

DISTAL SACRECTOMY FOR RECURRENT RECTAL CANCER

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Surgical treatment of recurrent rectal tumors is a challenge for cancer surgeons. Due to the high risk of intraoperative and postoperative complications, such tumors are often considered inoperable. We present a clinical case of 56-years-old male patient with local recurrence and pathological fracture of the sacrum at S5 level to whom en-bloc distal sacrectomy was performed. Such surgical technique for recurrence of rectal cancer provides significant improvement in local and general condition and creates a favorable prognosis for the patient's survival, which is demonstrated by the described clinical case.

Key Words: distal sacrectomy, recurrent rectal cancer, locally advanced rectal cancer.

DOI: 10.32471/exp-oncology.2312-8852.vol-43-no-4.16794

Due to current advances in chemotherapeutic, radiation and surgical methods of treatment of colorectal cancer, the frequency of local recurrence of tumors has decreased significantly in recent years from 20–30% to 5–10% [1]. However, local recurrences of rectal cancer remain a rather complex clinical problem. Patients with local recurrence of rectal tumors are mostly disabled due to severe pain, which is not relieved by analgesics, the presence of rectal or vaginal discharge, tenesmus, impaired urination [2, 3]. From 20% to 50% of these patients have only local recurrence without the presence of distant metastases, which makes it possible to use a surgical method of treatment of this category of patients. In 30% of patients with local recurrence of colorectal cancer, radiation therapy can improve the clinical condition of patients, but it does not improve their survival [2].

Surgical treatment of recurrent rectal tumors is a challenge for oncologists. Perifocal inflammatory infiltration, dense adhesions, severe fibrosis after previous radiation and surgical treatment significantly complicate the implementation of surgical interventions and create difficulties in reaching the radical limit of resection. The surgical approach depends on the location and size of the tumor, its connection with the surrounding organs and structures [2].

There is no standardized classification of recurrent rectal tumors. The vast majority of cancer surgeons classify recurrent tumors of the rectum according to the invasion of a particular anatomical area of the pelvis. There are central (tumor is localized in the rectum and surrounding soft tissues), sacral (tumor infiltrates the presacral space, germinates or adjacent to the sacrum and coccyx) and lateral (tumor process extends into the structures of the lateral walls of the pelvis: iliac vessels, nerves, ureters, lymph nodes) recurrent tumors of the rectum [1, 3]. Central recurrent tumors are the most convenient for surgical removal and have the most favorable prognosis in terms of achieving negative (R0) resection margins [1]. Sacral and lateral recurrent tumors of the rectum in modern practice are often considered by sur-

geons as inoperable due to the high risk of intraoperative and early postoperative complications. The risk of iatrogenic injuries, the risk of bleeding and blood loss, the risk of purulent-septic complications require a very detailed preoperative examination (computed tomography, positron emission tomography, magnetic resonance imaging, using 3D-rendering), planning the scope of surgery and strict selection of patients [1, 2, 4–6].

Total or subtotal sacrectomy, hemisacrectomy, partial resection of the sacrum are high-risk and complex surgical interventions. According to the literature, the main significant intraoperative complication is the massive uncontrolled bleeding, which according to some authors may be 1250–1700 ml [4, 6, 7]. This blood loss may be associated with the involvement of the iliac vessels into the tumor process [4], which creates a discussion about the feasibility and benefits of using this approach for the treatment of recurrent tumors [2, 4, 5, 8]. However, when reaching the negative resection margins (R0), this approach can ensure a good survival rate of this category of patients [3].

Distal sacrectomy is performed below the sacroiliac joint (does not disrupt the continuity of the pelvic ring and does not require reconstruction of the pelvic bones and lumbar spine), main blood vessels, sciatic and sacral nerves, which avoids the development of massive bleeding as well as disorders of the pelvic organs and lower extremities in the postoperative period [2, 4, 6, 9].

CASE REPORT

Patient R., 56 years old, was admitted to the proctology department of Communal non-profit enterprise “Khmelnyskyi Regional Hospital” KRH on March 9, 2021, with complaints of pain in the sacrum and anal areas, periodic numbness and pain in the lower extremities, constant discharge of mucus with streaks of blood from the anal canal.

