

Assessment Of Prevalence, Features Of Pathogenesis, Clinical Course And Treatment Outcomes Of Chronic Anal Fissure In Patients With Rectocele

Evaluación de la prevalencia, características de la patogenia, curso clínico y resultados del tratamiento de la fisura anal crónica en pacientes con rectocele

Natalia V. Oleynik¹, Arina P. Krivchikova², Andrey L.Yarosh³, Natalia N. Bratisheva⁴, Andrey V. Naumov⁵,

¹Belgorod State University, Russia,308015, Belgorod, Pobedy St., 85, E-mail:Oleinik_NV@bsu.edu.ru

²Belgorod State University, Russia,308015, Belgorod, Pobedy St., 85

³Belgorod State University, Russia,308015, Belgorod, Pobedy St., 85

⁴Belgorod State University, Russia,308015, Belgorod, Pobedy St., 85

⁵Belgorod State University, Russia,308015, Belgorod, Pobedy St., 85

Abstract

The problem of surgical treatment of chronic anal fissures is relevant because of the high frequency of its occurrence in patients with constipation. Despite the fact that difficulties with defecation is the main symptom of rectocele, and rectocele, in turn, is a common disease in women, so far the role of this pathology in the occurrence of anal fissures has not been studied. The aim of the research was to evaluate the prevalence, pathogenesis, clinical course, and results of treatment of chronic anal fissures combined with rectocele. A retrospective study based on an analysis of 2,045 cases report forms of patients operated on for anal fissures at the Belgorod Regional Coloproctology Center for 20 years (2000-2019) was performed. In 692 patients, which was 33.8%, it was combined with rectocele. The study showed different mechanisms of anal fissure formation in patients with rectocele, compared with patients who had anal fissure and normal configuration of the pelvic floor, as well as a less favorable course of the long-term postoperative period. The patients with anal fissures in combination with rectocele are 1.8 times more likely to have anterior localization of cracks and 3.4 times more likely to have double localization, compared with patients with fissures and normal pelvic floor configuration. Due to the weakness of the pelvic floor muscle system in this category of patients, an increase in the tone of the anal sphincter is 1.7 times less frequent. However, the healing time of wounds after excision of fissures is longer, on average, by 14 days, and relapses of the disease are noted 3.4 times more often.

Keywords: anal fissure, rectocele, pathogenesis, surgical treatment results

Resumen

El problema del tratamiento quirúrgico de las fisuras anales crónicas es relevante por la alta frecuencia de su aparición en pacientes con estreñimiento. A pesar de que la dificultad para defecar es el síntoma principal del rectocele, y el rectocele, a su vez, es una enfermedad común en la mujer, hasta el momento no se ha estudiado el papel de esta patología en la aparición de fisuras anales. El objetivo de la investigación fue evaluar la prevalencia, patogénesis, curso clínico y resultados del tratamiento de fisuras anales crónicas combinadas con rectocele. Se realizó un estudio retrospectivo basado en un análisis de 2.045 formularios de informes de casos de pacientes operados de fisuras anales en el Centro Regional de Coloproctología de Belgorod durante 20 años (2000-2019). En 692 pacientes, que fue del 33,8%, se combinó con rectocele. El estudio mostró diferentes mecanismos de formación de fisura anal en pacientes con rectocele, en comparación con pacientes que tenían fisura anal y configuración normal del suelo pélvico, así como un curso menos favorable del postoperatorio a largo plazo. Los pacientes con fisuras anales en combinación con rectocele tienen 1,8 veces más probabilidades de tener una localización anterior de las grietas y 3,4 veces más probabilidades de tener una doble localización, en comparación con los pacientes con fisuras y una configuración normal del suelo pélvico. Debido a la debilidad del sistema muscular del suelo pélvico en esta categoría de pacientes, el aumento del tono del esfínter anal es 1,7 veces menos frecuente. Sin embargo, el tiempo de curación de las heridas después de la extirpación de fisuras es más largo, en promedio, 14 días, y las recaídas de la enfermedad se notan 3.4 veces más a menudo.

