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OPTIMIZATION OF SURGICAL STRATEGY FOR COMPLEX PARARECTAL FISTULAS: CLINICAL AND FUNCTIONAL RESULTS

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Abstract. A retrospective analysis of 248 patients with complex pararectal fistulas operated on from 2018 to 2024 was conducted. Patients were divided into three groups depending on the surgical technique used: traditional fistula excision with sphincter suturing, use of ligature method, and application of plastic techniques with flap transposition. The best results were obtained using a differentiated approach to choosing the operation method, taking into account the location of the internal opening of the fistula, the degree of involvement of the sphincter apparatus, and the presence of cicatricial changes. The recurrence rate was 8.3% when using plastic techniques versus 24.7% with traditional excision. Functional results were assessed using the Wexner scale: the average score was 3.2±1.1 for plastic surgeries and 7.8±2.3 for traditional excision.

Keywords: pararectal fistula, surgical treatment, plastic surgery, sphincter-preserving techniques, functional outcomes, recurrence.

Introduction. The problem of surgical treatment of complex pararectal fistulas remains one of the most relevant issues in modern coloproctology. According to various authors, the incidence of pararectal fistulas ranges from 0.01% to 0.03% in the general population, with complex fistulas accounting for up to 40% of all cases. The complexity of surgical treatment of this pathology is due to the anatomical features of fistulous tracts, high risk of disease recurrence, and the possibility of developing anal sphincter insufficiency after surgery.

Despite the variety of proposed surgical treatment methods, the results remain unsatisfactory. The recurrence rate after surgical treatment, according to different authors, ranges from 5% to 35%, and the incidence of anal sphincter insufficiency reaches 45% with traditional fistula excision methods. These data indicate the need for further improvement of surgical tactics in treating this category of patients.

Complex pararectal fistulas include transsphincteric fistulas with high location of the internal opening, extrasphincteric fistulas, horseshoe fistulas, recurrent fistulas, as well as fistulas with multiple external openings and purulent extensions. The main problem in treating such fistulas lies in the need for radical excision of all fistulous tracts while preserving anal sphincter function.

Currently, there are many methods of surgical treatment for pararectal fistulas, including traditional fistula excision into the intestinal lumen, ligature method, various options for plastic operations using flaps of rectal mucosa, submucosal layer, or perianal skin. However, the question of choosing the optimal operation method depending on the anatomical features of the fistula remains debatable.

The study of factors affecting the results of surgical treatment, including the location of the internal opening of the fistula, the degree of involvement of the sphincter apparatus, the presence of cicatricial changes, and concomitant pathology of the rectum and anal canal, becomes particularly relevant. Understanding these factors will allow for the development of a differentiated approach to choosing the method of surgical intervention and improving treatment outcomes.

The objective of this study was to examine the features of surgical treatment of complex pararectal fistulas and develop a differentiated approach to choosing the method of surgical intervention to improve immediate and long-term treatment outcomes.

Materials and Methods. A retrospective analysis of the results of surgical treatment of 248 patients with complex pararectal fistulas who were treated at the Department of Coloproctology of Samarkand State Medical University from 2018 to 2024 was conducted. Inclusion criteria for the study were: presence of transsphincteric fistula with high location of the internal opening, extrasphincteric fistulas, horseshoe fistulas, recurrent fistulas, fistulas with multiple external openings, patient age from 18 to 75 years, informed consent to participate in the study.

Exclusion criteria included: intersphincteric fistulas, fistulas caused by specific diseases, oncological diseases of the rectum and anal canal, severe somatic diseases in the stage of decompensation, patient refusal to participate in the study. Among the examined patients, there were 186 men and 62 women. Patient age ranged from 22 to 72 years, with a mean age of 41.3±8.7 years.

All patients underwent comprehensive examination, including general clinical research methods, digital rectal examination, anoscopy, rectosigmoidoscopy, fistulography, ultrasonography using an endorectal probe, and magnetic resonance imaging of the pelvis as indicated. During physical examination, the number and location of external fistulous openings, presence of infiltration and cicatricial changes in the perirectal tissue, and condition of the perianal skin were assessed.

The functional state of the anal sphincter was assessed using anorectal manometry before surgery and in the long-term postoperative period. Resting pressure and voluntary contraction pressure in the anal canal were measured. The Wexner scale was used to assess the degree of anal incontinence, which takes into account incontinence of gas, liquid and solid stool, the need to wear pads, and the degree of lifestyle change. Assessment was carried out on a five-point scale for each parameter, with a maximum possible score of 20, corresponding to complete incontinence.

