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TRANSANAL ENDOSCOPIC RESECTION OF RECTAL NEOPLASMS

Based on a retrospective analysis of the treatment results of 23 patients of the coloproctology department of the Surgut District Clinical Hospital for the period from 2018 to 2021, the effectiveness of transanal endoscopic resection of rectal benign tumors was evaluated. The study found that the technique of transanal resection of large tumors of the rectum has a number of advantages in comparison with traditional approaches: preservation of the function of the rectal closure apparatus, a small number of postoperative complications and preservation of the patient's quality of life at a high level. The results of the study indicate the effectiveness of using the technique of transanal endoscopic surgery in patients with malignant rectal tumors. The feasibility study ensured the radical removal of the formations of the TisN0M0 and T1N0M0 stage with minimal invasiveness of the procedure and the absence of early signs of recurrence of the disease.

Keywords: rectum, benign tumors, transanal endoscopic resection, rectal cancer.

In recent decades, there has been an increase in the number of neoplasms of the digestive tract and, in particular, the colon. The proportion of them during screening studies can reach up to 32%. Especially important is the fact that in Eastern European countries the frequency of colorectal cancers cases in the structure of malignant neoplasms is at least 11.5% and occupies 42.6% among intestinal neoplasms [1-5]. The social significance of the problem of diagnosis and treatment of tumors of the digestive tract related with the fact that every year there is an increase in the number of colonic neoplasms among people younger than 55 years [4]. At the same time, the worst prognosis is associated with rectal neoplasms [5].

Biopsy of villous tumors of rectum makes it possible to detect malignancy focuses in them in 45% of the examined [1-13]. Therefore, the planning of surgical intervention should take into account the possibility of simultaneously obtaining a full-layer fragment of the rectal wall to obtain a reliable morphological analysis or the possibility of performing radical surgical intervention.

Removal of large villous neoplasms using traditional endoscopic techniques is impossible in some cases. For surgical treatment of neoplasms of the rectum, among others, the Mason (excision of the neoplasm transsphincterally) or Kraske (transcoccigeal) techniques were successfully used [11]. This was accompanied by a high level of complications - syndrome of chronic pelvic pain after coccygectomy, the formation of fistulas and anal incontinence [5, 11]. Various resection technologies are traditionally considered to be radical methods of treatment of rectal tumors. These interventions are associated with a high risk of intra- and post-operative complications, damage to the sphincters, and also often require the imposition of a permanent intestinal stoma. This leads to a violation of the patient's labor and social adaptation and sometimes disability [2-5].

The technique of transanal endoscopic microsurgery (transanal endoscopic microsurgery or operation - TEM, TEO) has been introduced into the clinical practice of Russian surgeons in recent decades. It was proposed by the German surgeon G. Buess in 1983 for the removal of epithelial neoplasms of the rectum [6, 7] To date, the TEO technique in large villous polyps and early non-invasive forms of rectal cancer treatment shows good results due to the development and improvement of surgical instruments and the development of a standardized approach to its implementation [1-13]. Nevertheless, the frequency of complications associated with transanal endoscopic intervention, according to large multicenter studies, ranges from 1.7% to 21,9% [1-4, 9, 11, 13].

In this regard, the study of the effectiveness of transanal endoscopic resection of rectal neoplasms is an up-to-date topic of scientific research.

Objective: to evaluate the effectiveness of transanal endoscopic resection of rectal neoplasms

Materials and methods. A retrospective analysis of the treatment results of 23 patients of the coloproctology department of the Surgut District Clinical Hospital for the period from 2018 to 2021 was performed. The inclusion criteria were the presence of a neoplasm in the rectum at a distance of up to 20 cm from the toothed line, with a size of more than 20 mm, a wide base or a prostrate type of neoplasm (Isp, Is, IIa types according to S.Kudo classification). There were 13 (56.5%) males and 10 (43.5%) females in the analyzed group. The average age of the patients in the study group was 58.4 ± 5.6 years.

