STOMA SITING
&
PARASTOMAL HERNIA MANAGEMENT

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Disclosure

No financial affiliation to disclose

Introduction

□ Stoma = Mouth (Greek)

□ Definition : opening the bowel onto the surface of abdomen

□ Types: conventional or continent

Conventional Stomas

- Loop stoma or end stoma
- Temporary or permanent

Up to 50% of temporary stomas may become permanent

Indications of stomas

Temporary stomas:

- Relief an obstruction
- De-function distal diseased or injured bowel
- Protect a distal anastomosis or a pouch
- Protect anal operations (e.g complex fistulas or sphincter repair)

Indications of stomas

Permanent stomas:

-After resection of bowel for benign disease
(e.g Total proctocolectomy for UC & Crohn's disease)
-After resection of bowel for malignant disease
(e.g APR for very low cancer rectum & anal canal)
-Irremediable fecal incontinence

Complications of stomas

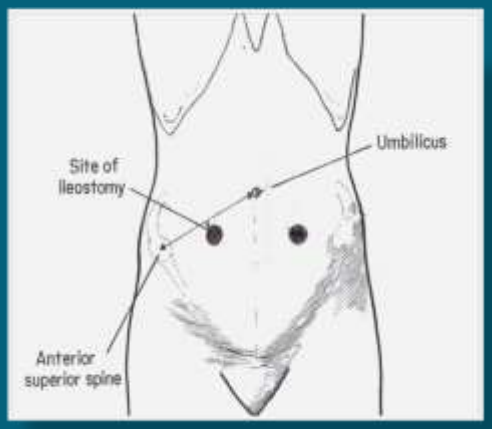
Local	*Metabolic*	*Skin*
-Necrosis	-Dehydration	-Folliculitis
-Hernia	-Electrolyte loss	-Candidiasis
-Obstruction	-Renal calculi	-Dermatitis
-Stenosis	-Gall stones	-Fistulas
-Retraction		
-Prolapse		
-Inadequate diversion		
-Carcinoma		

Preoperative stoma siting

- Can prevent most of the stoma complications
- The goal is to provide a stoma fit for a tight seal appliance which lasts for 5-7 days
- The site is marked when the patient is awake using permanent ink prior to surgery
- CT scan can help to choose the best stoma location in patients with multiple previous abdominal surgeries

Stoma Siting

- Check the site in different patient positions (standing, sitting, lying and bending)
- Away from scars, creases, bony prominences
- Below the umbilicus, overlying the rectus muscle, on the summit of infra-umbilical fat mound
- In an obese patients stoma is located in the upper abdomen where the skin is flat and where the patient can see to manage

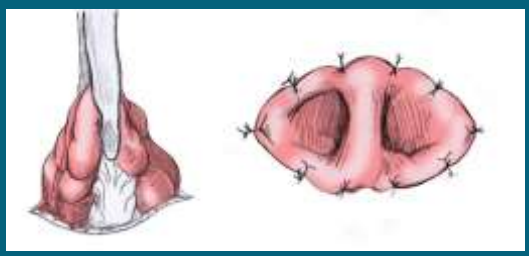


Loop Colostomy: Surgical Techniques

- **Open**
- **Laparoscopic**
- **Trephine:** blind
  or colonoscopy assisted
  or laparoscopy assisted

Technical Tips

- **Proper preoperative stoma siting** is mandatory
- **Tension free stoma**: Generous mobilization of the bowel to deliver 2.5 cm loop of colon or 5 cm of loop of ileum (tension free) above skin surface
- **Snug abdominal wall aperture**: incision of anterior rectus sheath 3.5 cm which allows 2 fingers or the bowel loop and one finger to pass through

