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FISSURECTOMY WITH POSTEROLATERAL SPHINCTEROTOMY IN THE TREATMENT OF CHRONIC ANAL FISSURE

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Abstract

The main aim of the study was to investigate the effectiveness of the modified posterolateral sphincterotomy (PLIS) in the treatment of chronic anal fissure (AF).

During 2 years, 19 patients who were underwent the modified PLIS + fissurectomy for the dorsal localized chronic AF were under our treatment and medical observation. 11 of the patients at the age of 18-62 were men and 8 were women. PLIS (at 5 or 7 o'clock positions) was performed in all patients. Under visual control sphincterotomy was applied involving only the 1/3 distal part of the internal anal sphincter (IAS). In this regard, the landmark was the dentate line. For satisfactory dosing of PLIS during the operation an obturator with a diameter of 33-34 mm was used. The 4-finger inspection was also considered appropriate. In order to increase the mobility of the skin flap after PLIS, the skin was sharply separated from the external anal sphincter (EAS) in 2-2.5 cm along the perianal direction and mobilized, so the flap was prepared for closing the fissurectomy defect. For secure fixation the IAS was also partially taken to the sutures of the fissurectomy defect closure. Specific complications after surgery and the possibility of recurrence were investigated.

Modified PLIS + fissurectomy allows safe surgical control and to perform sphincterotomy without additional incision; considering the low risk of complications and recurrence, it can be applied in the surgical treatment of chronic AF.

***Key words*:** anal fissure, posterolateral sphincterotomy, fissurectomy, anal incontinence.

Introduction

An anal fissure (AF) is a linear wound defect between the dentate line of the anoderm and the outer edge of the anus [1, 2, 3]. AF is a widespread proctological disease, occurring in all age groups with the same frequency for both sexes [4]. Although AF is mostly primary, it has not exact pathogenesis, but solid faecal excretion and hypertonicity of the IAS are considered to be the main factors of this pathology [5]. AF is manifested mainly with anal pain ± slight bright red bleeding with defecation [2]. If AF does not heal within 6 weeks, it can be recognized as chronic AF [4]. According to other authors' mind, if the fissure is present for less than 8 weeks, it should be considered as acute AF.

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Chronic AF lasts longer and should be accompanied by one or more signs of chronicity (hypertrophied anal papilla at the proximal end of the fissure, sentinel tag at the distal end, and increased tone of IAS fibers along the fissure) [1, 2, 6, 7]. In most cases, AF is mostly located at posterior midline (90 %) and also it may be located at anterior midline (predominantly in women). In 3% of patients fissures can be located at posterior and anterior positions simultaneously. Fissures that located rather than the midline is considered to be atypical or secondary and needs more evaluation, because of possibility of association with serious diseases, like Crohn's disease and immunodeficiency syndromes [2, 7]. The basing aim of the treatment of chronic AF is to relieve IAS spasm associated with a chronic fissure. Although medical treatment is effective in some cases, in vast majorities conservative measures fail. For such cases, surgery remains the gold standard of treatment for chronic AF [4]. Surgical methods for the treatment of chronic AF include anal dilatation, posterior midline internal sphincterotomy (PIS), lateral internal sphincterotomy (LIS), posterolateral sphincterotomy (PLIS), and fissurectomy with advancement flap repair [4]. Treatment has focused on alleviating hypertonicity of the sphincter. The most common surgical treatment is partial internal lateral sphincterotomy. In all types of surgical interventions, the main aim is to reduce sphincter hypertension. The most accepted type of surgical treatment is partial internal lateral sphincterotomy [4, 8]. A recent systematic review shows that patients treated with sphincterotomy have a cure rate of 95.13 %. At the same time, the positive results of surgery may be achieved at the cost of increased complications, especially persistent incontinence [9].

In the lateral position, internal anal sphincterotomy can be performed both by open and closed methods with almost the same effectiveness, being considered preferable than anal dilatation [10]. Posterior internal sphincterotomy (PIS) was proposed by Eisenhammer in 1951 as a midline incision along the fissure [11]. The aim of sphincterotomy during PIS was to cut the hypertonic part of the IAS muscle in order to reduce anal tone and facilitate fissure healing [12]. Although, in differ from LIS, the PIS can be performed through the same incision without creating a new wound [13], but prolonged healing time due to keyhole deformity and leakage of fecal material are considered as disadvantages of this procedure [1, 13]. However, if there is an intersphincteric fistula connected with the fissure, PIS can still be considered as an alternative treatment for chronic AF [13]. According to other authors' mind, blindfold cutting of the internal sphincter during LIS leads to an increase of incontinence cases [14]. Some researchers noted that fissurectomy and sphincterotomy have the opposite effect [15, 16]. A sphincterotomy can be performed by a fissurectomy, in which a new surgical wound is created. So, by cutting the fibrotic fissure stable wound healing is provided [14]. According to several authors, LIS is recommended now as a standard procedure for the treatment of chronic AF [17, 18], because it is safe, effective and can be repeated [19, 20]. Several reliable studies come to conclusion that there is no significant difference between properly performed open and closed surgical sphincterotomy [7]. Excision of the IAS in LIS can be performed outside the fissure, in the right or left lateral positions under local, regional

