

Role of Prophylactic Mesh Placement for Laparotomy and Stoma Creation



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KEYWORDS

- Incisional • Hernia • Prevention • Mesh • Augmentation • Parastomal • Prophylactic

KEY POINTS

- Incisional and parastomal hernias remain a challenge to treat, morphing into a cycle of complications and reoperations with increased cost and decreased quality of life.
- Prevention of abdominal hernias with mesh may have a higher upfront cost, but could lead to a larger benefit by halting the progression of complications and reoperations.
- Use of an onlay mesh with minimal fixation can easily be taught and implemented to prevent incisional hernias in high-risk populations among many surgical subspecialties.
- Use of a retrorectus mesh may be more favorable in parastomal hernia prevention.
- The ideal type of mesh to be used in these surgeries is a topic of debate that will become clearer when more data on bioabsorbable meshes become available.

INTRODUCTION

A cornerstone of modern medical practice is in the institution of preventative, risk-reductive measures to improve outcomes. This is a concept that has been implemented across many specialties with great success, but only sparingly in surgery, a field uniquely equipped to impact patient outcomes by performing prophylactic operations. A few examples include mastectomies and colectomies to prevent cancer in

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high-risk patients, insertion of ureteral stents during colorectal surgery to identify ureteral injury, and creation of muscle flaps in vascular procedures to prevent groin infections.¹⁻⁴ Similarly, there may be an opportunity to prevent incisional hernias (IH) and parastomal hernias (PH) through surgery with prophylactic mesh placement (PMP).

Considering morbidity, cost, and quality of life, effective primary prevention of IH and PH could improve the lives of patients and reduce the strain of IH and PH on the health care system. Hernias are a cyclical chronic disease with a high recurrence rate, substantial complications, and increased expenses linked to treatment. Flum and colleagues⁵ described the high cumulative rates of reoperative repairs for ventral hernias and concluded that adverse outcomes were not decreasing despite efforts at improving repair techniques. Holihan and colleagues⁶ took this further and showed that a recurrent hernia has increased complications leading to reoperation, more complications, and an ongoing “vicious cycle” that does not stop. This cycle can be thought of as a conceptual framework, outlined in Fig. 1, where roughly one-third of the 350,000 IH repairs in the United States will fail, perpetuating this ongoing cycle and leading to more than \$3 billion in cost.⁷⁻⁹

Hernias continue to remain an issue with solutions that are only partially effective. There are emerging data on techniques for PMP to prevent IH and PH. To improve and enhance knowledge, this article summarizes and critically examines the literature evaluating the prevention of abdominal hernias (AH) through the placement of prophylactic mesh.

BACKGROUND

There are estimates that up to 4 to 5 million abdominal surgeries are performed annually in the United States.¹⁰ Midline laparotomies are associated with significant morbidity in the perioperative and postoperative period. One of the most common and challenging postoperative consequences of a laparotomy is an IH, which occurs in roughly 5% to 20% of the general population but is seen in approximately 30% and as high as 73.1% of high-risk patients.^{11,12} A study by Bosanquet and colleagues¹³ showed through metaregression that the incidence of IH was 12.8% among 83 different patient groups. The authors of that study were also able to identify specific patient groups at high risk for IH, which included increasing age, patients with a history

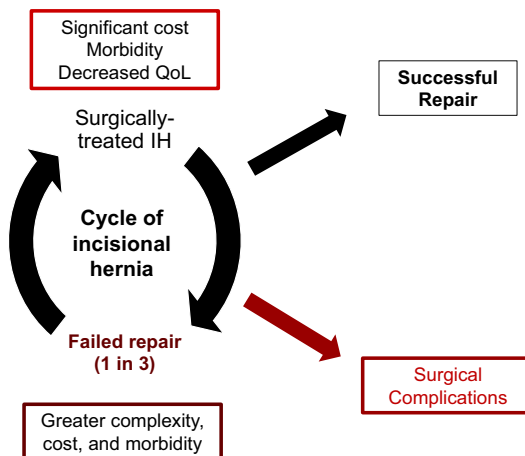


Fig. 1. Conceptual framework for cycle of incisional hernia. QoL, quality of life.

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