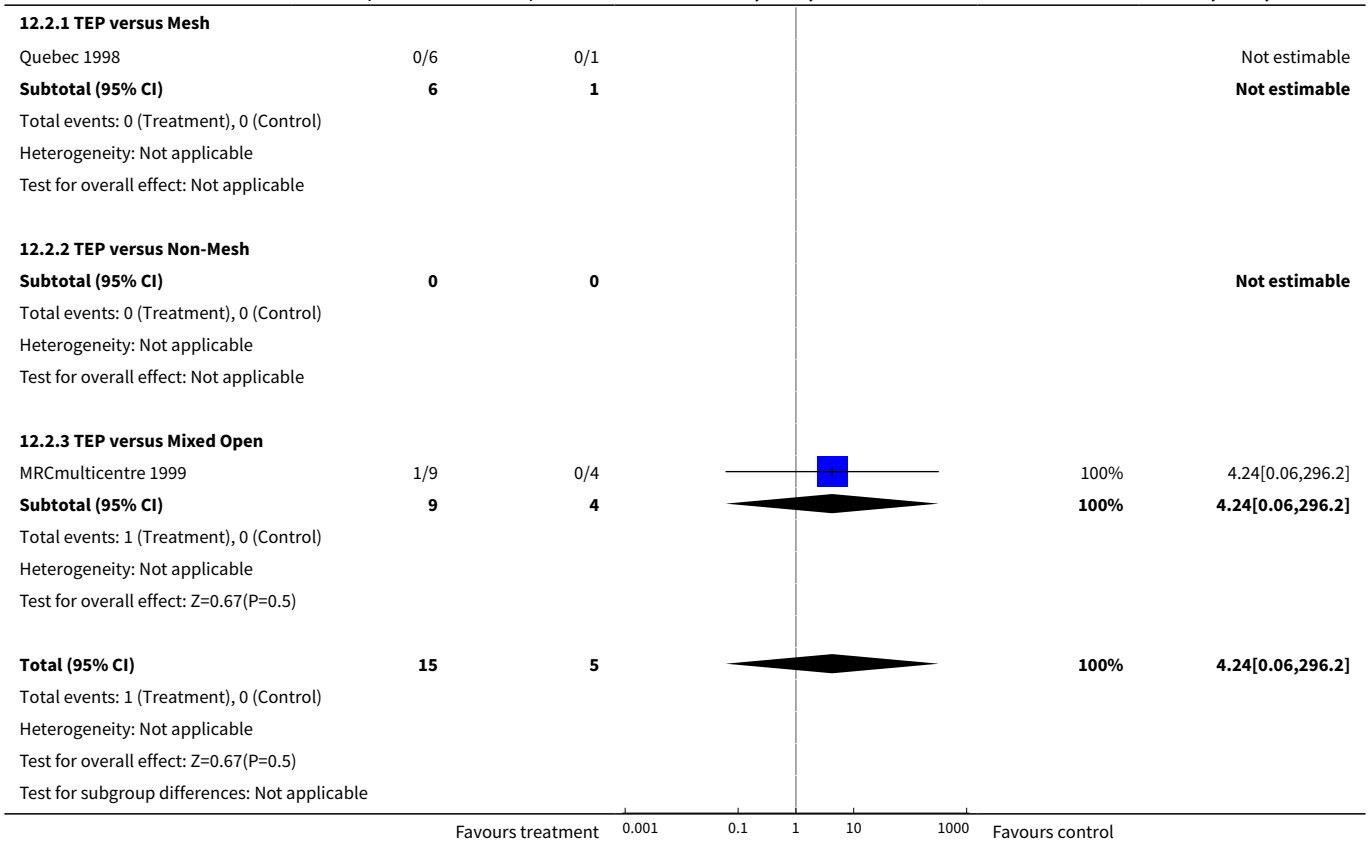


Analysis 12.2. Comparison 12 TEP versus Open (Femoral hernias), Outcome 2 "Opposite" method initiated.



