

ORIGINAL ARTICLE

PERISTOMAL HERNIA; THE IDEAL MANAGEMENT

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Abstract

Aim: Peristomal hernia is a distressing complication of intestinal stomas that is mostly due to one or more technical errors. In this study, stoma repositioning within rectus sheath will be evaluated as a line of treatment.

Methods: Thirteen patients (8 females and 5 males) were operated upon two to five years after operations of abdomino-perineal resection of malignant lesions of the lower rectum with terminal left pelvic colostomy who developed peristomal hernias. The colon was prepared and under general anaesthesia, an elliptical incision was done around the stoma, hernia was reduced, the sac excised, stoma was freed and new stoma site was created through rectus sheath. Parastomal hernias were dealt with through laparotomy if associated with incisional hernia. Peristomal hernia defect was closed using prolene mesh in an inlay manner.

Results: There was no intraoperative complications. Postoperative complications included delayed colostomy function in 5 cases, seroma formation in 5 cases and infected seroma in 2 cases. The patients were convenient with the newly designed stoma, which was cosmetically better and functionally good

Conclusion: Peristomal hernia is one of avoidable hernias. Stoma repositioning within the rectus sheath is one of the most suitable lines of treatment of peristomal hernia

Keywords: Peristomal hernia, Stoma complications.

INTRODUCTION

Peristomal hernia is an incisional hernia that develops at the site of colostomy or ileostomy. The incidence varies from 1-50% of stoma cases.^(1,2) Hernial sac usually lies within the attenuated layers of the abdominal wall. Peristomal hernia often result from one or more technical errors which underscore the importance of proper preoperative planning and close attention to detail in the operating room. Other factors include obesity, malnutrition, postoperative sepsis, advanced

age, malignancy, steroid use and increased intra-abdominal pressure.⁽³⁾

Patients with peristomal hernias usually complain of unsightly bulge or occasional leakage from around the stoma and the hernia may grow to become cosmetically unacceptable. Pain is also a common symptom due to stretching of abdominal wall and peristomal skin irritation as a result of unfitted appliance with leakage of stoma effluent. A hernial sac with a narrow neck may

become obstructed or strangulated necessitating urgent laparotomy but fortunately, the necks of most of peristomal hernias are generally broad with less incidence of strangulation and obstruction. Most of these hernias should be managed conservatively with only 10-20% who need surgical intervention especially if become painful or precludes the adherence of a collecting pouch around the ostomy.⁽⁴⁾

All patients who proposed to have stomas should be evaluated preoperatively by a surgeon and an enterostomal therapist. The stoma site should be placed away from any bony prominence, not near skin folds, scars, belt line and should not be brought through an operative incision. A small paper disc or ostomy appliance should be applied to the abdominal skin at the planned site with the patient standing, sitting and in recumbent position. Two different stoma sites should be marked before operation.⁽⁴⁾

Placement of an ostomy lateral to the rectus muscle or through an operative incision contributes to formation of a parastomal hernia. Sjobahl and associates brought the stoma out through rectus abdominis muscle with less incidence of hernia (2.8%).⁽⁵⁾

Aim of the work: Stoma repositioning within the rectus sheath and hernioplasty of peristomal hernia will be evaluated as regard post operative early and late complications and incidence of recurrence.

PATIENTS AND METHODS

Thirteen patients admitted to General Surgery Department, Mansoura University Hospital from June, 2004 to October, 2007 with parastomal hernias. They were operated upon two to five years ago with abdominoperineal resection of malignant lesions of the lower third rectum with left iliac fossa terminal colostomy. They were 8 females and 5 male with age ranging from 28 to 63 years. There was an associated incisional hernia in 5 patients. Operative intervention was decided because of irreducibility, recurrent soiling and skin irritation. The patients were investigated thoroughly with laboratory tests, tumour markers, abdominal ultrasonography and abdominopelvic CT to exclude recurrence and secondaries.

OPERATIVE TECHNIQUE: (Figs. 1-4)

The patients were prepared preoperatively using chemical agents (metronidazole 500mg tab, tds & neomycin tab/6 hours for two days) and by Castor oil purge. Systemic antibiotic prophylaxis in the form of amoxicillin-clavulanic acid injection and metronidazole infusion administered before induction of anaesthesia. Another supportive dose of antibiotic was given 2 hours after induction with lengthy operations (more than 2 hours). Injection was given for 2 days then replaced with oral medication for one week. The newly proposed stoma was planned in 2 different sites before operation

(placed away from any bony prominence, not near skin folds and lying within rectus sheath). Before sterilization, the colostomy was closed using continuous 2/0 silk sutures.

Surgical approach was decided depending upon presence of associated incisional hernia. In the presence of incisional hernia, formal laparotomy through the previous lower midline incision was done, the sac of midline incisional hernia was opened and intestinal loops dissected away from the sac and reduced intraperitoneal. The contents of peristomal hernia were dealt with through laparotomy incision where intestinal loops were freed gently from the hernial sac and.

An elliptical incision around the colostomy was performed and the colostomy was freed from its site and the peristomal hernial sac was excised.

