PARASTOMAL HERNIA

- A parastomal hernia is an incisional hernia related to an abdominal wall stoma.
- Diagnosis
  - Clinical exam - remove appliance
    - Patient may have to stand or valsalva
    - Digital exam to assess aperture
  - CT

Classification

- Four subtypes, rarely used in the literature
  - SUBCUTANEOUS
    - Hernia sac in the subcutaneous plane
  - INTRASTOMAL
    - Sac penetrates into ostomy
  - PERISTOMAL
    - Sac is within prolapsing stoma
  - INTERSTITIAL
    - Sac within layers of the abdominal wall

Presentation

- Most parastomal hernias are asymptomatic
- 33% require operative treatment
  - Bleeding
  - Obstruction
  - Strangulation
  - Pain
  - Poorly fitting appliances

Incidence

- Wide range depending on duration of follow up and use of imaging

Type	Range	Average
End Colostomy	4-48%	15.3%
Loop Colostomy	0-31%	4%
End Ileostomy	2-28%	6.7%
Loop Ileostomy	0-6%	1.3%

Etiology

- Influenced by patient and technical factors
- Patient factors are the same as other types of abdominal wall hernias
- No scientific evidence to support this notion

Etiology – Patient Factors

- Obesity
- Malnutrition

- Increased intra-abdominal pressure
    - COPD, prostatism, constipation, ascites
- Steroids
- Malignancy
- Age
- Wound Sepsis

Etiology – Technical Factors
- Size of trephine aperture
- Location
- Intra vs extraperitoneal technique
- Pre-op consultation with Stoma RN
- Closure of lateral space
- Stomal fixation to fascia
- Elective vs Emergent stoma creation

Prevention - Site
- Operative incision, umbilicus, through or lateral to rectus muscle
- 6 studies performed to compare hernia rates of stomas through rectus and lateral to the muscle
    - 511 total patients
        - 344 through the rectus
        - 167 lateral to the rectus
    - Only one of the six studies demonstrated a significant difference

Prevention – Trephine size
- Much debated, multiple suggestions, little data
- One finger, two finger, 1.5 or 2 cm, 2/3 width of intestine
- Tangential forces cause of hernia
    - Ftang = Frad X R2
    - Therefore, obese patients (large abdominal wall radius) with large apertures should theoretically be at highest risk for herniation
- Smallest opening to allow a viable stoma

Prevention – Transperitoneal vs extraperitoneal
- End colostomies
- 5 studies with 834 pts.
- All have lower rate of herniation with extraperitoneal technique
- BUT only one study was statistically significant
- No prospective randomized clinical trial

Prevention - Mesh
- 34 patients prospective randomized trial
    - 18 no mesh, 16 mesh
    - 8 recurrences, all in the no mesh cohort

- No wound infections or fistulas
- Study terminated
- Longer follow up needed

- 54 patients randomized to sublay mesh or no mesh
    - Incidence of parastomal hernia decreased
    - No adverse effects
    - Large pore, reduced polypropylene, high absorbable material (Vypro)

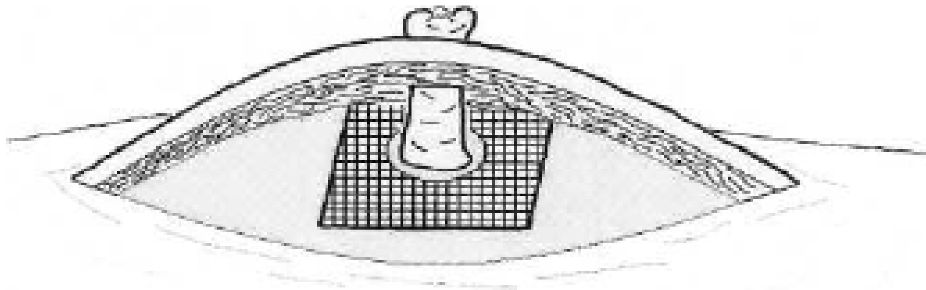


Fig. 1. At the primary operation, prophylactic Vypro mesh is placed in a sublay position. The bowel passes through the peritoneum/posterior rectus sheath and through a cross-cut in the mesh before it is delivered through the remaining layers of the abdominal wall.

Table 2. Parastomal Hernia at 12-Month Follow-up

	No Mesh (n = 27)	Mesh (n = 27)	*P* Value
Died before 12-mo follow-up	1	6	.10
Parastomal hernia	13	1	.00

Arch Surg. 2004;139:1356-1358

Prevention

- No convincing data for:
    - Fixation to fascia
    - Stoma marking by enterostomal therapist
    - Elective vs. emergent

Management

- Best treatment is to restore bowel continuity
- Most managed conservatively
- Techniques for repair:

- Local tissue repair
- Stoma relocation
- Repair with prosthetic material

Local Tissue Repair

- Technically simple, avoids laparotomy
- Recurrence rate 46-100%
- Studies are small in number
- Only one study compared repair with relocation (33 vs 76%; $P < 0.01$)

Stoma Relocation

- Published series are few and small
- Recurrence rate of 0 – 76%
- Only 8 studies with a total of 91 patients
- Hernia at previous stoma site 8 – 52%