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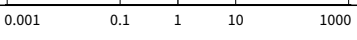
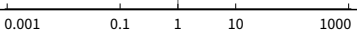
Analysis 12.3. Comparison 12 TEP versus Open (Femoral hernias), Outcome 3 Conversion.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
12.3.1 TEP versus Mesh					
Quebec 1998	0/6	0/1			Not estimable
Subtotal (95% CI)	**6**	**1**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.3.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.3.3 TEP versus Mixed Open					
MRCmulticentre 1999	3/8	0/4		100%	6.25[0.44,88.87]
Subtotal (95% CI)	**8**	**4**		**100%**	**6.25[0.44,88.87]**
Total events: 3 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.35(P=0.18)					
Total (95% CI)	**14**	**5**		**100%**	**6.25[0.44,88.87]**
Total events: 3 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.35(P=0.18)					
Test for subgroup differences: Not applicable					



Analysis 12.4. Comparison 12 TEP versus Open (Femoral hernias), Outcome 4 Haematoma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
12.4.1 TEP versus Mesh					
Quebec 1998	1/5	0/1		39.81%	3.32[0.02,638.51]
Subtotal (95% CI)	**5**	**1**		**39.81%**	**3.32[0.02,638.51]**
Total events: 1 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=0.45(P=0.65)					
12.4.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.4.3 TEP versus Mixed Open					
MRCmulticentre 1999	1/7	0/3		60.19%	4.17[0.06,300.53]
Subtotal (95% CI)	**7**	**3**		**60.19%**	**4.17[0.06,300.53]**
Total events: 1 (Treatment), 0 (Control)					



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Z=0.65(P=0.51)					
Total (95% CI)	**12**	**4**		**100%**	**3.81[0.14,105.19]**
Total events: 2 (Treatment), 0 (Control)					
Heterogeneity: Tau^2=0; Chi^2=0, df=1(P=0.95); I^2=0%					
Test for overall effect: Z=0.79(P=0.43)					
Test for subgroup differences: Chi^2=0, df=1 (P=0.95), I^2=0%					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 12.5. Comparison 12 TEP versus Open (Femoral hernias), Outcome 5 Seroma.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
12.5.1 TEP versus Mesh					
Quebec 1998	0/5	0/1			Not estimable
Subtotal (95% CI)	**5**	**1**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.5.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.5.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/7	0/3			Not estimable
Subtotal (95% CI)	**7**	**3**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**12**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 12.6. Comparison 12 TEP versus Open (Femoral hernias), Outcome 6 Wound/superficial infection.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
12.6.1 TEP versus Mesh					
Quebec 1998	0/5	0/1			Not estimable

