



LAPAROSCOPIC TRANSABDOMINAL RETROMUSCULAR REPAIR FOR VENTRAL HERNIAS: OUTCOMES FROM A TERTIARY CARE HOSPITAL

General Surgery

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ABSTRACT

Introduction: Ventral hernias, including primary and incisional types, affect 3–20% of patients post-abdominal surgery. Laparoscopic Transabdominal Retromuscular (TARM) repair combines retromuscular mesh placement with minimally invasive benefits. This study evaluates TARM repair outcomes at a tertiary care hospital. **Materials and Methods:** A retrospective study analyzed 30 patients (aged 18–60 years) undergoing TARM repair for ventral hernias from June 2023 to June 2024 at Chettinad Hospital and Research Institute (CHRI). Outcomes, including operative time, complications, pain, functional recovery, and aesthetics, were assessed at 24 hours, 2 weeks, 6 weeks, and 3 months. **Results:** Mean operative time was 92.5 ± 15.8 minutes, with a median hospital stay of 2 days. No intraoperative complications occurred. Postoperative complications included seroma (10%) and minor wound infections (6.7%). Pain scores decreased from 5.3 ± 1.2 at 24 hours to 1.2 ± 0.5 at 3 months. By 3 months, 93% of patients resumed normal activities, with aesthetic scores improving from 4.5 ± 1.5 to 9.0 ± 0.7 . **Conclusion:** Laparoscopic TARM repair is safe, effective, and associated with low complications, rapid recovery, and high patient satisfaction. Larger prospective studies are needed to confirm long-term outcomes.

KEYWORDS

Ventral Hernia, Laparoscopic TARM, Retromuscular Repair, Minimally Invasive Surgery, Hernia Outcomes

INTRODUCTION

Ventral hernias, encompassing primary (e.g., umbilical, epigastric) and incisional types, affect 3–20% of patients following abdominal surgery (1). Open repairs, while effective, are associated with higher wound complications and prolonged recovery (2). Laparoscopic ventral hernia repair (LVHR) reduces these risks but often involves intraperitoneal mesh placement, increasing adhesion risks (3). The laparoscopic Transabdominal Retromuscular (TARM) repair, inspired by the Rives-Stoppa technique, places mesh in the retromuscular space, enhancing durability while maintaining minimally invasive benefits (4). Despite its theoretical advantages, real-world data on TARM outcomes in tertiary care settings are limited. This study evaluates the safety, efficacy, and patient satisfaction of laparoscopic TARM repair for ventral hernias at Chettinad Hospital and Research Institute (CHRI), a tertiary care hospital in India.

Objective

To evaluate the outcomes of laparoscopic Transabdominal Retromuscular repair for ventral hernias at a tertiary care hospital.

MATERIALS AND METHODS

Study Design

This retrospective study analyzed 30 patients undergoing laparoscopic TARM repair for ventral hernias at CHRI from June 2023 to June 2024. The study was approved by the CHRI Institutional Review Board (IHEC-II/0678/24), and informed consent was obtained from all participants.

Inclusion and Exclusion Criteria

Patients aged 18–60 years with primary or incisional ventral hernias (median, lateral, or multiple-site) with or without rectus diastasis were included. Exclusion criteria included recurrent hernias, emergency presentations, congenital abdominal wall weakness, or unfit for general anesthesia.

Sample Size

Thirty patients diagnosed with ventral hernias via clinical examination and ultrasonography (with CT scans when indicated) were included.

Procedure

Laparoscopic TARM repair was performed under general anesthesia. The procedure involved creating a retromuscular space, placing a polypropylene mesh, and closing the hernia defect with non-absorbable sutures. Posterior component separation with transversus abdominis release was used for tension-free closure when needed. Mesh was fixed using sutures or tackers, ensuring no nerve injury.

Data Collection

Demographic, operative, and follow-up data were collected. Outcomes included operative time, hospital stay, complications (e.g., seroma, infection), pain, aesthetics, and functional recovery, assessed at 24 hours, 2 weeks, 6 weeks, and 3 months via in-person or telephonic follow-up. Pain and aesthetic scores were measured on a 0–10 scale (0 = worst, 10 = best).

Statistical Analysis

Descriptive statistics summarized categorical variables (frequencies, percentages) and continuous variables (means $\pm$ SD or medians with IQR). Paired t-tests or Wilcoxon signed-rank tests assessed changes in pain and aesthetic scores. Chi-square tests evaluated complication associations. Analyses were performed using SPSS version 26.0, with $p < 0.05$ considered significant.

Results

Demographic and Clinical Characteristics

The study included 30 patients (mean age: 42.7 ± 10.4 years; 70% male). Primary ventral hernias accounted for 60% ($n=18$), with incisional hernias comprising 40% ($n=12$). Most defects were median (63%, $n=19$), followed by lateral (27%, $n=8$) and multiple-site (10%, $n=3$).

