

Selection Of Optimal Approach To Diagnosis Of Anal Canal Stenosis

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Abstract: This study included 102 patients with PSAC. The distribution of all patients with postoperative anus narrowing by degree showed that the total number of patients with grade II PSAC reached 84 (82.3%) cases. Grade III postoperative anus narrowing was recorded in 18 (17.6%) patients. Patients with the cutaneous form of anus stricture occupied a dominant position, accounting for 62 (60.8%) cases. One of the main reasons for the development of the muscular form of PSAC was anal sphincter pectinosis combined with rectal fistulas, which accounted for 13 (12.7%) cases. The distribution of all patients with postoperative anus narrowing according to the frequency of concomitant chronic surgical pathologies of the anal canal showed that the majority—57 (55.9%) cases—were patients with chronic anal fissures. The use of ultrasound and MRI with 92.4% and 100% informativeness, respectively, allows for the identification of the degree and nature of inflammatory pathological changes in the anal canal mucosa, pararectal tissue, and anal sphincter, which optimizes preparation for surgical correction.

Keywords: Post-operative stenosis of the anal canal, clinical presentation, diagnosis.

Introduction

Post-operative stenosis (narrowing, stricture) of the anal canal (PSAC) is a serious disease caused by the pathological narrowing of the anus, which occurs as a result of excision of the perianal skin and mucous membrane of the anal canal, followed by their replacement with connective tissue [1,2,3]. According to research by various authors, over the last few decades, the prevalence of this proctological pathology has varied from 2% to 9% of the total number of patients who underwent surgical intervention due to benign pathologies of the rectum, including anal canal diseases [4]. Post-operative stenosis of the anal canal (PSAC) occurs in 5-10% of cases following the application of standard surgical treatment methods for chronic hemorrhoids, and according to some data, the proportion of such cases can reach up to 15% [5]. In the USA, hemorrhoidectomy is the most frequent cause of this pathology, with a development rate ranging from 1.5% to 3.8% [6]. It should be emphasized that despite progress in improving diagnostic methods and surgical intervention for postoperative anal canal stenosis, the problem of choosing an optimal approach to the diagnosis and treatment of PSAC has not yet been resolved. Scientific publications have not yet provided unified and unambiguous recommendations regarding the most effective method for diagnosing and surgical correction of PSAC.

Purpose of the study: to improve the results of surgical treatment for patients with postoperative anal canal strictures.

Metodology

This study included 102 patients with PSAC who underwent surgery in the coloproctology department of SamSMU's clinic between 2013 and 2024. A retrospective analysis was conducted on 46 medical histories of patients with anus narrowing resulting from surgical treatment of acute and chronic anal canal pathologies (control group - CG). Additionally, a prospective analysis was conducted on 56 patients with PSAC (main group - AG) who underwent treatment from 2019 to 2024 and for whom developed and improved surgical treatment methods for PSAC were applied.

The inclusion criteria for the study were determined by the presence of postoperative anus narrowing of the II and III degrees in patients, which developed as a result of surgical treatment for acute and chronic surgical pathology of the anal canal. Patients with post-traumatic and congenital narrowing of the anus, stenosis of the anal canal of tumor origin, as well as postoperative I-degree narrowing of the anal canal, were excluded from the study.

The age of patients in both groups ranged from 21 to 74 years, with an average age of 44.3 ± 1.6 years. The predominance of patients in the age categories of 21-44 and 45-59 years (respectively 46.1% and 45.1%) (55.4%) was noted (Table 2.1). During the study, men predominated, accounting for 60 cases (58.8%), while women accounted for 42 (41.2%).

The duration of history in patients with postoperative anus narrowing averaged 4.2 ± 1.3 years. At the same time, the majority consisted of patients with a duration of anal canal narrowing of up to 1 year, which accounted for 48.2% and 47.8% of cases in the main group (AG) and control group (CG) respectively during the postoperative period. The lowest incidence in terms of disease duration was observed in patients with a period of 3 to 5 years - 17.8% and 15.2% in both study groups, indicating comparability between these patient groups.

