

RESEARCH ARTICLE

Extended Low Anterior Resection with a Circular Stapler in Patients with Rectal Cancer: a Single Center Experience

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Abstract

Background: to evaluate the outcome of stapled colo-anal anastomoses after extended low anterior resection for distal rectal carcinoma. **Materials and Methods:** A retrospective study of fifty patients who underwent colo-anal anastomoses after extended low anterior resection was conducted at Imam Hospital from September 2007 up to July 2012. **Results:** The distance of the tumor from anal verge was 3 to 8 cm. Anastomotic leakage developed in 6% of patients and defecation problems in 16%. One-year local recurrence was 6% while three-year local recurrence was 4%. One-year systemic recurrence was seen in 22% while three-year systemic recurrence was seen in 20%. **Conclusions:** Colo-anal anastomoses after extended low anterior resection for distal rectal carcinoma can be conducted safely.

Keywords: Extended low anterior resection - stapler - rectal cancer - colo-anal anastomoses

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Introduction

Colorectal cancer is one of the most common malignancies in Iran. The mainstay for the treatment of rectal cancer is surgery. The choice of surgical technique is influenced by the severity of disease and the extent of disease spread in the bowel, the location of the tumor, the stage of the cancer, the patient's preference, and experience of the surgeon (Osei-Bonsu et al., 2013). Current surgical procedures for rectal cancers include abdomino perineal resection (APR), low anterior resection and extended low anterior resection. Following low and extended low anterior resections, anastomosis is necessary to restore the continuity of the gut. Intestinal anastomosis can be performed in a variety of ways (Fayek, 2014). Currently, the two most commonly used anastomotic techniques are: hand-sewn sutured anastomosis and stapled anastomosis. Although both are well established, they are not without their faults. Neither provides an immediately "sealed" anastomosis and both are prone to uncommon but serious complications such as anastomotic bleeding, infection or leaks. However, controversy remains regarding which of the two methods of creating an anastomosis yields better clinical outcomes (Nir et al., 2012). The theory behind creating a safe, healthy bowel anastomosis remains constant, irrespective of the technique chosen.

Unfortunately, however, despite the "perfect patient", healthy bowel and meticulous technique continue to leak resulting in significant morbidity and mortality (Lustosa

et al., 2012). In colorectal surgery, the advantages of the stapled technique are said to be a lower percentage of complications, such as leaks, better blood supply, reduced tissue manipulation, less edema, uniformity of sutures and shorter hospital stay and operation time (Tang et al., 2009). Here, we evaluate the results of extended low anterior resection with the aid of the circular stapler for carcinomas of the middle third or upper part of the lower third of the rectum in our centers.

Materials and Methods

From September 2007 up to July 2012 fifty patients with distal rectal cancer who underwent extended low anterior resection with stapler and coloanal anastomoses in Imam Hospital were enrolled in this study. Including criteria are T1-T2 tumors with minimum proximity to anal verge of 4cm. Excluding criteria are T3-T4 tumors with sphincter involvement, fecal incontinency, perineal involvement and perianal fistula formation. Patients with T3 tumors and/or nodal involvement underwent neoadjuvant chemotherapy and re-evaluation was performed after chemotherapy. The procedure consisted of total mesorectal excision and coloanal anastomoses with circular stapler in upper part of anal canal. All patients were evaluated for anastomotic leakage, marginal involvement, sphincter involvement / incontinency, local / systemic recurrence and anastomotic stricture. Physical examination as well as serum CEA level was employed

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every 3 months postoperatively. Thoraco-abdominopelvic CT scan after 6 months was performed to evaluate local and systemic recurrence. All patients underwent colonoscopy 1 and 3- year postoperatively to assess local recurrence as well as stricture. All statistical calculations were performed with SPSS 20 software (SPSS, Chicago, IL). The t Test and one-way ANOVA test were used to compare the data.

Results

Fifty patients (25 males and 25 females) with distal rectal cancer were enrolled in this study. Age ranged between 24-82 years with Mean: 50 years. Twenty four (48%) were stage I, 12 with stage IIA (24%), 11(22%) with stage IIIB, 2 (4%) with stage IIIC and one (2%) with stage IV. Thirty eight (76%) out of fifty patients received chemoradiation therapy. Tumor proximity to anal verge was between 3 and 8 Cm. Three patients (6%) developed anastomotic leak and 8 (16%) had defecation problem. Marginal involvement was reported in 2 patients (4%). One-year local recurrence was seen in 3 patients (6%) while three-year local recurrence was seen in 2 patients (4%). One-year systemic recurrence was seen in 11 patients (22%) while three-year systemic recurrence was seen in 10 patients (20%). Two patients (4%) developed anastomotic stricture.

