

Surgical treatment of patients with postoperative perianal scar deformities and concurrent rectal fistulas

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Perianal scar deformity is referred to as a scar or deformity in the perianal area, with or without extension to the anal canal. It frequently occurs after surgical treatment for acute purulent necrotic diseases and is associated with the formation of fistulas in the scar.

OBJECTIVE — to evaluate the experience of the proctology department in the treatment of postoperative perianal scar deformities and concurrent rectal fistulas using one-stage combined plastic surgery.

MATERIALS AND METHODS. A prospective, non-randomized study was carried out at the proctology department of the Kyiv City Clinical Hospital No. 18 to evaluate the treatment outcomes for postoperative perianal scar deformities and concurrent fistulas in the scar using one-stage combined plastic surgery. A total of 34 patients were treated from January 2021 to February 2023, with an average age of 41.85 ± 7.81 years. All patients had a history of surgical treatment of purulent-necrotic perineal diseases. The observation period ranged from 1 to 6 months. Preoperative and postoperative data were collected to analyze the duration of surgery, the incidence of complications, the duration of hospitalization and rehabilitation.

RESULTS. All 34 patients underwent one-stage combined plastic surgery, which included a combination of anoplasty or sphincteroplasty and flap plastic surgery. The size of the scar deformity was important when choosing a wound closure method, as 3 (8.82%) patients had a small lesion (up to 2 cm²), 20 (58.82%) had a moderate lesion (from 2 to 6 cm²), and 11 (32.36%) had a widespread lesion of the perianal area (more than 6 cm²). The type of rectal fistula was also taken into account: a simple fistula was observed in 26 (76.47%) patients, and a complex fistula in 8 (23.53%). The average duration of the operation was 90.41 ± 13.48 min, and the patient's hospitalization period was 5.88 ± 1.41 days. Postoperative complications were observed in 3 patients (8.82%).

CONCLUSIONS. Our findings demonstrate that, in the majority of patients, a single-stage excision of postoperative perianal scar deformities and concurrent fistulas combined with skin grafting allows for the preservation of normal anal function and satisfactory cosmetic and functional outcomes.

Keywords

anal stenosis, anorectal flap procedures, rectal fistula, perianal scar deformation, skin flap plastic.

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Perianal sepsis is a common disease that ranges from acute purulent necrotizing disease of the skin and subcutaneous fat to chronic rectal fistula. In most cases, the source is considered to be a nonspecific cryptogenic infection that starts in the intersphincteric space. The main method of treatment is surgery [2]. Despite the wide range of treatment methods, surgeons still face severe consequences from this group of diseases. One of them is the formation of postoperative scar deformity of the perianal area and the recurrence of fistulas in the scar.

Postoperative scar deformity should be understood as the presence of a scar or deformity in the perianal area with or without extension to the anal canal. Although the prevalence of this pathology in the population, and even more so their combinations, is insignificant, treatment is a rather difficult and controversial task for clinicians [2, 5]. The main reasons for this problem are the significant extent of scar spread, difficulty in differentiating adjacent structures, difficulty in closing the wound defect, and the optimal choice of the plastic method [19].

In addition, complete treatment of the fistula with all its courses is extremely important. Failure to take into account at least one of these points when planning the scope of the operation can lead to serious complications in the form of early fistula recurrence, anal incontinence of varying degrees of severity, and increased anorectal deformity.

The next point is the choice of method of skin flap plastic surgery for the scar deformity of the ano-perianal area. A fairly large number of them have been described, but clinicians do not make an unambiguous choice: Y-V anoplasty, Diamond-shaped flap, House flap, and rotational S-shaped flap [1, 7, 11]. However, none of them is universal, and sometimes they cannot solve the problem of closing a wound defect.

OBJECTIVE – to evaluate the experience of the proctology department in the treatment of postoperative perianal scar deformities and concurrent rectal fistulas using one-stage combined plastic surgery.

Materials and methods

The study was conducted at the Department of Surgery No. 1 on the basis of the Proctology Department of the Kyiv City Clinical Hospital No. 18. It involved 34 patients who underwent one-stage combined surgical treatment. Of these, 23 (67.6%) were men and 11 (32.4%) were women. The average age of the patients was 41.85 ± 7.81 years. The type of fistula and the area of scar deformity were also taken into account.