or general anesthesia, in the patient's lithotomy or prone jack-knife position, both by open or closed method [21]. Alawady M et all. comparing PLİS and LİS concluded that the time to complete healing was significantly shorter and pain score was significantly lower after PLIS than after LIS which can be due to more reduction in the resting anal pressure after PLIS. Continence disturbances occurred after PLIS less frequently than after LIS; however, no significant differences between the two techniques were noted [22].

Although various procedures are used in the treatment of AF, meta-analysis study found that for evaluation of the effectiveness of these different procedures more data are needed [23]. Early complications of sphincterotomy include bleeding, hematoma, bruising, perianal abscess, and fistula, but the most important complication is incontinence of different grades. Such cases are observed in up to 30% of patients, especially in patients with weaker, shorter sphincter muscles and in women who have suffered of mechanical damage of sphincter due to childbirth [21].

The aim of the research was to study the effectiveness and safety of fissurectomies completed by the posterolateral sphincterotomy (PLS) proposed by us in the surgical treatment of anal callous fissure in terms of symptomatic recovery, complications and relapses. Our main goal was to describe in detail the modified PLIS technique and its results in the surgical treatment of chronic AF. Therefore, we did not consider comparisons with other surgical treatments for chronic AF.

Material and methods

The patients with the diagnosis of primary chronic AF (located at 6 o’clock position) who underwent fissurectomy with modified PLIS were included in the study. The observations were carried out at the Educational Surgical Clinic of the Azerbaijan Medical University (Baku, Azerbaijan) during 2 years (2024-2025). Following the medical literature [2, 7], patients diagnosed with acute AF, tuberculosis, ulcerative colitis, secondary chronic fissure connected with Crohn's disease, and chronic AF, accompanied by hypotonicity of the anal sphincter were not included in this study. Besides, patients with associated proctological pathologies were also excluded from the study, because of their possible influence on the final results. The total number of patients was 19; 11 of them were men and 8 were women, the age range was 18-62 years (average age 38 years). The frequency rate according to gender and age was not statistically significant, our conclusion is generally consistent with the results of other studies [4]. All subjects were undergone fissurectomy + PLIS procedure at 5 or 7 o’clock positions by the same surgical team. This factor reduced to zero the possibility of subjective effects connected with different approaches to surgical results. During PLIS, only the distal 1/3 of the IAS was partially dissected, and a dentate line was taken as a marker. Visual control of PLIS allowed to perform optimal sphincterotomy and to achieve meticulous hemostasis (Figure 1).

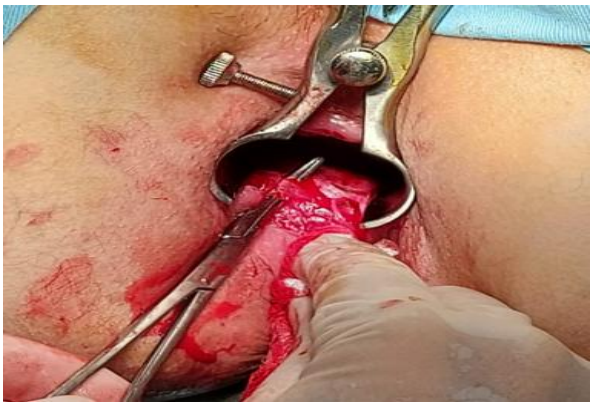

Figure 1. The critical operation view of PLIS performed under visual control up to dentate line

The results of our study are consistent with the facts we found in the medical literature on this issue [15, 16]. For evaluation of the satisfactoriness of PLIS, in the operation an anoscope obturator of 33-34 mm diameter was introduced into the anal canal. After the procedure, the free insertion of the obturator through the anal canal was considered as an indicator of the successful sphincterotomy. The 4-finger principle has been also applied as an equivalent to using an obturator. However, the use of an obturator was considered as more rational one. After performing of PLIS, for closing the fissurectomy defect and secure fixation of the skin flap the operations were continued as we proposed: initially, the skin flap was prepared so that it maintained its integrity and trophism. In order to increase the mobility of the skin flap, a 2-2.5 cm long section of skin was mobilized from EAS by sharp dissection in the perianal direction along the wound. After preparing the flap, when we started to tailor the medial part of the flap, slightly took the superficial fibers of the internal sphincter into the muco-cutaneous suture. It induced the fixation of the flap in the anal canal, supporting the mucosa to hold the sutures. So we found it useful for prevention of postoperative retraction.