There is not a significant relation between disease stage and either marginal involvement and or anastomotic leak (P-value: 0.195). In contrast there is a reverse relation between receiving chemoradiation and anastomotic leak.

Our data doesn't reveal significant relation between stage of the disease and one-year/ three- year local recurrence as well as one-year/ three-year systemic recurrence (P-value: .026, 0.7, 0.23 and 0.34). The rate of anastomotic stricture was significantly higher in lower stages (P-value: 0.001) and younger patients (P-value: 0.002). In addition anastomotic stricture was more frequent in males (P-value: 0.004), and had a reverse relation to tumor proximity to anal verge (P-value: 0.001).

Our data reveal that there is a reverse relation between receiving chemoradiation and local/systemic recurrence (P-value: 0.003) as well as marginal involvement (P-value: 0.001). In contrast, anastomotic stricture was significantly higher in patients who received chemoradiation (P-value: 0.004). Defecation problems was more frequent in males (P-value: 0.002) and younger patients (P- value: 0.002). Furthermore defecation problems had a reverse relation to tumor proximity to anal verge (P-value: 0.003).

Discussion

The most important priority in the surgical management of mid and distal rectal cancers is adequate oncologic clearance. It is generally accepted that this is achievable by total mesorectal excision, although in Japan extended pelvic lymphadenectomy is also used in selected cases (Ho, 2006). A very low local recurrence rate of 3%-6% (associated with improved 5 year survival) is possible when proper oncological surgery is performed of mid and distal rectal adenocarcinoma. Restoration of bowel continuity

is possible in most cases, without compromise of cancer clearance (Hida and Okuno, 2010). Re-anastomosis can be performed with stapled, transabdominal hand- sewn or coloanal pull-through techniques. The type of procedure is defined by the anatomical site of anastomosis rather than the position of the cancer, as commonly described at colonoscopy. The term "low" anterior resection refers to a colorectal anastomosis performed at between distal to the anterior peritoneal reflection and proximal to the anorectal junction. This is normally measured to be about 5 to 8 cm above the anal verge, depending upon the patient's body build. The term "ultra-low" or "extended" anterior resection refers to a colorectal or more usually, a coloanal anastomosis at the level of the anorectal junction. This is the type of anastomosis that is performed after proper total mesorectal excision and incision of the Waldeyer's fascia posterior to the rectum. The latter technical step allows the rectum to be mobilized/"freed" both anteriorly and proximally from the pelvis, allowing for transection of the rectum safely at the anorectal junction. The level of this anastomosis is normally measured to be about 3-5 cm from the anal verge. Such distal anastomoses have much higher risk of anastomotic dehiscence and consideration should be given to temporary defunctioning by either a colostomy or ileostomy (Nugent and Neary, 2010). Following successful resection of the rectal cancer with total mesorectal excision, bowel continuity can be restored by coloanal/distal rectal anastomosis performed using Hand-sewn or Stapled anastomosis.

The mean age of our patients is 58.19±13.53, very similar to a same study by Kakodkar et al (Gupta et al., 2006). Twenty three patient developed fecal incontinency in Rasmussen's study (Rasmussen et al., 2003). Chatwin et al showed that 51% had normal function, 21% had gas incontinency, 12% had mild fecal incontinency and 5% had sever fecal incontinency (Chatwin et al., 2002). In our study 16% had defecation problem.

Several studies have determined different effective factors on rectal function post-operatively; such as female gender, residual rectal length and proximity to anal verge (Gimelfarb et al., 2013, Zbar et al., 2013). The more proximity to anal verge, the more risk of rectal dysfunction. Thus for distal rectal cancer (2- 6 Cm from anal verge), it is preferred to save anal canal as possible (Tenckhoff et al., 2015). In our study the proximity to anal verge was 3-8Cm.

Seventy six percent of our patients received radiotherapy pre-operatively. Although the mechanism of adverse effect of radiotherapy on rectal function is still unknown, it may cause tissue and sphincter fibrosis with subsequent declined neo-rectal compliance (Rullier, Denost et al., 2012). Six percent of our patient developed anastomotic leak that is comparable to other studies with 10.3% up to 27.2% (Mori et al., 2010, Atema et al., 2015).

The use of extended low anterior resection with the aid of the circular stapler for carcinomas of the middle third or upper part of the lower third of the rectum does not have excessive mortality and morbidity. In most cases, anorectal function reaches a satisfactory state, though there may be quite troublesome incontinency.

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