Intracorporeal Laparoscopic Cecorectal Anastomosis

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Abstract: We recently described a laparoscopically assisted subtotal colectomy with extracorporeal antiperistaltic cecorectal anastomosis (CRA). We modified this technique by performing an intracorporeal CRA: the anvil head assembly removed from the circular stapler with an ancillary trocar placed into the anvil shaft is pushed through the bottom of the cecum, the cecum with the anvil head assembly is brought into the pelvis, the circular stapler is inserted into the rectum and the cecoproctostomy is performed. Two patients underwent this new laparoscopic subtotal colectomy with CRA. The operating times were 230 and 260 minutes, respectively. There was no postoperative morbidity. Our results allow us to state that intracorporeally performed antiperistaltic cecoproctostomy after laparoscopic subtotal colectomy is feasible.

Key Words: colorectal surgery, laparoscopic surgery, subtotal colectomy, cecorectal anastomosis

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In 1931, Ogilvie[1] first proposed subtotal colectomy with preservation of the ileocecal junction (Fig. 1), continuity being achieved by anastomosing the cecum to the rectal stump, as an alternative to ileoproctostomy, in the cases in which a segment of right colon can be preserved. We recently obtained very satisfying results[2] with a simple end-to-end mechanical antiperistaltic cecorectal anastomosis (CRA)[3] without the rotation of the cecum and hence of the vascular pedicle performed in other techniques,[4–6] obviating the need to tailor the size of the end of the cecum, which may be large, to the end of the rectum, which may be small.

In the last decade, several studies have shown the advantages of laparoscopic surgery of the large bowel over laparotomy, particularly in terms of patient comfort in the postoperative period and delay in return to normal activities.[7–9] For that reason, we have recently perfected a technique for laparoscopically assisted subtotal colectomy with extracorporeal CRA[10] (Figs. 1, 2A), and the results of our early experience indicate that our technique is feasible and safe.[10] The experience we have gained has induced us to introduce some modifications in the technique that allow us to perform an intracorporeal CRA (Fig. 2B). In this article we report this modified technique.

TECHNIQUE

Preoperative management, anesthesia, and trocar placement have been reported previously.[8,10] The technique of mobilization of the colon has also remained unchanged from that which has previously been described.[10] After the ligation of the origin of the inferior mesenteric vein, a full mobilization of the left colonic flexure is performed, and the greater omentum is detached. The procedure continues with the dissection

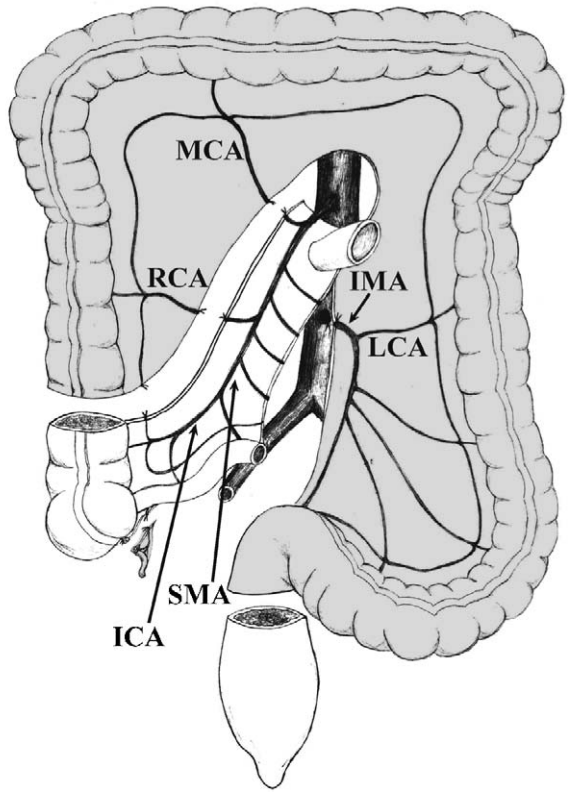

FIGURE 1. Extension of the colonic resection (highlighted in gray). Residual cecum is 10 to 15 cm in length from the ileocecal junction. ICA indicates ileocolonic artery; IMA, inferior mesenteric artery; LCA, left colonic artery; MCA, middle colonic artery; RCA, right colonic artery; SMA, superior mesenteric artery.

