

Perianal abscess and fistula-in ano in children – evaluation of treatment efficacy. Is it possible to avoid recurrence?

Authors' Contribution:

A – Study Design
B – Data Collection
C – Statistical Analysis
D – Data Interpretation
E – Manuscript Preparation
F – Literature Search
G – Funds Collection

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ABSTRACT:

Introduction: Perianal abscess and fistula-in-ano are common findings in infants and children. The perianal abscess is usually a manifestation of a fistula-in-ano. Experience of our center indicates general lack of knowledge of the origin of the abscess and therefore, it is usually treated by incision and drainage, which leads to repeated recurrences.

Aim: We aimed to present the optimal management of fistula-in-ano and perianal abscess in order to reduce or even eliminate the risk of recurrence.

Material and methods: The retrospective study included 24 infants with perianal abscess treated at our center between 2013 and 2015. Patients were divided into two groups: group I (50%) was primary treated in our center, while group II had undergone prior surgical interventions in other hospitals. Fistula-in-ano was intraoperatively identified in all patients (100%) and fistulotomy was performed.

Results: No fecal incontinence or recurrence of perianal abscess were observed in any of our patients. In group II, the disorder was associated with severe inflammation, some patients underwent an additional surgical intervention, such as incision and drainage of an extensive buttock's abscess; patients required longer antibiotic therapy and prolonged hospitalization.

Conclusion: Minimally invasive approach (sitz baths, antibiotic therapy, puncture or incision and drainage of the abscess) appears tempting due to its simplicity and lack of need for general anesthesia, but it is associated with a high recurrence rate. Fistulotomy and fistulectomy, which are slightly more invasive procedures, significantly reduce the recurrence rate of fistula-in-ano and perianal abscess.

KEYWORDS:

fistula-in-ano, fistulotomy, perianal abscess

INTRODUCTION

Abscesses and anal fistulas are relatively common conditions in the pediatric population, especially in infancy.

Inflammation of the glands located in abnormally deep Morganini's crypts is the cause of development of perianal abscesses and fistulas [1]. Inflammation is initiated in the crypts and spreads to the surrounding tissues, leading to inflammation and formation of an abscess in that area. In most patients, perianal abscess is a symptom and consequence of anal fistula running from the crypt on the top of the anal canal to the skin (Fig. 1.). The largest group of patients comprised male infants without other chronic conditions. In older children perianal abscesses may be the first symptom of nonspecific enterocolitis.

Physical examination reveals a painful lump located in the anal area. Skin over the lesion is erythematous, sometimes with elevated temperature (Fig. 2., 3.). In some patients, on physical examination, purulent content is excreted from the anus when the nodule is pressed, demonstrating the presence of a hollow channel penetrating into the anus – an anal fistula.

Various methods of management are used in the treatment of perianal abscesses and fistulas. They may be distinguished into two groups: the first group consists of ad hoc procedures aimed at reducing inflammation and emptying of the abscess (sitz baths, local

or systemic antibiotic therapy, abscess incision and drainage), the second group includes procedures aimed not only at draining the abscess, but also at removing the fistula from the skin to the crypt (ligation of the fistula modo Hippocrates, cutting open the fistula – fistulotomy, or excision of the fistula – fistulectomy). Not only resolution of symptoms determines the effectiveness of the procedure, but also the lack of abscess /fistula recurrence (we talk about the recurrence if the symptoms reappear in the same or similar location). In some patients without a perianal fistula on physical examination, it can be identified when a child is under general anesthesia by inserting a probe into the abscess and directing it toward the crypt.

AIM

The aim of the work is to analyze the results of treatment of children with perianal abscesses/fistulas at a single center that utilizes uniform methods of management.

MATERIAL AND METHODS

The course of treatment was analyzed in all infants with reported symptoms of anal abscess admitted to the Department of Pediatric Surgery and Organ Transplantation of the Children's Memorial Health Institute between January 2013 and December 2015.

