

Hybrid Approaches for Complex Parastomal Hernia Repair

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ABSTRACT

Parastomal hernia is one of the major complications of colostomy with high occurrence. From October 2011 to November 2014, a retrospective study was conducted by analyzing and following up data of 16 patients suffering from parastomal hernia who underwent a hybrid technique repair. The safety and efficacy of the hybrid technique for parastomal hernia repair was investigated in terms of complications. All cases were operated successfully and had no major immediate post-operative complications other than mild abdominal pain in 5 cases. No long-term postoperative complications were reported in the follow-up. The authors found hybrid technique to be safe and effective for parastomal hernia repair with fewer complications.

Key Words: *Parastomal hernia. Hybrid technique. Laparoscopy.*

Parastomal hernia following formation of an ileostomy or colostomy is one of the major long-term postoperative complications with incidence rate as high as 48.1%, which is usually repaired by open or laparoscopic approaches.^{1,2} In recent years, a hybrid approach by combining open and laparoscopic technique is being used to repair complicated parastomal hernia.³ Between October 2011 and November 2014, hybrid repair technique was performed in 16 patients with complicated parastomal hernia at the 2nd Affiliated Hospital of Soochow University. In this study, the safety and efficacy of hybrid technique for parastomal hernia repair was analyzed in terms of complications. Ethical approval was given by the medical ethics committee of the Second Affiliated Hospital of Soochow University. Clinical data of 16 patients, suffering from complicated parastomal hernia, were collected. Data were analyzed with SPSS version 19.0 (Inc., Chicago, IL, USA).

The mean age of patients was 69.9 ± 8.8 years with the average body mass index of 29 kg/m². The overall diameter of hernia ring was 9.6 ± 2.6 cm. Among them, 13 cases were primary hernia and 3 were recurrent hernia. The co-morbidities were hypertension in 6 patients, hepatocirrhosis in one patient, and the diabetes mellitus in 4 patients.

Two hybrid techniques were applied for the parastomal hernia repair, including laparoscopy-open-laparoscopy (Technique 1) and open-laparoscopy (Technique 2). In the former, the pneumoperitoneum was established and

pressure was maintained at 1.6 kPa. Trocars were placed more than 8 cm away from the hernia ring edge. Laparoscopic adhesiolysis was performed to expose the entire hernia ring. Then the procedure was converted to open, and a circle incision was performed around the stoma to get access to intra-abdominal cavity. The stoma was trapped and closed using a sterile glove, and the stoma intestine and skin around the stoma were carefully sterilized. Then the cuff-like portion of mesh (Dynamesh-IPST) was set and flattened into the intestinal stoma with the anti-adhesion surface of the mesh facing toward the inside abdomen. With single-strand braided non-absorbable Prolene suture, the hernia ring was closed to a size which only allows the stoma intestine to go through. After that, the stoma intestine was sutured to hernia ring with absorbable sutures for about 8 stitches. Then the procedure was again reconverted to laparoscopy with the pressure of 1 - 3 kPa for pneumoperitoneum and mesh was spread properly avoiding curls. Mesh edges were additionally anchored to the circumference of intestinal stoma with spiral metal staples placed at 1.5 - 2.0 cm interval. The free intestinal stoma was raised out of the abdominal cavity and the extra length of intestine was resected with stapler. The extra hernia sac and scar tissue were removed. Hernia sac was closed with interrupted absorbable sutures, to eliminate any residual cavity or dead space. New stoma was created and colostomy bag was attached to it. In the latter technique, open-laparoscopy, open procedure was applied for the patients with dense abdominal adhesions, recurrent stomal hernia and strangulated or obstructed stomal hernia with intestinal obstruction. Complete adhesiolysis was done. Previously-placed mesh was removed in the case of recurrent hernia. Bowel was reduced into peritoneal cavity after adhesiolysis to remove obstruction in the case of strangulated or obstructed stomal hernia. After complete adhesiolysis and reduction of hernial sac, rest of the procedures were carried out as in Technique 1.

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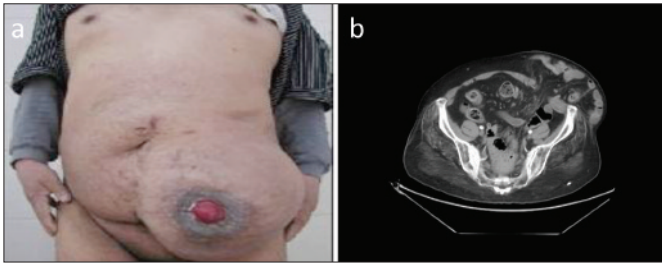


Figure 1: Protruding hernial sac seen in (a) standing position; (b) abdominal CT.