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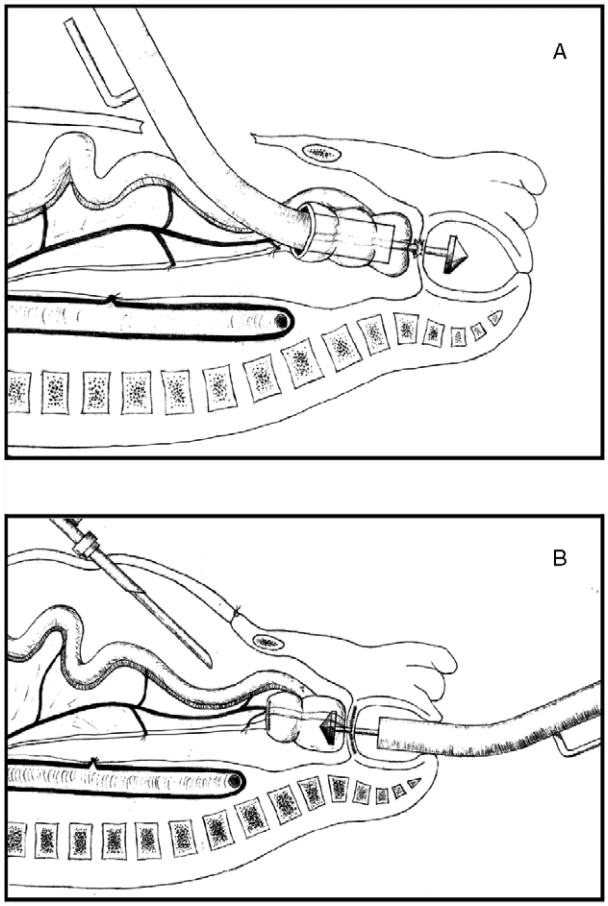

FIGURE 2. A, Method of extracorporeal end-to-end antiperistaltic cecoproctostomy with the right colonic section used as an entrance door for the stapler, and the rectal section used as an entrance for the head of the stapler. B, Method of intracorporeal end-to-end antiperistaltic cecoproctostomy with the right colonic section used as an entrance door for the head of the stapler, and the rectal section used as an entrance for the stapler.

of the gastrocolic and hepatocolic ligaments, a full mobilization of the right colonic flexure and the ligation of the trunk of the inferior mesenteric artery. The root of the left mesocolon is mobilized in the direction of the rectum. The lateral attachments of the left colon are divided. The mesorectum is dissected and severed at the high rectum level. The dissection and mobilization of the right colon are then accomplished along the avascular plane of the right paracolic gutter. The cecum is also completely mobilized and the right and middle vascular pedicles are divided, carefully preserving the ileocolonic artery and its branches to the cecum. The rectum is transected just below the level of the sacral promontory, under the conversion of the tenia muscle fibers, where the intestinal lumen widens (Fig. 1). After this laparoscopic phase, the abdomen is opened through a small Pfannenstiel incision, incorporating the lowest port site. The colon is delivered through the incision. Appendectomy is performed. The ascending colon is divided 10 to 15 cm above the ileocecal junction, and the colonic section line is used as an entrance door for the anvil head assembly removed from the circular stapler (Fig. 2B). The anvil head with an ancillary trocar placed into the anvil shaft is pushed through the bottom of the cecum so that the locking spring comes out. A purse-string suture is tied securely against the anvil shaft. The apex of the cecum is closed using a linear stapler, and the cecum with the anvil head assembly is brought into the pelvis with no rotation. The Pfannenstiel incision is sutured, the circular stapler is inserted into the rectum and an antiperistaltic cecoproctostomy is performed intracorporeally anastomosing the cecal bed to the rectal stump (Fig. 2B).

RESULTS

This modified laparoscopic subtotal colectomy with cecoproctostomy was successfully used on 2 female patients, aged 42 and 36 years, respectively, affected by serious slow transit constipation (bowel activity every 15 d). The operating times were 230 and 260 minutes, respectively. There was no postoperative morbidity. In both cases, the length of postoperative hospital stay was 7 days; 3 months after surgery, daily bowel frequency consisted of 2 movements, with a solid stool consistency. Both patients reported perfect continence at follow-up.

DISCUSSION

When we first performed cases of cecoproctostomy with a mini-invasive approach, we adopted a laparo-assisted technique. Similarly to the already described open procedure, we used the right colonic section as an entrance door for the stapler, and the rectal section as an entrance for the anvil head of the stapler (Fig. 2A); for this reason, we estimated the cecorectal anastomosis as being too difficult a task to perform entirely by laparoscopy, and preferred to accomplish it extracorporeally, through the Pfannenstiel incision. By changing the technique and by introducing into the cecum only the anvil head assembly removed from the circular stapler, intracorporeal anastomosis becomes easy to perform, thus allowing us to avoid any extracorporeal maneuver. The technique we propose enables the performance of anastomosis with the same technique usually used in laparoscopic left hemicolectomy; because it entails neither the use of retractors which traumatize the flaps of the wound nor the necessity to widen the small suprapubic incision, it maximizes the advantages of a mini-invasive approach. Obese patients, presenting a thick adipose panniculus, would evidently have the greatest benefit from this technique.

The results of our first experience with this new technique allow us to state that intracorporeally performed antiperistaltic cecoproctostomy after laparoscopic subtotal colectomy is feasible. Further studies involving laparoscopic procedures compared with conventional "open" techniques are needed to prove whether the advantages gained in other laparoscopic procedures are applicable to this kind of surgery.

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