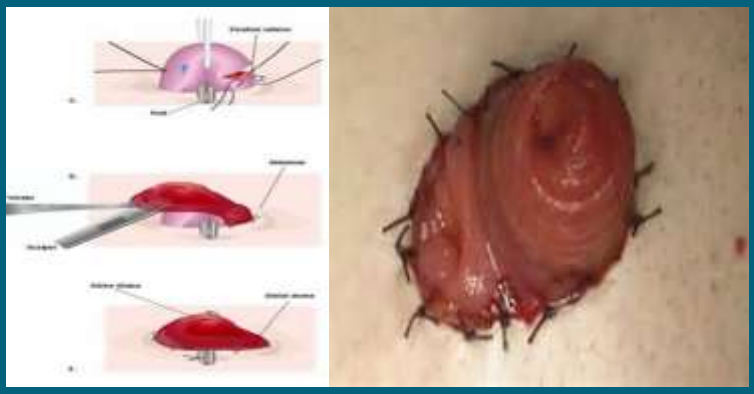


Technical Tips

□ **Proper on table maturation of stoma**:

-Transverse semilunar incision at the summit of the loop of colon

-At junction between proximal 2/3 and distal 1/3 of ilea loop



Parastomal Hernia

- **Parastomal hernia is the most common stoma complication**
- **Incidence:**
  - **2 - 28% of end ileostomy**
  - **4 - 48 % of end colostomy**
- **Weakness between the intestinal stoma and abdominal muscle**
- **Fascial defect→ Viscera protrude → bulge at the base of the stoma**

Parastomal hernia risk factors

Patient factors

- Obesity
- Old age
- Malignancy, malnutrition
- Diabetes, steroid therapy
- ↑ intra-abdominal pressure
- Post-operative wound infection

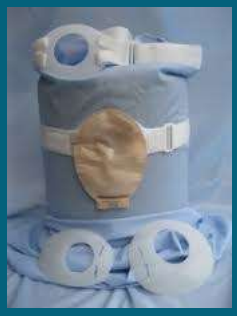
Parastomal hernia risk factors

Technical factors

-Type:
Sigmoid colostomy and end stomas
-Location:
Stoma lateral to the rectus sheath
- Size of aperture:
Fascia aperture size > 35 mm, ↑risk by 10%
For every mm. increase in aperture size
- Technique:
-Intraperitoneal or extraperitoneal ?
-Stoma fixation to the fascia ?
- Situation:
-Preoperative stoma marking or not ?
-Elective or emergent stoma creation ?

Conservative Treatment

- The the majority of cases will present with asymptomatic bulge
- Using an ostomy belt : abdominal binder with a ring which goes around the stoma appliance
- High fiber diet, laxatives, fiber supplements to prevent straining



Surgical intervention: Indications

About 30-50 % of cases

- Recurrent abdominal pain
- Recurrent subacute intestinal obstruction
- Irreducibility
- Associated with prolapse
- Appliance leakage /poor fit

Emergency situations

- Incarceration
- Stomal necrosis

Surgical Management

Closure (take down)

Non-mesh techniques
- Local aponeurotic repair
- Relocation

Mesh repair techniques
- Open
- Laparoscopic

Local aponeurotic repair

- Parastomal incision
- Adhesiolysis and reduction of contents
- Excision of hernia sac
- Primary suture repair
- Poor results: recurrence rate 46 - 100%
- Repair by components separation method is a new technique

Stoma Relocation

- Possible relocation sites may me limited due to prior surgery
- CT scan can help to choose the best stoma relocation site in patients with multiple previous abdominal surgeries
- Done with or without a formal laparotomy
- Relocation site may be ipsilateral or contralateral

Stoma Relocation

- Relocation on the contralateral side is associated with lower recurrence rate of 57% vs. 86% on the ipsilateral side
- It seems appropriate to prophylactically re-enforce the new relocated stoma with a mesh
- "Stoma resite" results in 3 potential hernias
- - Midline incision
- - Old stoma site
- - Parastomal at new site

Mesh Repair

4 Techniques

Onlay

Inlay (interposition)