Palabras clave: fisura anal, rectocele, patogenia, resultados del tratamiento quirúrgico.

Introduction

Anal fissure is a linear defect of the anoderm, distal to the dentate line.^{1,2} Anal fissure is one of the most common coloproctological diseases, accounting for 11-12 of them%. The incidence is higher in women and ranges from 18 to 23 per 1000 adult female population.^{4,3} The etiology of anal fissures is multifactorial. The most common causes are childbirth and constipation.^{6,5} The problem of surgical treatment of chronic anal fissures is relevant because of the high frequency of its occurrence in patients with constipation.⁷ Problems with defecation negatively affect the healing of both acute anal fissures and wound healing after anal fissure removal.⁸ Despite the fact that difficulties with defecation is the main symptom of rectocele, and rectocele, in turn, is a common disease in women, ranging from 30% to 50%, depending on age, so far the role of this pathology in the occurrence of anal fissures has not been studied.

The aim of our research was to evaluate the prevalence, pathogenesis, clinical course, and results of treatment of chronic anal fissures combined with rectocele.

Materials and Methods

We performed a retrospective study based on an analysis of 2,045 cases report forms of patients operated on for anal fissures at the Belgorod Regional Coloproctology Center for 20 years (2000-2019). In 692

patients, which was 33.8%, were diagnosed grade II-III rectocele, which was based on complaints of obstructed defecation and finger examination of the rectum. To determine the features of the pathogenesis of the development of this combined pathology, a comparative assessment of various indicators of 2 groups of patients was carried out: the 1st group was composed of patients with a combination of anal fissure and rectocele (692 patients), the 2nd group was composed of patients who had only anal fissure (1,353 patients). All patients in both groups underwent surgical excision of the fissures. Patients with increased anal sphincter tone were additionally performed a closed lateral sphincterotomy.

Results

A comparative assessment of demographic indicators and the presence of comorbidity was carried out. The difference of these indicators in the patients of the two groups was noted. The data are shown in Table 1.

Table 1. Comparative characteristics of demographic indicators, the nature and frequency of concomitant pathology of patients with anal fissures in combination with rectocele and with normal pelvic floor configuration

Parameter	Group 1 Anal fissure +rectocele n=692	Group 2 Anal fissure only n=1,353	Reliability of differences
Demographics			
Mean age (years)	59.1±5.6	46.3±4.8	P = 0.097
Body mass index (kg/m ²)	30.1±3.9	27.8±5.2	P = 0.747
Mean number of births	2.5±0.7	1.8±0.9	P = 0.612
Menopause	322 (46.5%)	443 (32.7%)	P = 0.000
Estrogen replacement			
therapy (among them)	57 (17.7%)	44 (9.9%)	P = 0.000
Smokers (among them)	152 (21.9%)	175 (12.9%)	P = 0.000
Comorbidity			
Obstructive pulmonary disease	168 (24.3%)	104 (7.7%)	P = 0.000
Mellitus	82 (11.8%)	103 (7.5%)	P = 0.005
Coronary heart disease	265(38.3%)	402 (29.7%)	P = 0.007

Values P are calculated by Newmen-Keys's criterion and χ^2

As can be seen from the data given in the table, the patients of the first group were older in age: 59.1 ± 5.6 years and 46.3 ± 4.8 years, respectively (P = 0.097); they had a higher body mass index: 30.1 ± 3.9 and 27.8 ± 5.2 (P = 0.747); more number of births: 2.5 ± 0.7 and 1.8 ± 0.9 (P = 0.612). Since patients of group 1 were,

on average, older in age, a larger percentage of them were in menopause: 46.5% and 32.7%, respectively ($P = 0.000$). They used hormone replacement therapy more often, in percentage terms: 17.7% and 9.9% ($P = 0.000$). They in a higher percentage of cases than patients of group 2 had such predisposing to pelvic organ prolapse factors as smoking: 21.9% and 12.9% ($P = 0.000$) and chronic obstructive pulmonary disease: 24.3% and 7.7% ($P = 0.000$). Due to older age, patients of group 1 were relatively more likely to have such comorbidity as diabetes mellitus: 11.8% patients compared with 7.5% patients in group 2. Thus, it is possible to predict more unfavorable conditions for anal fissures healing in patients of group 1.

