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RAPID COMMUNICATION

Laparo-endoscopic "Rendezvous" to treat cholecysto-choledocolithiasis: Effective, safe and simplifies the endoscopist's work

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Abstract

AIM: To investigate our clinical experience with combined laparo-endoscopic Rendezvous (RV) for the treatment of patients affected by gallstones and common bile duct (CBD) stones and especially to study the never evaluated opinion of the endoscopist concerning the difficulty of the intraoperative endoscopic procedure during the RV in comparison with standard endoscopic retrograde cholangio-pancreatography (ERCP).

METHODS: Eighty consecutive patients affected by cholecystolithiasis and diagnosed or suspected CBD stones were treated with a standardized "tailored" RV. The relevant technical features, the feasibility, the effectiveness in stone clearance, the safety but also the simple evaluation of difficulty and agreement of the endoscopist were analyzed with a questionnaire.

RESULTS: The feasibility was 97.5% and the effectiveness 100% concerning CBD clearance and solution of coexisting problems at the papilla. Minor morbidity was 3.3%, the operating time was prolonged by a mean of 14 min, the mean hospital stay was 3.8 d and only one stone's recurrence occurred. The endoscopist evaluated the procedure to be simpler than standard ERCP-ES in 81.2% of the cases.

CONCLUSION: Simultaneous RV carries high effectiveness and safety at least comparable to those reported for other options. The endoscopist is very often satisfied with this approach because of the minimization of some steps of the endoscopic procedure and avoidance of relevant iatrogenic risk factors. If the mandatory collaboration between surgeons and endoscopists is guaranteed, this approach can often be preferable for the patient, the surgeon, the endoscopist and the hospital.

Key words: Gallstones; Common bile duct; Endoscopic retrograde cholangio-pancreatography; Endoscopic sphincterotomy; Rendezvous; Intra-operative cholangiography; Laparoscopic cholecystectomy

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INTRODUCTION

Cholecystolithiasis is one of the most common diseases in which treatment involves general practitioners, gastroenterologists, endoscopists and general surgeons. The management of patients affected by gallstones complicated by common bile duct (CBD) stones and/or problems at the papilla of Vater is anyway a challenge as there are many available options for treatment, all being effective but with the best practice is still unknown. The development of minimally invasive surgery has been associated with development and diffusion of totally laparoscopic exploration of the CBD which is considered the best approach by the pioneers of minimally invasive surgery. This convention contrasts with the fact that the sequential approach, combining the endoscopic retrograde cholangio-pancreatography (ERCP) with endoscopic

sphincterotomy (ES) prior or after cholecystectomy, was for a long time considered to be the preferable choice and also today many gastroenterologists, endoscopists and surgeons still prefer it in clinical practice. The third option, namely the laparo-endoscopic "Rendezvous" (RV) combines in one procedure laparoscopic cholecystectomy (LC), intra-operative cholangiography (IOC) and endoscopic CBD clearance being an actual alternative to the other two. This laparo-endoscopic approach is for the surgeon technically simpler than total laparoscopy, carries interesting advantages but is more complex to organize and is perhaps also considered to reduce the role of the laparoscopic surgeon. Also for the endoscopist this procedure could carry many advantages. Believing in its usefulness we used this approach in 80 consecutive patients affected by gallstones and CBD stones and here we report the results concerning effectiveness, safety and for the first time in the literature we particularly analysed the agreement, evaluation and opinion of the endoscopist normally used to perform ERCP-ES.

MATERIALS AND METHODS

Eighty patients affected by cholecystolithiasis and CBD stones or suspected stones at IOC were treated simultaneously during the same operation by patient tailored combined laparo-endoscopic "RV". Our definition of the term "RV" consists of the combined laparo-endoscopic simultaneous approach involving the endoscopist and surgeon in the operating room during one single administration of anesthesia to clear CBD stones or solve associated problems related to sludge or other problems at the papilla of Vater. All the records of the treated patients were analyzed concerning main clinical data, history, diagnosis, surgical or endoscopic technical particularities, duration of the procedures, feasibility, failure, conversion to open surgery, effectiveness in stone clearance, post-operative complications, duration of the hospital stay, late complications and recurrence of stones. At the end of every procedure we submitted a questionnaire to the endoscopist to analyze his satisfaction concerning the intraoperative endoscopic procedure. The questionnaire elicited a simple immediate opinion of the endoscopist concerning his evaluation of the endoscopic difficulty of the procedure graded as: (1) simpler; (2) comparable; (3) more difficult, if compared to a standard ERCP-ES.