In order to minimize thermal tissue stress, it was considered more appropriate to use electrical devices as little as possible, to use cold (ice) throughout the operation, to achieve hemostasis by mechanical pressure and suturing. At the end of the procedure, perianal block by articaine+epinephrine 40 mg+5 mg/1ml injection (total 6-8 ml) and wound dressing with Metronidazole ointment were applied as auxiliary measures to reduce postoperative pain syndrome. The operations were performed under spinal (in most cases) or general anesthesia in the lithotomy position with bladder catheterization to prevent postoperative acute urinary retention and control diuresis. The indications for general anesthesia were patient's choice, including refusal of spinal anesthesia, impossibility of spinal anesthesia or anesthesia risks. Patients were followed 3 months, for assessing symptomatic recovery process and detecting early postoperative complications. Complications, such as bleeding, fever, incontinence, keyhole deformity, abscess and fistula forming; pain severity and recurrence rate were evaluated.

Discussion of the obtained results

Anal manometry was performed in 17 patients 2 months after surgery, and only in 1 patient the resting pressure (RP) decreased to 38 mmHg. This case was assessed as 1st degree incontinence and was corrected conservatively. In other patients, postoperative RP ranged from 42 to 48 mmHg. Postoperative squeeze pressure (SP) was within the normal range in all patients. Information on early postoperative complications is presented in Table 1, and all complications that arose were resolved conservatively. Complications such as bleeding, keyhole deformity, abscess and fistula formation, disease recurrence, and the need for repeat surgery were not observed. Our results are generally consistent with statistical data found in the medical literature [4].

Table 1. Early postoperative complications and their frequency

Early postoperative complications	**Frequency of occurrence (%)**
Acute urinary retention	1 (5.26 %)
Bleeding	-
Temperature	1 (5.26 %)
Incontinence (1 degree)	1 (5.26 %)
Relapse of disease	-
Keyhole deformity	-
Abscess and fistula forming	-
Need for repeated surgical intervention	-

Medical parameters such as operation time, volume of blood loss, postoperative patient activation time, need for antibiotic administration, postoperative NSAID and narcotic analgesics use, and postoperative rehabilitation were investigated, and the results were found to be satisfactory (Table 2). The pain intensity measured by the VAS (the Visual Analogue Scale) was generally considered very weak, with less than 30 points.

Table 2. Medical parameters of treatment

Studied parameters	**Indices**
Duration of operation (min.)	≤ 30
Volume of blood loss (ml)	≤ 30
Postoperative activation of patient (hours)	<12–24
Antibiotic adminstration (number of patients/days)	½
Postoperative NSAID adminstration (days)	≤ 3
Postoperative narkotic-analgesics prescriptions (number of patients/days)	3/1
Postoperative rehabilitation (days)	30

As part of our ongoing research, we plan to compare the proposed modified PLIS procedure with the standard LIS procedure.

Conclusion

Analysis of the results showed that visual control during fissureectomy with PLIS in all age groups, regardless of gender, allows for reliable dissection of the IAS of the required size without the need for additional incisions. Intraoperative use of a 33-34 mm diameter obturator is recommended to control the sphincterotomy volume. During the closure of the fissurectomy defect for secure fixation of the skin flap in the anal canal, taking superficial internal sphincter fibers into the muco-cutaneous sutures was beneficial in preventing the flap from immediate future displacement and also in avoiding of the keyhole deformity. The operation is comparable to alternative methods in terms of medical and technical aspects, financial costs, and medico-social rehabilitation indicators. Therefore, fissurectomy performed using PLIS can be considered an effective and safe procedure of choice for the surgical treatment of chronic AF, given the low risk of postoperative complications and recurrence.

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XRONİK ANAL ÇATIN MÜALİCƏSİNDƏ POSTEROLATERAL SFİNKTEROTOMİYA İLƏ TAMAMLANAN FİSSUREKTOMİYANIN TƏTBİQİ

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Xülasə

Xronik anal çatın (AÇ) müalicəsində modifikasiya etdiyimiz üsulla posterolateral sfinkterotomiyanın (PLİS) effektivliyinin araşdırılması tədqiqatımızın əsas məqsədi olmuşdur.

