

INSTRUMENTS AND TECHNIQUES*

Op-Site skin closure: a comparison with subcuticular and interrupted sutures

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Summary

Op-Site skin closure was compared with two standard techniques of wound closure, interrupted silk sutures and subcuticular nylon. The Op-Site skin closure allowed freer drainage of secretions from the wound and the incidence of erythema and tenderness was significantly lower. However, there was a greater tendency for the wound edges to slip out of alignment or invert.

Patients and methods

A consecutive series of 209 abdominal operations and inguinal herniorrhaphies performed by one surgeon (GMW) was studied. For the common procedures the method of skin closure was determined by opening an envelope containing a randomised card. For less common procedures the method of skin closure was taken in strict rotation. All wounds were closed primarily and no wound drain or fat stitch was used. A standardised antibiotic regime was drawn up for each contaminated procedure or situation. Of the 209 patients, 120 had 'clean' procedures, for example herniorrhaphy, elective cholecystectomy and highly selective vagotomy and 62 patients underwent procedures with an 'intermediate' risk of wound infection such as operations on acutely inflamed organs other than the colon. Twenty seven patients fell into the 'contaminated' group which included resection of poorly prepared colon and patients in whom a positive culture had been obtained from peritoneal fluid. Five patients were moved retrospectively from the intermediate to the contaminated group on the basis of positive cultures from peritoneal swabs.

Assessment

The house surgeon of the firm acted as the independent assessor of the wounds which were examined on the fifth postoperative day or on the day of discharge from hospital and again at outpatients four weeks later. Erythema was only noted if it occurred separately from needle puncture sites or if it extended more than 5 mm from the edge of the incision. Induration and tenderness were assessed by gentle palpation along the entire length of the wound. All wound discharges were sent for culture and their duration was documented in days. Patients were requested to report any wound discharge which occurred after leaving hospital.

Results

Op-Site skin closure was associated with a lower incidence of erythema and tenderness than the other two methods, but

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this was at the expense of some loss of precision of wound edge alignment. This trend was seen in all levels of contamination (Tables I and II), although this did not reach statistical significance among the relatively small numbers in each group. Subcuticular sutures were not used in the contaminated group so that only Op-Site and silk closure techniques are comparable across the whole range of contamination (Table III). There was a statistically significant reduction in the incidence of erythema and tenderness in the Op-Site group using Fisher's exact two tail analysis.

TABLE I Results of patients in the 'clean' and 'intermediate' group

	Op-Site	Silk	Subcuticular
Patients	66	58	58
Erythema	—	2	2
Induration	5	5	11
Tenderness	1	4	3
Inexact apposition	3	—	2
Discharge purulent	1	4	4
serous	8	4	4
Duration of discharge			
More than 7 days	—	3	3
Less than 7 days	9	5	5

TABLE II Results of patients in the 'contaminated' group

	Op-Site	Silk
Patients	13	14
Erythema	—	3
Induration	—	5
Tenderness	—	3
Inexact apposition	1	—
Discharge purulent	3	3
serous	3	2
Duration of discharge		
More than 7 days	2	1
Less than 7 days	4	4

Pus discharged from the wounds of 15 patients (Table IV). Four fell into the subcuticular group even though this technique was not used for 'contaminated' procedures. Three out of seven patients with silk sutures and three out of

TABLE III Aggregated results of all Op-Site and silk wound closure

	Op-Site	Silk	Significance
Patients	79	72	
Erythema	—	5	p = 0.0457
Induration	5	10	p > 0.1
Tenderness	1	7	p = 0.0464
Inexact apposition	4	—	p > 0.1

The differences between the incidence of erythema and tenderness between the two groups reached statistical significance using Fisher's exact two tail test.

TABLE IV Results of patients with purulent discharges

	Op-Site	Interrupted silk	Subcuticular
Patients	4	7	4
Erythema	—	3	3
Tenderness	1	3	3
Wound incision	—	3	3

four patients with subcuticular sutures required formal incision of a wound abscess. In all four Op-Site closures the wound drained freely and in three cases was neither tender nor reddened.

Discussion

Op-Site skin closure is a polyurethane membrane coated with a firm adhesive. It has a central line of fenestrations which lie across the incision. Theoretically there is less risk of wound contamination with staphylococci which may be carried into the wound on a needle or suture (1).

The cosmetic results of Op-Site skin closure have been reported elsewhere (2). Op-Site was thought to be superior to silk by patient and independent assessor. The same study also pointed out the advantage of a wound closure which

could be removed by the patient so avoiding a visit from a district nurse to remove stitches.

The main disadvantage of Op-Site lies in the limitations of its adhesion with skin. The bonding increases in strength over the first few days and then gradually diminishes. Any fluid present on the skin at the time of application interferes with bonding and careful haemostasis is essential. Early discharge of fluid lifts the Op-Site off the skin adjacent to the incision, accuracy of wound apposition is lost and the edges may invert. The Op-Site was lifted off to a more significant degree in two cases where peritoneal lavage had been used and in one patient with postoperative delirium tremens. None of the paediatric patients interfered with their dressings.

The other side of the same coin is that Op-Site skin closure does seem to allow matter to drain out of the wound more freely than suture techniques. This may explain the lower incidence of erythema and tenderness. It may also explain the fact that three patients from both the sutured groups required incision of a wound abscess, whereas pus drained spontaneously in the Op-Site group.

Op-Site skin closure may prove to be a useful method of skin closure. It would be prudent not to use it in a patient likely to become confused postoperatively. It should also be avoided if an early and copious discharge of fluid through the wound is likely, for example where the peritoneum has been irrigated or where ascites is present. However, Op-Site skin closure may prove particularly useful where the wound is contaminated.

Op-Site is manufactured by Smith & Nephew Limited.

References

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Reading maketh a full man; conference a ready man; and writing an exact man.
'Of studies' Francis Bacon 1561-1626