RESULTS

Clinical data

From 2002 to 2006, 80 consecutive patients were submitted to the laparo-endoscopic RV. The mean patient age was 58 years (9-88 years), 29 patients were male and 51 female. The youngest patient was a 9-year-old female patient with a BMI of 27, with gallstones and recurrence of acute biliary pancreatitis due to common bile duct sludge and sphincter of Oddi dysfunction. The oldest patient was a female patient with increasing jaundice, severe cholangitis, and CBD stones impacted in the papilla and coming out of two failed attempts to treat the jaundice and the stones with ERCP-ES. The diagnosis of CBD stones was given preoperatively in 47 patients (58.7%), in 33 patients (41.2%) the diagnosis was not available preoperatively. 23 patients (28.7%) had a recent history of mild acute pancreatitis or abnormal increase of amylase or lipase levels associated with biliary pain. In 49 patients (61.2%) there was an abnormal increase of bilirubin levels. In 53 patients (66.2%) suspicion or the diagnosis of CBD stones was obtained by ultrasonography. In 46 patients (57.5%) a cholangio-MRI was also performed preoperatively and in 38 of them (82.6%) this confirmed the diagnosis. In 24 patients (30%) with CBD stones a CT scan was also performed during diagnostic work-up but this confirmed the stones in only 9 patients (37.5%). In fact, in 23 of the 33 patients without preoperative diagnosis (69.6%) there was preoperatively a high clinical suspicion of CBD stones but in 10 (31.1%) the diagnosis could be obtained only during surgery by IOC performed because of the surgeon's own decision based on the above mentioned criteria. All 80 patients therefore underwent anteretrograde transcystic IOC. The criteria used to perform IOC were the diagnosis of CBD stones or the positiveness of at least one of the following risk factors: history of acute pancreatitis, pre-operative abnormal increase of direct bilirubinemia, ALP or gamma-GT, abnormally dilated CBD at ultrasonography, multiple small stones or sludge in the gallbladder, intraoperative evidence of a large cystic duct or an enlarged CBD. The feasibility of the RV was 97.5%.

Technical data

None of these 80 patients underwent surgical open or laparoscopic CBD exploration. Only in one patient a transcystic biliary drain (Pedinelli) was left at the end of the procedure because the inexperienced endoscopist inflated too much air in the bowel during the endoscopic procedure preventing the surgeon from having a good view of the cystic duct to clip it safely. Conversion to open surgery occurred in 2 cases (2.5%) because of surgical problems related to adherences due to previous abdominal surgery that rendered the identification of the biliary anatomy difficult. In these two patients the clearance of the CBD was performed by the endoscopist anyway and therefore the procedure remained a RV with open cholecystectomy. Intraoperative cholangiography confirmed CBD stones in 68 patients (85%) and these could be extracted in all cases with stone clearance obtained in 100% of the cases. In 15 patients (18.7%) a delayed contrast medium passage (> 30 min from the injection) was also observed during IOC and resolved by ES. In 12 of the patients (15%) cholangiography did not clearly show stones but ES was performed anyway because of a pre-operative diagnosis of stones, clinical history of recurrent pancreatitis, hyperbilirubinemia or because of CBD dilatation and delay in contrast medium discharge in the duodenum. In 5 of these patients with abnormal delay, the ES could not identify stones in the sudden relevant bile flow after sphincterotomy but in 3, biliary sludge was evident. In 2 of these the ES did not show stones and the images were interpreted as false positives due to air bubbles in the CBD. In only 19 patients (23.7%)

