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Reconstruction methods after low rectal resections for carcinoma

KEYWORDS: Rectal Neoplasms; Reconstructive Surgical Procedures; Anastomosis, Surgical; Postoperative Complications; Treatment Outcome

ABSTRACT

The results of the clinical investigation of patients operated for low rectal cancer with resection methods applying the various forms of reconstruction were presented in the work. Related to the reconstruction method after low rectal resection, patient sample was divided into 4 subgroups: subgroup with straight colorectal anastomosis, subgroup with double stapler, subgroup with Moron triple stapler technique and subgroup with colonic J-pouch anal anastomosis. Based on our experience we concluded that: priority in rectal surgery is sphincter preserving operation, knowledge of different methods of reconstruction and experience in rectal surgery provide surgeons with more appropriate choices, optimal form of reconstruction after low rectal resections for cancer is colonic J pouch anal anastomosis, J pouch colo-anal anastomosis provides good immediate and distant postoperative results.

INTRODUCTION

Curative treatment of rectal carcinoma is exclusively surgical, but it can be combined with adjuvant therapy (radiotherapy, chemotherapy) in order to improve still insufficiently good results of operative treatment. The main aim of the treatment is to achieve a compromise between the necessity of a radical oncologic treatment and the need to preserve sphincter mechanism function and maintain the quality of life. The complexity of intervention, specific localization of the malignancy, insufficient accessibility, proximity of other small pelvis structures, require appropriate knowledge of surgical anatomy, meticulous operative technique, patience and experience of a surgeon.

In modern rectal surgery, resection is one of the most common interventions. The first resection of the rectum was performed by Reybard in 1843, but Dixon completely reaffirmed the method in 1939 and it was named after him (1). Related to the height of the anastomosis after rectal resection, there are high resections with anastomosis above 9 cm from the anocutaneous line, low with anastomosis below 9 cm from this line and ultra low with anasto-

mosis below 5 cm from the anocutaneous juncture. Low and ultra low anastomoses are a special problem due to specific anatomic, physiologic and microbiologic characteristics of the terminal large bowel section.

Due to a recent interest in low rectal anastomoses, we decided to analyze the complications and mortality with different reconstruction methods through our initial clinical results.

MATERIAL AND METHODS

Our clinical investigation was performed at the Surgical Clinic in Niš from 1999 to 2002. There were 206 radical rectal interventions, with 135 (65.5%) anterior rectal resections. The examinee sample includes 80 (59.2%) patients of both sexes with low rectal resection, out of which there were 54 (67.5%) men and 26 (32.5%) women averagely aged 60.07 years. All the anastomoses were performed at 9 cm from the anocutaneous line with mechanical suture. Related to the reconstruction method after low rectal resections, the examinees were divided into four groups:

Group with straight colorectal anastomosis; there were 34 (42.5%) patients in this group and the reconstruction was performed with combined circular stapler CEEA-Auto Suture, 28 mm or 31 mm diameter. Group with double stapler; there were 32 (40%) patients in this group and the reconstruction was performed with combined circular CEEA diameter 31 mm and linear stapler TA Premium 30 or 55 mm, depending on the width of distal bowel remnant. Group with Moron triple stapler technique; there were 6 (7.5%) examinees in this group and the anastomosis was performed with combined circular CEEA diameter 31 mm and linear staplers TA Premium 30 mm or 55 mm. Group with colonic J-pouch anal anastomosis; there were 8 (10%) examinees in this group and the reconstruction was performed with combined circular CEEA diameter 31 mm, linear TA Premium 30 or 55 mm staplers and GIA 50 mm. All these interventions were performed with standard colonic preparation, with 3-day liquid diet and enema two days before the operation. Antibiotic preparation comprised 500 mg metronidazol and 2 g cephtriaxon during the anesthesia induction. The treatment connoted the patients in the Loyd-Davis position and total medial laparotomy. In all cases, after complete left colonic mobilization, a. mesenterica inferior was ligated at its branching from the abdominal aorta and v. mesenterica inferior below the lower edge of the pancreas. Hypogastric nerve preservation was performed whenever possible, adhering to the principle of total mesorectal excision. Distal rectal remnant was washed with mercury-chloride solution or with saline to prevent malignant cell implantation into the anastomosis region. In 34 cases (42.5%) with very low and high-risk anastomoses, with incomplete stapled "bite" and evident anastomosis defects "loop" ileostomy protection was performed. As a means of protection homologous fibrin glue was also applied in 25 (31.25%) cases in the amount of 10 ml (Blood Transfusion Center, Niš) per anastomosis. Prepared fibrin glue is applied with "Pantaject" system (Beriplast P) firstly to the posterior anastomosis wall (on the dry surface) in the amount of 15 ml. After the application a 2 minutes pause is required for the adhesive jelly-like layer to be formed. Identical procedure was used for the anterior wall.

