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Anal fissure – new concepts and controversies in the diagnosis and treatment

Szczelina odbytu – najnowsze poglądy i kontrowersje na temat diagnostyki i leczenia

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S u m m a r y

Anal fissure is one of the most common as well as widespread benign diseases of the anus. Fissure development is initiated by a mechanical injury that is induced by hard faecal mass and remains unhealed if the blood flow in the tissue surrounding the fissure is reduced and the relaxation of the internal anal sphincter is impaired. Conservative treatment is administered as the initial treatment for anal fissures. In recent years, apart form the traditional treatment options, such as warm-water bath, ointments with nitro-glycerine or calcium-channel blockers, there have been reports of using new drugs for pharmacological sphincterotomy. They include bethanechol, which is a muscarinic receptor agonist, as well as sildenafil – a phosphodiesterase type 5 inhibitor which is a mild dilator of blood vessel smooth muscles. The authors describe a good therapeutic effect achieved with topical treatment with 7% sucralfate (sucrose sulphate-aluminium complex) ointment that is used for the treatment of peptic ulcers. Qualifications for the surgical treatment of anal fissure have been made significantly more stringent. Lateral sphincterotomy is the gold standard. The article presents a review of literature on various modifications of lateral sphincterotomy (among other things, segmental internal lateral sphincterotomy was presented). The authors believe that the new operative techniques require due caution and their actual efficacy and possible functional complications such as impaired continence, may be assessed only after a few years of follow-up.

Key words: anal fissure, lateral sphincterotomy, sucralfate

S t r e s z c z e n i e

Szczelina odbytu jest jedną z najczęściej występujących łagodnych chorób odbytu i jest chorobą powszechną. Czynnikiem inicjującym powstanie szczeliny odbytu jest uraz mechaniczny twardymi masami kałowymi, zaś współistniejące zmniejszone ukrwienie tkanek wokół szczeliny oraz zaburzenia relaksacji mięśnia zwieracza wewnętrznego prowadzą do braku gojenia po urazie. Wstępne leczenie szczelin odbytu jest leczeniem zachowawczym. Obok leczenia klasycznego – ciepłych nasiadówek, maści z nitrogliceryną lub blokerami kanałów wapniowych – w ostatnich latach pojawiły się doniesienia o stosowaniu nowych leków w celu uzyskania farmakologicznej sfinkterotomii, takich jak bethanechol – agonista receptorów muskarynowych, oraz sildenafil – inhibitor fosfodiesterazy typu 5, o łagodnym działaniu rozkurczającym na mięśnie gładkie naczyń krwionośnych. Autorki opisują dobry efekt terapeutyczny przy zastosowaniu miejscowym 7% maści z sukralfatu, soli glinowej siarczanu sacharozy, stosowanej w leczeniu owrzodzeń żołądka. Kwalifikacje do leczenia operacyjnego szczeliny odbytu uległy znacznemu zawężeniu. Złotym standardem jest boczna sfinkterotomia. W artykule dokonano przeglądu piśmiennictwa na temat różnych modyfikacji bocznej sfinkterotomii (m.in. przedstawiono segmentalną boczną sfinkterotomię wewnętrzną). Autorki uważają, że nowe techniki operacyjne wymagają zachowania należytej ostrożności, ich rzeczywistą skuteczność oraz ewentualne powikłania czynnościowe w postaci osłabienia kontynencji można będzie ocenić dopiero po kilkuletniej obserwacji.

Słowa kluczowe: szczelina odbytu, boczna sfinkterotomia, sukralfat

INTRODUCTION

Anal fissure is one of the most common benign anal diseases, and is a common disease. Approximately 10-15% of patients presenting to outpatient surgery complain of symptoms associated with the onset of anal fissure (1). The fissure usually refers to patients between 30th and 50th years of age. The most common location is the area of dorsal commissure. Anal

fissure located on the sidewall may be a symptom of other diseases, such as neoplasia, leukemia, Bowen's disease and Paget's disease, tuberculosis, syphilis, AIDS, or inflammatory bowel disease.

ETIOPATHOGENESIS

Theories on the pathogenesis of anal fissure in recent years have undergone great changes.

Currently, in the literature, authors emphasize that the factor that initiates the formation of an anal fissure is an injury – often hard fecal masses (2), but among other factors diarrhea may also be included (3), inflammation and scar tissue in the anal canal, the introduction of a foreign body – also during endoscopy. Co-reduced blood supply to the tissues around the fissure, and disorders of the internal sphincter muscle relaxation leads to a lack of healing after injury.

In studies of blood flow around the anodermal area performed using the Doppler method it has been shown that it is reduced within the dorsal commissure (4). In patients with anal fissure it was found that blood flow in the area of the fissure is significantly lower compared to the control group.

It was also found that in patients with anal fissure Gowers' rectoanal inhibitory reflex (RAIR) is abnormal. There is no relaxation of the internal sphincter muscle, there is a paradoxical contractile response of sphincter during pressure, abnormal visceral sensation in the rectal ampulla (5).