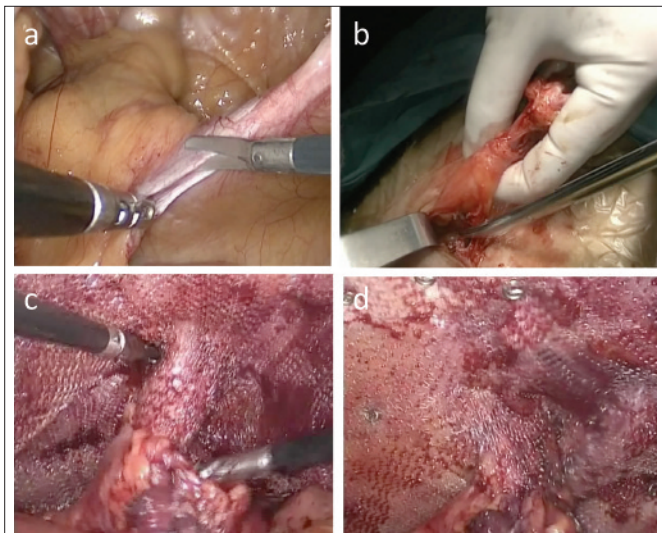


Figure 1: Surgical procedure of (a) laparoscopic adhesiolysis; (b) open excision of incisional scar from previous surgery; (c) laparoscopic spreading of mesh; (d) mesh fixed to abdominal wall with the help of spiral metal laparoscopic stapler.

All cases were performed successfully by hybrid technique with a mean operation time of 167.2 ± 52.2 minutes and a mean postoperation hospital stay of 9.9 ± 2.2 days. Ten cases were operated by Technique 1 and other 6 cases by Technique 2. All patients were followed-up for 16.6 ± 8.8 months and all of them were found without any obvious seroma, recurrence or bulging.

Parastomal herniation is a frequent complication of stoma formation with one-third of these requiring early operative correction and usually open or laparoscopic parastomal hernia repair. Laparoscopic techniques have advantages of less trauma, quick recovery and low complication rate compared with the original open approach.⁴ However, the new hybrid approach for complex parastomal hernia repair, as described herein, combines a laparoscopy with an open approach which can have advantages of both the open and laparoscopic approach in order to increase the efficacy of surgery and avoiding their disadvantages at the same time. Compared with traditional laparoscopic parastomal hernia repair, hybrid technique allows the removal of excess skin and sac; thus resulting in better cosmetic effect. For difficult cases with dense abdominal adhesions, recurrent stomal hernia and strangulated or

obstructed stomal hernia with intestinal obstruction, Technique 2 is more feasible since adhesions can easily be separated with less bowel injury under open vision. Besides, through open incision, the hybrid technique allows closing the hernia ring with interrupted suture and the simple placement of sleeve mesh, which is more reliable with less recurrence than common meshes. On the other hand, compared with traditional open parastomal hernia repair, the hybrid technique still enjoys the convenience brought by laparoscopic procedure, including the immobilization of the mesh with stapling and smaller incisions. Therefore, the hybrid technique combines the advantages of traditional open and laparoscopic parastomal hernia repair together, possessing better cosmetic effect with easier manipulation.

The following points should be considered during hybrid approach. For laparoscopy, trocars are placed away from the defect edge to leave enough space for mesh flattening and to avoid the damage of adhesive bowel. The blunt dissection or scissors dissection should be used for the separation of adhesions close to the peritoneum. The abdominal wall should be examined carefully for occult defect. Stoma bowel should be freed up to subcutaneous part. New stoma should be created according to the length of intestine and size of parastomal hernia. The pneumoperitoneum pressure needs to be reduced to 1.1 - 1.3 kPa before spiral metal tacks are nailed. For open technique, hernia sac is opened via annular incision along the stoma, and sagging skin with scar tissue is cut off. Limiting the wound to the adequate size to separate adhesions and placing the mesh, helps prevent or minimize wound complications. Maximal resection of hernia sac can reduce the risk of postoperative complication and aid to abdominal wall reconstruction.

Overall, the hybrid approach was found to be safe and effective for the complex parastomal hernia repair with less complication; and larger randomized clinical studies will be helpful to determine long-term outcomes of surgery and recommendation for extensive clinical use.

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