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Gasless video-assisted reversal of Hartmann's procedure

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Abstract. More than 60% of patients who are submitted to Hartmann's procedure refuse to undergo reversal. This procedure is in fact a major undertaking associated with significantly mortality and morbidity rates. The authors suggest a minimally invasive approach without pneumoperitoneum.

A consecutive series of four male patients, average age 64 years, underwent laparoscopic assisted reversal of Hartmann's procedure in our department. The procedure was performed for intestinal malignant occlusion in two cases and for perforated diverticulitis in the other two. Mobilization was nearly immediate and incisional pain almost absent; peristalsis restarted after 36–48 h. Finally, the patients were discharged on day 6. Neither mortality nor morbidity occurred in the 8-month follow-up period. The authors conclude that this new laparoscopic procedure may lead to shorter hospital stays and increased acceptance by patients, while maintaining the same safety of the traditional open procedure.

Key words: Minimally invasive surgery — Gasless laparoscopy — Reversal of Hartmann's procedure — Perforated diverticulitis — Malignant occlusion — Large bowel

Henri Hartmann first described the procedure of resection of the sigmoid colon associated with an end colostomy and closed rectal pouch [5]. While Hartmann performed this operation in patients with carcinoma of the left colon, the procedure is nowadays indicated in acute diverticulitis (stages III and IV according to the Hinchey classification), inflammatory or neoplastic strictures, and traumatic perforation of the left colon [7].

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However, Hartmann's procedure requires further surgery in order to restore the integrity of the lower digestive tract, and since reversal is a major undertaking, associated with significant morbidity and mortality [4, 6, 7], many patients do not undergo reversal.

The standard surgical approach to the reversal of Hartmann's procedure has traditionally been with laparotomy. Since 1987, however, the feasibility of many abdominal surgical operations with means other than laparotomy has been demonstrated by the success of laparoscopic surgery [2, 3]. Some of the proven advantages of minimally invasive surgery are: the more rapid return of gastrointestinal functions; less postoperative pain and disability; a shorter postoperative hospital stay; a better cosmesis; and a more rapid return to work [2].

In this paper the authors report their experience with gasless video-assisted reversal of Hartmann's procedure.

Materials and methods

At the Department of Surgery of Ferrara University a consecutive series of four patients underwent the gasless video-assisted reversal of Hartmann's procedure. These patients were all male, with an average age of 64 years. Two were admitted with generalized peritonitis due to a perforated sigmoid diverticulum and two with a neoplastic stricture of sigmoid colon. Hartmann's procedure was performed in all four cases. The reversal was carried out after 6 months in the first two cases and after 14 months in the latter two.

After careful preoperative preparation of the intestine, the patient is placed on the operating table in the Lloyd-Davies position. General endotracheal anesthesia is administered and a Foley tube and an oral gastric tube are inserted. The surgeon and an assistant stand on the patient's left side; a second assistant stands between his legs.

The patient is then placed in a steep Trendelenburg position and rotated to the right in order to move the small intestine out of the operative field. The colostomy is demolished and the descending colon is mobilized. After proximal colonic stump regularization, a pursestring is performed using reabsorbable monofilament. The anvil of a CEEA P 31 is inserted and the pursestring is performed and closed. The proximal colonic stump, now ready for suture, is turned back into the peritoneal cavity and left there. At this point the operation is continued by inserting the telescope and the surgical

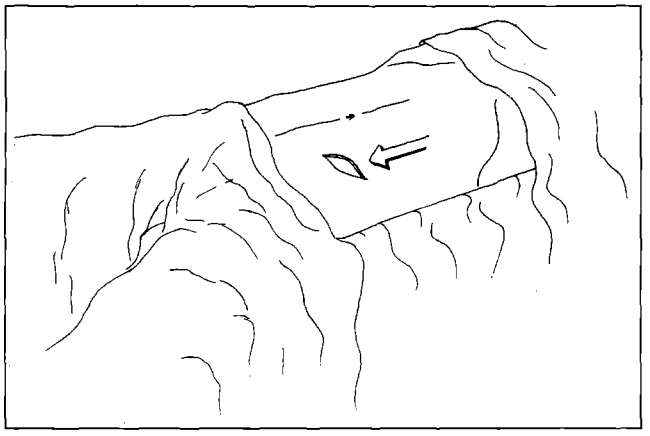

Fig. 1. After the preparation of the proximal colonic stump, the operation is continued by retracting the abdominal wall with conventional retractors and by inserting the telescope and the surgical equipment through the laparotomy wound left from the colostomy demolition (*arrow*).