Table 1 Main differences for the endoscopist between the main steps of endoscopic procedures at the papilla of Vater for CBD exploration comparing RV with standard ERCP-ES

Factors of difference of the endoscopic procedure	RV	ERCP-ES
(1) Position of the patient	Supine	Lateral
	Rarely more difficult endoscopy	Preferred because of habit
(2) Cholangiography	Antegrade transcystic	Retrograde
	Positive (time reduction)	Negative
(3) Wirsung injection (chemical damage)	Absent	Possible
	Positive (risk reduction)	Negative
(4) Ductal hyperpression (physical damage)	Absent	Frequent
	Positive (risk reduction)	Negative
(5) Guide wire help for papilla cannulation	Transcystic	Retrograde
	Positive (time reduction)	Negative
(6) Flushing of the CBD	Antegrade during basket retrieval (synergic)	Retrograde
	Positive (time reduction)	Not synergic
(7) Papilla manipulation causing oedema or Oddi's spasm	Limited or absent	Frequent
	Positive (risk reduction)	Negative
(8) Precut of the Papilla	Absent	Possible
	Positive (risk reduction)	Negative
(9) Reduction of the steps of endoscopic procedure	Possible	Uncommon
	Positive (time reduction)	Negative
Total of positive factors	8/9	1/9

there was the need to pass a guide wire transcystically to help the endoscopist to cannulate the papilla while in the other 61 patients the endoscopist cannulated the papilla without need of surgical help. In the only pediatric case a SOD (sphincter of Oddi dysfunction) was associated with cholecystolithiasis and was successfully managed with pneumatic papilla dilatation. In 5 cases (6.2%) the endoscopist used a mechanical lithotripter to shatter larger stones to facilitate their extraction. In one case with suspected CBD stones at IOC the ES and CBD exploration resulted negative for stones, and this was the only endoscopic procedure considered retrospectively to be an over treatment but unfortunately it was supported by a positive preoperative cholangio-MRI together with multiple risk factors of CBD stones.

Complications

Only one case of intraoperative complications occurred (1.2%) with self limiting bleeding of the papilla after sphincterotomy. In 7 patients (8.7%) there was an increase of amylase levels after the RV but only in 3 (3.7%) it was a real pathologic increase (3X n.v). Of these 7 patients with an increase of amylase levels 5 (71.4%) had had a retrograde transpapillary injection of the contrast medium. This occurred because they were all patients in the initial group (up to the 19th case) in which the endoscopist was used to injecting in retrograde because of the convention and in one later case the retrograde injection was needed because of accidental intra-operative mobilization of the cholangiography catheter out of the cystic duct. The mean duration of the whole RV was 114 min (49-221 min) whereas the mean duration of the intraoperative endoscopic procedures was 14 min (range 6-33 min). The mean postoperative hospital stay of the patients was 3.8 d, thus 1 d longer than our standard simple LC. All theses patients were followed for almost 6 mo and all were symptom free up to the last follow-up. All patients had a bile duct in the normal range at the 6 mo US control and all without clinical evidence of recurrence of stones or cholangitis. Only in one patient (1.2%) an asymptomatic recurrence of a common bile duct stone was diagnosed 13 mo after RV. This was a patient with a known incomplete ES because of intraoperative bleeding, which led us to suspend the endoscopic procedure. No patient developed jaundice or hyperbilirubinemia (0%) and no patient developed symptoms related to ERCP or acute pancreatitis. Oral feeding started in all patients within 36 h. No patient had to be treated post-operatively for incomplete clearance of the CBD with a post-operative ERCP or ES. We collected the data regarding the endoscopist's opinion concerning the intraoperative endoscopic procedure.

Endoscopist's opinion

In 65 cases (81.2%) the endoscopist considered the endoscopic procedure simpler, in 12 cases (15%) indifferent if compared to a normal ERCP-ES and in only 3 cases (3.7%) he considered the procedure more difficult, especially because of the problems in papilla cannulation due to the different positions related to the supine position of the patient on the operating table. The main factors that were considered important to facilitate the endoscopic procedure are summarized in Table 1. When considering all the factors, avoidance of some of the steps of standard endoscopic procedures can lead to an overall reduction of time and main risk factors in iatrogenic damage.