Favours treatment 0.001 0.1 1 10 1000 Favours control

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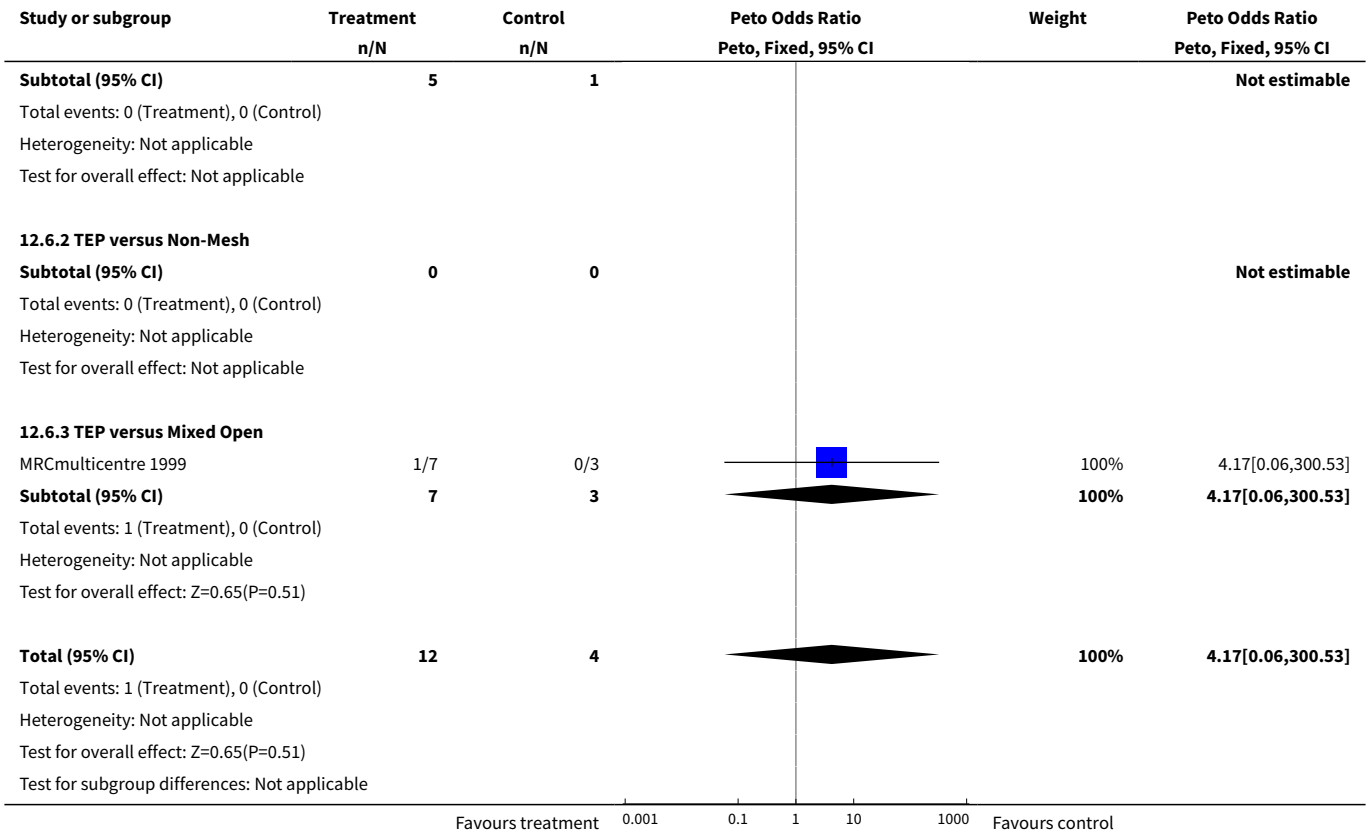
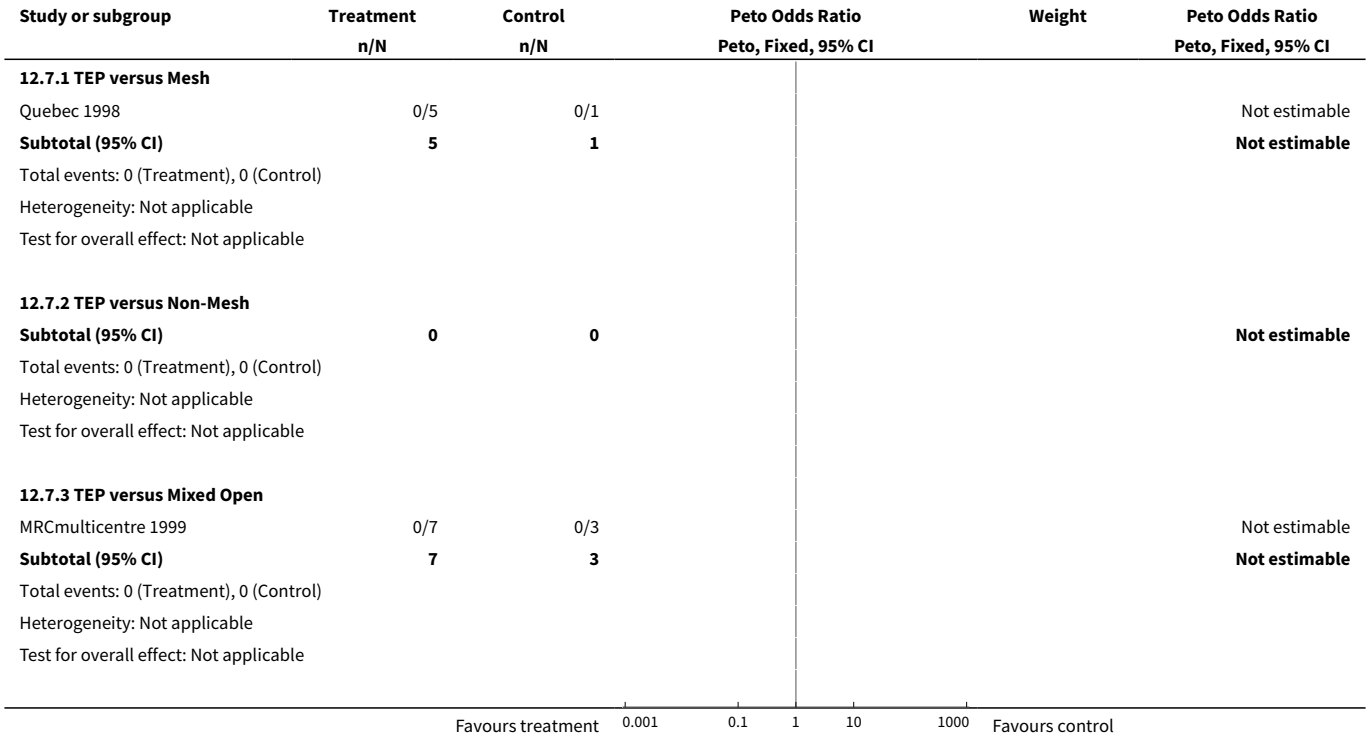