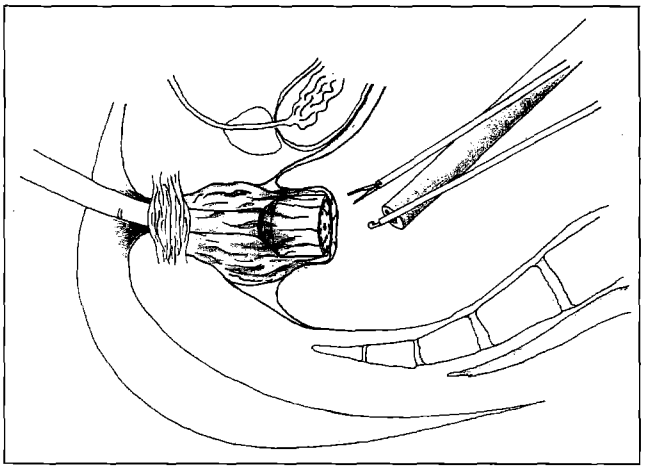

Fig. 2. The telescope and laparoscopic tools suited for rectal stump dissection are inserted through the laparotomy site left after colostomy demolition. The stapler pressure against the apex of the rectal stump allow one to choose and to prepare the site of the anastomosis.

equipment through the laparotomy hole left from the colostomy demolition, maintaining the vision in a desufflated abdomen by retracting the abdominal wall with conventional retractors, these too inserted through the colostomy hole (Fig. 1). One retractor holds up the abdominal wall; another two keep the small bowel out of the operative field. Alternatively, the surgeon can introduce into the abdomen long conventional instruments like forceps, scissors, etc., or laparoscopic ones; the latter prove more suitable lower down in the pelvis where the operative field is extremely narrow.

Adhesiolysis can now be started. The left ureter is visualized and the small bowel is mobilized out of the pelvis, exposing the pouch of Douglas. An intraoperative coloscopy can be used as a guide for the localization of the rectal stump. The CEEA P is then inserted through the anus. The stapler pressure against the apex of the rectal stump allows the surgeons to choose and prepare the site for the anastomosis (Fig. 2). The axle of the stapler is then advanced though the rectal wall under direct vision. Scissors or an endoknife, patented by the authors, can be used to help the trocar to perforate the bowel wall. The stapler is then assembled and an end-to-side anastomosis is performed under direct vision. The integrity of the anastomosis is checked by rectal instillation of dye. Finally, peritonization is performed, the cavity is irrigated, a drainage tube is placed, and the incision is closed.

Results

All the operations were completed, as planned, in about 150 min. The patients' mobilization was nearly immediate and postoperative pain was almost absent. Peristalsis began 36–48 h after surgery and spontaneous canalization 3 or 4 days later. The drain was removed on day 4. No mortality nor morbidity occurred, and the patients were discharged on day 6. A follow-up of 8 months has not shown any complications.

Discussion

The reversal of Hartmann's procedure is a major undertaking associated with significant morbidity and mortality [4, 6, 7], and for this reason many patients refuse to undergo it [4]. Of the several concerns regarding this surgical operation, Bell underlines two of the main problems [1]: the difficulty encountered in locating and dissecting the rectal stump, and that of obtaining a tension-free anastomosis.

However, several techniques have been described to facilitate, first, the localization of the rectal pouch [4, 6, 7]. During the first operation the pouch could be sutured to the sacrum or suspended from the pelvic brim, or the stump could be identified with long unreabsorbable sutures. During reversal, a sigmoidoscopy could transilluminate the bowel wall—the procedure that we follow.

A tension-free anastomosis, the second problem highlighted, generally needs the mobilization of the splenic flexure. We do not, however, mobilize excessively the splenic flexure during the first operation: this enables us to do it the second time as much as we need. The use of CEEA P and an end-to-end or an end-to-side colorectal anastomosis has proved, by now, to be the best way to perform anastomosis [4, 6, 7]. The pressure of the stapler against the apex of the rectal stump makes the choice, the dissection, and the preparation of the rectal wall easy without a purse-string.

On the other hand, even if the above-mentioned procedures are strictly followed, reversal continues to present significant mortality and morbidity rates. However, laparotomy alone accounts for a number of the postoperative complications, especially in elderly and high-risk patients, while the development of laparoscopic techniques and, above all, of laparoscopic cholecystectomy, has triggered sudden and dramatic changes in general surgery, proving to have many advantages [2, 3]: the more rapid return of gastrointestinal functions, less postoperative pain and disability, shorter postoperative hospital stays, better cosmesis, and a more rapid return to work [2].

Experience acquired with this technique, together with the wider availability of specific tools, has resulted in the application of minimal-access techniques to various abdominal and thoracic operations. A minimally invasive technique for the reversal of Hartmann's intervention has also been proposed.

We believe that the reversal should be the first step in training surgeons for laparoscopic colonic surgery. Resection of the sigmoid colon will have already been carried out at the primary operation and the surgeon has only to prepare the anastomotic stumps and to perform the suture.

All the phases of the procedure are performed, as in open surgery, under direct and magnified vision. Gorey et al. [4] propose the preparing and leaving the proximal stump in the peritoneum, closing the colostomy wound, placing four trocars, and inducing the pneumoperitoneum. We, on the contrary, believe that the colostomy wound is large enough to insert retractors, surgical instruments, and the telescope and work assisted by the laparoscope, avoiding pneumoperitoneum. Our experience showed that mechanical abdominal-wall retraction assured space sufficient to attempt a laparoscopic mobilization of the small bowel from the pelvis and to prepare the rectal stump for the suture.

Our experience also demonstrated that the opening time is no longer than that required for the laparotomic approach and that most of the advantages of minimally invasive surgery are maintained. Postoperative pain is absent; mobilization is nearly immediate; an oral-gastric tube is not needed; peristalsis recommences the 1st day after the operation. In the future, a shorter postoperative stay should also be achieved.

The success of the operation itself, and the brilliant postoperative course that followed, shows that laparoscopically assisted reversal can be performed with safety, especially in elderly and high-risk patients.

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