# Comparison of Deep Space Infection Rates Between Biologic and Reinforced Tissue Matrix Mesh in Elective Ventral Hernia Repair

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## Background

Ventral hernia mesh infections can have life-altering consequences for patients and frequently require prolonged treatment or reoperation. Deep space surgical site infections (SSI)—defined as infections involving the deep soft tissues of the operative site, including fascia and muscle, and potentially the implanted mesh—have not been well compared between biologic and hybrid mesh in elective ventral hernia repair.

## Objective

This study aims to compare the rates of deep space surgical site infections between biologic mesh and reinforced tissue matrix (RTM) during elective ventral hernia repair.

## Methods

A retrospective cohort study was performed to examine the difference in deep space SSI between individuals who underwent ventral hernia repair with biological mesh versus RTM from 2015 to 2023.

Demographic statistics were completed, and the Mann-Whitney U test and Fisher exact tests were used to compare outcomes between mesh types.

## Methods

**Inclusion Criteria:**

- ❑ Patients ≥ 18 years old
- ❑ Patients who underwent elective ventral hernia repair with mesh placement

**Primary Outcome:**

Short-term (< 30 days) and long-term (≥ 30 days) outcomes for SSI after elective hernia repair with mesh placement

**Secondary Outcome:**

- ❑ Location of infection in relation to mesh placement
- ❑ Type of component separation completed

## Results

**Initial Evaluation**

| | RTM n = 96 | | Biologic n = 57 | | P-valve |
|---|---|---|---|---|---|
| Age | 58 | [45 - 63] | 57 | [49 - 64] | 0.560 |
| BMI | 31 | [27 - 35] | 32 | [27 - 38] | 0.110 |
| Location of Mesh | | | | | < 0.001 |
| Inlay | 1 | 1 % | 2 | 4 % | |
| Underlay | 45 | 47 % | 48 | 84 % | |
| Sublay | 50 | 52 % | 7 | 12 % | |
| Component Separation | | | | | < 0.001 |
| Anterior | 9 | 9 % | 18 | 32 % | |
| Posterior | 54 | 56 % | 2 | 4 % | |

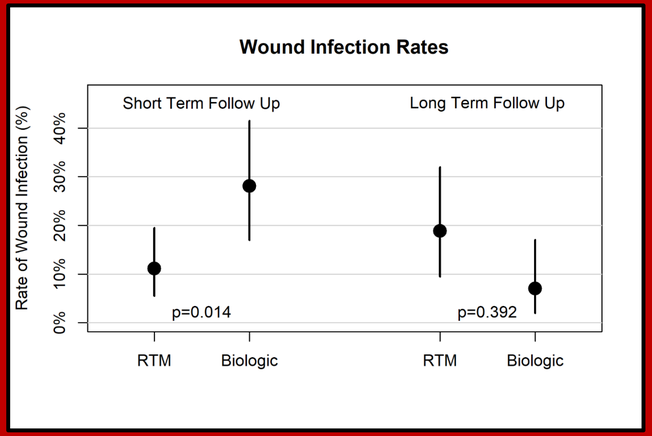
**Short-Term Follow Up**

| | RTM | | Biologic | | P-valve |
|---|---|---|---|---|---|
| | n | % | n | % | |
| | 90 | 94 % | 57 | 100 % | 0.085 |
| Development of SSI | 10 | 11% | 16 | 28 % | **0.014** |
| No Component Separation | 1 | 3 % | 11 | 30 % | **0.008** |
| Component Separation | 9 | 15 % | 5 | 25 % | 0.317 |
| Anterior | 0 | 0 % | 5 | 25 % | 1.000 |
| Posterior | 9 | 15% | 0 | 0 % | 0.298 |

**Long Term Follow Up**

| | RTM | | Biologic | | P-valve |
|---|---|---|---|---|---|
| | n | | n | | |
| | 55 | 57 % | 55 | 96 % | **<0.001** |
| Months from Surgery | 2.9 | [1.0 - 5.1] | 41.1 | [30.2 – 52] | **<0.001** |
| Development of SSI | 9 | 16% | 5 | 9 % | 0.392 |
| No Component Separation | 1/10 | 10 % | 4/36 | 11 % | 1.000 |
| Component Separation | 8/45 | 18 % | 1/19 | 5 % | 0.260 |
| Anterior | 0 | 0 % | 1 | 5 % | 1.000 |
| Posterior | 8 | 18% | 0 | 0 % | 1.000 |

## Results




- ❑ **153 patients** underwent elective ventral hernia repair.
- ❑ **96 patients** underwent repairs with RTM and **57 patients** underwent repairs with biologic mesh.
- ❑ **11% of patients** who underwent hernia repairs with RTM developed an SSI within 30 days of surgery vs **28% of patients** who received biologic mesh
- ❑ **No significant difference** in development of an SSI between mesh types in long term outcomes

## Conclusions

Reinforced tissue matrix can be utilized in elective ventral hernia repairs with a decrease in short term mesh infections and no change in long term mesh infections in comparison to non-crosslinked dermal matrix.