Analysis 12.7. Comparison 12 TEP versus Open (Femoral hernias), Outcome 7 Mesh/deep infection.



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Total (95% CI)	**12**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 12.8. Comparison 12 TEP versus Open (Femoral hernias), Outcome 8 Vascular injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
12.8.1 TEP versus Mesh					
Quebec 1998	0/5	0/1			Not estimable
Subtotal (95% CI)	**5**	**1**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.8.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.8.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/9	0/4			Not estimable
Subtotal (95% CI)	**9**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**14**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 12.9. Comparison 12 TEP versus Open (Femoral hernias), Outcome 9 Visceral injury.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
12.9.1 TEP versus Mesh					
Quebec 1998	0/5	0/1			Not estimable
Subtotal (95% CI)	**5**	**1**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Not applicable					
12.9.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.9.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/9	0/4			Not estimable
Subtotal (95% CI)	**9**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**14**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Analysis 12.10. Comparison 12 TEP versus Open (Femoral hernias), Outcome 10 Port site hernia.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
12.10.1 TEP versus Mesh					
Quebec 1998	0/5	0/1			Not estimable
Subtotal (95% CI)	**5**	**1**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.10.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.10.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/8	0/4			Not estimable
Subtotal (95% CI)	**8**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**13**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

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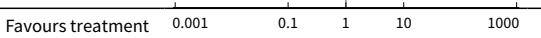
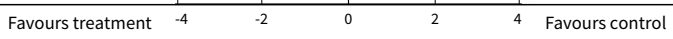
Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					



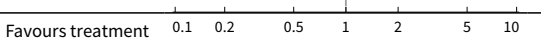
Analysis 12.11. Comparison 12 TEP versus Open (Femoral hernias), Outcome 11 Length of stay (days).

Study or subgroup	Treatment N	Treatment Mean(SD)	Control N	Control Mean(SD)	Mean Difference Fixed, 95% CI	Weight	Mean Difference Fixed, 95% CI
12.11.1 TEP versus Mesh							
Quebec 1998	5	0 (0)	1	0 (0)			Not estimable
Subtotal ***	**5**		**1**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
12.11.2 TEP versus Non-Mesh							
Subtotal ***	**0**		**0**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
12.11.3 TEP versus Mixed Open							
MRCmulticentre 1999	7	1 (0)	3	1 (0)			Not estimable
Subtotal ***	**7**		**3**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Total ***	**12**		**4**				**Not estimable**
Heterogeneity: Not applicable							
Test for overall effect: Not applicable							
Test for subgroup differences: Not applicable							



Analysis 12.12. Comparison 12 TEP versus Open (Femoral hernias), Outcome 12 Time to return to usual activities (days).