DISCUSSION

In all other papers concerning the laparo-endoscopic RV mostly published by surgeons[1-8], there never was an analysis of the problems related to the main technical factors of the endoscopic procedure, nor were the compliance and explanations from the point of view of the endoscopist considered. This is in our opinion a relevant lacking in the analysis of this particular procedure,

Table 2 Main indications for the laparo-endoscopic RV with evaluation of the factors that suggest its preferability instead of the other treatment's options

Main indications for the laparo-endoscopic RV	RV preferable *vs* laparoscopic CBD exploration	RV preferable *vs* sequential ERCP-ES
(1) Common bile duct stones not easily extractable through the cystic duct Positive factor -> (time reduction)	(A) Need of higher surgical skill (B) Longer operation time (C) Need of biliary drain	(a) Risk of synchronization (b) Risk of unnecessary ERCP (c) Risk of difficult retrograde cannulation
(2) Multiple small CBD stones and large friable stones Positive factor -> (reduction of risk of recurrence)	A, B, C + (D) High risk of residual fragments and recurrence	a, b, c
(3) Any type of CBD stones with delayed passage of the contrast medium during IOC or T-tube-IOC after laparoscopic CBD exploration Positive factor -> (reduction of risk of recurrence)	A, B, C, D + (E) high risk of undertreatment of chronic papillitis and of maintenance of underlying causes	a, b, c
(4) CBD stones with previous cholangitis Positive factor -> (reduction of risk of recurrence)	A, B, C, D + (E) high risk of maintenance of underlying causes at the papilla	a, b, c + (d) Avoidance of contrast medium injection with risk of recurrence of cholangitis
(5)CBD stones after recurrent acute biliary pancreatitis or hyperbilirubinemia Positive factor -> (iatrogenic risk reduction)	A, B, C, D, E	a, b, c, d + (e) risk of recurrence of ERCP related acute pancreatitis
(6) Known or unsuspected Sphincter of Oddi Dysfunction, cholecysto-lithiasis with or without CBD stones Positive factor -> (iatrogenic risk reduction)	A, B, C, D, E	a, b, c, d, e
(7) CBD stones and/or abovementioned problems in patients with Billroth Ⅱ during open cholecystectomy Positive factor -> (iatrogenic risk reduction)	A, B, C, D, E + (F) Manual drive of the endoscope by the surgeon in the afferent jejunal loop	a, b, c, d, e + (f) more difficult ERCP
(8) CBD stones, SOD, acute pancreatitis in children/CBD stones in patients with normal or thin CBD Positive factor -> (iatrogenic risk reduction)	A, B, C, D, E + (G) difficult laparoscopic CBD exploration and risk of stenosis of the suture	a, b, c, d, e, f + (h) avoidance of sphincterotomy in children
(9) CBD stones and/or SOD after failure of preoperative ERCP-ES or recurrence of acute biliary pancreatitis Positive factor -> (iatrogenic risk reduction)	A, B, C, D, E	a, b, c, d, e, f
(10) Inexperienced surgeon for laparoscopic CBD exploration Positive factor -> (iatrogenic risk reduction)	A, B, C, D, E, G	a, b, c, d, e, f

