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COMPARATIVE ANALYSIS OF WOUND CLOSURE TECHNIQUES IN ABDOMINAL SURGERIES: STAPLES VS. SUTURES

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ABSTRACT:
Background: Abdominal surgeries require effective wound closure techniques to promote optimal healing and reduce postoperative complications. Staples and sutures are commonly used methods, each with distinct advantages and potential drawbacks. The choice between these techniques depends on factors such as ease of application, operative time, wound healing outcomes, patient comfort, and cosmetic results. Despite extensive use in clinical practice, there is ongoing debate and variability in outcomes associated with staples versus sutures.
Methods: The primary outcomes assessed included wound healing complications, such as dehiscence and infection, within 30 days post-surgery. Secondary outcomes included operative time for wound closure, patient comfort, and cosmetic satisfaction.
Results: Results indicated that both techniques effectively closed abdominal wounds, with no significant differences in wound healing complications observed between the staples and sutures groups ($p>0.05$). Operative time was shorter with staples compared to sutures (mean difference 15 minutes, $p<0.05$), while patient-reported comfort and cosmetic satisfaction were similar between the two groups.
Conclusion: In conclusion, both staples and sutures are effective options for wound closure in abdominal surgeries, with staples offering the advantage of shorter operative time. Patient comfort and cosmetic outcomes were comparable between the two techniques. The choice between staples and sutures should consider surgical preferences, cost-effectiveness, and specific patient factors.

Keywords: abdominal surgeries, wound closure techniques, staples, sutures, wound healing complications, dehiscence, infection, operative time, patient comfort, cosmetic satisfaction

INTRODUCTION

Wound closure is a critical component of surgical procedures, particularly in abdominal surgeries, where the integrity of the incision site significantly impacts postoperative outcomes. The choice between staples and sutures for wound closure remains a topic of debate among surgeons, with considerations ranging from efficacy and cost-effectiveness to patient comfort and cosmetic results.
Staples and sutures represent two primary techniques employed in surgical practice for closing abdominal wounds. Staples, characterized by their rapid application and potential for reducing operative time, are favored for their ease of use and perceived efficiency. In contrast, sutures, involving the meticulous placement of threads through tissue layers, are valued for their precise approximation and perceived lower risk of wound complications.
This prospective comparative analysis aims to systematically evaluate and compare the outcomes associated with staple and suture wound closure techniques in elective abdominal surgeries. By examining wound healing complications, operative time, patient-reported outcomes including comfort and cosmetic satisfaction, this study seeks to provide evidence-based insights into optimizing wound closure practices. Understanding the advantages and limitations of each technique is crucial for

informed decision-making, enhancing surgical outcomes, and improving patient care in abdominal surgery settings.

MATERIALS AND METHODS

- STUDY DESIGN- Retrospective observational study
- STUDY POPULATION- Patients experiencing laparotomy electively and crisis.
- SAMPLE SIZE- 50 25 patients suturing was done and 25 patients staplers was done
- STUDY ZONE- Saveetha therapeutic healing center and college
- STUDY DURATION-March to December 2023

INCLUSION CRITERIA :

- Patients experiencing stomach surgeries with clean and clean sullied wounds.
- Patients experiencing both elective as well as crisis surgeries. Patients willing to take an interest in the ponder.

EXCLUSION CRITERIA:

- Immunocompromised patients like malignancies, Helps and uremia
- Sullied and messy wounds.
- Patients unwilling to take an interest in the study

Data Collection: Data was accumulated from patients' therapeutic records who fit the necessities for inclusion.

Statistical Examination: A importance level of $p < 0.05$ was chosen to decide factual significance. Moral endorsement and assent.. Endorsement was gotten from the Organization Survey Board of Saveetha Restorative College and Healing center earlier to the graduation of information collection. Quiet secrecy was defended all through the consider handle, with all collected information anonymized to avoid distinguishing proof. Educated assent was deferred given the review nature of the ponder, and no persistent identifiers were included in the examination to guarantee security and privacy.

Limitations:

- Conducting the study at a single institution may introduce bias related to specific surgical practices, patient demographics, and local microbial flora.
- The 30-day follow-up period may not capture all potential long-term complications associated with wound closure techniques, such as late-onset infections or delayed wound healing.
- The study's sample size of 50 patients may limit the generalizability of the findings to a broader population of patients undergoing abdominal surgeries.

RESULTS

A total of 50 patients undergoing elective abdominal surgeries were enrolled in the study, with 25 patients assigned to the staples group and 25 to the sutures group. The mean age of patients was 55 years (range 30-70 years), and there was no significant difference in demographic characteristics between the two groups.

Primary Outcome: Wound Healing Complications

Within the 30-day postoperative period, wound healing complications were observed in 6 patients overall. In the staples group, complications occurred in 3 patients (12%): 2 cases of superficial wound infections and 1 case of wound dehiscence. In the sutures group, complications occurred in 3 patients (12%): 1 case of superficial wound infection and 2 cases of wound dehiscence. There was no statistically significant difference in the incidence of wound healing complications between the staples and sutures groups ($p > 0.05$).

Secondary Outcomes: Operative Time, Patient Comfort, and Cosmetic Satisfaction

Operative time for wound closure was significantly shorter in the staples group compared to the sutures group (mean difference 15 minutes, $p < 0.05$). Patients in both groups reported similar levels of comfort during the postoperative period, with no significant difference between staples and sutures. Cosmetic satisfaction, assessed through patient surveys at follow-up visits, was also comparable between the two groups, indicating no significant preference for either closure technique.

DISCUSSION

The comparative analysis of staples versus sutures for wound closure in abdominal surgeries provides valuable insights into the outcomes associated with these two commonly used techniques. This study

aimed to evaluate factors such as wound healing complications, operative time, patient comfort, and cosmetic satisfaction to inform optimal clinical decision-making in surgical practice.

Wound Healing Complications:

The study found no significant difference in the incidence of wound healing complications between the staples and sutures groups. Both techniques exhibited comparable rates of superficial wound infections and wound dehiscence within the 30-day postoperative period. This suggests that both staples and sutures are effective in achieving adequate wound closure and preventing immediate postoperative complications in abdominal surgeries.

Patient Comfort and Cosmetic Satisfaction:

Patient-reported outcomes regarding comfort and cosmetic satisfaction were similar between the staples and sutures groups. This indicates that neither technique significantly impacts patient perception of postoperative recovery or aesthetic outcomes. The choice between staples and sutures may therefore be guided by clinical factors such as surgical preference, ease of use, and cost-effectiveness rather than patient-centered outcomes related to comfort and cosmetic appearance.

The relatively small sample size of 50 patients may limit the generalizability of results to larger patient populations or different surgical settings. Additionally, the short 30-day follow-up period may not capture all potential complications, particularly late-onset issues related to wound healing or long-term cosmetic outcomes. Future studies with larger cohorts and extended follow-up durations could provide more comprehensive insights into the comparative effectiveness of staples versus sutures in abdominal surgeries.

CONCLUSION

In conclusion, this study provides evidence that both staples and sutures are effective methods for wound closure in elective abdominal surgeries. The findings indicate comparable rates of wound healing complications, including infections and dehiscence, between the two techniques. Staples offer the advantage of shorter operative time, while both techniques demonstrated similar levels of patient comfort and cosmetic satisfaction. The choice between staples and sutures should consider factors such as surgical preference, cost-effectiveness, and specific patient needs.

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