Sublay

Intraperitoneal Onlay

Types of Mesh

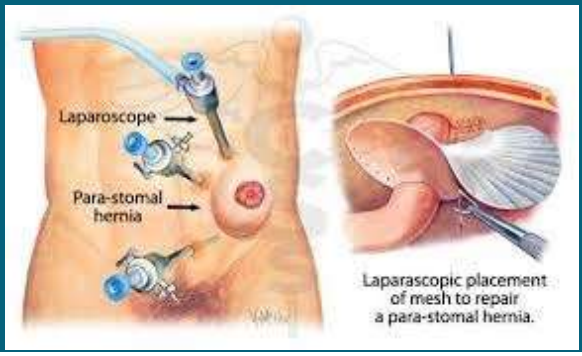
- Synthetic meshes:
- Polypropylene (PP): erosion/ adhesions
- Polytetrafluoroethylene (PTFE)
- Expanded Polytetrafluoroethylene (e-PTFE): shrinkage/ migration
- Polyvinylidene fluoride (PVDF)
- Composite knitted mesh (polyester-based): antiadhesion/ macroporous

- Intraperitoneal mesh should have 2 different sides' properties: side promote tissue ingrowth/ side must resist adhesions

- Biologic grafts: Human, Bovine, porcine

Laparoscopic Mesh Repair

- Sugarbaker
- keyhole
- Sandwich (sublay mesh + onlay mesh)
- Two-mesh

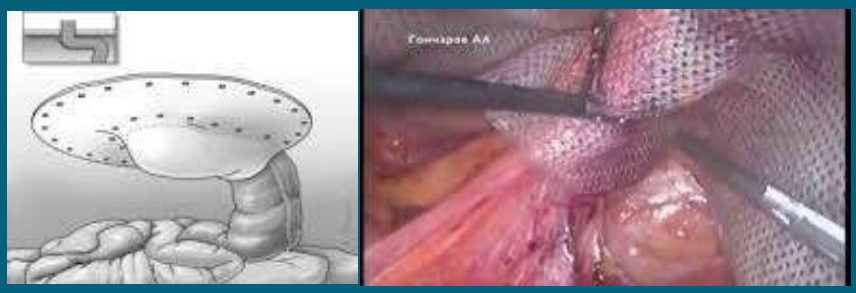


Standard laparoscopic techniques

Sugarbaker

In 1985 described the placement of a large piece of mesh over the entire defect

- Complete reduction of the hernia sac
- Wide mesh overlap
- Lateralization of the intestinal conduit with transabdominal mesh fixation



Standard laparoscopic techniques

Keyhole

A keyhole is made in the mesh

The stoma is brought through the hole

The slit is closed around the stoma and fixed with tackers

A second piece of mesh may be used (the double keyhole technique)



Standard laparoscopic techniques

Sugar baker

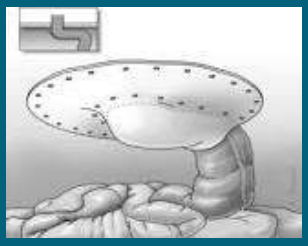
- Technically feasible
- Complications 12%
- Recurrence 16%

Keyhole

Technically demanding

Complications 20%

Recurrence 27%




Parastomal Hernia: Prevention

- Extra-peritoneal stoma creation (retroperitoneal tunnel)
- Umbilical stoma creation
- Prophylactic mesh placement: Mesh re-enforcement of stoma

Prevention with mesh

Synthetic mesh: Isruelsson et al. 2010

- 75 / 93 pt had sublay lightweight partially-absorbable polypropylene mesh (mean follow-up 15 m)
- Hernia rate with mesh - 13 %
- Hernia rate without mesh - 67 %

Biologic mesh: Harold et al. 2012

- Acellular human dermal matrix (alloderm)
- Prospective randomized studies on 39 pt
- prophylactic mesh 1 / 16 pt had hernia (6.2 %)
- No mesh 7 / 23 pt had hernia (30.4 %)

Conclusion

- The incidence of parastomal hernias is very high
- Conservative treatment can be appropriate in asymptomatic patients
- Surgical management (30-50 % of cases)
  - Stoma closure is the best option whenever possible
  - Local aponeurotic suture repair should not be performed
  - Stoma relocation is also associated with poor results
  - Laparoscopic repair with mesh is the best option (Sugarbaker or Keyhole)
    - Prophylactic mesh re-enforcement still needs more randomized controlled studies for justification as a standard procedure

THANK YOU