for which we tried to make aware to both the surgeon and endoscopist concerning its utility as mandatory for its immediate outcome and for its development. On the other hand, it was impossible to plan a prospective randomized study as every case is different and the endoscopist could never treat the same patient with RV and also ERCP-ES so that the evaluation could be based exclusively on the endoscopist's subjective opinion. We would like to underline that our definition is somewhat different because we define a laparo-endoscopic RV also when the guide wire is not passed, in contrast to others that consider a RV only when the surgeon passes a guide wire through the cystic duct to help the endoscopist[1-3]. We do not believe that the guide wire has to be passed in every case but, to avoid unnecessary iatrogenic risks, only if needed especially when the endoscopist cannot easily cannulate the papilla. Certainly this combined laparo-endoscopic approach has its main negative factor as the need for synchronized collaboration between surgeon and endoscopist and this is still, not only in our opinion, the main factor that limits its diffusion[4,5]. Cholecystolithiasis is worldwide a very common illness that involves general practitioners, gastroenterologists, and surgeons but also frequently the endoscopist particularly if the presence or the simple suspicion of stones in the CBD becomes the main problem. All the cases where the CBD stones are easily extractable through the cystic duct by the surgeon during LC should be excluded in this discussion but unfortunately this evaluation is never possible prior to surgery so that a rational plan of all treatment options is mandatory. Especially when transcystic extraction of stones is not possible, as happens in about 30%-40% of the patients with CBD stones, the combined laparo-endoscopic approach should be considered often in our opinion, as the preferable option for many simple technical and clinical reasons. These reasons are summarized in Table 2 that shows our main indications explaining the points of preferability of the RV compared to other options. Some other general considerations have to be met as well. First, the treatment of CBD stones in cholecystectomized patients today remains the exclusive work of the endoscopist who often performs a salvage procedure for the patient and helps the surgeon as well[9-11]. This endoscopic approach is highly effective[12] with sporadic mortality and minimal early and late morbidity, all anyway lower when compared to surgical interventions. The surgical approach is therefore never proposed today as a first option in cholecystectomized patients and moreover the endoscopic treatment with ERCP-ES is never considered wrong or dangerous for these patients. If cholecystectomy still has to be performed, with the combined approach RV, the surgeon can help the