All the patients studied had fistulas involving the sphincteric apparatus. According to their characteristics, they were divided into simple and complex categories. According to the ASCRS guidelines [3, 18] for the treatment of perianal abscess and fistula in the anus:

- «simple» fistulas are intersphincteric or low-transfixed fistulas covering less than 30% of the external sphincter;
- «complex» fistulas are those with greater muscle involvement and/or anterior fistulas in women, as well as recurrent fistulas and fistulas associated with previous fecal incontinence, inflammatory bowel disease, or radiation.

Garg suggests a more contemporary and versatile classification. According to it, fistulas are classified into five classes. The first two classes, I and II, are low fistulas involving less than a third of the external sphincter and are characterized as simple fistulas. Classes III-V are high fistulas involving more than a third of the external sphincter and are classified as complex fistulas. In other words, fistulas that can be safely (without risk of incontinence) treated with

fistulotomy are classified as simple fistulas. Fistulas that cannot be successfully and safely treated with fistulotomy are classified as complex fistulas [6, 15, 17].

To determine the size of the scar deformity, we used a specially developed device and methodology, which are currently under patent.

The detailed characteristics of the patients are shown in Table 1.

The preoperative examination was performed according to the local clinical protocol and European guidelines and included general clinical examinations, pelvic magnetic resonance imaging, fistulography if MRI was not possible, rectomanoscopy, and anoscopy [16]. For the purpose of preoperative bowel preparation, all patients received oral polyethylene glycol. Anaesthesia methods included spinal anaesthesia and, if necessary, combined intravenous and spinal anaesthesia. The surgical position was lithotomy.

Operation progress

The first stage of the operation was the revision of the anal canal and contrast of the fistula in order to determine the causative crypt, contrast of the capsule, and additional fistula passages (Fig. 1).

The second stage involved the excision of the cicatricial deformity together with the fistula and its contrasting elements.

The third stage was sphincteroplasty and anoplasty (Fig. 2). The features of the procedure are as follows:

- 1) absorbable polyfilament material (Vicryl) of size 2.0 was used for sphincter suturing;
- 2) suturing was performed with separated intermittent sutures to reduce ischemia;
- 3) the anoplasty stage was performed separately according to the same principle.

Table 1. **Patient characteristics (n = 34)**

Indicator	Value
Age, years	41.85 ± 7.81
Men	23 (67.6%)
Women	11 (32.4%)
Type of fistula	
Simple	26 (76.5%)
Complex	8 (23.5%)
Area of scar deformity, cm ²	
< 2	3 (8.8%)
2–6	20 (58.8%)
> 6	11 (32.4%)

Note. Quantitative data are presented as mean and standard deviation.

The fourth stage of surgery was to determine the size of the skin flap and its subsequent mobilization, along with an assessment of its viability.

The fifth stage was fixation of the skin flap to the edges of the wound defect (Fig. 3).

The peculiarities of the procedure are as follows:

1) for the fixation of the flap, a non-absorbable nylon material of size 3.0 was used;

2) suturing was performed with separated intermittent sutures to reduce ischemia, for additional drainage of exudate in the postoperative period, if necessary, and to reduce the load on the flap.

The time of surgery, length of hospital stay, and postoperative complications were recorded. Patients underwent routine clinical and proctologic examinations at outpatient stages 2, 4, and 12 weeks after surgery (Fig. 4). Subsequently, regular examinations were performed at the patient's request. After 6 months, patients were contacted by phone and invited for a final examination.

Results

Over the past two years, we have performed one-stage combined plastic surgery on 34 patients (23 (67.6%) men and 11 (32.4%) women) with this pathology. The average age was 41.85 ± 7.81 .

The average time of surgical intervention was 90.41 ± 13.48 min, and the volume of blood loss was 59.47 ± 15.58 ml, which corresponds to the average data reported in the literature.

In the postoperative period, patients underwent antibiotic prophylaxis in the form of intravenous injections of ceftriaxone 1 g twice a day for 3 days. The perineal pain was maximal on the first postoperative day and decreased until the 5th postoperative day. For pain relief, intramuscular injections of non-steroidal anti-inflammatory drugs were used in the hospital and later in peroral forms as needed. Patients also underwent dressings 4 times a day with hypertonic solutions for 4–5 days, and then 2–3 times a day with Betadine solutions.