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
12.12.1 TEP versus Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.12.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					



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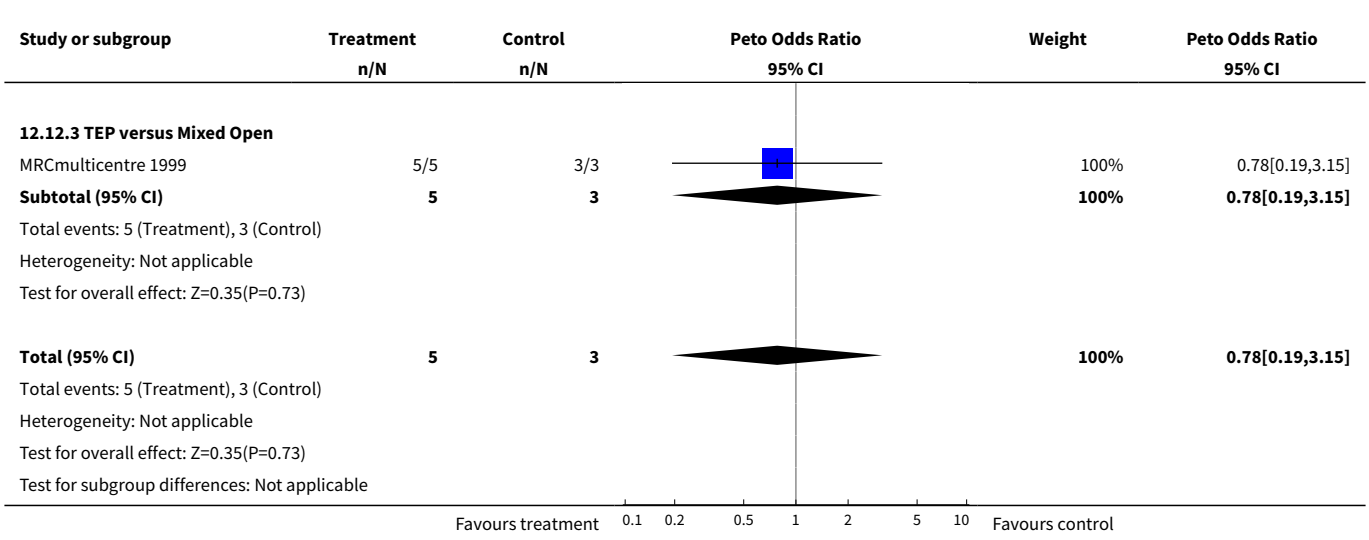
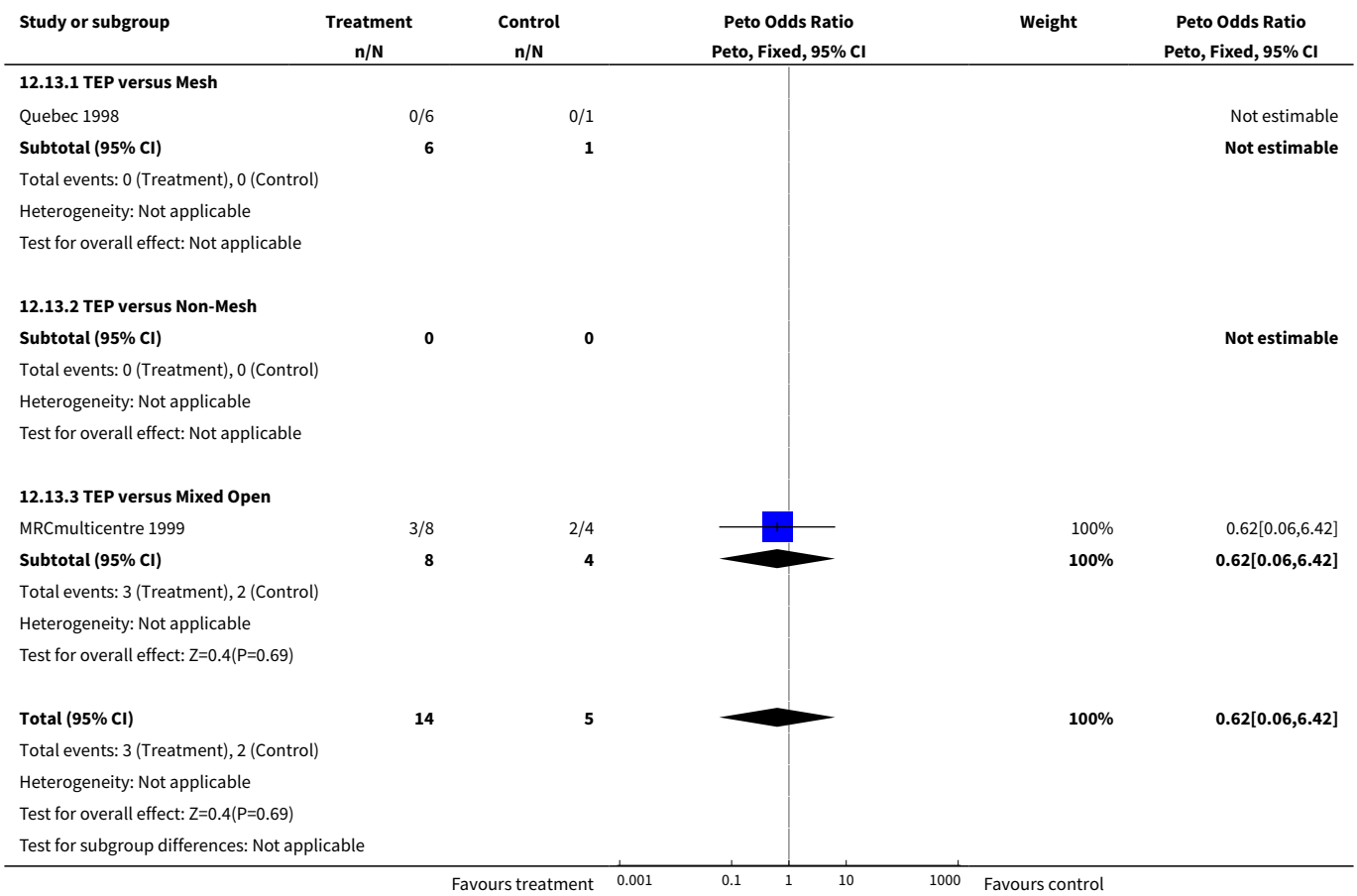