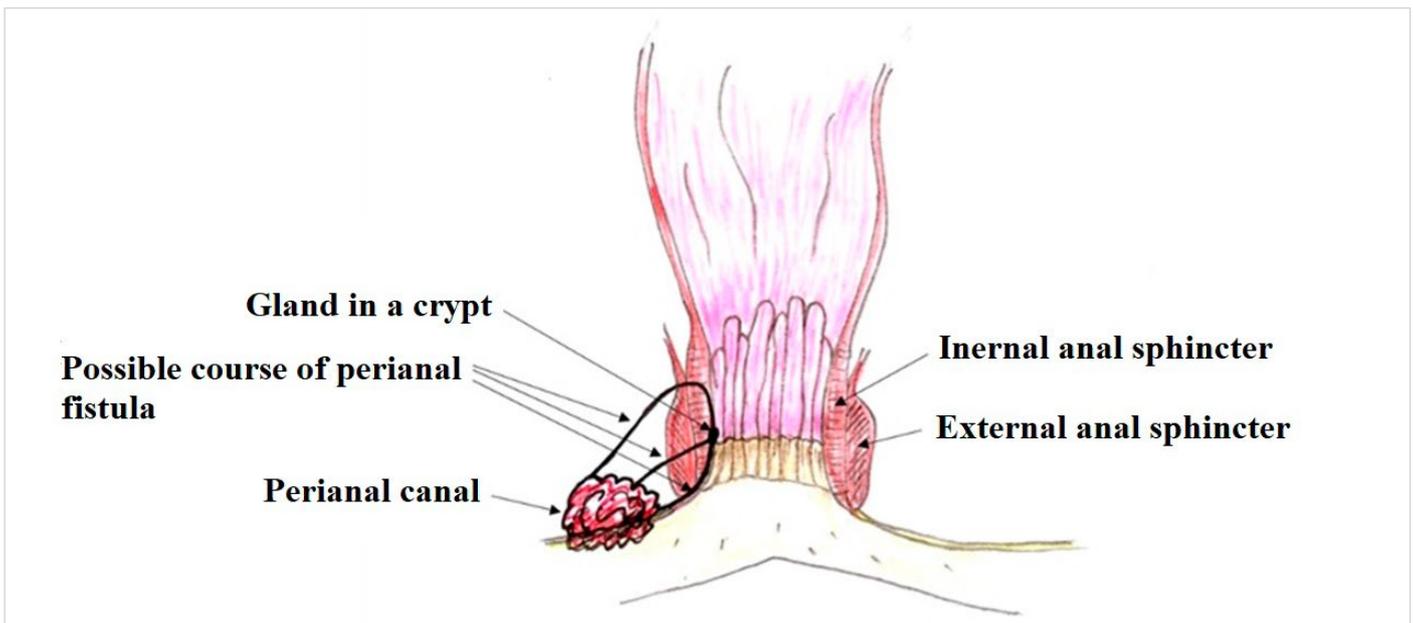


Fig. 1. Location of abscess and anal fistula.

Twenty-four patients were divided into 2 groups:

- Group I: 12 children primarily treated in the clinic;
- Group II: 12 children previously treated at other centers, who have reported to our center due to relapse of symptoms.

Analyzed: age at the time of diagnosis, sex, number of previous surgical interventions due to anal abscesses, surgical procedure, duration of antibiotic therapy, duration of hospitalization and incidence of relapses and stool incontinence.

All patients admitted due to anal abscess were male, aged 2 weeks to 10 months (median: 4 months). Physical examination usually revealed a painful lump in the anal area. Most often, the abscess was located on the right side, at 9 o'clock (7 patients) or at 11 o'clock (4 patients); location was not reported in one patient (Fig. 4.). Moreover, an extensive inflammatory infiltrate of the buttock was found in 3 children and in one patient it extended to perineal area and scrotum. All these patients had undergone previous surgical interventions, consisting of abscess incision. In one patient, broad-spectrum antibiotic therapy was applied immediately before patient was transferred to our center, while other patients did not receive antibiotics before hospitalization. Elevated leukocyte count was noted in 3 children at the time of hospitalization, while CRP was not elevated in any of our patients.

Half of the patients were primarily admitted to our center (12 people). In the remaining 12 cases, it was a recurrence of an anal abscess in the same location following surgical intervention in other centers 7 patients had had a single incision of the anal abscess, 3 patients had the procedure performed twice, 1 patient had 3 such procedures, and 1 had 4 surgical interventions: abscess incision performed twice and two ligations of the fistula *modo Hippocrates*) – Fig. 5.