From the anamnesis, it was established that PSAC occurred in 20 (19.6%) patients after surgical treatment of acute anal canal pathologies: 13 (23.2%) cases in the main group (AG) and 7 (15.2%) cases in the control group (CG). Among these patients, after surgical treatment of acute putrefactive paraproctitis, PSAC was observed in 8 (7.8%) patients: 6 (10.7%) cases in the AG and 2 (4.3%) cases in the CG. PSAC developed in 8 (7.8%) patients after treatment of acute anaerobic paraproctitis: 4 (7.1%) cases in the AG and 4 (8.7%) cases in the CG. Furthermore, in 3 (5.3%) and 1 (2.2%) patients of the primary and control groups, PSAC occurred after the removal of an acute anal fissure with bleeding and moderate anemia.

In the remaining 82 (80.4%) cases, narrowing of the anus in the postoperative period developed after surgical treatment of chronic anal canal pathologies, of which 43 (76.8%) patients belonged to the primary group (PG) and 39 (84.8%) to the control group (CG). Of these, in 59 (57.8%) cases, postoperative narrowing of the anal canal (PSAC) was observed in the group of patients with chronic hemorrhoids: 30 (53.5%) patients in the AG and 29 (63.0%) patients in the CG (Table 2.4). In 18 (17.6%) cases, PCA developed in patients with complex recurrent rectal fistula: 10 (17.8%) patients in the AG and 8 (21.7%) patients in the CG. In 5 (4.9%) cases, the cause was the chronic course of the anal fissure: 3 (5.4%) cases in the main group and 2 (4.3%) in the control group.

The distribution of all patients with postoperative anus narrowing by degree showed that the total number of patients with grade II PSAC reached 84 (82.3%) cases, of which 45 (80.3%) were in the main group (OG) and 39 (84.8%) in the control group (CG). Grade III post-operative anus narrowing was recorded in 18 (17.6%) patients, including 11 (19.6%) in the AG and 7 (15.2%) in the CG.

In this work, the distribution of all patients with postoperative anus narrowing occurring after surgical treatment of anal canal pathology by forms showed that patients with the cutaneous form of anus stricture occupied a dominant position, accounting for 62 (60.8%) cases: 32 (57.1%) among patients in the main group (AG) and 30 (65.2%) in the control group (CG). One of the main reasons for the development of the muscular form of PSAC was anal sphincter pectinosis combined with rectal fistulas, which accounted for 13 (12.7%) cases: 8 (7.8%) and 5 (10.9%) observations in the AG and CG, respectively. In cases of combination of skin and mucosal or other forms of PSAC narrowing, patients were classified based on the predominant type of narrowing.

The distribution of all patients with postoperative anus narrowing by the frequency of comorbid chronic surgical pathologies of the anal canal showed (Table. 2) that the majority—57 (55.9%) cases—were patients with chronic anal fissures (CAP): 28 (50.0%) in the main group (AG) and 29 (63.1%) in the control group (CG). At the same time, the lowest frequency of combination of chronic pathologies was noted in 13 (12.7%) patients with PCOS: 8 (14.2%) cases among AG patients and 5 (10.9%) in the CG. When analyzing the combination of comorbidities in patients with anus narrowing resulting from surgical interventions for anal canal pathologies, it was established that anemia occupies a leading position, accounting for 27 (29.3%) cases.

Among the complaints submitted by patients, difficulty and excessive strain during defecation with an increase in its duration were noted in all patients of both groups—100% in both the primary group (PG) and the control group (CG). At the same time, the lowest frequency of complaints among patients with postoperative anal canal narrowing (PSAK) was rectal bleeding, which accounted for 27 (26.5%) cases. The majority of patients with bleeding and painful defecation were patients with PSAC complicated by an anal fissure.

Among the complaints submitted by patients during defecation against the background of postoperative anus narrowing, a feeling of incomplete rectal emptying was observed in 84 (82.3%) patients. Of these, 36 (35.3%) patients resorted to manual stool relief: 19 (33.9%) patients from the AG and 17 (36.9%) from the CG, i.e., they had obstructive defecation syndrome (ODS). Some researchers emphasize that in patients with COD syndrome, the passage of contents through the large intestine usually remains normal, except for a delay in the rectosigmoid region. It is known that the causes of COD are numerous and include both functional and anatomical factors that interact and influence the process of stool evacuation. Consequently, studying the characteristics of SOD in patients with PSAC is also of significant clinical interest.