Analysis 12.13. Comparison 12 TEP versus Open (Femoral hernias), Outcome 13 Persisting pain.



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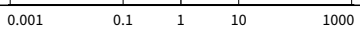
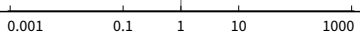
Analysis 12.14. Comparison 12 TEP versus Open (Femoral hernias), Outcome 14 Persisting numbness.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio Peto, Fixed, 95% CI	Weight	Peto Odds Ratio Peto, Fixed, 95% CI
12.14.1 TEP versus Mesh					
Quebec 1998	0/6	0/1			Not estimable
Subtotal (95% CI)	**6**	**1**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.14.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.14.3 TEP versus Mixed Open					
MRCmulticentre 1999	5/8	0/4		100%	10.56[1.03,108.64]
Subtotal (95% CI)	**8**	**4**		**100%**	**10.56[1.03,108.64]**
Total events: 5 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.98(P=0.05)					
Total (95% CI)	**14**	**5**		**100%**	**10.56[1.03,108.64]**
Total events: 5 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Z=1.98(P=0.05)					
Test for subgroup differences: Not applicable					



Analysis 12.15. Comparison 12 TEP versus Open (Femoral hernias), Outcome 15 Hernia recurrence.

Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
12.15.1 TEP versus Mesh					
Quebec 1998	0/6	0/1			Not estimable
Subtotal (95% CI)	**6**	**1**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.15.2 TEP versus Non-Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
12.15.3 TEP versus Mixed Open					
MRCmulticentre 1999	0/8	0/4			Not estimable
Subtotal (95% CI)	**8**	**4**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					



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Study or subgroup	Treatment n/N	Control n/N	Peto Odds Ratio 95% CI	Weight	Peto Odds Ratio 95% CI
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**14**	**5**			**Not estimable**
Total events: 0 (Treatment), 0 (Control)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Test for subgroup differences: Not applicable					

Favours treatment 0.001 0.1 1 10 1000 Favours control

Comparison 13. Laparoscopic versus mesh (published data)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Persisiting pain (published data)	2	488	Odds Ratio (M-H, Fixed, 95% CI)	2.28 [0.58, 8.92]
1.1 TAPP versus Open Mesh	2	488	Odds Ratio (M-H, Fixed, 95% CI)	2.28 [0.58, 8.92]
1.2 TEP versus Open Mesh	0	0	Odds Ratio (M-H, Fixed, 95% CI)	0.0 [0.0, 0.0]

Analysis 13.1. Comparison 13 Laparoscopic versus mesh (published data), Outcome 1 Persisiting pain (published data).