An inlay prolene mesh was inserted and sutured to the edges of the defect. The new colostomy site was opened and the detached colostomy brought out through it, then the colon was sutured to the peritoneum from within the abdomen and to anterior rectus sheath from outside. A negative suction drain was inserted and the skin was closed with interrupted 3/0 prolene stitches. A disc of the colostomy with its attached skin was amputated and the newly fashioned colostomy sutured to the skin with 3/0 vicryl.

In the absence of incisional hernia, an elliptical incision around the colostomy was performed and the hernial sac was opened, the contents were freed and reduced and colostomy was freed from its surrounding tissue and hernial sac was excised (without laparotomy).

The new colostomy site was opened transversely through the skin (without removal of a disk of skin) and anterior rectus sheath, the rectus muscle was split and the posterior rectus sheath was also opened transversely. The opening admits only two fingers. The detached colostomy brought out through this incision and sutured to the peritoneum and to anterior rectus sheath and skin. Peristomal hernia defect was repaired using an inlay prolene mesh. A negative suction drain was inserted and the skin was closed with interrupted 3/0 prolene stitches. 24 hours post operative, a colostomy bag was applied to the new stoma.

Statistical methods: Findings were calculated as numbers, simple percentages and mean \pm standard deviation



Fig 1. Parastomal hernia of terminal colostomy.



Fig 4. Repositioning of the stoma in a new site within rectus sheath

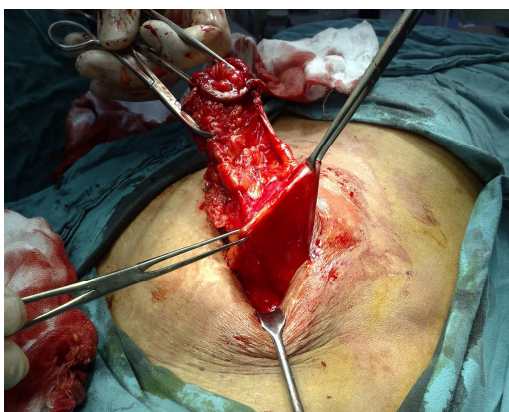


Fig 2. Dissection of hernial sac.

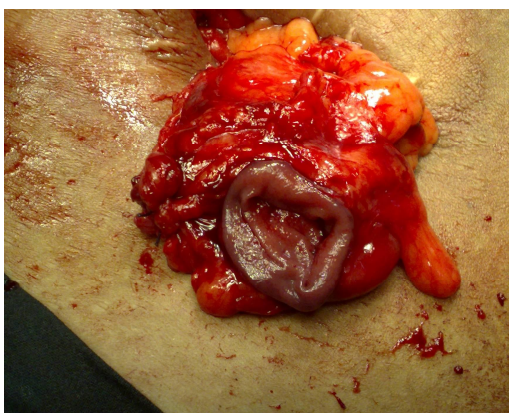


Fig 3. Redundant colon is ready to be excised.

RESULTS

Thirteen patients were included in this study, their age ranged from 28-63 y (with mean age of (43.5 ± 3.2) years). They were 8 females and 5 males.

All patients were suffering from a parastomal hernia. There was an associated incisional hernia at site of previous laparotomy in 5 patients. Table 1.

Table 1. Clinical characters of studied patients (n=13).

Mean age	43.5 \pm 3.2 years
Female / male ratio	8 / 5 (1.6 : 1)
Associated incisional hernia	5 (38.5%)

Under general anaesthesia, the patients were operated upon, mean operative time was 115 min (± 10 min) (range 95-165 min). There was no intraoperative complications Table 2.

Table 2. Operative and postoperative results (n=13).

Parameters	Mean time
Operation time	115 \pm 10 min
Hospital stay (days)	4.5 \pm 2.5 days
Healing time (days)	14 \pm 3.6 days
Drainage period	9.5 \pm 4.5 days
Resuming normal life	23 \pm 2.4 days

Postoperative complications included delayed colostomy function up to 72 h (5 cases), seroma and repeated aspiration (5 cases), infection (2 cases) (infected seroma), treated conservatively, recurrence (1 case) (1-3 years follow up). There was neither stomal ischemia nor retraction.

After a mean follow up period of 31 (\pm 3.6) months, the patients were convenient with the newly designed stoma, which was cosmetically better and functionally good with better quality of life Table 3.

Table 3. Postoperative early and late complications in studied patients (n=13).