Material və metodlar: 2 il ərzində dorsal lokalizasiyalı xronik AÇ-a görə təklif etdiyimiz üsulla PLİS + fissurektomiya cərrahi əməliyyatı keçirmiş 19 xəstə müalicəmiz və nəzarətimiz altında olmuşdur. 18-62 il yaş aralığında olan xəstələrdən 11-i kişi, 8-i qadın olmuşdur. Bütün xəstələrdə PLİS (5 və ya 7 radəsində olmaqla) həyata keçirilmiş, sfinkterotomiya vizual nəzarət altında yalnız internal anal sfinkterin (İAS) distal 1/3 hissəsini əhatə etmişdir. Bu baxımdan oriyentirimiz dişli xətt (dentate line) olmuşdur. PLİS-in qənaətbəxş dozalanması üçün əməliyyat zamanı 33-34 mm diametrli obturatordan istifadə edilmişdir. 4 barmaq təftişi də praktik cəhətdən qənaətbəxş hesab edilmişdir. PLİS icrasından sonra dəri diliminin hərəkiliyini artırmaq məqsədilə dəri yara boyunca perianal istiqamətdə xarici anal sfinkterdən (EAS) iti surətdə 2-2,5 sm ölçüdə ayrılaraq mobilləşdirilmiş və fissurektomiya deffektinin bağlanması üçün flap hazır vəziyyətə gətirilmişdir. Güvənli fiksasiya üçün fissurektomiya deffektinin tikişlərinə İAS da hissəvi götürülmüşdür. Əməliyyatdan sonra spesifik ağırlaşmalar və residiv ehtimalı araşdırılmışdır. Modifikasiyalı PLİS + fissurektomiya əməliyyatı güvənli cərrahi nəzarətə sahib olmaqla bərabər, sfinkterotomiyanı əlavə kəsik aparmadan icra etməyə imkan verir; ağırlaşma və residiv riskinin cüzi olmasını nəzərə alaraq, xronik AÇ-ın cərrahi müalicəsində tətbiq edilə bilər.

Açar sözlər: anal çat, posterolateral sfinkterotomiya, fissurektomiya, inkontinensiya

ПРИМЕНЕНИЕ ФИССУРЭКТОМИИ, ДОПОЛНЕННОЙ ПОСТЕРОЛАТЕРАЛЬНОЙ СФИНКТЕРОТОМИЕЙ, В ЛЕЧЕНИИ ХРОНИЧЕСКОЙ АНАЛЬНОЙ ТРЕЩИНЫ

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Резюме

Основной целью нашего исследования было изучение эффективности постеролатеральной сфинктеротомии (ПЛИС) при лечении хронической анальной трещины (АТ) с использованием модифицированного нами метода.

Материалы и методы: В течение 2 лет под нашим наблюдением находились 19 пациентов с хронической анальной трещиной дорсальной локализации, которым была выполнена предложенная нами хирургическая операция: ПЛИС + фиссурэктомия. Возраст пациентов составлял от 18 до 62 лет, из них 11 мужчин и 8 женщин.

У всех пациентов выполнялась ПЛИС (на уровне 5 или 7 часов), при этом сфинктеротомия под визуальным контролем охватывала только дистальную 1/3 часть внутреннего анального сфинктера (ВАС). Ориентиром служила зубчатая линия (dentate line). Для адекватного дозирования ПЛИС во время операции использовался обтуратор диаметром 33–34 мм. После выполнения ПЛИС, с целью увеличения подвижности кожного лоскута, производилась

мобилизация кожи вдоль раны в перианальном направлении от наружного анального сфинктера (НАС) на 2–2,5 см, после чего лоскут подготавливался для закрытия дефекта после фиссурэктомии. Для надежной фиксации в швы дефекта после фиссурэктомии частично захватывался также внутренний анальный сфинктер. Послеоперационно изучались специфические осложнения и вероятность рецидива.

Модифицированная операция ПЛИС + фиссурэктомия, помимо обеспечения надежного хирургического контроля, позволяет выполнить сфинктеротомию без дополнительного разреза. Учитывая низкий риск осложнений и рецидива, данный метод может применяться в хирургическом лечении хронической анальной трещины.

Ключевые слова: анальная трещина, постеролатеральная сфинктеротомия, фиссурэктомия, инконтиненция.