MANAGEMENT OF PARASTOMAL HERNIAS
CASE PRESENTATION
HPI

- 72 yo male
- S/P APR for T3N0M0 rectal cancer in 2000
- 3 days h/o
  - Mid abdominal pain
  - Multiple episodes of copious vomiting
  - Was passing stool and gas up till the day of his presentation
  - Currently obstipated
PMH/PSH

- HTN
- Hyperlipidemia
- COPD
- CAD
- CHF
- CKD/CRI
- Cervical myelopathy
- BPH

- APR (2000)
- TURBT (2001)
- CABG (2006)
- Sternal wound infection and pec. major advancement flaps (2006)
PHYSICAL EXAM

- AVSS
- PE pertinent for
  Prolapsed end colostomy in the LLQ, manually reducible
  Reducible parastomal hernia
  No peritoneal signs
LABS

- **CBC** - 13.4 (72%)/17/49.6/278
- **CHEM7** - Na 144; Cl 84; K 4; CO2 40; BUN 47; Crea 2.4; Glu 141
- **LFTs** - within normal limits
- **VBGs** - PH 7.51; PCO2 54; BE +15.8; HCO3 42.3; LA 3.5
CT SCAN A/P
INITIAL MANAGEMENT

- NPO
- IVF resuscitation
- Foley Catheter for I/O monitoring
- NGT with output replacement

Very high output up to 3000 cc/day

Failed to improve after a few days and started having pain at the stoma site
OPERATIVE MANAGEMENT

- Midline incision on both side of the umbilicus
- Adhesions
- Small bowel and omentum in the hernia sac
- Sac reduced
- Clear transition point about the mid jejunum
10 cm defect left after everything was cleaned up leaving the stoma
OPERATIVE MANAGEMENT

- 20x20 cm PROCEED mesh was placed on the peritoneal undersurface with a slit to accommodate the stoma.
- Fixed to the fascia with #0 prolene and tacked to the mesentery.
POSTOP COURSE

- Delayed extubation
- Prolonged ileus
- Pulmonary edema
- Wound infection
- Urinary tract infection
- Studies of the stoma (gastrograffin enema) showed patency
- Repeat CT scan showed no obstruction
- Currently tolerating diet and waiting for placement
MANAGEMENT OF PARASTOMAL HERNIAS
DEFINITION

- Incisional hernia related to an abdominal wall stoma

- Varies in different studies
  - Palpable defect or bulge adjacent to a stoma
  - Cough impulse at ostomy site
  - Radiologic definition- any intra-abdominal content protruding along an ostomy
  - Sometimes confused with prolapse
SUBTYPES

- **Subcutaneous** - subcutaneous sac
- **Interstitial** - sac within the muscular or aponeurotic layers of the abdomen
- **Perstomal** - the sac is circumferential enclosing the stoma
- **Intrastomal** - in ileostomies, sac between the intestinal wall and everted intestinal layer
INCIDENCE

- Believed to be between **30-50%**
- 50% occur within 2 years
- Incidence with ileostomy (0.8-10%)
  - Several studies failed to show any difference between ileostomies and colostomies
TECHNICAL CONSIDERATIONS IN STOMA FORMATION

- Extraperitoneal vs intraperitoneal (9% vs 17%)
- Transrectal vs lateral to the rectus (3% vs 22%)
- Size of the trephine: 2.5cm usually
  - Todd and Celestine- 2cm for ileostomies and 1.5cm for colostomies with a later retraction of 0.5cm
NON-TECHNICAL CONSIDERATIONS IN STOMA FORMATION

- Obesity
- COPD
- BPH
- Ascites
- Steroids
- Malignancies
- Advanced age
- Emergency procedure
SYMPTOMS

- Asymptomatic +++
- Parastomal discomfort with intermittent obstructive episodes
- Stoma appliance issues with leak and skin irritation
- Obstruction/strangulation

10-20% have symptoms severe enough to require surgical repair
SURGICAL MANAGEMENT

- Local aponeurotic repair with or w/o mesh
- Relocation of the stoma
- Open repair with mesh
- Laparoscopic repair
SURGICAL MANAGEMENT

- Different possible locations for mesh placement in parastomal hernia repair

LOCAL REPAIR

- **Aponeurotic repair**: primary closure of the defect - recurrence **50-76%** (up to 100%)
- **Onlay mesh repair**: involves applying a non resorbable mesh on top of the primary repair and fixing it to the fascia - recurrence **9-10%** (small studies w/o long follow up)
- **Sublay mesh repair**: the mesh is placed in the properitoneal space after plication of the sac
SURGICAL MANAGEMENT

RELOCATION

- Risk of recurrence at least as high as the primary site
- Recurrence rates as high as 24-86%
- Higher if relocated on the same side
- The primary site should be treated as an incisional hernia and repaired with mesh placement - recurrence rate 26-48%
SURGICAL MANAGEMENT
SURGICAL MANAGEMENT

