SPHINCTER PRESERVING PELVIC EXENTERATION FOR LOCALLY ADVANCED RECTAL CANCER

N. Damianov[1], G. Popivanov[2], B. Gaideva[1], V. Hristova[1]

[1]Clinic of Endoscopic, Endocrine Surgery and Coloproctology, Division of Coloproctology and [2]Clinic of Abdominal Surgery, Military Medical Academy of Sofia

ABSTRACT

PURPOSE: Locally advanced rectal cancer (LARC) represents approximately 10% of all colorectal cancers. The achievement of R_0 resection through multidisciplinary approach combining chemoradiotherapy and aggressive surgery as total or posterior pelvic exenteration is the only curative option for these patients. The preservation of the pelvic diaphragm is associated with considerably higher quality of life.

MATERIAL AND METHODS: A total of 13 patients with LARC were treated by the authors from 2008 to 2012. All of them underwent neoadjuvant chemoradiotherapy and followed-up by CT, MRI and colonoscopy for a mean period of 35 months. Early complication and recurrence rates were recorded. Two cases with sphincter preserving total pelvic exenteration (TPE) were presented in details.

RESULTS: Eleven posterior (PPE) and two TPR with preservation of urogenital and anal sphincters were performed. Clear oncologic margins were achieved in 11 patients. There were no cases with distant metastases. The two cases with total exenteration are still alive and cancer-free, 18 and 13 months after the operation, respectively. The mean survival is 20,5 months as the follow-up is still ongoing.

CONCLUSION: The multimodal approach including pelvic exenteration surgery is the only curative option for the patients with locally advanced rectal carcinoma. The survival strongly correlates with the disease-free interval, so the achievement of R_0 resection is mandatory. The primary LARCs are associated with lower morbidity and better survival rates than the recurrences. The preservation of the pelvic diaphragm, when possible, is very important for achievement of better quality of life.

Key words: *locally advanced rectal cancer, minor pelvic exenteration, quality of life, local recurrence, case reports*

INTRODUCTION

Locally advanced rectal cancer (LARC) without distant spreading represents approximately 10% of all colorectal cancers. If left untreated, it has a poor prognosis. Because of the relatively slow progression the death usually occurs whitin two years for primary and one year for recurrent rectal carcinoma (15). Severe pain and septic complications significantly worsen the quality of life (QoL) of these patients. The multidisciplinary approach with chemoradiotherapy combined with total or posterior (for women) pelvic exenteration (TPE/PPE) is the only curative option for them.

The achievement of satisfactory QoL becomes very important aspect of the modern surgery, besides the improved survival. A step in this direction for these patients is the preservation of the pelvic diaphragm with the sphincters, when possible, and one-stage or a later restoration at least of one of the both tracts (7,11).

Address for correspondence:
G. Popivanov, MD
Clinic of Abdominal Surgery
Military Medical Academy,
3, Georgi Sofijski Str., 1606 Sofia
e-mail: gerasimpopivanov@rocketmail.com

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MATERIAL AND METHODS

A total of 13 patients with LARC were treated by the authors from 2008 to 2012. All of them underwent neoadjuvant chemoradiotherapy. They were followed-up by CT, magnetic resonance imaging (MRI) and colonoscopy for a mean period of 35 months. Early complication and recurrence rates were recorded. The two cases with sphincter preserving TPE were presented in details. Additionally, a brief review of the published results in the period 2000-2012 was performed.

CASE REPORTS

Both patients were males with LARC engaging the urinary bladder. The indications for TPE were the lack of distant metastases and sepsis due to the communication between digestive and urinary tracts. In both of them, TPE with preservation of the urogenital diaphragm and anal sphincters was performed.

The first case was a 51-year-old male with advanced rectal carcinoma engaging the whole circumference of the rectum, extending from the anorectal junction to 9 cm proximally. MRI revealed an infiltration of the urinary bladder. The subsequent cystoscopy revealed infiltration of the trigonum and ureter's orifices bilaterally. Neoadjuvant radiotherapy with cobalt was performed (25x2 Gy). The follow-up contrast MRI after 73 days revealed progression of tumour size from 83/58 mm to 97/51 mm with a large engagement of the perirectal adipose tissue, seminal vesicles and the posterior wall of the bladder with a rectovesical fistula (Figs. 1 and 2). On physical examination, a circular fixed tumour was found with a leakage of urine. The laboratory results were normal except for hemoglobin level of 8,6 mg/dL.