Before hospitalization, all patients were examined, which included a survey, physical examination, analysis of clinical and biochemical parameters. The list of instrumental studies included colonoscopy with mandatory biopsy of the neoplasm, assessment of its location and size, as well as magnetic resonance imaging of the pelvic organs to exclude invasive growth.

Before surgery, all patients were assessed for their general condition according to the Charlson comorbidity index with the Deyo correction [8]. The average index in the group of surveyed was 4 (3;6).

According to the preoperative pathohistological study, tubulo-villous adenomas with low–grade intraepithelial neoplasia (IEN) were detected in 8 (34.8%) patients, with moderate IEN - in 10 (43.5%) people, with high–grade IEN - in 5 (21.7%) patients (Table 1).

In the study group, neoplasms located at a distance of up to 8 cm from the dentate line were detected in 12 (43.5%) patients, from 9 to 15 cm – in 9 (39.1%) patients. Formations proximal to 15 cm from the dentate line were detected in 2 (8.7%) people.

Localization of the neoplasm on the posterior wall of the rectum was observed in 14 (60.8%) patients, on the anterior –

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in 7 (30.4%) patients, on the lateral – in 2 (8.7%) people.

Antibiotic prophylaxis was carried out in all patients in accordance with the results of monitoring the sensitivity of the nosocomial flora. It was carried out by intravenous infusion of semisynthetic wide-spectrum antibiotics of the inhibitor-protected penicillins group - ampicillin + sulbactam at a dosage of 1.5 grams or amoxicillin + clavulanic acid at a dosage of 1.2 grams. The drug was injected intravenously to all patients once 30 minutes before the beginning of operation.

To date, there is no consensus among specialists performing transanal operations on the preparation of the intestine for surgery [10]. However, according to M Sailer et al., phosphate enemas improve visualization and contribute to a potential reduction in the risk of infection in the area of surgical intervention [12]. In the described group, preparation was carried out on the eve of the operation according to a single-stage scheme using preparations of polyethylene glycol (macrogol). Intraoperatively, such preparation of the intestine for surgical intervention was assessed by us as satisfactory.

The technique of transanal endoscopic surgery was described by Professor G. Buess in 1983 and has been revised over time in order to improve its effectiveness, as well as to modernize the equipment for its implementation.

Before the introduction of the rectoscope, the patient underwent a finger anus divulsion. The next stage was the introduction of an operational rectoscope with an obturator, taking into account the distance to the distal edge of the formation. After visualization, a needle-shaped monopolar electrode was used to mark the postoperative field, while the distance between the formation and the resection cream was at least 10 mm. Full-layer resection of the formation was performed using the Harmonic power system, additional hemostasis was carried out using a monopolar electrode. After the extraction of the drug, the postoperative wound was sutured with a absorbable monofilament material. There are publications in foreign literature about the absence of the need for suturing postoperative wounds that occupy less than 30% of the area of the intestinal lumen. However, this entails an increase in the risk of bleeding in the early postoperative period, and this method was not used by us during the study.

All 23 (100.0%) patients underwent transanal endoscopic removal of the tumor. The patient's position on the operating table was determined by the localization of the disease. With its location on the posterior semicircle, 14 (60.8%) people were operated in the position for stone cutting. When placed on the anterior semicircle in a position on the abdomen - 7 (30.4%) patients. With the lateral location of the formation - on the left side – 2 (8.7%) patients.

As an anesthetic aid, epidural anesthesia was used in 19 (82.6%) patients, endotracheal anesthesia – in 4 (17.4%). The average operation time was 65 (40;100) min. In the postoperative period, patients did not need to stay in the department of anesthesiology and intensive care. Therefore, after the stabilization of vital functions, patients were transferred to the coloproctology department.

The management of patients in the postoperative period was carried out according to the developed protocol for the management of patients after interventions on the colon and rectum. This protocol included, in addition to antibiotic prophylaxis and prevention of thromboembolic complications, refusal of prolonged use of the urinary catheter, early activation of patients and the start of eating per os on the first day after the intervention.

