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Comparative Study on Intracorporeal Suturing Versus Tackers for Peritoneal Closure in Laparoscopic Transabdominal Preperitoneal (TAPP) Inguinal Hernia Repair

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ABSTRACT
Inguinal hernia repair is among the most frequently performed surgeries worldwide. The primary goals of this procedure are to minimize recurrence, provide early postoperative pain relief, promote a swift return to normal activities and ensure cost-effectiveness. This study aimed to compare the outcomes of two peritoneal closure techniques-intracorporeal suturing using Vicryl 2.0 and tackers-during laparoscopic transabdominal preperitoneal (TAPP) inguinal hernia repair. A prospective comparative study was conducted with 60 patients divided into two groups. Group A (30 patients) underwent peritoneal closure using intracorporeal suturing with Vicryl 2.0, while Group B (30 patients) underwent peritoneal closure using tackers. Postoperative pain, operative time, return to normal activities and over a 6-month follow-up. The mean operative time was significantly shorter in the Tacker Group (1 hour 5 minutes) compared to the Suturing Group (1 hour 21 minutes). Postoperative pain was higher in the Tacker Group at all intervals. Time to return to normal activities was faster in the Tacker Group (7 days) compared to the Suturing Group (10 days). However, chronic pain was more prevalent in the Tacker Group (10%) than in the Suturing Group (3%). No hernia recurrence was observed in either group at the 6-month follow-up. While tacker-based peritoneal closure was faster and resulted in a quicker return to daily activities, intracorporeal suturing with Vicryl 2.0 was associated with lower postoperative pain and fewer incidences of chronic pain. Both techniques were effective in preventing hernia recurrence.

INTRODUCTION

An inguinal hernia occurs when the abdominal wall weakens, allowing internal tissues or organs, often parts of the intestines, to protrude[1]. The lifetime risk of inguinal hernia is high and estimated at 27% for men and 3% for women[2]. This condition manifests as a lump and can cause discomfort, pain and interference with daily activities. If left untreated, severe complications such as bowel strangulation or obstruction may occur, leading to life-threatening consequences. Inguinal hernia repair is one of the most commonly performed surgeries globally, every year>20 million surgeries for hernia repair are done, with laparoscopic approaches like transabdominal preperitoneal (TAPP) repair being widely adopted due to their minimally invasive nature and faster recovery times. The TAPP (Transabdominal Preperitoneal) procedure is a widely utilized laparoscopic technique for inguinal hernia repair. It involves creating a small incision through the abdominal wall, allowing access to the peritoneal cavity. Pneumoperitonium is created with carbon dioxide to enhance visibility and inserts a laparoscope for visualization. Peritoneal flap is raised and synthetic mesh is placed over the hernia defect to reinforce the abdominal wall. After securing the mesh, the peritoneum is closed over it using either sutures or tackers[3], effectively isolating the mesh from the intestines. This minimally invasive approach offers several advantages over traditional open repair, including reduced postoperative pain, shorter recovery time and lower recurrence rates. The laparoscopic access allows for better visualization of the anatomy, facilitating accurate mesh placement and reducing the risk of nerve damage or complications. Despite the effectiveness of both methods, the choice between intracorporeal suturing and tacker-based closure remains debated. Tackers are quicker to apply but have been associated with higher postoperative pain and long-term complications[4,5]. This study compares the clinical outcomes of these two techniques in a cohort of patients undergoing TAPP inguinal hernia repair.

MATERIALS AND METHODS

Study Design: This prospective comparative study was conducted at Bellary Medical College and Research Centre (formerly VIMS, Ballari). A total of 60 male patients, aged 18-65 years, who were scheduled for elective laparoscopic TAPP inguinal hernia repair, were enrolled. The patients were randomly assigned into two groups.

- **Group A (Intracorporeal Suturing Group):** 30 patients underwent peritoneal closure using intracorporeal suturing with Vicryl 2.0.
- **Group B (Tacker Group):** 30 patients underwent peritoneal closure using absorbable tackers.

Inclusion and Exclusion Criteria: Male patients aged between 18-65 years with unilateral inguinal hernia were included. Patients with recurrent or bilateral inguinal hernias, history of previous abdominal surgery, or large hernia defects were excluded.

Randomization: Patients were randomly assigned using a computer-generated random number sequence. Allocation was concealed in sealed opaque envelopes, opened just before surgery.

Surgical Procedure: Standard laparoscopic TAPP hernia repair under general anesthesia was performed. Peritoneal closure was achieved using either sutures or tackers.

Outcomes Measured: Primary outcomes included operative time, postoperative pain, return to normal activities and hernia recurrence. Secondary outcomes included postoperative complications.

RESULTS AND DISCUSSIONS

Operative Time: The mean operative time was significantly shorter in the Tacker Group (1 hour 5 minutes) compared to the Suturing Group (1 hour 21 minutes).

Postoperative Pain: Higher pain scores were observed in the Tacker Group at all intervals. VAS scores were as follows.

- At 6 hours: Tacker Group: 6.5, Suturing Group: 5.8.
- At 24 hours: Tacker Group: 5.0, Suturing Group: 4.2.
- At 48 hours: Tacker Group: 3.2, Suturing Group: 2.5.

Return to Normal Activities: Patients in the Tacker Group returned to normal activities within 7 days, while those in the Suturing Group took 10 days.

Complications: Chronic pain was observed in 10% of the Tacker Group and 3% of the Suturing Group. No significant differences in infection rates or seroma formation were observed.

Hernia Recurrence: No hernia recurrence was observed in either group at the 6-month follow-up. This study highlights the trade-offs between speed and patient comfort when choosing between tackers and intracorporeal suturing for peritoneal closure in TAPP hernia repair. Tackers offer faster operative times and quicker return to normal activities but come with the cost of higher postoperative pain and a greater incidence of chronic pain. On the other hand, intracorporeal suturing with Vicryl 2.0 provides better pain management and long-term comfort, albeit at the cost of a longer operative time.

The absence of hernia recurrence in both groups underscores that both methods are effective in achieving long-term hernia repair. However, the choice of closure method should consider patient factors, surgeon expertise and a preference for minimizing postoperative pain and chronic complications.

CONCLUSION

Intracorporeal suturing with Vicryl 2.0 offers superior postoperative comfort with lower pain scores and fewer incidences of chronic pain compared to tackers. However, tackers provide a faster operative time and quicker return to normal activities. Surgeons should tailor their approach to individual patient needs, balancing operative efficiency with postoperative recovery and long-term outcomes.

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