Figure 1. **Assessment of fistula and scar deformity with subsequent contrast**



Figure 2. **Sphincteroplasty and anoplasty were performed in preparation for flap surgery**



Figure 3. **Condition after flap surgery (intraoperative)**



Figure 4. **Status at the 4th week of follow-up**

Most patients reported excessive discharge of fluid from the postoperative wound site or anus up to 7–12 postoperative days. Symptoms of anal incontinence were observed in 3 (8.82 %) patients and persisted during the first month, but there were no such symptoms or complaints until the third postoperative month.

It should be noted that during their stay in the hospital, all patients received cleansing enemas 1–2 times a day; after discharge, they had to follow a high-slag diet (with an increased fiber content).

The duration of the hospital stay was 5.88 ± 1.41 days.

Postoperative complications developed in 3 (8.82 %) patients: in 1 (2.94 %) patient, wound edge divergence due to the use of small monofilament non-absorbable suture material (less than 3.0 and 4.0), and in 2 (5.88 %) patients, skin graft death due to violation of medical recommendations.

Sutures were removed on postoperative days 12–14. Thirty-four patients (100 %) completed the planned follow-up within 3 months and 28 (82.35 %) within 6 months.

The median area of scar deformity before surgery and after 1 and 3 months was 5.53 ± 2.64 cm², 4.91 ± 2.34 cm², 3.88 ± 1.81 cm², respectively, and was statistically significant ($p = 0.014$).

Table 2 shows the results of the surgical intervention and the postoperative period.

Table 2. **Surgery results (n = 34)**

Indicator	Value
Operation time, min	90.41 ± 13.48
Blood loss, ml	59.47 ± 15.58
Pain scale (0–10 points)	
1	5.06 ± 1.65
5	1.06 ± 0.89
Hospitalization period, days	5.88 ± 1.41
Postoperative complications	3 (8.8 %)
Average area of scar deformation, cm ²	
Before the operation	5.53 ± 2.64
1 month	4.91 ± 2.34
3 months	3.88 ± 1.81
Presence of anal incontinence	
Before the operation	5 (14.7 %)
1 month	3 (8.8 %)
3 months	0

Note. Quantitative data are presented as mean and standard deviation

Discussion

Postoperative perianal scar deformity causes discomfort to the patient and is considered a serious postoperative complication, as evidenced by many pieces of literature [9]. According to the patient's quality of life assessment (GIQLI), the quality of life before surgery is significantly lower [4]. And the combination of this pathology with a rectal fistula is even more alarming due to the low variability of the described treatment methods. Despite a fairly significant arsenal of both minimally invasive (insertion of a fistula plug, injection of glue or paste, VAAFT, etc.) and open methods of treating rectal fistula alone, surgeons often experience treatment failures. In a retrospective analysis by Jeremy Sugrue et al., it is described that the use of flap repair in the treatment of the latter showed good results, but the issue still remains controversial [11]. An important point for us was the risk of developing anal incontinence. For example, after an open fistula excision technique, the risk of its occurrence ranges from 0 to 64 % [9]. In our case, symptoms of anal incontinence were observed in only 3 (8.82 %) patients out of 34 during the first postoperative month and resolved on their own by the 3rd postoperative month without any correction.

Since we deal with a combined pathology, we tried to find information on such interventions. After analyzing the literature data in the PubMed database over the past 15 years, we found only two clinical cases regarding the treatment of postoperative scarring of the perianal and fistula deformities. It should also be noted that most authors consider only anal stenosis and do not take into account patients with perianal deformities without sphincteric dysfunction. We believe that this is a rather serious omission. First of all, because of possible cases of skin flap failure and early recurrence [14]. That is why we performed the primary sphincter reconstruction simultaneously with anoplasty and plastic surgery of the postoperative defect using a skin flap after excision of the scar deformity and fistula.

When using flap techniques, it is important to select and model them. Most authors rely on Khubchandani's classification of anal stenosis [8]. However, it was not convenient for us to use. We relied on the area of scar deformity, which, in our opinion, is a more optimal and reasonable approach for better preliminary modelling of the size of the displaced skin flap.

There is currently no universal solution for flap plastics for various perineal pathologies [5, 10]. The use of a rotational S-flap is associated with a sizable wound surface, the possibility of the flap losing viability, and consequently, the length of patient hospitalization and rehabilitation. House-flap, Diamant-flap, YV, and VY have shown better results in

terms of a shorter rehabilitation period and better functional and cosmetic results [4, 13]. However, it should be noted that these types of plastic surgery were used exclusively for one of the above pathologies. Since we were dealing with a combined pathology of varying severity, the choice of the type of flap plastic surgery primarily depended on the wound defect. Taking into account the need to excise the fistula with its elements and the completely scarred deformity, the area of the wound defect can be quite significant. That is why we consider it inappropriate to compare the duration of surgical intervention, rehabilitation, and hospitalization of patients with monopathology and combined pathology.