Morphological examination of the surgical material was carried out after cutting on a sledge microtome, sections 4-5 microns thick were prepared for paraffin sections. The staining of the preparations was carried out with hematoxylin – eosin. Microscopy of histological preparations

Table 1

Results of preoperative pathohistological examination (n=23)

Type of morphological structure	Abs, pers.	%
Tubulo-villous adenoma with low grade IEN	8	34.8
Tubulo-villous adenoma with moderate grade IEN	10	43.5
Tubulo-villous adenoma with high–grade IEN	5	21.7
Total	23	100.0

*IEN – intraeptive neoplasia

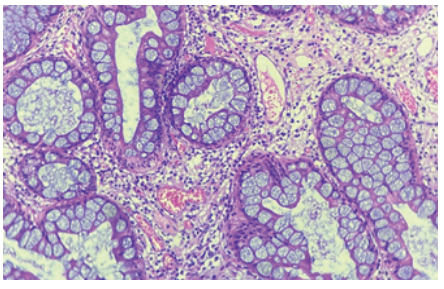

Fig. 1. Patient Sh., 59 years old. Tubulo-villous adenoma of the colon with low-grade intraepithelial neoplasia. Color: hematoxylin-eosin. X40

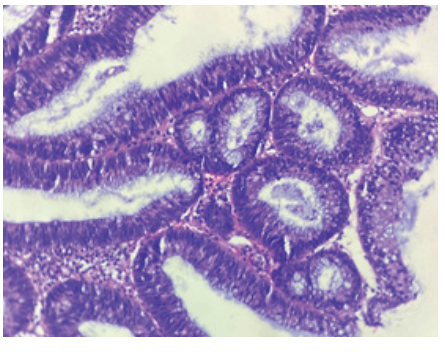

Fig. 2. Patient N., 66 years old. Tubulo-villous adenoma of the colon with moderate intraepithelial neoplasm. Color: hematoxylin-eosin. X40

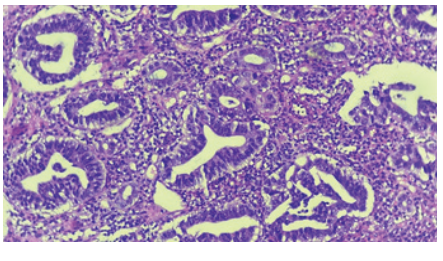

Fig. 3. Patient N., 62 years old. Tubulo-villous adenoma of the colon with intraepithelial neoplasia of high (high-grade)

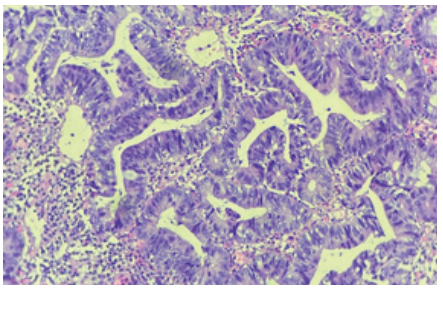

Fig. 4. Patient N., 67 years old. fragments of tuber-villous adenoma of the colon with morphological indicators of widespread glandular intraepithelial neoplasia of high degree (severe dysplasia, Cancer in situ) in several areas small foci of intramucosal adenocarcinoma Color: hematoxylin-eosin. X40.

Table 2

Distribution of TEO complications in the postoperative period (n=23)

Degree of complication according to the Clavien-Dindo	Abs., pers.	%
I degree	1	4.3
II degree	0	0.0
IIIa degree	0	0.0
IIIb degree	2	8.7
IVa degree	0	0.0
IVb degree	0	0.0
V degree	0	0.0
Total	3	13.0

was carried out at 10, 20, 40x magnification using a Zeiss Primo Star light microscope.

