

Problems in Colorectal Stapler Use

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Received 2016 January 7; Accepted 2016 January 16.

Keywords: Colorectal Surgery, Surgical Staplers, Minimally Invasive Surgical Procedures

Dear Editor,

In recent years, surgical staplers have changed the colorectal surgery techniques. One such a change is to perform minimally invasive operations by laparoscopy. The other change is the technical feasibility of these surgeries, especially in the rectum region and subsequently decreasing the rate of the complications such as anastomotic leak. Performing anastomosis by hand in the middle and lower rectum is very difficult and sometimes impossible in obese patients and men. Gradually, the surgeons get used to the technology and surgical staplers replaced operation by hand. In 1979, the original technique for rectal anastomosis by stapler was introduced by Ravitch and Steichen (1).

Anastomosis is almost the last step of the operation and because the surgeon has spent several hours and a lot of energy for dissecting and releasing the tissues, he or she is too tired to encounter with such a complication of the stapler, and deciding for continuing the surgery and how to manage this catastrophe is often very hard. What makes the situation more difficult for the surgeon is the high cost of the staplers and the limitations imposed by the insurance companies which sometimes makes it impossible to use the staplers.

This study aimed to introduce 15 patients with trouble in stapler use that have undergone operation between 2010 and 2013. Ten patients had been diagnosed with rectal cancer, 2 patients with polyposis colon, 2 patients with obstruction defecation disorder, and 1 patient with hemorrhoids.

We believe that the proper use of the staplers depends on 2 factors. First, surrounding tissues such as the fat, omentum, and mesocolon should be put away from the stapler, because the space of stapler is limited and surrounding tissues inside this space increases the possibility of stapler poor function. Also, entering surrounding

tissues into the stapler, for example, entering the vagina inside the stapler follows the risk of rectovaginal fistula. Second is the proper stapler size which should be matched to the tissue thickness. The size of the linear staplers should be large enough to cover the whole tissue and even a few millimeters more. Of course, there is an exception in using a linear stapler on distal rectum and anal channel that due to space limitations, the stapler should not be large. Size is more important in annular staplers, because the staplers larger than the size of intestine may increase the risk of intestinal perforation. For example, using annular stapler with ileorectal anastomosis and choosing the appropriate size is important due to small size of ileum.

Sometimes, inappropriate dealing with the line of stapler disrupts its function which happened in one of our patients. In this case, after inserting the linear stapler in the lower rectum, the surgeon's aid used Betadine soaked gauze for prepping the residual rectum. Immediately after entering the gauze and pushing it upward, the linear stapler was torn apart.

Patient management after stapler failure is very important too. In our patients with rectal cancer, laparoscopy was performed for 3 patients and linear stapler failed in all 3 cases. In 2 patients, the surgery was converted to open approach. In one patient, the residual rectum was closed as purse, and in another patient, the residual rectum was extracted through the anus and closed with cutting linear stapler (prolapse technique). For the other patient, purse string method was performed through the anus.

Seven patients with rectal cancer underwent open surgery. These patients were divided into 2 groups. The first group had undergone low anterior resection (3 patients). Their residual rectum closing with linear stapler failed and the surgery continued with closing the residual rec-

tum as purse suturing through the abdomen. The second group had undergone ultralow resection (4 patients). The surgery continued in lithotomy position. In 2 patients after mucosectomy and distal proctectomy, coloanal anastomosis was performed and in 2 other patients, the residual rectum was anastomosed to the colon and colorectal anastomosis was performed.

Levin and Kadro reported their experiences about 2 cases with complications associated with the end to end stapler. After the fire, the stapler opened the device intraluminally, allowed the extraction of the main component, anvil entrapped tissue using a flexible sigmoidoscope and rescue of the anastomosis (2).

In patients with hemorrhoids and use of stapler for hemorrhoidopexy, we had one case of postoperative obstruction, as we found that purse-string suture has remained above the stapler fire site.

Therefore, the patient had postoperative obstruction and because of rectal distention proximal to purse-string placement, this area (purse-string) had gone up and difficult to detect. With the passage of a Foley catheter through the hole of purse site, its balloon inflation, and dragging into the bottom, we could cut the stitch and resolve the obstruction. Severe bleeding is a rare complication of using staplers for prolapse and hemorrhoids which happened in one of our patients. In this case of internal prolapse, following use of stapler and during exit of the channel anal, severe bleeding occurred that accumulated in his rectum. The bleeding was hardly controlled by using suction, applying pressure by gauze, and suturing. Bleeding occurred in other cases too, but was not severe and controlled with

tampons, local pressure, and suturing.

One of the serious problems in using circular staplers is passing the stapler through the vagina. Several cases of colovaginal anastomosis have been reported in the literature (3, 4). The surgeon must be sure that the stapler is properly placed at the rectal area. We had one case of rectovaginal fistula. With regard to the anatomic location of the vagina and rectum, it seems that its detection is essential for the prevention of firing the stapler and the surgeon should check it from inside the vagina before stapler firing.

Footnote

Authors' Contribution: Study concept and design: Abbas Abdollahi and Ghodratollah Maddah; drafting the manuscript: Abbas Abdollahi, Ghodratollah Maddah, Hosein Shabahang, and Hamed Golmohammadzadeh.

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