OPEN MESH REPAIR

- IPOM (Intraperitoneal Onlay Mesh) vs Sublay
- Keyhole technique vs Sugarbaker technique (bowel entering lateral to the mesh)
SURGICAL MANAGEMENT

- OPEN MESH REPAIR - IPOM
  - ePTFE - most commonly used
    - 2 layers
      - Inner non reactive layer for bowel contact
      - Prone to infection
  - Keyhole technique - risk of Buttonhole hernia with shrinkage and contamination
  - Sugarbaker Technique - risk of erosion of the bowel where it passes under the mesh
  - Recurrence 0-15%

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SURGICAL MANAGEMENT

SUGARBAKER

TECHNIQUE
SURGICAL MANAGEMENT

- OPEN MESH REPAIR- SUBLAY
  - Proposed as the most advantageous technique for mesh repair of PH
  - Low weight polypropylene meshes are used
  - Have better resistance to infection than PTFE
  - Placed away from bowel
  - Recurrence rates from pooled studies 7%
SURGICAL MANAGEMENT

- LAPAROSCOPIC APPROACH
  - Done in a way similar to open IPOM
  - Keyhole technique or Sugarbaker technique
  - Recurrence rates vary between 4-44%
  - Higher risk of bowel injury 22%
  - Higher risk of mesh infection (4% in one study)
SURGICAL MANAGEMENT

LAPROSCOPIC APPROACH-TECHNICAL TIPS

- Fashion the mesh before insertion in the abdomen with a circular defect and a slit
- If the mesh is cut in a linear fashion the slit will enlarge with intraabdominal pressure
- A good way to reduce recurrence may be to place 2 pieces of mesh one on top of the other
SURGICAL MANAGEMENT

BIOPROSTHETICS

- Studies reporting the use of bioprosthetics for treatment of parastomal hernias are scant, low powered and have a short F/U.
- Most advantages are extrapolated from the use of bioprosthetics in incisional hernias.
- Most studies seem to show a low incidence of complications and an equivalent incidence of recurrence as synthetics.
SURGICAL MANAGEMENT

- BIOPROSTHETICS

  - Recurrence rates vary between 9-27% depending on the studies and the type of mesh used (human dermis vs porcine small bowel submucosa)
### Table 1

Articles describing parastomal hernia prophylaxis by mesh placement. The study by Jänes et al. [21] was a controlled study. The other studies were descriptive.

<table>
<thead>
<tr>
<th>Author</th>
<th>Patients</th>
<th>Operative technique</th>
<th>Follow-up (months)</th>
<th>Hernia recurrence</th>
<th>Complications related to mesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayer et al. [18]</td>
<td>36</td>
<td>Onlay</td>
<td>Up to 48</td>
<td>0</td>
<td>2 (one had a narrow stoma, one had stitch granuloma)</td>
</tr>
<tr>
<td>Gögenur et al. [19]</td>
<td>24</td>
<td>Onlay</td>
<td>Median 12 (range 2–26)</td>
<td>2</td>
<td>2 (both patients had mesh-arm penetration through the skin)</td>
</tr>
<tr>
<td>Israelsson [20]</td>
<td>13</td>
<td>Sublay</td>
<td>Mean 12</td>
<td>0</td>
<td>1 (wound infection)</td>
</tr>
<tr>
<td>Jänes et al. [21]</td>
<td>21</td>
<td>Sublay</td>
<td>Mean 24</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Marimuthu et al. [22]</td>
<td>18</td>
<td>Sublay</td>
<td>Mean 16</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>112</strong></td>
<td></td>
<td></td>
<td><strong>3</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>
Janes et al. randomized 54 patients to stoma creation with sublay mesh vs no mesh with a mean F/U of 24 months. 1 hernia occurred in the mesh group vs 13 in the non mesh group. There was no complications.

Retrospective studies were also in favor of prophylactic mesh placement.
PREVENTION

CONCLUSION

- Placement of mesh at the primary operation is safe
- Reduces the occurrence of parastomal hernia
- Prophylactic meshes were also placed in contaminated cases w/o infection
- More randomized studies needed
CONCLUSIONS

- Very common condition
- Only a small proportion will require surgical therapy
- The high recurrence rates underline the fact that there is no perfect operation for this condition
- Promising results with laparoscopy and bioprosthetics
- Prophylactic mesh placement seems to be the way to go
REFERENCES

- Ballas KD, Rafailidis SF, Marakis GN et al. Intraperitoneal ePTFE mesh repair of parastomal hernia. *Hernia* (2006); **10**: 350-353
REFERENCES

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- Helgstrand F, Gogenur I, Rosenberg J. Prevention of parastomal hernia by the placement of a mesh at the primary operation. *Hernia* (2008); 12: 577-582
- Neal Ellis C. Short-term outcomes with the use of bioprosthetics for the management of parastomal hernias. *Dis Colon Rectum* (2010); 53: 279-283