To assess the effectiveness of transanal endoscopic surgery, an analysis of the course of the early postoperative period, the degree of radicality of surgical intervention was performed. Descriptive statistical processing of the obtained results was performed by the standard statistical software package SPSS 21.0 for Windows and Microsoft Office Excel 2013.

Results and discussion. The appearance of active peristalsis in patients in the postoperative period was noted on 1 (1;2) day, the discharge of gases – on 1 (1;2) day. The appearance of an independent stool - on the 3rd (2nd; 4th) day after the operation.

In the study group, a complicated course was observed in 3 (13.0%) patients: 1 (4.3%) complication developed in the intraoperative period, 2 (8.7%) cases of postoperative complications. Intraoperative perforation of the rectal wall was noted in 1 (4.3%) patient with a large villous polyp located at a distance of 15 cm from the dentate line. This required emergency surgical intervention in the scope of laparotomy, loop sigmostomy.

In 1 (4.3%) patient in the postoperative period, bleeding developed from the site of removal of the formation of the rectum. Conservative therapy was prescribed to relieve the resulting complication, no surgical treatment was required. In 1 (4.3%) patient, sutures erupted in the area of the postoperative wound with retraction of the proximal edge of the flap of the rectal mucosa and the development of pelvic phlegmon. This complication was the reason for the opening of the phlegmon with perineal access, laparotomy and the imposition of a loop sigmostomy.

Table 3

The results of the final pathohistogical study (n=23)

Type of morphological structure	Abs., pers.	%
Highly differentiated adenocarcinoma in situ	3	13.0
Tubulo-villous adenoma with low grade IEN*	5	21.7
Tubulo-villous adenoma with moderate IEN*	8	34.8
Tubulo-villous adenoma with IEN* of high degree	7	30.4
Total	23	100.0

*IEN – intraeptive neoplasia

There were no fatal outcomes in the group of patients after transanal endoscopic operations. Table 2 shows the distribution of complications by Clavien-Dindo classification.

The duration of hospitalization in this group of patients was 7 (6;13) days, while with an uncomplicated course, the stay of patients was 7 (6;8) days and 11 (9;13) days in the presence of intra- and postoperative complications.

After discharge from the hospital, patients were observed by coloproctologist until the final result of a pathohistological examination of the removed tumor was obtained. When performing a video colonoscopy in the long–term postoperative period - after 6 months of discharge from the hospital - there was no recurrence of the disease at the site of localization of removed neoplasms. 12 months after the surgical intervention, when performing outpatient endoscopic examinations, polypoid formations up to 5 mm in size were detected and removed during biopsy in 2 (8.7%) patients of the observation group. According to the pathohistological examination of the removed neoplasias, signs of hyperplastic colon polyp were found in 1 (4.3%) patient, signs of granular inflammation and fibrosis were found in 1 (4.3%) patient.

In 3 (13.0%) observations in the removed preparation, signs of highly differentiated adenocarcinoma in situ and with the germination of the submucosal layer were revealed, which corresponds to the TisN0M0 and T1N0M0 stages according to the TNM classification. At the same time, there were no signs of malignant growth in the edges of the resection. This group of patients was referred for consultation by an oncologist. After examination, there were no signs of metastasis of malignant formations, and patients are observed by an oncologist in the III clinical group. 3 and 6 months after the surgical intervention, there was no recurrence of the disease.

The distribution of patients according to the histological structure of the removed formations is shown in Table 3, the coincidence of pre- and postoperative diagnoses was 78.3%.

The technique of transanal endoscopic surgery made it possible to successfully perform primary radical intervention in 3 (13.0%) at the initial stages of rectal cancer. At the same time, the complicated course of the intra- and postoperative period was noted in 3 (13.0%) patients.

Conclusion.

Thus, the technique of transanal endoscopic resection has proven itself in clinical practice as an effective way of treating epithelial benign neoplasms of the rectum. The feasibility study has a number of advantages over traditional open surgical interventions and methods of endoscopic removal of rectal formations: preserving the function of the rectal closure apparatus, a small number of postoperative complications and ensuring the patient's quality of life at a high level.