Study or subgroup	Laparoscopic n/N	Open mesh n/N	Odds Ratio M-H, Fixed, 95% CI	Weight	Odds Ratio M-H, Fixed, 95% CI
13.1.1 TAPP versus Open Mesh					
Maastricht 1999	2/42	1/37		34.11%	1.8[0.16,20.7]
SCUR 1999	5/205	2/204		65.89%	2.53[0.48,13.17]
Subtotal (95% CI)	**247**	**241**		**100%**	**2.28[0.58,8.92]**
Total events: 7 (Laparoscopic), 3 (Open mesh)					
Heterogeneity: Tau^2=0; Chi^2=0.05, df=1(P=0.82); I^2=0%					
Test for overall effect: Z=1.18(P=0.24)					
13.1.2 TEP versus Open Mesh					
Subtotal (95% CI)	**0**	**0**			**Not estimable**
Total events: 0 (Laparoscopic), 0 (Open mesh)					
Heterogeneity: Not applicable					
Test for overall effect: Not applicable					
Total (95% CI)	**247**	**241**		**100%**	**2.28[0.58,8.92]**
Total events: 7 (Laparoscopic), 3 (Open mesh)					
Heterogeneity: Tau^2=0; Chi^2=0.05, df=1(P=0.82); I^2=0%					
Test for overall effect: Z=1.18(P=0.24)					
Test for subgroup differences: Not applicable					

Favours laparoscopic 0.1 0.2 0.5 1 2 5 10 Favours open mesh

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FEEDBACK

Wrong data entry in 'tables of comparisons'

Summary

There is a false data entry in the above-mentioned review. The recurrence rates in the comparison "TAPP versus Non-Mesh (Comparison 02-15)" contain data from a trial called "Nyborg 1999". The trial arm on mesh repair is said to contain 438 patients, but the trial in truth only had 138 patients in this treatment arm. This typing error has potential effects on the results, because the trial is now receiving a exaggeratedly high weight in the statistical analysis.

I certify that I have no affiliations with or involvement in any organisation or entity with a direct financial interest in the subject matter of my criticisms.

Contributors

Comment by Stefan Sauerland (a clinical researcher and Cochrane reviewer) (13/02/03 16:45:08)

e-mail: S.Sauerland@uni-koeln.de

WHAT'S NEW

Date	Event	Description
5 August 2008	Amended	Converted to new review format.

HISTORY

Protocol first published: Issue 3, 1999
Review first published: Issue 4, 2000

Date	Event	Description
6 November 2002	New citation required and conclusions have changed	Substantive amendment

CONTRIBUTIONS OF AUTHORS

AG led the review team.
The protocol was developed by members of the Secretariat and the Steering Committee on behalf of the EU Hernia Trialists Collaboration.
The search strategy development, abstract assessment and full text quality assessment were performed by KMc.
Data collection and data queries were co-ordinated by KMc.
Recoding and reanalysis of IPD were carried out by NS.
Other data abstraction and methodological quality assessment were conducted by KMc, NS and SR.
The data input to Revman was performed mainly by KMc.
The interpretation of results was undertaken by members of the Secretariat and the Steering Committee on behalf of the EU Hernia Trialists Collaboration.
The clinical interpretation was led by PMNYHG.
All reviewers contributed to the writing of the report, which was led by KMc and AG

DECLARATIONS OF INTEREST

There are no known conflicts of interest.

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SOURCES OF SUPPORT

Internal sources

- University of Aberdeen, Health Services Research Unit, UK.

External sources

- European Union, Biomed 2 Workprogramme, Not specified.

INDEX TERMS

Medical Subject Headings (MeSH)

*Surgical Mesh; Hernia, Inguinal [*surgery]; Laparoscopy [adverse effects] [*methods]; Pain, Postoperative; Postoperative Complications [etiology]; Randomized Controlled Trials as Topic; Secondary Prevention

MeSH check words

Humans

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