

Contaminated Incisional Hernia Repair with Mesh Suture

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Introduction

Closure of contaminated and clean-contaminated incisional hernias remains a challenge. Standard suture techniques are simple but prone to failure due to high focal tension, while planar mesh offers reinforcement but adds complexity and foreign body burden.

Mesh suture (Duramesh™) is a novel construct designed to combine the simplicity of suture with the strength of mesh by distributing force across a broader surface area. **This study assesses the early clinical performance of mesh suture in contaminated midline hernia repair, focusing on feasibility and short-term outcomes including infection, reoperation, and recurrence.**

Fig 1. Mesh suture (Duramesh)

Methods

Patients undergoing mesh suture closure for clean-contaminated or contaminated midline incisional hernias (Jan 2023–Jul 2024) were retrospectively reviewed. The primary outcome was 1-year surgical site infection (SSI), surgical site events (SSE), readmission, reoperation, and hernia recurrence. Kaplan-Meier analysis estimated recurrence-free survival, truncated at 18 months.

Surgical Technique

Mesh suture was placed in a continuous running fashion with full-thickness, 1 cm through-and-through bites and 8 mm travel. Fascial edges were cleared to healthy tissue. When primary closure was not feasible, anterior component separation was performed using perforator-sparing counter-incisions.



Fig 2. Mesh suture repair

Hernia recurrence

- Hernia recurrence: **8.2%**
- Mean time to recurrence: 12.8 months
- 3 occurrences within 18 months; 1 at 22.8 months
- 12-mo recurrence-free survival: **~91%**

Major complications

- 21.6% experienced SSI, SSE, or reoperation within 90 days
- Only significant predictor was presence of stoma (p=0.041)

Results

Demographics

- 51 patients met inclusion criteria
- Used by 22 surgeons across 7 specialties
- Mean hernia width: 8.1 cm
- Preop Botulinum toxin use: 11.8%
- Anterior component separation: 25.5%
- Length of stay: 7.9 days

Contamination

Bowel resection	22 (43.1)
Ostomy reversal	3 (5.9)
Gynecologic procedure	4 (7.8)
Urologic procedure	4 (7.8)
Creation of stoma/revision	4 (7.8)
Enterotomy	1 (2.0)
Cholecystectomy	2 (3.9)
Fistula	5 (9.8)
Lysis of adhesions	6 (11.7)

Outcomes

- 90-day SSI rate: **15.6%**
- 90-day SSE rate: **9.8%**
- Readmission related to closure: **5.8%**
- Reoperation: **9.8%**

Conclusion

Mesh suture appears feasible for contaminated midline incisional hernia repair, with low short-term recurrence (8.2%) and acceptable complication rates. Infection and reoperation rates compare favorably to published outcomes for planar mesh in similar settings. The technique was used across specialties with minimal training, suggesting it may be widely adoptable. While early results are encouraging, further prospective studies are needed to assess long-term durability and broader applicability.