According to modern scientific publications, the five-year survival rate of patients with rectal cancer after transanal endoscopic surgery is 90%. The results of the study indicate the effectiveness of the application of the technique of transanal endoscopic surgery in patients with malignant tumors of the rectum. The feasibility study ensured the radical removal of the formations of the TisN0M0 and T1N0M0 stages with minimal invasiveness of the procedure and the absence of early signs of recurrence of the disease.

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RENAL CANCER RESECTION WITH TARGETED BALLOON CHEMOEMBOLIZATION

The purpose of the study was to evaluate the content of endothelial vascular growth factor in the tissues of the kidney parenchyma, in the thickness of the tumor and in the blood serum of a patient during partial nephrectomy with intra-arterial administration of an anti-angiogenic drug.

Materials and research methods. The present study was carried out on the basis of an analysis of the results of surgical treatment of patients with kidney cancer. 8 patients with renal cell carcinoma in stage T 1 a N 0 M 0 organ-preserving surgery was performed in the amount of kidney resection with intra-arterial injection of the targeted drug Bevacizumab into the kidney artery. The concentration of vascular growth factor in the tumor, in the renal parenchyma, and in venous blood from the kidney was studied before the renal artery was clamped, during renal ischemia, and after the injection of Bevacizumab into the renal artery.

Results and discussion. With a sudden cessation of blood flow, the tumor releases the amount of vascular growth factor several times higher than the initial values: an increase in the concentration in the thickness of the tumor by 3 times, in the kidney parenchyma - 1.5 times, and in the venous blood - 3.5 times higher than before ischemia. Inactivation of the growth factor by the targeted drug caused a decrease in its level in the tumor tissue by 25%, in the kidney parenchyma by 10% and in the blood serum by 85.35%.

Conclusion. Intraoperative administration of a targeted drug at the time of acute tumor ischemia irreversibly binds the vascular growth factor released during hypoxia, and thus prevents neoangiogenesis in potential metastatic foci.

Keywords: kidney cancer, vascular endothelial growth factor, kidney resection.

Introduction. The discovery of the mechanisms of oncoangiogenesis has led to the creation of new approaches in the treatment of malignant neoplasms. Targeted drugs have firmly entered the routine practice of pharmacotherapy for various types of cancer. Various combinations of targeted and chemotherapy show ambiguous results, which encourages the search for new, non-trivial solutions in the fight against oncology. With regards to renal cell carcinoma, the situation is exacerbated by the peculiarities of the pathogenesis of kidney cancer. There is a lot of evidence in the literature of aggressive metastasis of kidney cancer - up to 30% of all newly diagnosed patients at the time of diagnosis have metastatic lesions of varying severity [2, 4, 10], and, despite the radical nature of the operation performed, these metastases progress to 20-40% of cases of all operations [1, 7]. Such an aggressive course of the disease requires systemic postoperative therapy [3]. In addition, after organ-preserving surgery, a third of patients may experience a relapse [8].

Thus, the treatment of renal cell carcinoma is a complex, completely unresolved problem of both surgical treatment and conservative therapy, since long-term targeted therapy has numerous side effects [9], affecting a wide variety of organs and systems. In some cases, these side effects can lead to death [5].

The threat of activation of kidney cancer metastases or tumor recurrence led to the invention of a new combined method of surgical treatment of malignant tumors of the renal parenchyma [6], which provides additional anti-relapse and antimetastatic protection of the body in organ-preserving surgical treatment of kidney cancer. It is well known that during acute ischemia, a cancerous tumor secretes special biologically active substances that promote the growth of additional vessels to improve the blood supply to the ischemic tumor. The group of these substances includes vascular endothelial growth factor (VEGF), which has the most active effect on neoangiogenesis. In this regard, substances were synthesized that inactivate VEGF by irrevers-

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