According to Lim et al. additional predispose to the formation of the fissure may be increased by the production of endothelin-1 – epidermal blood vessels shrinkage enhancing factor. Increases in the levels of endothelin-1 in blood were found in patients with chronic anal fissure compared with healthy subjects and patients with third or fourth-degree hemorrhoidal disease (6).

RECOGNITION AND DIAGNOSIS

The diagnosis of anal fissure is easy. In interviews, patients give symptoms such as bleeding and severe pain associated with defecation or appearing after defecation and persisting for up to several hours (7).

Other symptoms may include a tendency to constipation, the presence of secretions, maceration changes of the anal area (8). Some patients have problems holding the gas and liquid stool. In the physical examination it is usually sufficient to spread the buttocks, which allows for the visualization of the fissure.

In patients with acute anal fissure in an examination through the anus generally increased tension of the internal sphincter muscle is observed and the introduction of a finger into the anus may worsen pain in the rectum. Nevertheless, per rectal examination should be performed to rule out other diseases that may also cause pain. Skillfully performed per rectal examination should not be too painful for the patient and the mechanical stretching of the anal sphincter muscle causes its knee-jerk relaxation and pain relief (9). In chronic anal fissure pain is usually not so strongly expressed, or does not exist at all. A little more tense sphincter can persist. After stretching the buttocks hard edges of the ulceration scar are visible, and at the bottom of the fissure the internal sphincter muscle fibers. Outside oversized fold of skin is visible. In the anal canal in the area of the distal fracture increased wart dentate line is reflected. In some cases of chronic fissure, low intersphincteric fistula can be formed, reflected in the form of beads.

A new element in the diagnosis of fissure is the use of endosonography becoming more and more widespread.

Reports on the performance of ultrasonographic transrectal examinations in patients with anal fissure began to appear in the literature in the early 90's. Chronically elevated tension of the internal sphincter muscle causes its thickening in 64 to nearly 70% of patients (10, 11). Preoperative diagnostic ultrasound is an accurate assessment of the state of the sphincter in patients and the exclusion of coexistence of other pathology of the anal canal. **Authors point out that the sensitivity of endosonografic examination in the assessment of the anal sphincter is between 95-100% and the specificity 75-85%** (12). This examination may therefore have an impact on the choice of surgical technique, especially in the context of the implementation of a more or less total sphincterotomy.

Gauge examinations also constitute the extension of diagnosis in recent years. In most publications authors estimate patient continence after fissure treatment for comparison of different treatments – both conservative and operational ones (10, 11, 13).

TREATMENT

Initial treatment of anal fissure is a conservative treatment.

Conservative treatment

The conservative treatment of anal fissures uses warm sitz baths, ointments with nitroglycerin or calcium channel blockers, methods with a long-lasting strong position (14). Including such substances such as salbutamol into treatment – the agonist of beta-2 receptors causes smooth muscle relaxation, L-arginine – which is the physiological precursor of nitric oxide – and 1% of clove oil have been the subject of research and publications in the 90's.

In recent years, there have been reports on the use of new drugs for pharmacological sphincterotomy. These include the Bethanechol – muscarinic receptor agonist. In a study of a group of 15 patients a dose-dependent reduction of the pressure in the anal canal was achieved while achieving the maximum pressure reduction by 24% when using 0.1% Bethanechol ointment. 60% of patients were cured in the course of 8 weeks of treatment. There were no side effects (15).

Promising results have been obtained with the use of sildenafil. It is an inhibitor of phosphodiesterase type 5,

with a mild relaxant effect on vascular smooth muscles. Registered and used in the treatment of primary pulmonary hypertension and potency disorders. Results published in individual reports need confirmation in a larger group of patients (16).

Povidone iodine is used to treat ulcers, infectious diseases of the skin and mucous membranes, burns, washing traumatic wounds. It has bactericidal antifungal and antiviral activity. Durai et al. used to treat anal fissure with 10% povidone iodine solution, applied twice a day for 5 days. During a year of observation, there was no recurrence of the fissure (17).

Sucralfate is an aluminum salt of sucrose sulfate, successfully used in the treatment of stomach ulcers. The combination of sucralfate with the mucous membrane at the ulcer is achieved by electrostatic interaction between positively charged exudate proteins and negatively charged sucralfatepolyanions. In 2011, a good effect in the treatment of wounds of the anal canal after applying the ointment of 7% concentration of sucralfate was described. The authors of the article only recently have begun to apply 7% sucralfate in the treatment of fissure with good effect.

In the literature, there are also reports of substances that do not meet the expectations of the researchers. These include, minoxidil, a potassium channel agonist and indoramin, an antagonist of alpha 1 – adrenoreceptors. Despite the proven with manometric studies obtained reduction of pressure in the anal canal, these substances did not affect the healing of fissures (18).