Table 6 Stoma relocation to repair parastomal hernia

Reference	Year	No. of patients	Laparotomy	Stoma	Follow-up (months)	Recurrence	Complications
Prian et al.[76]	1975	6	Yes	C	33*	0	–
Williams et al.[6]	1990	6	Yes	EI	52*	3	–
Rubin et al.[74]	1994	18	Yes	EC, LC, EI	32*	6	16
Taylor et al.[77]	1978	2	No	EI	52.8*	0	–
Stephenson et al.[78]	1995	8	No	EI, EC	15*	0	3
Botet et al.[79]	1996	11	No	C	range 2–36	0	0
Cheung et al.[45]	2001	19	No	C	85.1*	8	6
Allen-Mersh and Thomson[24]	1988	21	–	EC	–	16	–
Total		91				33 (36.3)	

Values in parentheses are percentages. Three minor wound complications, none requiring removal of mesh. C, colostomy; EI, end ileostomy; EC, end colostomy; LC, loop colostomy. *Mean.

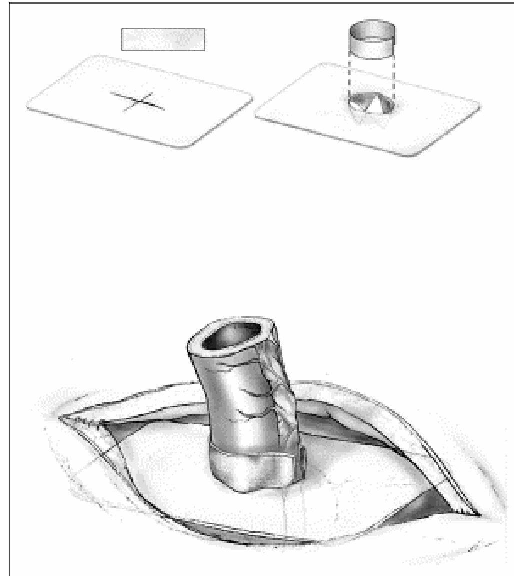
Repair with Mesh

- Intraperitoneal mesh
    - First reported by Sugarbaker in 1980
    - Circular piece of mesh placed around fascial defect
    - Very limited studies
- Preperitoneal mesh
    - Between rectus and posterior fascia
- Fascial onlay mesh

Is Mesh Safe?

- 58 patients underwent hernia repair w/ mesh
    - 31 end colostomies, 24 end ileostomies, 3 loop
    - Complication rate: 36%
        - Recurrence 26%
        - Surgical bowel obstruction 9%
        - Prolapse 3%
        - Wound infection 3%
        - Fistula 3%

- Mesh erosion 2%



Complication (n = 21)	Number	Overall percentage
Recurrence	15	26
Bowel obstruction	5	9
Stomal prolapse	2	3
Wound infection	2	3
Fistula	2	3
Mesh erosion	1	2

Repair with Mesh

- 135 patients reported
- 15.5% recurrence
- Only 2 patients required extirpation of the mesh

Relocation with mesh

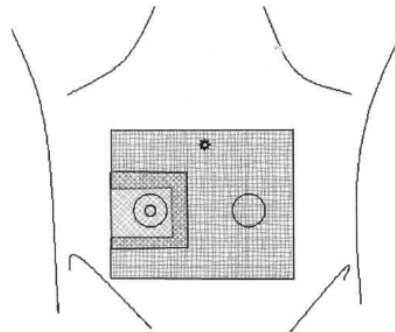


Fig. 2. Stoma relocation with mesh. Low-weight mesh is placed in a sublay position at the new stoma site. Nonabsorbable prosthetic mesh repairs the abdominal wall defects at the parastomal hernia and in the midline. A U-shape is cut from the nonabsorbable mesh, preventing it from coming in contact with the bowel.

Table 1. Parastomal hernias treated by relocation into another quadrant with prophylactic mesh at the new site and mesh repair of the abdominal defect: September 2002 to April 2004

Parameter	No.
Patients	13
Male/female	5/8
Age (years), mean	65
Emergent operation	3
Follow-up time (months)	
Range	3–25
Mean /median	12/11
Wound infection	1
Hernia recurrence	0

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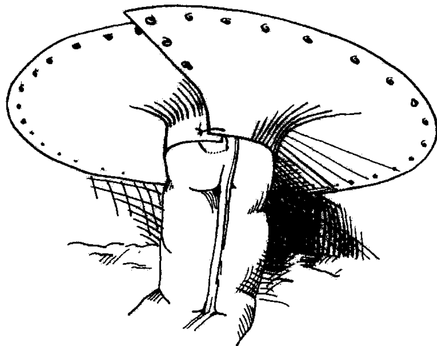
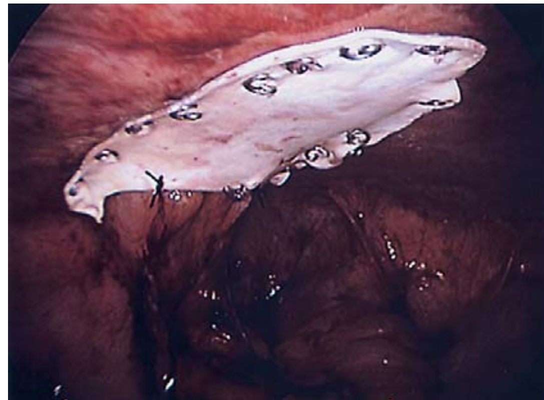
Laparoscopic Repair





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