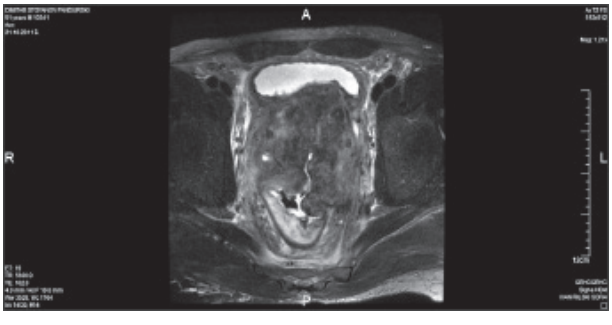


Fig. 1. Follow-up MRI (axial view) clearly demonstrates the presence of a rectovesical fistula - the bladder contrast passing into the rectum. Tumour size is 97/51 mm

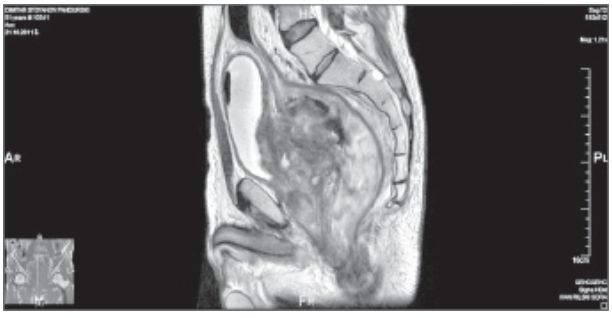


Fig. 2. Follow-up MRI (sagittal view) shows the infiltration of prostate and posterior wall of the urinary bladder. Tumour size is 83/58 mm

Intraoperatively, tumour of the rectum with a large infiltration of the posterior wall of the urinary bladder was found proven by biopsy of the trigonum. Due to lack of infiltration of the urogenital diaphragm and achievement of 3 cm distal clearance TPE was performed with blood loss of 1800 mL (Fig. 3). The left ureter was anastomosed with the right one, which was brought out as ureterocutaneostomy on the right side of the anterior abdominal wall and sigmostomy was performed. The patient had uneventful recovery and was discharged on the 12th postoperative day.



Fig. 3. Intraoperative view after TPE with preserved urogenital diaphragm. Both ureters are resected and cannulated (see the bottom of the picture)

The gross examination of the specimen revealed tumour size of 18/8 cm with infiltration of the urinary bladder and presence of fistula (Fig. 4). A microscopic examination showed G1 adenocarcinoma pT4bN0M0 (0/12). All resectional margins, prostate gland, 12 perirectal and 3 mesenterial lymph nodes were

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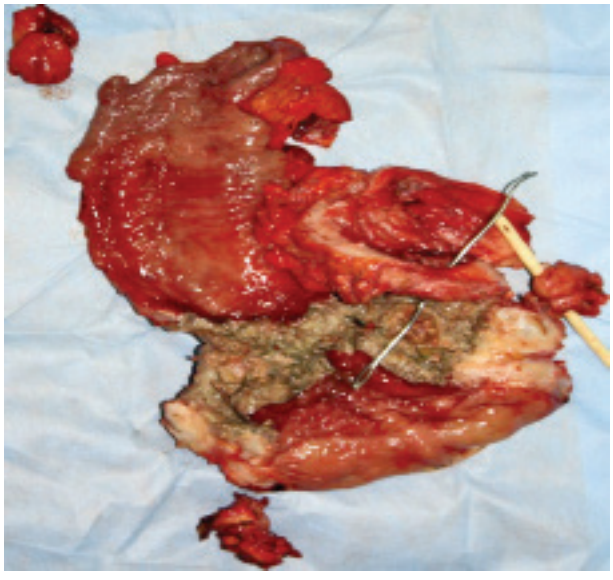


Fig. 4. Gross specimen of TPE. The probe is into the rectovaginal fistula, Foley catether is in a prostatic part of the urethra. Lymph nodes from the base of the inferior mesenteric artery (see at the right top). A part of the mesorectum resected after specimen removal (see the bottom)

free of carcinoma (R_0 resection). One year after the operation, the patient had no recurrence (based on MRI and colonoscopy) and underwent restoration of the integrity of gastrointestinal tract.

The second patient was a 70-year-old male with LARC engaging the entire circumference from the 5th to the 12th cm from the dentate line and infiltration of the posterior bladder wall. After sigmostomy and neoadjuvant radiotherapy, TPE was performed two months later on. He had uneventful recovery and was discharged on the 10th postoperative day.