Table 1: Demographic and Clinical Characteristics

VARIABLE	VALUE
Age (years, mean $\pm$ SD)	42.7 ± 10.4
Sex (n, %)	Male: 21 (70%) Female: 9 (30%)
Hernia Type (n, %)	Primary: 18 (60%) Incisional: 12 (40%)
Defect Location (n, %)	Median: 19 (63%) Lateral: 8 (27%) Multiple-site: 3 (10%)

Operative Outcomes

Mean operative time was 92.5 ± 15.8 minutes, with a median hospital stay of 2 days (IQR: 1–3). No intraoperative complications or conversions to open surgery occurred.

Postoperative Outcomes

Postoperative complications included seroma (10%, $n=3$) and minor wound infections (6.7%, $n=2$), with no mesh infections or recurrences.

Table 2: Postoperative Complications

COMPLICATIONS	n (%)
Seroma	3 (10%)
Minor Wound Infection	2 (6.7%)

Mesh Infection	0 (0%)
Recurrence	0 (0%)

Pain scores decreased significantly from 5.3 ± 1.2 at 24 hours to 1.2 ± 0.5 at 3 months (p<0.001) (Figure 1).

Table 3: Postoperative Pain Scores

TIME POINT	PAIN SCORE (Mean ± SD)
24 Hours	5.3 ± 1.2
2 Weeks	2.1 ± 0.9
6 Weeks	1.7 ± 0.8
3 Months	1.2 ± 0.5

Functional recovery improved over time, with 70% of patients resuming normal activities by 2 weeks, 85% by 6 weeks, and 93% by 3 months.

Table 4: Return to Normal Activities

TIME POINT	PATIENTS RESUMED (n, %)
2 Weeks	21 (70%)
6 Weeks	25 (85%)
3 Months	28 (93%)

Aesthetic scores increased significantly from 4.5 ± 1.5 preoperatively to 9.0 ± 0.7 at 3 months (p<0.001) (Figure 2).

Table 5: Aesthetic Scores

TIME POINT	SCORE (Mean ± SD)
Preoperative	4.5 ± 1.5
2 Weeks	6.5 ± 1.0
6 Weeks	8.3 ± 1.1
3 Months	9.0 ± 0.7

Quality-of-life satisfaction reached 93% by 3 months.

Table 6: Quality-of-Life Satisfaction

TIME POINT	SATISFACTION (n, %)
24 Hours	25 (85%)
3 Months	28 (93%)

DISCUSSION

This study demonstrates that laparoscopic TARM repair is a safe and effective option for ventral hernias, with a mean operative time of 92.5 minutes and low complication rates (seroma: 10%; wound infection: 6.7%). These outcomes align with Köckerling et al., who reported similar results for laparoscopic transversus abdominis release (5). Unlike intraperitoneal onlay mesh (IPOM) repair, TARM's retromuscular mesh placement reduces adhesion risks, potentially lowering long-term complications (3).

Significant pain reduction (from 5.3 to 1.2 over 3 months) and rapid functional recovery (93% by 3 months) highlight TARM's advantages over open repair, consistent with Belyansky et al. (6). High aesthetic satisfaction (score: 9.0 at 3 months) reflects the minimally invasive approach's cosmetic benefits (7). The absence of recurrences at 3 months is promising, though longer follow-up is needed, as recurrence rates may increase over time (1).

TARM requires advanced laparoscopic skills, potentially limiting its adoption in resource-constrained settings. The retrospective design and small sample size (n=30) limit generalizability. The 3-month follow-up may not capture late recurrences, and the lack of a control group (e.g., open repair or IPOM) precludes direct comparisons. Future multicenter studies with longer follow-up and comparative designs are needed to validate these findings and assess TARM's cost-effectiveness and training requirements.

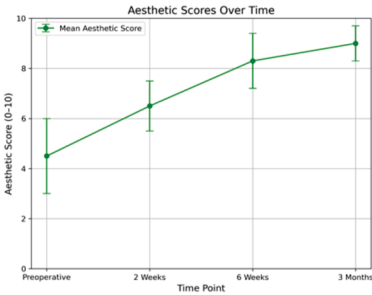


Figure 1: Mean pain scores (0–10 scale) at 24 hours, 2 weeks, 6 weeks,

and 3 months post-laparoscopic TARM repair, showing significant reduction over time (p<0.001).

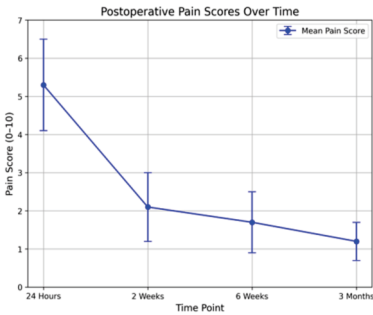


Figure 2: Mean aesthetic scores (0–10 scale) from preoperative to 3 months post-laparoscopic TARM repair, demonstrating significant improvement (p<0.001).

CONCLUSION

Laparoscopic TARM repair is a safe and effective technique for ventral hernia management, offering low complication rates, significant pain reduction, rapid recovery, and high aesthetic satisfaction. Its retromuscular mesh placement combines minimally invasive benefits with robust repair principles, positioning it as a promising standard in tertiary care settings. Larger prospective studies with extended follow-up are needed to confirm long-term outcomes and guide broader adoption.

Conflict of Interest

The authors declare no conflicts of interest.

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