

STOMAL HERNIAS

A stomal hernia (also called a para-stomal hernia) is a type of [incisional hernia](#) that occurs next to a stoma. It is a common problem, and can be challenging to manage.

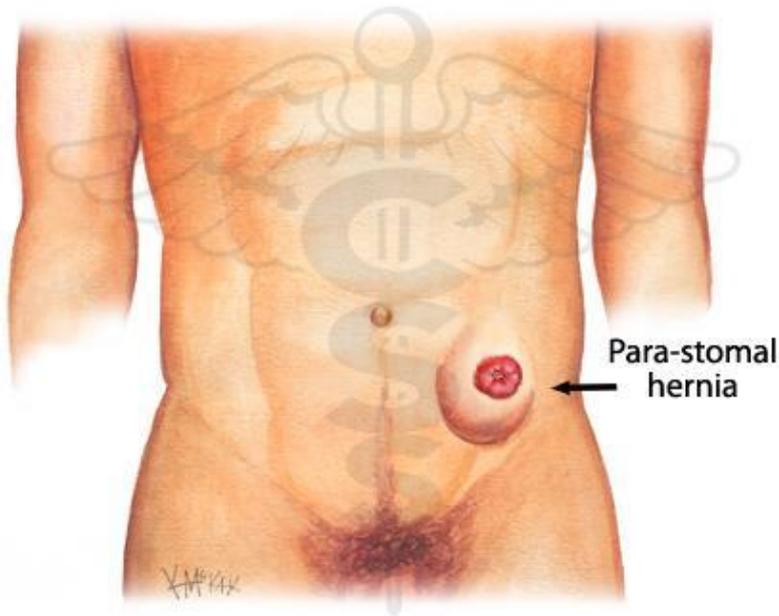


Figure 1. Para-stomal hernia

CAUSE

Stomal hernias result when there is a widening of the surgical hole (trephine) created in the abdominal wall at the time of original stoma formation. This hernia results from tangential forces that stretch on the trephine over time. They are a common and difficult complication to manage. In fact some degree of herniation is argued to be inevitable, and does not always represent a true hernia.

INCIDENCE

As a general rule, up to half of stomas will develop a para-stomal hernia, and most occur within the first two years.

DEFINITION

A parastomal hernia is a protrusion of abdominal contents (commonly bowel or fatty omentum) through a weakness in the abdominal wall at the site of the previous hole (trephine) made for delivering the stoma. They are traditionally classified clinically into four sub-types:

1. Subcutaneous – the hernia occurs alongside the bowel for the stoma and bulges into the fatty spaced just under the skin (subcutaneous space).
2. Interstitial – the hernia occurs alongside the bowel for the stoma, then bulges into the abdominal wall sliding between the muscles of the abdominal.
3. Perstomal – relates only to the prolapsing loop stoma, and is where loops of bowel and or omentum enter the hernia space produced between the two loops of prolapsed bowel.
4. Intrastomal – the hernia occurs alongside the bowel for the stoma and enters the plane between the emerging and the everted part of the bowel. It typically occurs in prolapsing end stomas or stomas with excessive spouting.

The actual type of hernia is not as important as the contents of the hernia, and whether or not the hernia causes symptoms. Parastomal hernias that contain bowel and cause obstructive symptoms such as abdominal bloating and vomiting with pain, are the hernias that are most likely to need repairing.

RISK FACTORS

Technical factors and patients factors are responsible for parastomal hernias.



TECHNICAL FACTORS

Technical factors frequently responsible include the site of stoma placement, size of the trephine, and method of fixation used.

The size of the trephine is likely to be the most important. A large scientific review found that para-stomal hernias were more common in those people with a trephine greater than 35mm, with a 10% increase in hernia rate for every 1mm increase in size. An analysis of the forces acting upon the trephine that cause dilatation, and ultimately a hernia, show that the larger the trephine radius, the stronger the tangential force pulling the trephine apart, and the greater the risk of herniation. This physical analysis supports the clinical findings that para-stomal hernias are less common following an a small bowel stoma (ileostomy) than a large bowel stoma (colostomy).