According to the medical history and findings of instrumental examination (rectoromanoscopy and biopsy, computed tomography of the abdominal cavity and pelvis), the patient was diagnosed with cancer of the middle third of the rectum. Multispiral computed tomography (31.08.2018) revealed the signs of non-plastic lesions of the ampulla at middle third of the rectum for 50–55 mm with a predominantly infiltrative-endophytic

type of spread — severe stenosis of the lumen of the affected segment, severe regional adenopathy (6–7–9 mm) of pararectal lymph nodes (most likely of metastatic origin). No pathology of other organs was detected. After completing the course of gamma therapy (total dose 38 Gy), the patient refused to continue the treatment and did not seek for medical help for one year. On August 13, 2019, the patient was consulted by a proctologist at the Communal non-profit enterprise “Khmelnyskiy Regional Hospital” with a clinic of chronic obstructive intestinal obstruction in the stage of subcompensation. On rectoromanoscopy, at a distance of 7 cm the dense, rigid tumor was visualized that narrowed circularly the lumen and was bleeding when touched with a rectoscope tube. The obstructive low resection of the rectum, intestinal decompression, and sigmoidostomy were performed. Histopathological conclusion (23.08.2019): moderately differentiated adenocarcinoma with invasion into the submucosal and muscular layers of the intestinal wall, without germination in the serous membrane and surrounding fat, in the lymph nodes — severe inflammatory reactive hyperplasia. Over the next 3 months, the patient received 4 courses of chemotherapy. 23.06.20, the patient complained about the presence of tumor in the perianal area, after further examination was diagnosed with recurrence of rectal cancer in the anal canal and soft tissues of the perineum. After appropriate preoperative preparation, the patient underwent removal of recurrent tumor within the unaltered tissues. Computed tomography findings (03.03.2021): the condition after resection of the rectum, functioning sigmoidostomy of the anterior abdominal wall on the left, presacral space diffusely infiltrated, signs of formation 51 × 63 × 73 mm in presacral area, with uneven contours and horizontal level of purulent and multiple gas bubbles; solid component on the inner wall of the dorsal right 35 × 25 × 25 mm, heterogeneous structure, with uneven accumulation of contrast, uneven hilly contours, which probably corresponds to recurrence with germination, osteolytic destruction of the coccyx, with signs of pathological fracture at S5 level (Fig. 1).

The general condition of the patient on admission was of moderate severity. Assessment of comorbidity — Charlson index 5 points. Karnofsky index 70–80%, Performance status — 1, ASA II. At additional examination: per anus — on the posterior wall behind the anal canal a tumor-like formation is palpated, rigid, with uneven, hilly contours, size 4–5 cm, immobile, fills the presacral space. At a palpation of terminal department of a sacrum the pain syndrome is expressed. Diagnosis: Cancer of the middle third of the rectum pT2N0M0G2C4 I st., II clinical group. Colostomy. Local recurrence with pathological fracture of the sacrum at S5 level.

In order to minimize intraoperative blood loss, surgery was performed using an electrosurgical device. Given the high risk of bleeding, surgery was provided with a sufficient amount of erythrocyte mass, cryoplasma, local and systemic hemostatic drugs, and surgical bone wax. The operation was performed under total intravenous anesthesia with controlled breathing. The patient is located on his back, tracheal intubation is performed, after which the