The combination of more than three symptoms of obstructive defecation syndrome (ODS) was observed in 90.4% of patients with postoperative narrowing of the anal canal, and the symptoms were organic in nature.

Within the framework of this work, the presence of postoperative scars on the skin of the perineum was recorded in all cases (100%). Furthermore, to determine the degree of postoperative anus stenosis in all patients, the dimensions of the external narrowed anal opening were measured. At the same time, patients with Grade I PSAC were excluded from this study, as they were subject to conservative treatment. Analysis of anal sphincter (AS) pectinosis showed its presence in 24 (23.5%) patients: 14 (25%) cases among AG patients and 10 (21.7%) cases in the CG. Most cases of pectinosis of the rectal sphincter developed in patients after undergoing acute putrefactive and anaerobic paraproctitis, which is due to the reactive narrowing of the sphincter and the formation of extensive scars. Deformity of the anal canal (AC) was identified in 14 (13.7%) observations, including 8 (14.3%) cases among patients in the main group and 6 (13.1%) in the control group.

Results and their discussion.

In the diagnosis of postoperative narrowing of the anus resulting from surgical interventions on the anal canal due to various surgical diseases, finger examination, ano- and rectoromanoscopy, sphincterometry, and anorectal manometry were not performed due to the narrowness of the external opening of the anal canal, which prevented the insertion of a finger or probe[8,9].

Ultrasound examination revealed the presence of purulent cavities and leaks in 15 (26.7%) cases in patients with PSAC: 6 (10.7%) cases following the excision of the pilonidal cyst sinus, 4 (7.1%) cases following the excision of a chronic anal fissure complicated by an internal pararectal fistula, and 5 (8.9%) cases following the incision of acute putrefactive paraproctitis. In most cases, patients identified poorly drained purulent cavities in the pararectal tissue with periodic exacerbations. In 8 (14.2%) cases, inflammatory infiltrates of various shapes and sizes were found around the anal sphincter. Furthermore, perineal ultrasound using a linear sensor revealed thickening and decreased echogenicity of muscle fibers in the area of the inflammatory infiltrate in 5 (8.9%) cases, which is

important to consider when preparing patients for upcoming anoplastics. Below are several ultrasound images of the soft tissues of the perineum using a linear sensor (Fig. 1).



Figure 1.- Ultrasound - examination with a linear sensor. a and b - infiltration of the right wall of the anal canal; c - high transsphincteral fistula of the rectum

In 18 (17.6%) patients with comorbid rectal fistulas—10 (17.8%) from the primary group (PG) and 8 (17.3%) from the control group (CG) —pararectal fistula fistulography was performed during the preoperative period. The purpose of this diagnostic study was to identify the presence of purulent cavities and leaks in the pararectal tissue, as well as to identify additional fistula passages in the pararectal tissue. As a result of fistulography, purulent cavities were detected in the pararectal tissue in 7 (6.8%) cases, and additional fistula passages were identified in 11 (10.8%) observations[10,11,12].

Magnetic resonance imaging (MRI) was performed on 10 (17.8%) patients in the primary group (PG) with grade III PSAC. As a result, infiltration of one of the walls of the anal canal and the lower ampullary part of the rectum was detected in 3 (5.4%) patients, which may indicate inflammatory changes or other pathological processes in these areas.

Additionally, 8 (14.3%) patients in the main group exhibited excessive dilation of the rectum and rectosigmoid colon with signs of chronic intestinal obstruction. This condition may be associated with prolonged permeability impairment and stasis of intestinal contents, which is frequently encountered in complex forms of PSAC (Fig. 2).