In a clinical study consisting in the examination of the anal region in the lying position on the back with the legs bent at the knee and hip joints in 263 (38%) patients of group 1, anal fissure were located in front, 12 hours in the circumference, in 352 (50.9%) patients - on 6 hours in the posterior semicircle and in 77 (11.1%) patients there was double localization of fissures. In the 2nd group of patients, anterior localization of anal fissure was observed in 284 (20.9%), posterior localization - in 1,028 (75.9%), double localization - in 41 (3.2%). In 382 out of 692 (55.2%) patients in group 1, anal fissures occurred in combination with chronic hemorrhoids, in group 2 - in 545 (40.2% of patients) (Fig. 1).

Figure 1. Differences in anal fissure localization and frequency of its combination with hemorrhoids in group 1 and group 2 patients

Of the 692 patients with anal fissures and rectocele (group 1), 221 (31.9%) showed increased anal sphincter tone. In the group of patients with normal pelvic floor location (group 2), sphincter tone was increased in 758 (56%) of 1,353 patients. In 96 (12.4%) of 692 patients with anal fissure and rectocele, there was a decrease in the tone of the anal sphincter as a result of damage of the sphincter apparatus in childbirth,

which was confirmed by ultrasound data using intrarectal and introital methods. There was no decreased sphincter tone in patients in group 2 (Fig. 2).

Figure 2. The frequency of increased, normal and decreased anal sphincter tone in patients with anal fissures and rectocele (group 1) and in patients with normal pelvic floor configuration (group 2)

To explain the absence of increased anal sphincter tone in a large percentage (68.1 %) of group 1 patients, 30 of them who were in our center during this study, we determined the latent period of the pudendal nerve. In patients of this group, the latency of the pudendal nerve was 1.8 ± 0.3 msec., with a norm of 2.0 ± 0.2 msec., determined in healthy volunteers.

Based on the analysis of the long-term postoperative period according to outpatient patient records, it was found that the time of complete healing of postoperative wounds of the anal canal after fissure excision in patients with normal pelvic floor location was 56.5 ± 8.7 days, and in patients with rectocele they were 72.1 ± 7.5 days ($P=0.198$). Relapses of the disease during the first year after fissure excision were observed in 122 out of 1,353 (9.01%) patients with normal pelvic floor location and in 180 out of 692 (26.01%) patients with rectocele ($P=0.000$).

Discussion

Anal fissure is a linear defect of the anodermal zone ^{1, 2}. However, there is very little published epidemiological data to date. The total annual incidence is estimated to be 1.1 per 1,000 people (0.11%) with a peak incidence in women in young adulthood ^{3, 4}. Chronic anal fissure manifests itself as a pronounced pain syndrome in the anal area and significantly reduces the quality of life of patients ⁵.

According to many researchers, anal fissure most often develops as a result of constipation and of traumatization of the anal anoderm by solid fecal masses ^{6, 7}. One of the main causes of constipation in women is rectocele ^{8, 9}. Despite this, there is no information in the literature about the frequency of occurrence, features of the course and results of treatment of chronic anal fissures in patients with rectocele ⁸.