In all children, the procedure was performed under general anesthesia. The child was placed in a gynecological position. A thorough inspection of the area was carried out. An incision was made over a palpable abscess. The content of the abscess was collected for bacteriological examination. A head probe was introduced through

the incision site to identify the course of the fistula channel into the crypt (Fig. 6.). Then, the fistula was cut using diathermy (fistulotomy) in 12 patients and excised (fistulectomy) in 1 patient. Three patients also required draining an extensive buttock or perineal phlegmon. After the procedure, parents were instructed how to properly care for the wound in order to prevent wound closing and allow granulation from its base. The child was discharged home after parents mastered the wound toilet.

RESULTS

The postoperative period was uncomplicated in 22 children (96%) (100% of children in group I and 83% in group II). In 2 patients admitted with extensive infiltration of the perineum, severe local inflammation was observed and 1 patient required prolonged antibiotic therapy (a child after 3-time abscess incision before being admitted to our center), and 1 required modification of antibiotic therapy (a child after a 1-time abscess incision outside our center). The duration of antibiotic therapy ranged from 0 to 25 days and depended on the severity of local inflammation (in most patients, it was only perioperative prophylaxis according to the current standards). In patients from group I, antibiotics were used between 1 and 8 days (median of 2 days; average of 3.5 days) and in patients from group II – 0 to 25 days (median of 2 days; average of 5 days). Duration of hospitalization ranged from 2 to 25 days – 2 to 7 days in group I (median of 2 days; average of 4 days), and 2 to 30 days in group II (median of 2 days; average of 5 days). Follow-up time lasted between 2 months to 5 years. We did not observe recurrence of an abscess or fistula in any of our patients. Two children had an abscess in a different location. Fistulotomy was performed, no recurrence was observed. One patient with very extensive inflammatory infiltration of the buttock, perineum and scrotum (3-time incision of the anal abscess at another center, fistulotomy performed in our center) required drainage of the buttock abscess 3 months after fistulotomy and repair of the scar on the buttock 2 years after surgery. Ultimately, he was diagnosed with neutropenia and remains under continuing care of immunologists. No sphincter injury has been reported in any of the patients.

DISCUSSION

It would seem that surgical procedure of anal abscesses and fistulas has been long established. However, judging by the number of patients coming to our center due to relapse of symptoms and complications of non-radical treatment, such as: large inflammatory infiltration extending over the entire buttock and perineum (Fig. 7., 8.), this is not the case. According to the information provided by the parents many pediatricians and, more surprisingly, pediatric surgeons – do not know the appropriate management of such cases and children are being referred, for example, to adult proctologists. Conservative management, consisting of local anti-inflammatory treatment, general antibiotic therapy, including ad hoc puncture or incision and emptying of the abscess (often multiple), predominates. It is not uncommon to recommend parents to puncture the abscess with a needle at home. The main reason for not using more effective means of management (fistulotomy, fistulectomy) is the fear of damaging the sphincters and causing stool incontinence. Contrary to these concerns, fistulotomy or fistulectomy is not associated with the risk of stool incontinence in the future, as the fistula canal usually runs outside the sphincter [2:3], as corroborated by our results.

The most conservative management includes topical treatment (sitz baths, antibiotic ointment) and waiting for spontaneous emptying of the abscess and healing. This approach, especially in infants, is associated with the risk of spreading infection by increasing local inflammation (Fig. 3.) or leading to generalized inflammatory reaction. The frequency of relapses and development of anal fistula in such conservative management reaches 77% [4].

In our observation, the most widely used procedure is incision and drainage of the abscess. This procedure is most often performed under local anesthesia or short-term sedation. Due to failure to eliminate the causal factor, such as the presence of a fistula, relapses or progression of inflammatory infiltration are very common. Buddicome et al. stresses that the failure to identify the anal fistula during the first surgical intervention is associated with an increased relapse rate (the risk of relapse increases to 24% in patients in whom fistula canal has not been identified compared to 8% in patients, in whom the fistula has been identified and incised at the first intervention) [2]. In a study by Ezer et al. the rate of recurrence of anal abscess/fistula after incision and drainage of an abscess reached 85% regardless of antibiotic therapy. In patients with an anal fistula diagnosed on physical examination and treated with incision and drainage of an abscess only, the relapse rate was 100% [3]. The frequency of relapse was significantly lower in children after removal of the anal fistula (fistulotomy or fistulectomy), amounting to 12–15% only [3, 5]. The presented management aimed at removing the fistula canal is associated with the lowest percentage of relapses. This is also corroborated by the results in our group of patients, in whom we did not observe relapses after cutting the entire fistula canal.