Table 1

Distribution of patients by type of pararectal fistulas

Type of fistula	Number	%
High transsphincteric	127	51.2
Extrasphincteric	68	27.4
Horseshoe	38	15.3
Recurrent	15	6.0
Total	**248**	**100.0**

Depending on the surgical treatment method used, all patients were divided into three groups. The first group consisted of 89 patients who underwent traditional fistula excision into the rectum lumen with suturing of the sphincter wound. The second group included 76 patients who underwent ligature method treatment with gradual cutting through and dissection of part of the sphincter. The third group consisted of 83 patients who underwent various options of plastic operations with flap transposition.

Indications for traditional fistula excision included transsphincteric fistulas involving less than one-third of the external sphincter thickness and absence of marked cicatricial changes in the area of the internal opening of the fistula. The ligature method was used for transsphincteric fistulas involving from one-third to half of the external sphincter thickness, as well as when one-stage fistula excision was impossible without significant sphincter damage. Plastic operations were performed for extrasphincteric fistulas, high transsphincteric fistulas involving more than half of the external sphincter thickness, horseshoe fistulas, and recurrent fistulas.

Table 2

Distribution of patients by groups according to surgical treatment method

Treatment method	Number	%
Traditional fistula excision	89	35.9
Ligature method	76	30.6
Plastic operations	83	33.5

Total	**248**	**100.0**

Statistical processing of study results was performed using SPSS version 23.0 software. The Kolmogorov-Smirnov test was used to assess normality of distribution. With normal distribution, data are presented as mean values and standard deviations. Student's t-test was used to compare quantitative indicators, and chi-square test was applied for qualitative indicators. Differences were considered statistically significant at $p<0.05$.

Results and Discussion. Analysis of immediate results of surgical treatment showed that the average operation duration in the first group was 38.2±7.4 minutes, in the second group 41.5±8.1 minutes, and in the third group 67.3±12.6 minutes. Thus, plastic operations required more time to perform, which is associated with the technical complexity of flap mobilization and transposition. Intraoperative blood loss in all groups was insignificant and did not require blood transfusion.

Pain syndrome in the early postoperative period was assessed using the visual analog scale in points from 0 to 10. The lowest intensity of pain syndrome was noted in the third group and amounted to 4.1±1.2 points on the first day after surgery, in the first group this indicator was maximal and amounted to 6.8±1.5 points, in the second group 5.4±1.3 points. By the fifth day of the postoperative period, the intensity of pain syndrome in all groups significantly decreased and amounted to 2.3±0.8, 1.7±0.6, and 1.2±0.5 points, respectively.

The average hospital stay in the first group was 8.4±2.1 days, in the second group 9.2±2.3 days, and in the third group 7.6±1.8 days. The longer stay of patients in the second group in the hospital was due to the need for periodic dressings and gradual tightening of the ligature. In the third group, despite the greater traumatic nature of the operation, hospitalization periods were minimal, which is associated with primary healing of the postoperative wound when using plastic techniques.

Postoperative complications developed in 31 patients, which accounted for 12.5% of the total number of operated patients. The structure of complications was dominated by postoperative wound suppuration, which was noted in 18 patients, bleeding in the early postoperative period in 7 patients, and acute urinary retention in 6 patients. In the first group, the complication rate was 16.9%, in the second group 13.2%, and in the third group 7.2%. A statistically significant difference in complication rates was noted between the first and third groups.

Table 3

Immediate results of surgical treatment

Parameter	Group 1 (n=89)	Group 2 (n=76)	Group 3 (n=83)
Operation duration, min	38.2±7.4	41.5±8.1	67.3±12.6

Pain score day 1, points	6.8±1.5	5.4±1.3	4.1±1.2
Hospital stay, days	8.4±2.1	9.2±2.3	7.6±1.8
Complication rate, %	16.9	13.2	7.2

Long-term treatment results were followed in 237 patients for periods ranging from 12 to 72 months, with an average follow-up period of 38.4±14.7 months. The main criteria for evaluating long-term results were the recurrence rate and functional state of the anal sphincter. Disease recurrence was diagnosed when clinical signs of pararectal fistula appeared: presence of a fistulous opening on the skin of the perianal area with purulent or mucous discharge, instrumental examination data confirming the presence of a fistulous tract.