endoscopist or otherwise the endoscopist can help the surgeon to clear the CBD, it only depends on whose point of view is considered. The questionable risk of an "avoidable ERCP-ES" curiously appears only if LC has to be performed. According to our results, the endoscopist's opinion and literature results, ERCP-ES with help seems to be easier for the endoscopist so that radiologic-endoscopic rendezvous was also used[13,14]. On the other hand, CBD clearance during LC with help of the endoscopist also seems easier for the surgeon as all the surgeons using the RV were always satisfied, never reporting results or aspects that lead them to abandon it[1-8,15,16]. These patients are all treated in an in-patient hospital setting so normally both surgeon and endoscopist are available and the other mandatory factors to gain the organization of a RV are functioning clocks and telephones to coordinate them. Sometimes the surgeon is also able to perform an endoscopy and in this case he can himself complete the auto-RV. The RV solves both cholecystolithiasis and CBD stones but it can especially avoid the main negative technical aspects of both laparoscopic CBD exploration and of the standard sequential ERCP-ES. Close to the technical reasons shown in our original analysis there are also several clinical reasons and evidences in the literature to use it. The development of minimally invasive surgery with the diffusion of totally laparoscopic exploration of CBD leads many authors to consider it the best option[17-19]. This concept is somewhat strained as it is certain that the sequential approach was considered for a long time to be the preferable one[20] and even today gastroenterologists, endoscopists and many surgeons still continue to prefer it in the clinical practice[21]. In fact, a recent NIH state of the science statement on ERCP showed that both ERCP and laparoscopic CBD clearance are safe and reliable to clear stones[22,23]. This statement includes the concept that the simultaneous combination of laparoscopy and ERCP-ES should be considered equally safe and reliable. If this statement concerning ERCP is true, the sequential approach is also reliable and effective so that the RV should theoretically be better, especially for the patient, because for the sequential approach there is the well known old problem of optimal timing between ERCP and LC, to also be considered "The bilateral interface…" between the two procedures[24] is eliminated in the simultaneous RV. The RV especially avoids the risks of ineffectiveness of both the pathways of the sequential approach related especially to no synchronization between diagnosis of CBD stones and its treatment. This concept of no synchronization is very important as only during RV the IOC shows the real-time situation of the CBD and moreover other relevant and often unsuspected underlying problems at the papilla. With the sequential approach it could be a renewed passage of stones in the CBD if the ERCP-ES is performed prior to cholecystectomy but moreover ERCP-ES could be unnecessary if performed after LC as stones can often pass spontaneously[25]. These risks are confirmed by a recent analysis of management of suspected CBD stones in children[26] that clearly shows the poor results and pitfalls of the two common sequential pathways of ERCP-ES. If performed prior to LC a total of 71% of ERCP were unnecessary and 7% failed. If performed after LC 50% of ERCP were unnecessary because stones were no longer found. Therefore, a large number of unnecessary invasive procedures, all potentially related to morbidity and mortality, are performed but often the majority are ineffective especially because they are out of synch with the evolving pathophysiology of gallstone disease[25]. Comparing the RV to totally laparoscopic CBD exploration, it is clear that the RV also solves problems at the papilla of Vater that certainly can not always be solved by laparoscopic CBD exploration and which are the main causes of retained stones and recurrence. Another important problem of the choice of the best option appears in those cases with an unclear IOC with uncertain images of stones or persistence or delayed contrast medium passage in the duodenum. In these unclear situations both transcystic laparoscopic CBD exploration and sequential ERCP-ES are questionable as often related to dense biliary sludge associated with stenosis of the papilla in which ES is certainly the safest solution for the patient. The laparoscopic CBD exploration normally consists of major biliary surgery and needs higher laparoscopic skills and prolongs the duration of the entire operation also increasing the overall risk for the patient[18,19,27]. The mean prolongation of the time of RV is normally shorter than those reported for totally laparoscopic CBD exploration[27,28]. This difference becomes more evident for those patients with multiple large stones and sludge and problems at the papilla. The laparoscopic CBD exploration in a recent review carries a conversion rate of 2%-8%, a failure of 3.1%. These unlucky patients have to be treated by the endoscopist in a sequential manner with a risk of ineffectiveness[28]. Retained stones after laparoscopic CBD exploration in very experienced hands are also up to 8% and a biliary drainage after surgical transverse choledochotomy is needed in up to 94% of the patients so that there is a need for repeated controls, prolonged hospitalization and re-admittances[29]. The success rate of laparoscopic duct exploration in a review of 28 papers from 1993 to 2000 was between 81% and 98% (mean of 88.4%) with an incidence of retained stones between 0% and 19% and a conversion rate up to 10%. On the contrary in a large review concerning the patients free of biliary symptoms after ERCP-ES this was up to 90% after 14.2 years[28]. The randomized multicenter EAES trial showed a therapeutic success of 84% for the ERCP-ES and a success rate of 83% for the laparoscopic exploration[10]. The patients matched for simple cholecystectomy reported significantly lower morbidity compared to laparoscopic CBD treatment and biliary complications are up to 16% of the patients, mostly due to the need of biliary drains[30]. The reduction and facilitation of the steps of the endoscopic procedure due to the surgeon's help of the endoscopist finally brings a relevant reduction of the time of the endoscopic procedure. Moreover the post-procedural hyperamylasemia and acute pancreatitis are strongly reduced or absent after RV if compared to standard ERCP[6,8,16] and this is principally related to avoidance of the risk factors reported in Table 1. These factors are those clearly related to the incidence and mechanism of post-ERCP pancreatitis in

different analyses[31-34]. It is also remarkable that after laparoscopic CBD exploration, acute pancreatitis can be comparably high to sequential ERCP-ES (7.3% *vs* 8.8%)[12]. Certainly standard ERCP whenever possible should be limited because, as suggested by experienced endoscopists the only sure way to avoid post-ERCP complications is to avoid ERCP itself[35]. The unique prospective randomized comparison of ERCP-ES with laparo-endoscopic RV by Morino[8] showed that the risk of incomplete duct clearance with ERCP-ES is 20% and in 77.7% of the cases the cause is the inability to cannulate the papilla. This confirms the main advantage of the RV for the endoscopist, namely the surgeon's help passing the guide wire transcystically. The same study shows that 88% of these ineffective ERCP-ES were brought to an effective intraoperative ERCP-ES during laparoscopic RV, and this happened also in one patient in our series. Simplifying the concept the endoscopist alone was not able to solve the problem but on the contrary, together with the surgeon was effective, confirming the value of the RV.

