

Clinical Outcomes of Drain Versus No Drain in Midline Laparotomy Closure: A Retrospective Comparative Study

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Abstract:

The value of routine subcutaneous drainage after midline laparotomy remains uncertain. Methods: This retrospective comparative study included 60 patients undergoing midline laparotomy closure between April 2025 and March 2026; 30 received a closed-suction subcutaneous drain and 30 had no drain. Outcomes (surgical-site infection [SSI], seroma, dehiscence, reintervention, and length of stay) were assessed at 30 days and compared using Fisher exact tests for categorical outcomes and an independent-samples t test for length of stay. Results: Crude complication rates were numerically higher in the drain group, but on reanalysis of the reported event counts none of the differences in SSI (7/30 vs 3/30; $p = 0.30$), seroma (6/30 vs 2/30; $p = 0.25$), or overall complications (12/30 vs 6/30; $p = 0.16$) were statistically significant. Only length of stay differed significantly (8.5 ± 2.1 vs 6.2 ± 1.8 days; $p < 0.001$). The p values displayed on the source poster were inconsistent with the event counts and have been recomputed. Conclusion: The reported data do not demonstrate a significant difference in wound-complication rates between groups; the only significant finding was a longer hospital stay in the drain group. Given the retrospective, mixed-indication design, confounding by indication cannot be excluded, and a prospective, adequately powered, wound-class-stratified study is required.

Wound complications remain an important source of postoperative morbidity after laparotomy. Subcutaneous drains may evacuate dead space and reduce seroma, but routine use lacks universal endorsement and guideline consensus [1,2]. Published evidence suggests that drain effects may differ by wound contamination and baseline risk, reinforcing the need for careful patient selection [3,4,7].

Keywords: Midline laparotomy; Subcutaneous drainage; Closed-suction drain; Surgical site infection (SSI); Seroma; Wound complications; Laparotomy closure; Postoperative outcomes.

INTRODUCTION

Wound complications remain an important source of postoperative morbidity after laparotomy. Subcutaneous drains may evacuate dead space and reduce seroma, but routine use lacks universal endorsement and guideline consensus [1,2]. Published evidence suggests that drain effects may differ by wound contamination and baseline risk, reinforcing the need for careful patient selection [3,4,7].

OBJECTIVES

1. Compare wound-complication rates (SSI, seroma, and dehiscence) between drain and no-drain groups.
2. Compare length of hospital stay and reintervention rates.
3. Identify patient subgroups, including those defined by BMI, wound class, and diabetes, that may benefit from subcutaneous drainage.

MATERIALS AND METHODS

This retrospective comparative study was performed at Saveetha Medical College and Hospital, Chennai. It included 60 adults undergoing primary midline laparotomy closure between April 2025 and March 2026. Group A received a closed-suction subcutaneous drain ($n = 30$), removed when output was less than 30 mL/day. Group B underwent primary closure without a subcutaneous drain ($n = 30$). Immunosuppressed patients, re-exploration wounds, mesh closures, and records with incomplete data were excluded. Outcomes were assessed at 30 days. The primary outcomes were SSI (CDC criteria), seroma, and dehiscence; secondary outcomes were length of stay and reintervention. Categorical outcomes were compared using Fisher exact tests and length of stay using an independent-samples t test, with a two-sided p value < 0.05 considered statistically significant.

RESULTS

On reanalysis of the reported event counts, complication rates were numerically higher in the drain group but did not differ significantly between groups for SSI, seroma, dehiscence, overall complications, or reintervention (all $p > 0.05$ by

Fisher exact test). Length of stay was significantly longer in the drain group (8.5 ± 2.1 vs 6.2 ± 1.8 days; $p < 0.001$, t test). The groups were reported as comparable at baseline, but the source poster does not provide baseline covariate counts, wound-class distribution, or adjusted analyses. The event counts should be verified directly against the source dataset, because the p values originally displayed on the poster were internally inconsistent with these counts (Table 1).

Table 1. Outcomes by group, with recomputed p values.

Outcome	Drain (n = 30)	No drain (n = 30)	p value (recomputed)	Significance
SSI	7/30 (23.3%)	3/30 (10.0%)	0.30	Not significant
Seroma	6/30 (20.0%)	2/30 (6.7%)	0.25	Not significant
Dehiscence	3/30 (10.0%)	2/30 (6.7%)	1.00	Not significant
Any complication	12/30 (40.0%)	6/30 (20.0%)	0.16	Not significant
Reintervention	4/30 (13.3%)	2/30 (6.7%)	0.67	Not significant
Length of stay, days	8.5 ± 2.1	6.2 ± 1.8	<0.001	Significant

DISCUSSION

After correct analysis, the numerically higher crude rates of SSI, seroma, and overall complications in the drain group did not reach statistical significance, and length of stay was the only outcome that differed significantly between groups. The significant p values originally reported for SSI, seroma, and overall complications could not be reproduced from the stated event counts and appear to be erroneous. In a retrospective, mixed-indication cohort, any residual difference may also reflect confounding by indication: surgeons may preferentially place drains in patients with greater contamination, dead space, or baseline risk. Consequently, these data cannot establish that drainage worsens wound outcomes; adjusted analyses stratified by wound class, contamination, diabetes, BMI, and emergency status would be required, consistent with meta-analytic evidence showing no clear benefit of routine drainage [1,2] and a multicentre randomised trial reporting no difference in SSI [4].

CONCLUSION

Based on the reported data, routine subcutaneous drainage cannot be recommended as beneficial for midline laparotomy closure. After correct statistical analysis of the reported event counts, the only significant between-group difference was a longer hospital stay in the drain group; differences in SSI, seroma, dehiscence, and overall complications were not statistically significant. The comparative effect of drainage therefore remains uncertain, and interpretation is further limited by confounding by indication in this retrospective design. Selective drainage in high-risk or contaminated wounds should be evaluated in a prospective, adequately powered study stratified by wound class [3,5,6,7].

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