Another proposal is to incorporate targeted antimicrobial treatment in accordance with the result of inoculation from anoderm into the regimen of conservative treatment of anal fissures. The published study was conducted on a group of 103 patients. The combination of pharmacological antibiotic ointment and sphincterotomy reduced the duration of pain, accelerated the epithelialization of the fissure and double-shortened the duration of treatment compared with the control group (19).

Surgical treatment

For many years the use of botulinum toxin has occupied the first place in surgical treatment.

Garrido et al. studied the effects of different toxins – gonyautoxine. It belongs to a group of saxitoxins produced by dinoflagellates Gonyaulax catenella. It has effects similar to botulinum toxin, a dose-dependent blocking nerve transmission by reversibly binding to the tension-dependent sodium channels. These preliminary results are very encouraging, the authors provide a 100% recovery within two weeks from the supply of toxins, moreover, there was no occurrence of incontinence. However, no long-term follow-up allowing the assessment of recurrence took place (20).

In 2011, a paper was published in which authors presented the results of treatment obtained by the stimulation of sacral nerve. 20-minute treatments were repeated three times a day for three weeks. The study was conducted on a group of five patients. The analgesic effect which was obtained immediately after the start of stimulation, remained for about 10-12 hours, after three weeks chronic anal fissure was healed in all patients. During a year-long observation there was recurrence (21). It appears that this approach could be proposed for patients with chronic anal fissure, in which gauge studies confirmed the weakness of resting tension and the dynamic activity of the sphincter muscles.

Operational treatment

Operational treatment of lateral sphincterotomy for many years has been regarded as the gold standard of treatment. The effectiveness of the introduction of new techniques is compared to the lateral internal sphincterotomy, especially in terms of the increase or decrease in postoperative incontinence.

In the 90's, when it became possible to extend the diagnosis of anal canal with manometry and ultrasound examinations, the presence of significant, irreversible damage to the anal sphincter muscles after surgery with traditionally used dilation was proven. The proposal that would reduce the incidence of complications of incontinence was treatment with expanding anususing Parks analdilator opened up to 4.8 cm or a rectosigmoid balloon with a diameter of 40 mm and the length of 60 mm (22). In 2008 a work was published evaluating the effectiveness of this procedure compared to the classical lateral sphincterotomy. A randomized study included 53 patients divided into two groups – the first was treated with balloon dilatation, the other – sphincterotomy. After treatment, in patients after balloon dilation, in transrectal ultrasound, there was no significant damage to the internal sphincter muscle. Efficacy was comparable in both groups (83.3% in dilation and 92% in surgical treatment). At a 24-month follow-up in patients treated with dilator no complications of incontinence were reported (23).

In 2010, a work was published which compared the outcomes of treating patients undergoing uni- and bilateral technique of lateral internal sphincterotomy. According to the authors in patients of both groups, the percentage of postoperative incontinence was comparable. In the group of patients with bilateral sphincterotomy, a reduction of time and intensity of postoperative pain and the number of relapses was obtained. Despite the positive results of treatment, the authors emphasize that for the evaluation of the method further research is needed, particularly with the use of pre- and postoperative manometry (24).

A new proposal to modify the lateral sphincterotomy is segmental lateral internal sphincterotomy. The authors propose cutting the internal sphincter using two cuts – the first from the anus to half the distance to the dentate line, the second shifted laterally by about 1 cm extending from the proximal end of the first cut to

the level of the dentate line. The study was conducted on a group of 50 patients who underwent pre- and post-operative manometry. The postoperative pain relief was achieved in the first day after surgery. Early complications such as hematoma and urinary retention occurred in 2% of patients. Postoperative wound healing was achieved within four weeks. During the postoperative follow-up, which ranged from 6 to 24 months, no patient had signs of incontinence (25).

In 2012, in the literature, the results of surgical treatment of patients with chronic anal fissure who had the fissure cut and the mucosal flap sutured to prevent deformation of the anal canal stenosis and incontinence. In patients with elevated values of pressure in the anal canal intersphincterictic 30 units of botulinum toxin were additionally administered. During the 24-month follow-up, there was no worsening of continence and relapse occurred in 8% of patients (26, 27).

In addition to proposals for new types of operations on anal fissures, in the literature there are also reports of improved outcomes of minor modifications to the surgical technique. Ersoz et al. found that, in the case of cutting anodermis parallel to the anal canal were obtained better wound healing after sphincterotomy was obtained (28).

Summing up the new proposals for the treatment of anal fissures it is worth noting that it is continuously believed that the initial treatment of fissure should conservative. The introduction of new drugs for conservative treatment and their effectiveness has significantly reduced the number of patients requiring surgical treatment, which always carries the risk of complications, although the used modifications of surgical techniques are intended to improve the effects of treatment and, in particular, reduce the risk of postoperative incontinence. The modifications to the surgical technique discussed in the article require due diligence, their actual effectiveness can only be assessed after several years of observation.

One always needs to remember that anal fissure surgery, considered the easiest of proctologic treatments can cause severe and often irreversible complications when performed by untrained hands – incontinence and deformity of the anal canal.

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