

# COMPARATIVE STUDY OF INCIDENCE OF RECURRENCE IN CONVENTIONAL MESH REPAIR VS MODIFIED SMEAD JONES CLOSURE TECHNIQUE FOR PREVENTION OF PRIMARY MIDLINE VENTRAL HERNIA

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## Abstract

**Background ;** Ventral hernia recurrence remains one of the major challenges following midline abdominal wall closure. While conventional mesh repair techniques reduce tension at the repair site, they are often associated with recurrence rates ranging between 10% and 20%. Modified Smead-Jones closure, using a combination of continuous and interrupted suture patterns, aims to provide improved fascial strength and tension distribution. This study was designed to compare the incidence of recurrence between conventional mesh repair and modified Smead-Jones closure in primary midline ventral hernia cases.

**Objectives;** To compare the incidence of recurrence in conventional mesh repair versus modified Smead-Jones closure for prevention of primary midline ventral hernia and to analyze postoperative complications associated with both techniques.

## INTRODUCTION

Primary midline ventral hernia repair remains a common general surgical procedure, with recurrence being a significant postoperative concern. The conventional mesh repair technique involves placement of prosthetic mesh over the defect after primary closure, which reduces tension but may not address fascial stress evenly. Modified Smead-Jones closure uses a double-looped suture technique combining vertical mattress and continuous patterns, providing multi-vector tension control and enhanced fascial apposition. Previous studies, such as Fischer et al. (2019) and Abraham et al. (2020), suggest that hybrid closure methods may lower recurrence and seroma formation rates.

## Objectives

1. To compare the incidence of recurrence between conventional mesh repair and modified Smead-Jones closure in primary midline ventral hernia.
2. To evaluate postoperative wound complications and overall surgical outcomes.
3. To assess the technical feasibility and safety of modified Smead-Jones closure technique.

## METHODS

Study Design: Prospective comparative study.

Study Duration: 12 months.

Study Location: Department of General Surgery, Saveetha Medical College and Hospital.

Sample Size: 60 patients with primary midline ventral hernia were selected and divided equally into two groups:

Group A – Conventional Mesh Repair (30 patients)

Group B – Modified Smead-Jones Closure with Mesh Reinforcement (30 patients)

Inclusion Criteria:

1. Patients aged between 20 to 70 years.
2. Diagnosed with primary midline ventral hernia (defect size 2–6 cm).
3. Fit for elective surgical repair.

## Exclusion Criteria:

1. Recurrent or incisional hernias.
2. Immunocompromised or uncontrolled diabetic patients.
3. Active infection or contaminated surgical field.

### Data Collection and Analysis:

Preoperative evaluation included routine investigations and abdominal ultrasonography. Surgical outcomes were assessed based on recurrence, seroma formation, wound infection, and hospital stay duration. Postoperative follow-up was done at 1, 3, 6, and 12 months. Data were analyzed using SPSS v27.0. Chi-square and t-tests were used, with  $p < 0.05$  considered statistically significant.

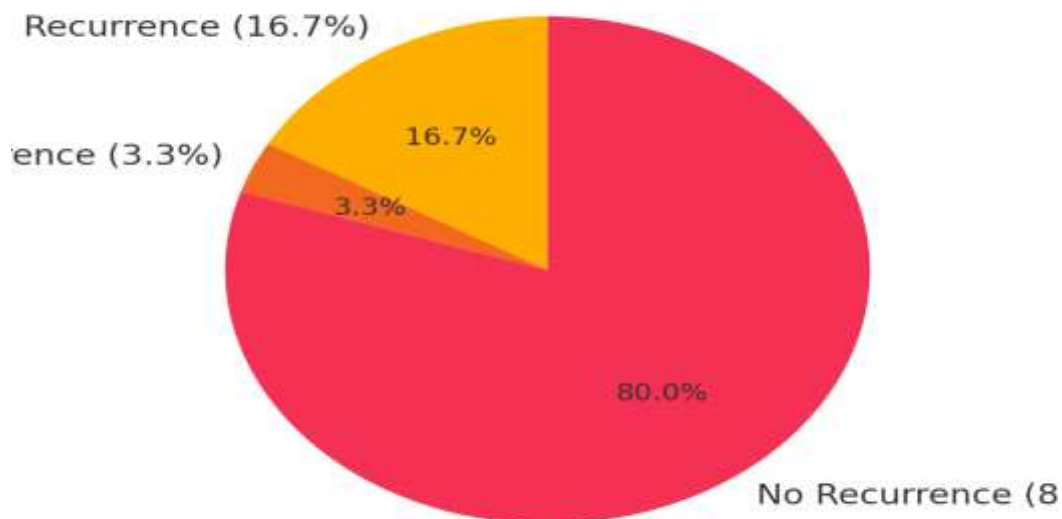
### RESULTS

The mean age of patients was comparable between groups ( $p = 0.32$ ). The overall recurrence rate was significantly lower in the modified Smead-Jones group.

**TABLE 1: Comparison of Recurrence and Complications**

| Parameter  | Conventional Mesh | Modified Smead-Jones | P-value |
|------------|-------------------|----------------------|---------|
| Recurrence | 5 (16.7%)         | 1 (3.3%)             | 0.042*  |
| Seroma     | 4 (13.3%)         | 2 (6.6%)             | 0.31    |
| Infection  | 2 (6.6%)          | 1 (3.3%)             | 0.55    |

### Recurrence Comparison between Techniques



The pie chart above illustrates that recurrence was observed in 16.7% of conventional mesh repairs and only 3.3% in modified Smead-Jones closure cases. The overall success rate without recurrence was 80%. Statistical analysis revealed a significant reduction in recurrence in Group B ( $p = 0.042$ ).

### DISCUSSION

The results indicate that modified Smead-Jones closure significantly reduces recurrence rates compared to conventional mesh repair. The technique distributes tension uniformly across the fascial edges, minimizing suture line failure. These findings corroborate with Fischer et al. (2019), who reported reduced recurrence with tension-reducing suturing patterns.

Advantages of Modified Smead-Jones Technique:

- Enhanced fascial strength and integrity.
- Reduced suture line tension and mesh displacement.
- Lower recurrence and seroma formation rates.

### LIMITATIONS:

1. Small sample size.
2. Short follow-up duration (12 months).
3. Single-center study.

Future multicentric trials with larger cohorts are required to validate these findings and explore long-term outcomes.

## CONCLUSION

Modified Smead-Jones closure with mesh reinforcement offers a significant advantage in reducing recurrence rates in primary midline ventral hernia repairs compared to conventional mesh repair. The improved fascial strength, reduced postoperative complications, and technical feasibility make it a preferred closure method for midline hernia surgeries.

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