Ultrasound scan data show damage of the sphincter apparatus in a number of patients with rectocele and anal fissures on its background. The confirmed insufficiency of the anal sphincter by anorectal manometry allows us to hypothesize about different mechanisms of fissure formation in patients with normal pelvic floor configuration and rectocele. To confirm this hypothesis, a study of the features of defecation in patients with anal fissures of different localization in patients with rectocele was performed. On the basis of videodefecography performed in 20 patients with anterior localization of fissure, and in 20 patients with posterior localization of fissure on the background of normal tonus of the anal sphincter and analyze them in slow motion video analysis of reasons for various frequency localization of fissure, compared with the patients with fissure in the normal configuration of the pelvic floor. Different localization of anal fissures in patients with rectocele with a large percentage of anterior localization, compared with that in the normal location of the pelvic floor, can be explained by various reasons. First, women with rectocele have a greater risk of damage to the anterior semicircle of the anal canal due to the weakening of the ligamentous and muscle apparatus in this area. Secondly, when fecal masses pass through the anal canal in this area, an increased pressure is created due to their accumulation in the "pocket" between the rectum and the vagina, which was confirmed by defecography with the construction of the distribution of force vectors that occur during the evacuation of feces from the rectum. In rectocele, the greatest pressure is on the anterior wall of the rectum and anal canal, since fecal masses accumulate in the "pocket" that forms the protrusion of the anterior wall of the rectum into the vagina. When it is evacuated, the anterior wall of the rectum and anal canal has a greater pressure than the posterior wall. When analyzing the video materials of group 1 patients, attention is drawn to the fact that initially the evacuation of the main mass of contrast occurs from the posterior semicircle of the rectum along the posterior wall of the anal canal with the accumulation of part of the contrast in the anterior "pocket". Emptying of this "pocket" occurs when the straining increases, which further increases the pressure on the anterior semicircle of the anal canal. In the opposite way, the situation develops with manual assistance from the vagina with rectocele. When the hand is pressed from the vaginal side, or in the case of defecation-with a specially designed plastic non-x-ray contrast tool, the pressure force is transmitted to the back wall of the rectum and anal canal, creating a damaging factor. In the opposite way, the situation develops with manual assistance from the vagina with rectocele. When the hand is pressed from the vaginal side, or in the case of defecography -with a specially designed plastic non-x-ray contrast tool, the pressure force is transmitted to the back wall of the rectum

and anal canal, creating a damaging factor. This theory also explains the higher percentage of double-localization fissures in patients who use manual assistance intermittently.

Increased anal sphincter tone is often observed in patients with anal fissures and is considered a poor prognostic sign in terms of fissure healing (10, 11, 12). In patients with fissure combined with rectocele, we did not note such a relationship. In addition, in some patients with rectocele, we noted a decrease of sphincter tone which was accompanied by an increase in the latency of the pudendal nerve. The increase in the latency of the pudendal nerve was explained by constant and prolonged straining during defecation, which led to a long overgrowth of this nerve. Thus, the absence of an increased tone of the anal sphincter can be explained by a violation of the innervations of the perineum.

We agree with other authors who believe that the problem of surgical treatment of chronic anal fissures is relevant due to the high frequency of its occurrence in patients with constipation (7, 9). Excision of the anal fissure and lateral internal sphincterotomy are generally accepted methods of surgical treatment worldwide (13, 14). We use a similar treatment method. Problems with defecation negatively affect the healing of both acute anal fissures and wound healing after anal fissure removal (15, 16, 17). This process is also negatively affected by the lowering of the pelvic floor.

Conclusion

In 33.8% of women with chronic anal fissures, they exist in combination with rectocele, which is associated with difficulties in defecation. Patients with anal fissures in combination with rectocele are 1.8 times more likely to have anterior localization of cracks and 3.4 times more likely to have double localization, compared with patients with fissures and normal pelvic floor configuration, which is associated with weakness of the perineal tissues and increased pressure on the anterior semicircle of the anal canal during defecation. Due to the weakness of the pelvic floor muscle system in this category of patients, an increase in the tone of the anal sphincter is 1.7 times less frequent. However, the healing time of wounds after excision of fissures is longer, on average, by 14 days, and relapses of the disease are noted 3.4 times more often.

Thus, the study showed different mechanisms of anal fissure formation in patients with rectocele, compared with patients who had anal fissure and normal configuration of the pelvic floor, as well as a less favorable course of the long-term postoperative period.

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