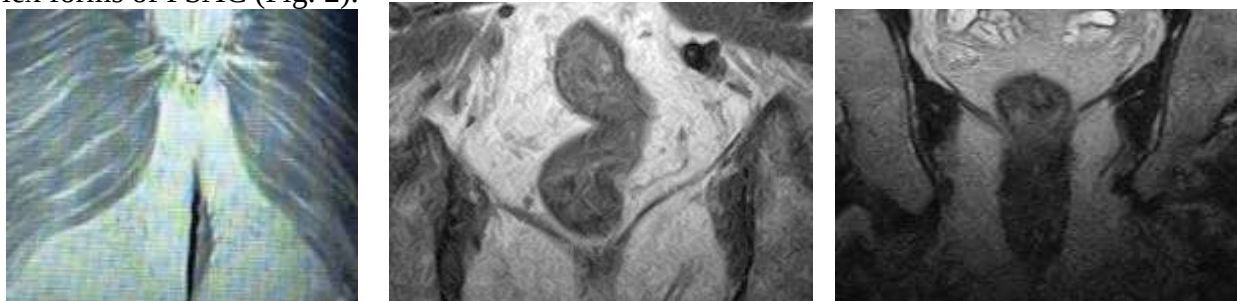


Figure 2. MRI - examination of the AC and pelvic organs of patients with PCA. a - infiltration of the right wall of the anal canal and the lower ampullary part of the rectum; b - and c - significant expansion of the PC above the narrowing of the anus

Discussion.

When performing magnetic resonance imaging of pelvic organs and soft tissues of the perineum in patients with anus narrowing resulting from surgical treatment of acute and chronic surgical pathologies of the anal canal, pectinosis of the rectal anal sphincter was identified in 6 out of 9 cases (Figures 3.3. a. b). 4 (7.1%) cases among patients in the main group and 2 (4.3%) cases among patients in the control group. Furthermore, in patients of both study groups with comorbid recurrent rectal fistula, purulent cavity was detected in 5 (4.9%) observations in the pararectal tissue[13].

AG patients were divided into three subgroups depending on the presence or absence of identified local changes in the tissues of the anal canal and rectal anus using ultrasound examination with a linear sensor: I-subgroup without changes in OPK and AK; Subgroup II with ultrasound and MRI signs of inflammation of the OPK and/or AS and subgroup III with ultrasound and MRI signs of

fibrous changes in the OPK and/or AS. Retrospectively, it was established that CG patients did not undergo ultrasound and MRI examinations of the perineum to identify comorbid pathologies of the AK that affect the immediate and long-term results of surgical treatment for PSAC[14,15].

Conclusions.

It was established that PSAC occurred in 20 (19.6%) patients after surgical treatment of acute anal canal pathologies. Among these patients, after surgical treatment of acute putrefactive paraproctitis, PCA was observed in 8 (7.8%) patients, after treatment of acute anaerobic paraproctitis in 8 (7.8%), and in 4 patients after acute anal fissure removal with bleeding and moderate anemia. In 82 (80.4%) cases, post-operative anus narrowing developed after surgical treatment of chronic anal canal pathologies. Of these, in 59 (57.8%) cases, postoperative narrowing of the anal canal (PSAC) was observed in the group of patients with chronic hemorrhoids. In 18 (17.6%) cases, PCAS developed in patients with complex recurrent rectal fistula. In 5 (4.9%) cases, the cause was the chronic course of the anal fissure. The distribution of all patients with postoperative anus narrowing by degree showed that the total number of patients with Grade II PSAC reached 84 (82.3%) cases. Grade III postoperative anus narrowing was recorded in 18 (17.6%) patients.

Patients with the cutaneous form of anus stricture occupied a dominant position, accounting for 62 (60.8%) cases. One of the main reasons for the development of the muscular form of PSAC was anal sphincter pectinosis combined with rectal fistulas, which accounted for 13 (12.7%) cases. In cases of combination of skin and mucosal or other forms of PSAC narrowing, patients were classified based on the predominant type of narrowing. The distribution of all patients with postoperative anus narrowing by frequency of concomitant chronic surgical pathologies of the anal canal showed that the majority—57 (55.9%) cases—were patients with chronic anal cracks (CHAT. At the same time, the lowest combined frequency of chronic pathologies was noted in 13 (12.7%) patients with PCOS.

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