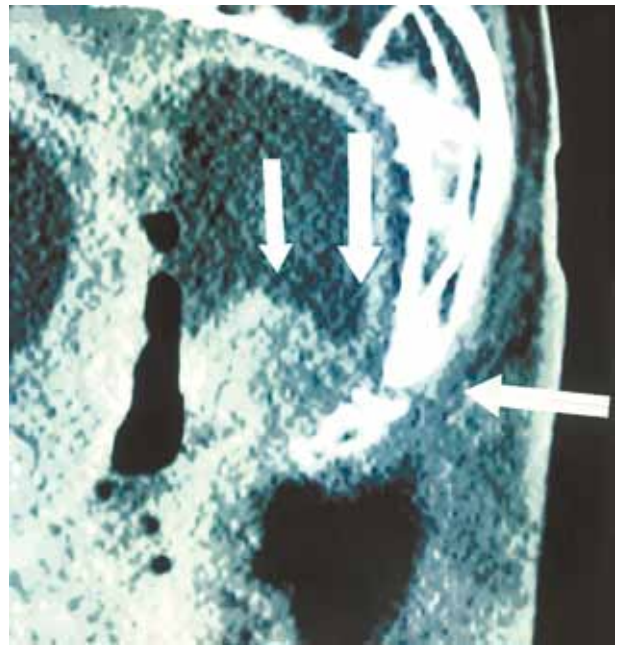


Fig. 1. CT scan of presacral area. The arrows show a recurrent tumor (arrows from above) and the area of pathological fracture (right arrow)

patient is rotated on prone position according to Depage. Parasacral access was performed (Kraske procedure), bypassing the anal canal. The soft tissue is separated to the level of the sacrum, the anococcygeal ligament, and the anal canal is mobilized. The sacrum at the level of S3–S5 is isolated from the surrounding tissues, the caudal segments of lig. sacrospinale and lig. sacrotuberale are partially cut. The anal canal, the stump of the rectum, together with the recurrent tumor and the coccygeal bones were completely mobilized within the unaltered tissues as a single block (en bloc) and remained fixed only by the sacrum. For the upper edge of the recurrent tumor, 1.5–2 cm higher, Gigli saw was inserted and the sacrum was crossed at the level of S4. Removal of a single block of local recurrence of rectal cancer with extirpation of the anal canal and stump of the rectum, resection of the sacrum at the level of S IV, coccygectomy was done (Fig. 2).

The stump of the sacrum is treated with surgical bone wax. Hemostasis is stable. The surgical wound was treated with antiseptics, tamponade with gauzes and drained with 2 PVC drains (Fig. 3). The wound was closed with its own tissues without moving the musculo-cutaneous flap. Intraoperative blood loss 20 ml. The duration of surgery was 100 minutes. Upon completion of surgery, the patient is re-rotated on the operating table in a supine position, extubated.

Histopathological examination: in soft tissues, areas of adenocarcinoma with common areas of necrosis; in the bone tissue, areas of destruction due to the pronounced desmoplastic reaction of the stroma (Fig. 4).

The patient is activated the next day after surgery. The early and distant postoperative period was complicated by the presence of dysuric disorders (urinary incontinence, feeling of incomplete bladder emptying). No complications from other organs and systems were observed. Extraction of drainages and tampon was per-



Fig. 2. Osteotomy of the sacrum at the level of S4 with Gigli saw



Fig. 3. The final stage of surgery. Drainage and tamponade of the residual cavity

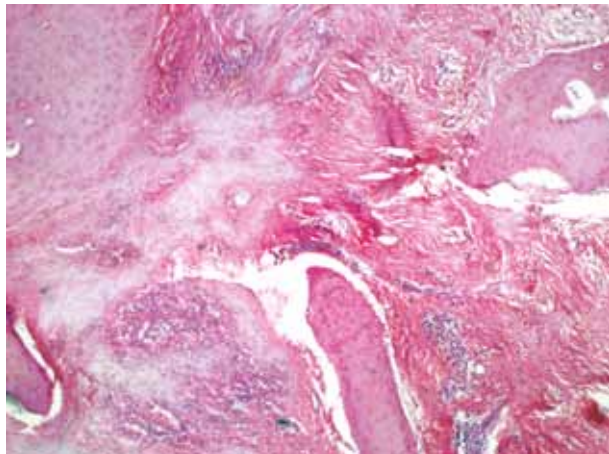


Fig. 4. Area of bone destruction. Uneven resorption of compact bone tissue and trabeculae, proliferation of histiocytes, fibroblasts, fibrocytes, focal infiltration by lymphocytes, plasma cells. (H&E, ×40)

formed on the 7th and 8th day of the postoperative period. Then patient was discharged from the hospital on the 8th day after surgery in satisfactory condition.