PATIENT FACTORS

Patient factors that increase the risk of para-stomal herniation include the following:

1. obesity;
2. emergency procedure;
3. weight gain after stoma formation;
4. poor nutrition;
5. immunosuppression (including use of steroids and biologics);
6. emphysema and smokers (chronic cough leads to raised intra-abdominal pressures) and
7. inflammatory bowel disease (Crohn's and ulcerative colitis).

Obesity appears to be the stand-out risk factor. Those with a waist circumference of greater than 100cm or BMI >30 are at particular risk. Those having a stoma as part of an emergency procedure are also at increased risk, as poor nutrition, immunosuppression, and large hole (trephine) to accommodate a swollen bowel are all likely to co-exist.

There is growing evidence to suggest that defects in collagen metabolism lead to altered wound repair and increase the risk of hernias.

PREVENTION OF PARASTOMAL HERNIAS

The aim of prevention is to minimise both the technical and patient risk factors already described.

MESH REPAIR TO PREVENT PARASTOMAL HERNIAS

There is some evidence to suggest that reinforcement of the stoma with mesh at the time of original surgery may help reduce the risk of subsequent para-stomal hernia formation.

MANAGEMENT OF A PARASTOMAL HERNIA

The tenants of management of the para-stomal hernia are best summaries by the four 'R's, which represent a ordered approach beginning most importantly with 'reassurance' followed by 'restoration' if possible, then by 'repair' with mesh, and only if this fails by 'resiting' of the stoma. Each subsequent option becomes trickier and riskier than the first.

REASSURANCE

Most para-stomal hernias are asymptomatic and require reassurance that a surgical repair is not needed. A cautious approach should also be taken for those with mild symptoms, particularly if frail or significant other illnesses exist, because of the high recurrence rates following surgery. Most patients with mild symptoms can be managed with stoma hernia belt which is much like a corset.

Life threatening complications are rare. Urgent or emergency repair is sometimes needed because of obstruction or risk of bowel twisting or strangulating. Patients should be educated about signs and symptoms of acute obstruction or strangulation which include vomiting, abdominal pain, and extreme tenderness over the hernia. If these occur, the patient should be advised to present to hospital early to be assessed by a surgeon.



RESTORATION

Restoration involved reversing the stoma, and establishing normal continuity of the gastrointestinal tract (GIT). If restoration is possible, this is ideally done 8-12 weeks after formation of an elective stoma and at least 3-6 months after a stoma. Reversal sooner than this risks difficulty due to adhesions with a high risk of further bowel injury or the creation of holes in the bowel (enterotomy) with the formation of a fistula.

REPAIR

Common indications for elective repair include:

1. Increasing size of the para-stomal hernia;
2. Skin breakdown or dermatitis around the stoma;
3. Intermittent bowel obstruction; and
4. Stoma appliance dysfunction and leakage.

SURGICAL TECHNIQUE

The ideal repair is one that is safe to perform, with limited morbidity, and associated with a low recurrence rate. A multitude of different techniques and approaches have been reported. There is a paucity of good quality evidence comparing each of these techniques. [Laparoscopic para-stomal hernia repair](#), has more recently increased in popularity, the main appeal the avoidance of a large abdominal incision, have added further confusion to this debate.

SUTURED REPAIR

Sutured repair without mesh was traditionally performed as a local direct repair or via a midline abdominal incision (laparotomy). More recently it is being performed key-hole (laparoscopically). A sutured repair alone without mesh is advised against as it is a tensioned repair that ultimately pulls through the weak tissues of the abdominal wall, and is therefore likely to be associated with a high recurrence.

MESH REPAIR

The high local failure rate of sutured fascial repairs for para-stomal hernias led Rosin and Bonardi in 1977 to introduce the use of prosthetic mesh as a method of reinforcing the repair. The overall success rate for a repair with mesh is relatively high compared with repair without mesh. However complications such as contamination of the mesh and fistula formation, while very rare, can be devastating. Nonetheless, mesh repair has become the standard practice for all para-stomal hernia repairs.

DIRECT FASCIAL REPAIR

This involves a skin and subcutaneous incision made either at or next to the stoma to allow dissection and direct sutured repair of the hernia defect, followed by reinforcement with mesh that is sutured on top of the fascia of the abdominal wall beneath the fat (onlay mesh repair).