Our analysis concerning endoscopist's compliance and opinion concerning the RV procedure shows clearly, the very good results concerning feasibility, effectiveness and safety and shows also that in the majority of the cases he was happy and satisfied to perform the endoscopic procedure intra-operatively. This is very simple to understand because the endoscopist is involved only if absolutely needed reducing in this manner both the risk of endoscopic over-treatment and also the risk of failure. Moreover the endoscopist avoids many steps of the procedure that are to his mind the main risk of iatrogenic damage, he is facilitated to easily understand his position inside the CBD, the surgeon can help him with the guide wire or immediately converting to laparoscopic CBD exploration or to open surgery in case of major problems like impacted stone or blockage of the basket inside the CBD. These positive factors for the endoscopist are also positive for the patient, reducing the risk of repeated or unnecessary procedures, the risk of ineffectiveness altogether, and reducing in our opinion the "cumulated iatrogenic risk" if compared to both other options. For all these reasons our positive clinical experience from the point of view of the surgeon and especially of the endoscopist suggests that this combined laparo-endoscopic simultaneous rendezvous approach, despite some, in our opinion questionable, organizational problems can often result in being the preferable treatment option for the patient with cholecystolithiasis and CBD stones.

COMMENTS

Background

Cholecystolithiasis is one of the most common diseases in which treatment involves general practitioners, gastroenterologists, endoscopists and general surgeons but the management of patients affected by gallstones complicated by common bile duct (CBD) stones and/or problems at the papilla of Vater is anyway a challenge as there are many available options for treatment, all being effective. A third alternative to the two main treatment's option, sequential or totally laparoscopic, consists of the simultaneous laparoendoscopic "Rendezvous (RV)". This study analyzed the results concerning 80 consecutive patients treated with a laparoendoscopic rendezvous procedure and especially analyzed the previously unanalyzed endoscopist's opinion which is also a very important point for this combined approach.

Research frontiers

The gold standard for the treatment of cholecystolithiasis combined with CBD stones is still not available. Large prospective randomized studies could help to clarify the issue but the literature shows that the cooperation between surgeons and endoscopists is usually scarce and that each specialist prefers what he believes is better.

Innovations and breakthroughs

Using the laparoendoscopic rendezvous approach for the treatment of gallstones and CBD stones both feasibility (97.5%) and effectiveness (100%) in stone clearance are very high while morbidity and stone recurrence are low. These results are comparable or even better than those reported for both the other two treatment's options. Moreover the work of the endoscopists results is simpler and safer than standard ERCP-ES in 4/5 of the cases, because of the reduction of the steps of the endoscopic procedure and the avoidance of relevant iatrogenic risk factors.

Applications

This study shows that the simultaneous laparoendoscopic rendezvous approach is often preferable for the patient, the surgeon, the endoscopist and the hospital. This approach reduces hospital stay and the iatrogenic risk compared to the sequential approach and reduces the need of higher surgical skills and biliary drainage compared to the total laparoscopic treatment. The main problems that still limit the diffusion of this procedure are the problems in organizing the mandatory cooperation between endoscopist and surgeon.

Terminology

Sequential treatments combine ERCP clearance of the CBD stones with previous or successive laparoscopic cholecystectomy. The laparoendoscopic treatment consists of laparoscopic cholecystectomy (LC) combined with endoscopic treatment of stones or underlying problems at the papilla of Vater during a unique anesthesia. The term "RV" means the meeting of a guide wire (the surgeon passes the guide wire anteretrogradely through the cystic duct) with the endoscope inside the duodenum; the presence of the guide wire and the meeting of the two instruments facilitate the cannulation of the Vater's papilla by the endoscopist himself and so also the clearance of the CBD from the stones. The term RV underlines the concept of "reciprocal implementation" of both surgeon's and endoscopist's work. The laparoendoscopic treatment does not automatically include a rendezvous procedure itself and this brings confusion in the evaluation of the results of the published papers.

Peer review

The authors described excellent results of the laparoendoscopic rendezvous, without the use of a statistical method.

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