Analyzing the frequency of relapses in their material, Karlsson et al. found that the highest proportion of relapses occurred in children who were not examined for the presence of a fistula (only incision and abscess drainage) and reached 45%. Among children who have been examined for the presence of fistula canal, but it has not been identified, relapses occurred in 26% of patients. The lowest number of relapses was found in patients in whom fistula



Fig. 2. Recurrence of anal abscess after abscess incision (fistula canal was identified and dissected intraoperatively).



Fig. 3. Anal abscess with infiltration of the buttock after a month of treatment with ichthyole ointment (fistula canal was identified intraoperatively and dissected; a large amount of purulent content was evacuated).

canal had been identified and fistulotomy had been performed – 8% [6]. In a study by Inoue et al., the effectiveness of the Hippocrates method reached 97% [7].

Also the use of antibiotic therapy is associated with a lot of controversies. There were three types of bacterial flora in microbiological cultures collected from anal abscess: intestinal bacteria (*E. coli*, *Klebsiella*, *Enterococcus*), skin bacteria (*S. aureus*, *Streptococcus*) and mixed flora. Some suggest that the formation of anal fistula is facilitated by local inflammation, which persists after incision of the anal abscess. Therefore, the use of antibiotics in general after abscess incision could prevent formation of anal fistulas. However, reports on this subject are contradictory, as other centers report that all patients who have received antibiotics suffered relapse [8]. The use of antibiotic therapy generally does not affect the recurrence of anal abscess [3:6].

It should be emphasized that in older children and adults, the etiology of abscess or anal fistulas may be other than inflammation of glands located in crypts. Firstly, it may be the first manifestation of Crohn's disease. For this reason, imaging diagnostics should be broadened in older age groups and nonspecific enterocolitis (colonoscopy, magnetic resonance imaging) should be excluded. In adults, it is also necessary to take into account the possibility of neoplastic lesions – colorectal cancer of the rectum.

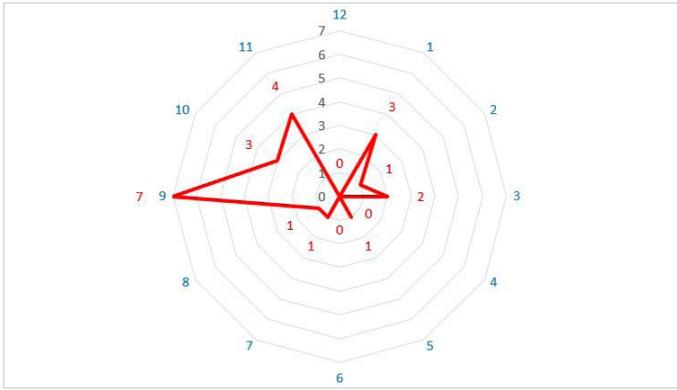


Fig. 4. Location of anal abscesses (red color marks the number of patients with a given location on a clock position).

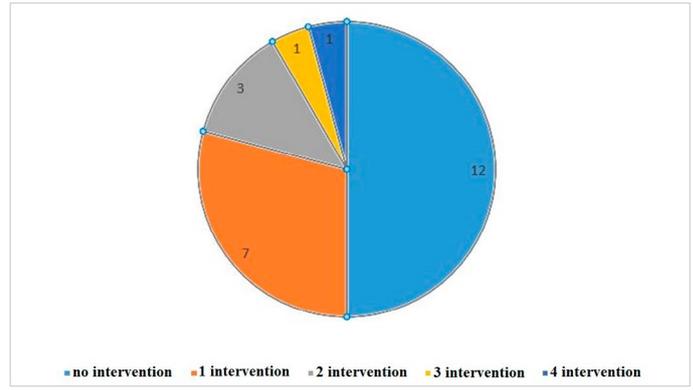


Fig. 5. Breakdown of patients according to previous surgical intervention for perianal abscesses.



Fig. 6. Identification of an anal fistula canal during surgery.



Fig. 7. A child after repeated incisions of anal abscess, with extensive inflammation of the buttock and perineum on the left.



Fig. 8. Intraoperative picture in a child from Fig. 6. (emptied abscesses and anal fistula incised) and 1 week after surgery.

CONCLUSIONS

In conclusion, the frequency of relapses of abscesses and anal fistulas is closely related to the type of surgical procedure: if the ca-

nal of anal fistula has not been identified and dissected, the risk of recurrence of symptoms is very high. Therefore, conservative management and procedures involving incision and drainage of the abscess alone should not be used.

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