TRANSABDOMINAL REPAIR

Access to the hernia can be achieved by means of a midline abdominal incision (laparotomy) or via a key-hole (laparoscopic) approach. The mesh is placed inside the abdomen below the fascia (sublay technique). The evidence to support mesh repairs is mostly from small non-randomised series. Intra-abdominal mesh is becoming increasingly popular, with the increased use of the laparoscopic approach, as well as the increased production of improved meshes that are dual layered (composite) such as Composix® containing an inner non-porous 'non-adherent' layer of polytetrafluoroethylene (PTFE) that prevents bowel adherence, and an outer porous layer of polypropylene (Prolene®) that promotes adhesion (tissue incorporation) to the abdominal wall, thus strengthening it.



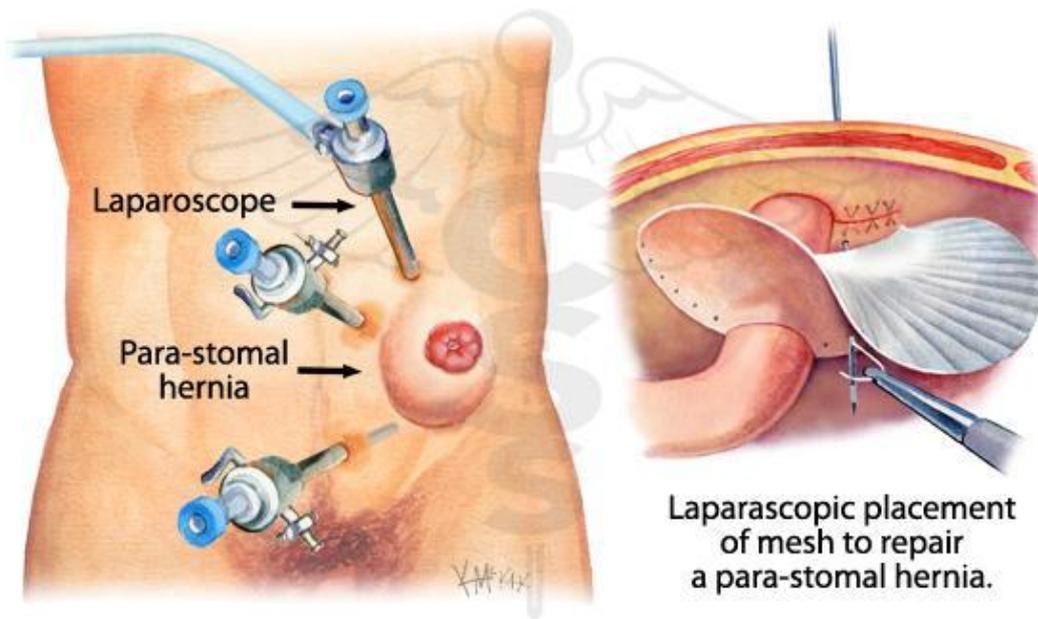


Figure 1. laparoscopic placement of mesh to repair a para-stomal hernia

BIOLOGICAL ABSORBABLE MESH REPAIR

The main biological substitute for prosthetic mesh on the market are those made from human collaged including AlloDerm® (non-crosslinked human acellular dermal matrix) and those made from porcine, which include Veritas® (non-crosslinked porcine pericardium), Periguard® (crosslinked porcine pericardium), Permacol®, and SurgiSIS® (crosslinked porcine dermal collagen). Crosslinked grafts have better tissue incorporation, neovascularisation and extracellular matrix deposition (similar to prosthetic mesh) than non crosslinked meshed. But it remains controversial whether this translates into a better, stronger repair. The main theoretical appeal of biologic meshes is the avoidance of adhesions and infection or erosion into bowel seen more commonly with non-dissolvable synthetic meshes. However their cost remains a prohibitive factor. These biological products are also not designed to last, with eventual disintegration. Whether these meshes are clinically useful depends on a balance between collagenase-mediated degradation and the rate of new tissue ingrowth. If the bio-prosthesis is absorbed before adequate collagen differentiation, the quality and strength of the newly formed tissue will be insufficient and the repair weak. This would presumably lead to a higher hernia recurrence rate.

RESITING

Resiting is a traditional approach that was popularised by a colorectal surgeon (Goligher). The problem with this approach is that the same approach is likely to achieve the same result, with the new stoma at the same high risk of hernia formation as the original stoma. High recurrence rates of 36% have led to resiting being an option of last choice.

