

## Outcomes Following Mesh Suture Abdominal Wall Closures, a Registry of 862 patients

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### Introduction

**Suture pull-through**, caused by excessive pressure at the suture–tissue interface (STI), is a key mechanism of incisional hernia formation in abdominal wall surgery. Despite interventions like weight loss, botulinum toxin, component separation, and mesh reinforcement, recurrence remains common, especially in high-risk patients.

**Duramesh™** is a novel polypropylene mesh suture designed to reduce pull-through by flattening under tension and distributing force over a broader surface. Its structure promotes early tissue ingrowth and has demonstrated superior strength in preclinical models. This study reviews its early clinical use and outcomes over 18 months within an integrated healthcare system.

### Methods

Patients who received mesh suture (Jan 2023–Jul 2024) for full-thickness abdominal wall closure were identified via implant logs. Outcomes included surgical site infection (SSI), surgical site events (SSE), hernia formation, reoperation, and readmission. Mesh suture was used per routine care.

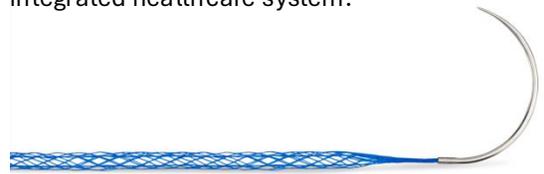


Fig 1. Mesh suture (Duramesh)

### Results

Fig 2. Specialties using mesh suture

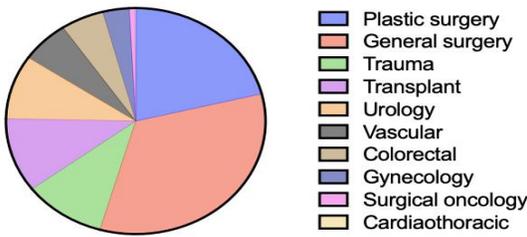


Table 1. SSI and SSE outcomes

	N = (%)	N = 862
<b>SSI</b>		
Superficial infection	39 (4.6)	
Deep infection	4 (0.5)	
Organ space infection	41 (4.8)	
<b>SSI 0-90 days</b>	<b>78 (9.0)</b>	
<b>SSE</b>		
Seroma	38 (4.5)	
Hematoma	33 (3.9)	
Soft tissue breakdown	29 (3.4)	
Fascial dehiscence	9 (1.0)	
Cellulitis	3 (0.3)	
Chronic draining sinus	3 (0.3)	
Enterocutaneous fistula	2 (0.2)	
<b>SSE 0-90 days</b>	<b>93 (10.8)</b>	

#### Demographics and Patient Details

- **862 patients** met inclusion criteria for full-thickness abdominal wall closure without planar mesh.
- 50.3% cases were clean, 41.9% clean-contaminated or contaminated, 7.8% were dirty or infected.

#### Versatility of Mesh Suture

- Used by 75 surgeons across 10 specialties
- Most common uses: fascial closure (34.9%), ventral hernia repair (25.2%)

#### Healthcare Utilization

- **90-day readmission: 15.3%**, only 7.0% related to abdominal closure.
- Most common readmission causes: SSI (15.9%), soft tissue breakdown (9.3%)
- **90-day reoperation: 7.5%**
- Most common reoperation causes: wound revision (21.4%), intra-abdominal pathology (20.2%)

#### Hernia Formation

- Hernia rate: **4.8%**
- CDC I (**3.8%**), CDC II-III (**5.8%**)

### Conclusion

In this early multi-specialty experience, mesh suture was used across a range of abdominal wall closures, including contaminated wounds, with acceptable short-term outcomes. SSI, SSE, and hernia formation rates were comparable to reported outcomes for standard suture and planar mesh. The device was adopted without formal training, suggesting ease of use. These findings support further study to evaluate long-term durability.