The recurrence rate in the first group was 22 cases out of 89, which accounted for 24.7%. In the second group, recurrence was noted in 11 patients out of 76, which accounted for 14.5%. In the third group, recurrence developed in only 7 patients out of 83, with a recurrence rate of 8.4%. Differences in recurrence rates between all groups were statistically significant. The main causes of recurrence in the first group were incomplete excision of the fistulous tract and postoperative wound suppuration with secondary fistula formation. In the second group, causes of recurrence were too rapid cutting through of the ligature without sufficient tissue fibrosis, as well as incomplete drainage of purulent extensions. In the third group, recurrences were associated with technical errors during plastic surgery: insufficient flap mobilization, suture tension, and flap necrosis.

Table 4

Recurrence rate in the long-term period

Group	Number of recurrences	Rate, %
Group 1 (n=89)	22	24.7
Group 2 (n=76)	11	14.5
Group 3 (n=83)	7	8.4

Assessment of the functional state of the anal sphincter was carried out 6 and 12 months after surgery. According to anorectal manometry data, resting pressure in the anal canal before surgery did not differ significantly in all groups and averaged 68.4±12.3 mm Hg. In the first group, 12 months after surgery, this indicator was 52.7±9.8 mm Hg, which is 23.0% lower than the baseline level. In the second group, resting pressure was 58.3±10.4 mm Hg, a decrease of 14.8%. In the third group, resting pressure practically did not change and amounted to 65.1±11.2 mm Hg, a decrease of only 4.8%.

Voluntary contraction pressure before surgery averaged 142.6±18.7 mm Hg. Twelve months after surgery, in the first group this indicator decreased to 98.4±16.3 mm Hg, in the second group to 112.7±17.8 mm Hg, and in the third group to 131.2±18.1 mm Hg. Thus, the greatest decrease in functional indicators was noted in the first group, and the smallest in the third group.

Clinical assessment of continence function was performed using the Wexner scale. Before surgery, most patients had normal or minimally impaired continence function, with an average Wexner scale score of 1.2±0.8. Twelve months after surgery, the average score in the first group was 7.8±2.3, in the second group 5.1±1.7, and in the third group 3.2±1.1. Moreover, a moderate degree of anal sphincter insufficiency was noted in 34.8% of patients in the first group, 18.4% in the second group, and 7.2% in the third group.

Table 5

Functional results according to Wexner scale at 12 months

Group	Score before surgery	Score at 12 months
Group 1 (n=89)	1.2±0.8	7.8±2.3
Group 2 (n=76)	1.2±0.8	5.1±1.7
Group 3 (n=83)	1.2±0.8	3.2±1.1

The obtained results demonstrate the advantages of using plastic techniques in the surgical treatment of complex pararectal fistulas. The main advantages of these techniques are: the possibility of radical excision of the fistulous tract without damage to the sphincter apparatus, closure of the internal opening of the fistula by transposing well-vascularized flaps, creation of conditions for primary healing of the postoperative wound, and preservation of anal sphincter function.

The main technical principles of performing plastic operations are: careful mobilization of the flap over a sufficient length to move it without tension, preservation of adequate flap vascularization, excision of cicatricial tissues in the area of the internal opening of the fistula, hermetic suturing of the internal opening of the fistula, and use of atraumatic long-absorption suture material. Adherence to these principles minimizes the risk of complications and achieves good functional results.

When choosing a surgical treatment method, it is necessary to consider the anatomical features of the fistula, the degree of involvement of the sphincter apparatus, the presence of cicatricial changes, the patient's general condition, and concomitant pathology. A differentiated approach to choosing the operation method, taking these factors into account, allows achieving optimal treatment results.

Conclusions

Complex pararectal fistulas represent a relevant problem in modern coloproctology, requiring the application of a differentiated approach to

choosing the surgical treatment method. The structure of complex fistulas is dominated by transsphincteric fistulas with high location of the internal opening, accounting for 51.2% of all cases.

The use of plastic techniques in the surgical treatment of complex pararectal fistulas significantly reduces the disease recurrence rate compared to traditional fistula excision. The recurrence rate when using plastic techniques is 8.4% versus 24.7% with traditional excision.

Plastic operations provide better functional treatment results compared to traditional methods. The average Wexner scale score 12 months after surgery is 3.2±1.1 for plastic operations and 7.8±2.3 for traditional fistula excision.

The main indications for the use of plastic techniques are extrasphincteric fistulas, high transsphincteric fistulas involving more than half the thickness of the external sphincter, horseshoe fistulas, and recurrent fistulas. Traditional fistula excision can be used for transsphincteric fistulas involving less than one-third of the external sphincter thickness.

Adherence to technical principles of performing plastic operations, including careful flap mobilization, preservation of its vascularization, excision of cicatricial tissues, and hermetic suturing of the internal opening of the fistula, is a mandatory condition for achieving good treatment results.

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