Complications	No (%)
Delayed colostomy function	5 (38.5%)
Seroma & aspiration	5 (38.5%)
Stomal ischemia	0
Stomal retraction	0
Infection	2 (15.3%)
Recurrence	1 (7.7%)
Follow up period (month)	24-52 (31 \pm 3.6)
Patient satisfaction	
- Satisfied (n = 12)	(92.3%)
- Dissatisfied (n=1) (recurrence)	(7.7%)

DISCUSSION

Despite the progress concerning operative techniques, parastomal hernias remain a surgical challenge. The management options are many, however, the high risk for recurrence demands precise indications for operative repair. Unfortunately, most literatures suggest unsatisfactory results.^(6,7)

To determine the complication and infection risks following extra-peritoneal onlay mesh placement in parastomal hernia repair, Lüning et al⁽⁸⁾ reviewed patients with extra-peritoneal parastomal hernia repair using a prosthetic mesh in 10-year study period. In one out of 16 patients, a mesh infection occurred, resulting in mesh removal (6.2%). The recurrence rate was 19% after a mean follow-up of 33 months. They concluded that parastomal hernia repair using a prosthetic mesh is a safe and effective method, with the lowest recurrence rates and acceptably low infection rates. In our study, infection was treated conservatively and recurrence was much lower than reported with nearly the same follow up period.

Riansuwan et al⁽⁶⁾ retrospectively studied parastomal hernia repair and concluded that parastomal hernia

repair is associated with high recurrence rates, relocation seems to have promising outcomes.

In an attempt to reduce the incidence of parastomal hernia, Rosch et al,⁽⁷⁾ used prophylactic retromuscular augmentation mesh implant and stated that the prophylactic use of meshes is able to reduce the incidence of parastomal hernias. Serra-Aracil et al⁽⁹⁾ implanted a parastomal lightweight mesh in the sublay position. After follow up for about 29 months, parastomal placement of a mesh reduced the appearance of PH to be 22% in contrary to control group which was 45%. Also, Vijayasekar et al,⁽¹⁰⁾ studied patients for them elective permanent stoma formation and resiting of a stoma were decided where a 6x6-cm polypropylene mesh was placed in the preperitoneal space (no stitches) and a circular hole was made to let the bowel come through with ease and the stoma was constructed. Four parastomal hernias were detected during the follow-up period (9.52%) (a mean of 31 months). Jänes et al,⁽¹¹⁾ used a prosthetic mesh in a sublay position at the index operation and concluded that at stoma formation, a prophylactic mesh in a sublay position is a safe procedure that reduces the rate of parastomal hernia. We do not use prophylactic mesh implant for our patients for fear of contamination.

Rosin and Bonardi⁽¹²⁾ stated that stomas emerging through the rectus muscle have a lower incidence of herniation. Sjødahl et al,⁽⁵⁾ found that the incidence of parastomal hernia in patients where stoma had been brought out through the rectus was 2.8%. However, Marks and Ritchie⁽¹³⁾ didn't find any reduction in herniation if the stoma was brought out through the rectus muscle.

Problems of routing the stoma through the rectus muscle may be that it is too close to the laparotomy incision or the umbilicus, causing difficulties with attachment of the collecting appliance, or there may be stomal oedema caused by impaired venous flow from compression by the muscle.

It is important that the trephine made in the abdominal wall is of the correct size and not too large. In this study, the trephine made was about 2.5 – 3 cm. This was explained by de Ruiter and Bijnen,⁽¹⁴⁾ working with physical engineers. They explained how the trephine is stretched open by tangential forces working on the circumference of the opening. According to the law of Laplace, the radial force (Frad) on a normal abdominal wall is related to the pressure (P) in the abdominal cavity and the radius (R1) of the abdominal cavity according to the formula:

$$F_{rad} = P \times R1/2$$

After construction of a trephine opening in the abdominal wall the tangential force (Ftang) on the edge of the opening is related to the radial force (Frad) and the radius of the trephine opening (R2) according to the formula:

Ftang = Frad X R2

Therefore, the trephine opening should be constructed as small as will safely transmit the intestine to the skin surface. So, skin opening should be just large enough to admit the tips of two fingers. However, this does not take into account the skin retraction which occurs later. Celestin⁽¹⁵⁾ advocated that the diameter of the trephine to be 2 cm for ileostomies and 1.5 cm for colostomies, later retraction resulting in the stomas becoming 0.5 cm larger. Slight cyanosis of the stoma with oedema the following day indicates that a correctly sized aperture has been formed.⁽¹⁶⁾

Bayer et al.,⁽¹⁷⁾ argued that as the underlying mechanism in parastomal herniation was enlargement of the internal fascial wall opening, this should be reinforced at the original operation, rather than waiting for a hernia to occur and then reinforcing the resultant defect. They performed this using a ring of polypropylene mesh, the bowel being brought out through an aperture in the mesh.

Martin and Foster⁽¹⁸⁾ stated that the development of many hernias is probably operator dependent. The incidence can be reduced by using an extraperitoneal technique, limiting the size of the trephine to 1.5-2.0 cm or by strengthening with a mesh. If an intraperitoneal technique is used the intestine should be brought out through the rectus muscle.

In conclusion; placement of an ostomy lateral to the rectus muscle or through an operative incision contributes to formation of a parastomal hernia. Bringing the stoma out through rectus abdominis muscle lower the incidence of peristomal herniation. Two different stoma sites should be marked before operation. Stoma repositioning within the rectus sheath is one of the most suitable lines of treatment of peristomal hernia as repairing of the defect has its strength and is isolated from the new site of the stoma.

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