This clinical case demonstrates an extremely rare clinical manifestation of the recurrence of colorectal cancer with successful surgical treatment. En bloc distal sacrectomy for recurrent rectal cancer is safe surgery, provides significant improvement in local and general condition, and creates a favorable prognosis for the patient's survival. Careful preparation for surgical treatment

and sacrectomy makes it possible to avoid intraoperative complications and ensures early rehabilitation of the patient.

REFERENCES

1. Lee DJK, Sagar PM, Sadacharam G, Tan KY. Advances in surgical management for locally recurrent rectal cancer: How far have we come? *World J Gastroenterol* 2017; **23**: 4170–80. doi: 10.3748/wjg.v23.i23.4170
2. Hogan NM, Joyce MR. Surgical management of locally recurrent rectal cancer. *Int J Surg Oncol* 2012; **2012**: 464380. doi: 10.1155/2012/464380
3. Westberg K, Palmer G, Hjern F, *et al.* Population-based study of surgical treatment with and without tumour resection in patients with locally recurrent rectal cancer. *Br J Surg* 2019; **106**: 790–8. doi: 10.1002/bjs.11098
4. Tsarkov PV, Efetov SK, Tulina IA, *et al.* Sacral resection in surgical treatment of locally advanced primary and recurrent rectal and anal cancer: short-term outcomes. *Pirogov Rus J Surgery* 2017; **7**: 4–13 (in Russian). <https://doi.org/10.17116/hirurgia201774-13>
5. Melich G, Weber M, Stein B, *et al.* Total sacrectomy for recurrent rectal cancer — A case report featuring technical details and potential pitfall. *Int J Surg Case Rep* 2014; **5**: 403–7. doi: 10.1016/j.ijscr.2014.04.026
6. Bhangu A, Brown G, Akmal M, Tekkis P. Outcome of abdominosacral resection for locally advanced primary and recurrent rectal cancer. *Br J Surg* 2012; **99**: 1453–61. doi: 10.1002/bjs.8881
7. Bosman SJ, Vermeer TA, Dudink RL, *et al.* Abdominosacral resection: Long-term outcome in 86 patients with locally advanced or locally recurrent rectal cancer. *Eur J Surg Oncol* 2014; **40**: 699–705. doi: 10.1016/j.ejso.2014.02.233
8. Dozois EJ, Privitera A, Holubar DS, *et al.* High sacrectomy for locally recurrent rectal cancer: can long-term survival be achieved? *J Surg Oncol* 2011; **103**: 105–9. doi: 10.1002/jso.21774
9. Tsarkov PV, Efetov SK, Tulina IA, Sidorova LV. Technique of sacrectomy at the combined operations for locally advanced rectal cancer. *Russ Zh Gastroenterol Hepatol Coloproctol* 2016; **26**: 92–8 (in Russian). <https://doi.org/10.22416/1382-4376-2016-26-5-92-98>

ДИСТАЛЬНА РЕЗЕКЦІЯ КРИЖОВОЇ КІСТКИ З ПРИВОДУ РЕЦИДИВУ РАКУ ПРЯМОЇ КИШКИ

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Хірургічне лікування пацієнтів з рецидивними пухлинами прямої кишки є справжнім викликом для хірургів-онкологів. Через високий ризик інтраопераційних та післяопераційних ускладнень такі пухлини часто вважаються неоперабельними. Ми демонструємо клінічний випадок лікування 65-річного чоловіка з локальним рецидивом раку прямої кишки та патологічним переломом крижової кістки на рівні S5, якому було виконано дистальну резекцію крижової кістки з видаленням рецидивної пухлини єдиним блоком. Дистальна резекція крижової кістки з приводу рецидиву раку прямої кишки є безпечним методом хірургічного лікування, що забезпечує значне покращення локального та загального стану й сприятливий прогноз щодо виживаності пацієнтів, що і було продемонстровано в цьому клінічному випадку.

Ключові слова: дистальна сакректомія, рецидив раку прямої кишки, місцево-поширений рак прямої кишки.