In the postoperative course postoperative complications and mortality were analyzed. Anastomosis dehiscence was determined according to the following criteria: stercoral contents to the contact drain, fever, anal pus, laboratory (Le, SE) and peritonitis (diffuse, localized). Rectal preparations (with mesorectum) were analyzed histomorphologically with light microscopy, traditional tissue staining with hematoxylin eosin (H&E) and PAS, as well as with special staining to reticulin.

RESULTS

Postoperative complications and mortality were analyzed. Morbidity. Total postoperative morbidity was present in 21 (26%) cases. In Group I morbidity was present in 9 (11.25%) cases, in Group II in 8 (10%), in Group III in 2 (2.5%) and in Group IV in 2 (2.5%) patients. Dominant causes

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of complications are operative wound and urinary tract infection, then sporadic cases of pneumonia and deep venous thrombosis of lower extremities. Specific morbidity in the form of clinically manifest anastomosis dehiscence occurred in 8 (10%) examinees. In Group I it was present in 3 (3.75%) cases, out of which in 2 as a perianastomotic abscesses and in 1 with stercoral content on draining; in Group II in 2 examinees (2.5%) - in one with stercoral content on draining and the other with stercoral peritonitis; in Group III in 2 cases as perianastomotic abscesses (2.5%); in Group IV in 1 (1.25%) case with stercoral content on contact draining.

Mortality. Four patients died (5%). In Group I 2 patients (2.5%) died of the consequences of stercoral peritonitis; in Group II 2 (2.5%) patients died of cardiocirculatory disturbances (1 cardiac failure; 1 pulmonary embolism). In Groups III and IV there were no deaths.

DISCUSSION

Sphincter-preserving operations have become the golden standard of the surgical treatment of most cancers of middle and distal thirds of the rectum. The reconstruction problem after low rectal resections is still open. The surgeon nowadays has at his disposal several modes of reconstruction after low resections: direct (straight) colorectal (coloanal) anastomosis, double stapler method, Moron triple stapler technique, as well as various pouching methods (colonic J-pouch, coloplasty) (2). The most important and most common early complication in our series is anastomosis dehiscence. Our analysis demonstrates the highest morbidity in Group I (direct colorectal or coloanal anastomosis) and the lowest in Groups III and IV (Moron triple stapler technique and colonic J-pouch). Anastomosis dehiscence is most frequent in Group I, and the least frequent in Group IV, with insignificant difference. Stercoral peritonitis in Group II may be explained by the fact that this anastomosis was not protected with "loop" ileostomy or fibrin glue. According to the literature clinically manifested dehiscence in elective surgery is 2-17%, depending on the anastomosis height, experience of the surgeon and reconstruction methods (3). The analysis of our and literature data suggests that low anastomoses are still burdened with high percentage of dehiscence due to relative devascularisation of distal rectal remnant in total mesorectal excision. In view of the fact that dehiscences are most frequent in the groups with direct colorectal or coloanal anastomosis and less frequent in colonic J-pouch, the optimal method of choice should be the one which warrants better postoperative as well as functional results - J-pouch anastomosis. "Loop" ileostomy is an optimal method of protection of low and ultra low anastomoses (below 5 cm from the anocutaneous line), which agrees with other authors (4). Out of 80 patients enrolled, 4 died (5%). Most frequent causes of death are cardiocirculatory disturbances and stercoral peritonitis. Diffuse peritonitis is a late clinical finding due to dehiscence of low colorectal anastomosis. Singh et al. published the results with mortality after rectal resections of 4% (5). The analysis of our results and the results of abovementioned authors demonstrates that sphincter-preserving rectal surgery is still burdened with mortality. Most common causes of death are cardiorespiratory events due to advanced age of the patients and stercoral peritonitis. Fistulas of low colorectal anastomoses are more complicated to recognize due to their place, which suggests the necessity of detailed postoperative monitoring for earlier detection and adequate treatment.

CONCLUSION

Based on our experience with various reconstruction methods after low rectal resection for carcinoma, the following may be concluded: The priority in rectal surgery is sphincter preservation; The knowledge of different reconstruction methods and experience in rectal surgery provide the surgeon more appropriate choices; Optimal reconstruction after low rectal reconstruction for cancer is colonic J pouch anal anastomosis; J-pouch coloanal anastomosis provides good immediate as well as later postoperative results.

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