At the same time, it is important to compare postoperative complications in the form of ischemia or skin flap death, postoperative wound suppuration, and wound edge separation. Thus, we observed in 2 patients the necrosis of the skin flap (5.88%) and in 1 patient the separation of the edges of the postoperative wound at the skin level (2.94%). Similar results were obtained by Farid M: in house-flap plasty, complications occurred in 1 (5%) patient out of 20; in Rhomboid flap plasty, complications occurred in 4 (20%) patients out of 20; and in Y-V plasty, complications occurred in 4 (20%) patients out of 20 [4, 12].

As a result, the analysis of the literature demonstrates that there is a lack of understanding regarding the issue of selecting a surgical treatment method for postoperative perianal scar deformities and concurrent chronic fistulas. Our method of one-stage combined surgical intervention with flap plastic surgery showed good results but requires further observation, improvement, and study.

Conclusions

Our findings demonstrate that a single-stage excision of postoperative perianal scar deformities and concurrent fistulas combined with skin grafting is a promising treatment strategy. This technique allows for the preservation of normal anal function and satisfactory cosmetic and functional outcomes. However, further randomized controlled trials are required to fully confirm the results of our research.

DECLARATION OF INTERESTS

The author declares no conflicts of interest.

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ETHICS APPROVAL AND WRITTEN INFORMED CONSENTS STATEMENTS

All procedures performed in the study and involving human participants were carried out in accordance with the ethical standards of the institutional and/or national research

committee, 1964 Helsinki declaration and its later amendments or comparable ethical standards. Written informed consent was obtained from all individual participants included in the study.

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Метод хірургічного лікування пацієнтів із післяопераційними рубцевими деформаціями періанальної ділянки у поєднанні із норицями прямої кишки

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Періанальна рубцева деформація — це наявність рубця чи деформації в періанальній ділянці з/без поширення на анальний канал. Часто вона формується після хірургічного лікування гострих гнійно-некротичних захворювань та супроводжується формуванням нориць у рубці.

Мета — оцінити досвід проктологічного відділення в лікуванні післяопераційної рубцевої деформації періанальної ділянки у поєднанні з норицею з використанням одномоментної комбінованої пластики.

Матеріали та методи. Проведено проспективне нерандомізоване дослідження результатів лікування післяопераційної періанальної рубцевої деформації з норицею в рубці в проктологічному відділенні Київської міської клінічної лікарні № 18 з використанням одномоментної комбінованої пластики. У період із січня 2021 р. до лютого 2023 р. проліковано 34 пацієнти, середній вік яких становив $(41,85 \pm 7,81)$ року. В усіх пацієнтів в анамнезі мала місце хірургічна обробка гнійно-некротичних захворювань промежини. Період спостереження становив від 1 до 6 міс. Проаналізовано тривалість оперативного втручання, госпіталізації та реабілітації, частоту ускладнень.

Результати. Усім пацієнтам виконано одномоментну комбіновану пластику, яка передбачала поєднання анопластики або сфінктеропластики з клаптевою пластикою. При виборі методу закриття ранового дефекту важливе значення мав розмір рубцевої деформації. У 3 (8,82%) пацієнтів — мале ураження періанальної ділянки ($< 2 \text{ см}^2$), у 20 (58,82%) — помірне (від 2 до 6 см^2), у 11 (32,36%) — поширене ураження ($> 6 \text{ см}^2$). Також урахували тип нориці прямої кишки: проста — у 26 (76,47%) пацієнтів, складна — у 8 (23,53%). Середня тривалість операції становила $(90,41 \pm 13,48)$ хв, термін госпіталізації — $(5,88 \pm 1,41)$ дня. Післяопераційні ускладнення зафіксовано у 3 (8,82%) пацієнтів.

Висновки. Отримані результати свідчать, що одноетапне висічення післяопераційної рубцевої деформації з норицею у поєднанні зі шкірною пластикою дає змогу зберегти нормальну анальну функцію, отримати задовільний косметичний ефект і досягти задовільних функціональних результатів у більшості пацієнтів.

Ключові слова: стеноз анального каналу, аноректальні клаптеві операції, ректальні нориці, перианальна рубцева деформація, пластика шкірними клаптями.

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