Microscopic examination revealed G2 adenocarcinoma pT4bN0M0 (0/10) with bladder infiltration. The follow-up CT, MRI and colonoscopy revealed no evidences for local recurrence or distant metastases 18 months after the intervention.

RESULTS

Eleven posterior and two total pelvic exenterations with preservation of urogenital and anal sphincters were performed (15,4%). Clear margins were achieved in 11 patients (84,6%). Major complication (pelvic abscess) was noted in one case (7,7%). One-stage bowel restoration was performed in two cases with posterior exenteration and two-stage one - in one patient with total exenteration one year later on. The mean follow-up was 35 months. One patient died and another was lost to follow-up. Among the remaining 11, only two local recurrences (18,2%) were noted in the group with posterior exenteration after 1 and 2 years, respectively. There were no cases with distant metastases. The two cases with TPE are still alive and cancer-free, 18 and 13 months after the operation, respectively. The mean survival is 20,5 months, as the follow up is still ongoing.

DISCUSSION

The pelvic exenteration as a method for treatment of advanced pelvic malignancies has been first described by Brunschwig in 1948 in attempt to achieve clear distal and circimferential margins (R_0 resection). TPE includes removal of the pelvic peritoneum, extirpation of the rectum, urinary bladder, prostate gland and levator muscles with obturatory lymph nodes. In women, the interposition of the genital system between rectum and urinary bladder often allows performing of PPE with urinary tract preservation. The anatomy in men reduces the possibility of such procedure and, usually, a TPE is performed. After specimen removal, both definitive ureterostomy and colostomy are performed together with pelvic floor reconstruction.

The current progress in surgery, radiological imaging and critical care led to considerable decrease of the mortality rates from 30% to 0-15,6% (6-8,11-13,15). However, the overall morbidity rates are still high and range between 24-55% for primary rectal cancer and 44-78% for recurrent tumours, but the major complications requiring intervention are 13-34% (3,7,11,15). Nevertheless, TPE remains the only curative option for the patients with LARC. Reported 5-year survival rates are between 48-66% for primary rectal cancer and 8-41% for recurrent one (2-4,14). The 5-year disease-free interval is 52-89% and 13-38%, respectively (2,3). The mean survival varies between 27,3 and 48,9 months for primary and 24 for recurrent rectal cancer (6,13). The disease-free interval and survival strongly correlate with achievement of R_0 resection and are better for primary rectal cancer (4-6,10-12). In this sense, the proper selec-

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tion of the patients plays a key role. The patients with considerable co-morbidity (ASA IV/V), encasement of external iliac vessels, side pelvic bones or sacrum above S_1, paraaortic lymphadenopathy and distant metastases are contraindicated for TPE (1,3). Several reports deal with the outcome after exenteration surgery for primary LARCs (1-4,9-11,13,14).

The achievement of satisfactory QoL is a very important aspect of the modern surgery, besides of that of improved survival. A step in this direction for these patients is the preservation of the pelvic diaphragm with the sphincters.

A series of 96 patients who underwent TPE with preservation at least of one of the both sphincters in 37,5% of them with mortality 15,6% and major complications in 19.8% was reported (11). The overall 5-year survival was 41,9%, 5-year disease-free interval was 40,5% with higher survival rates for R_0 than R_{1-2} resection (40,9 versus 21,2 months, respectively) (11). Five patients with TPE (R_0) and preservation of the both sphincters with one-stage anastomosis who were still alive 13-30 months after operation were reported elesewnere (7).

In two cases we managed to preserve the urogenital diaphragm and anal sphincters achieving sufficient distal margin of 3 cm. Both are still alive 13 and 19 months, respectively, after the intervention without evidence of local recurrences or distant metastases. One of them underwent restoration of the gastrointestinal integrity.

An additional benefit of sphincter preserving TPE is avoiding the possible complications associated with the pelvic floor reconstruction. On other hand, one-stage restoration prolongs the operative time and does not allow 'the test of time' about possible recurrences.

CONCLUSION

In spite of the high morbidity, the multimodal approach including TPE is the only curative option for LARC patients. Their survival strongly correlates with the disease-free interval, so the achievement of R_0 resection is mandatory. Primary LARC is associated with lower morbidity and better survival rates than the recurrent ones. The preservation of the pelvic diaphragm, when possible, is very important for achievement of better QoL and further efforts in this direction are justified.

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