

Perianal sinuses in neonates and infants

Kais M. Al-Wattar, FRCS(Ed), FRCS(Eng).

ABSTRACT

Objective: The aim of this study is to evaluate the etiology of perianal abscess or discharges in neonates and infants and some of them are perianal sinuses with blind inner end without connection to the anal canal, and some of these cases have a different histological pattern. Complete surgical excision and primary closure of their wounds can cure these patients.

Methods: Between January 1988 and December 2000, (81) neonates and infants (aged 2 weeks to 2 years) with perianal sinuses, fistula-in-ano abscess dealt in the Al-Zahrawi and Al-Khansa Teaching Hospitals, Mosul, Iraq, were studied. Fifty-one patients displayed an onset of symptoms during their first year of age, all cases had a gentle probing and proctoscopy under general anesthesia, and the discharge from abscess from the patients were sent for culture. Thirty patients with proper sinuses had excision of the sinus and primary closure; children with fistulae underwent fistulectomy; perianal abscesses drained. All the excised specimens were examined histopathologically.

Results: All children, except 3, were boys. Out of the 81 cases studied, 30 patients (37%) proved to have proper

sinuses with blind inner end. Eight of these showed a different histological pattern, and in 2 cases, the histopathology was that of rectal duplication, the microbiology of the discharge from the proper sinuses was showing a predominance of non-gut derived organisms. All patients cured by excision of the sinuses and primary closure.

Conclusion: Fistulae are the most common perianal discharging lesions in neonates and infants, blind sinuses are another cause in a considerable number. We propose a diagnostic strategy and treatment for those children presenting with discharging perianal lesions; for anticipation of these sinuses 3 points need to be considered before attempting surgery. 1) Blind sinus tract on gentle probing. 2) Normal anal and rectal mucosa on proctoscopy. 3) High bacterial yield of non-gut derived organisms on culture of the pus or discharge. Their treatment is by simple excision (coring) and primary closure; this method will shorten the healing and recovery time.

Saudi Med J 2002; Vol. 23 (12): 1499-1503

Fistula-in-ano has classically been described to be the result of crypt abscess that has extended to the perianal skin, but it may result from perianal abscess. Some articles have suggested a congenital cause in children.^{1,2} It has been thought that 40-50% of perianal abscesses develops fistula.^{1,3} A proposed relationship to androgens resulting in congenital deeply epithelialized crypts may explain the predominant occurrence in males.⁴⁻⁶ Infants often present with several recurrent perianal infections that will drain mucus for several days followed by an induration as the discharge stop.⁷ A casual

relationship between perianal abscess and fistula has been suggested;⁸ a congenitally abnormal crypt may be involved.⁹ Those deeper infections in the anal canal or the perirectal tissue usually arise from crypt infection with extension through the sphincters.¹⁰ Perianal Crohn's disease has been mentioned to be an underlying cause of recurrent perianal infection.¹¹⁻¹⁴ Duplications of the rectum are rare but it may present as fistula-in-ano, sinuses or abscess.^{15,16} Non-operative management of fistula-in-ano was suggested, but such lesions cannot be always cured by a period of conservative

From the Department of Surgery, College of Medicine, Mosul, Iraq.

Received 29th May 2002. Accepted for publication in final form 12th August 2002.

Address correspondence and reprint request to: Dr. Kais M. S. Al-Wattar, Consultant General and Pediatric Surgeon, Department of Surgery, College of Medicine, Mosul, Iraq. Fax: +964 (60) 815066. E-mail: wattar.m@uruklink.net

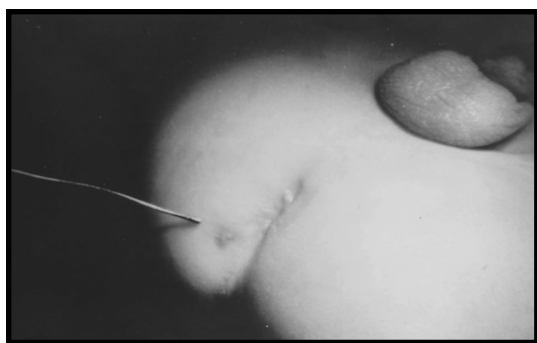


Figure 1 - Perianal sinus of a 6-month-old child.



Figure 3 - The sinus tract dissected.



Figure 2 - The perianal sinus after applying a stay suture and traction at its external opening.



Figure 4 - Primary closure of the wound.

treatment.⁵ The relevance of bacteriological exam of the pus or the discharge has been considered, the yield of bacterial culture whether of gut derived or a non-gut derived organisms has its importance in the development or occurrence of fistulae or sinuses.^{17,18}

Methods. Between January 1988 and December 2000, (81) neonates and infants (aged between 2 weeks and 2 years) with perianal sinuses and fistula-in-ano abscess dealt in the Al-Zahrawi and Al-Khansa Teaching Hospitals, Mosul, Iraq, were studied. The clinical details were considered. Before surgery, under general anesthesia proctoscopy to identify or exclude crypt pathology or an internal opening of fistula performed. Fistulae or sinuses were gently probed to have an idea of the depth and direction of the sinus and its relation to the anal mucosa. In cases of fistula, the probe could be passed through the internal opening to the lumen of the anal canal, probing was also attempted after drainage of

any abscess and when fistula identified fistulectomy was performed. Cases were considered as sinus when the probe stops and could not pass to the anal canal with intact mucosa, avoiding further push and development of false passage. Except for 3 cases, whose parents refused surgical intervention (all abscesses were drained spontaneously), patients with fistulae underwent fistulectomy while patients with blind sinuses without evidence of crypt pathology on proctoscopy underwent excision of the sinus, **Figure 1** shows the appearance of one of the congenital sinuses, and **Figure 2** shows the sinus after applying of stay suture around its opening and traction to feel its direction. The sinus tract dissected as shows in **Figure 3** and excised, the wound closed as shown in **Figure 4** during the early stage of the study, and the wound was left to heal by secondary intention in 7 cases within 3 weeks. The rest of the cases was closed primarily to heal in a shorter time. All the excised specimens were examined

histopathologically, concentrating on 2 main points: 1) a longitudinal section of the specimen passing through the whole length of the tract and showing both ends to demonstrate the blind end of the proper sinus and 2) examine the lining and the tissue composing the wall of the sinus for the presence of gut tissue at the blind end or around. Pus or discharge was cultured to have an idea in regard to the type of organisms, those of gut derived microorganisms or not particularly, cases the culture of which did not grow microorganisms was excluded from the study. According to the age presentation, patients were divided into 3 age groups: Group I - neonates <2 months; Group II - infants between 2-<12 months; Group III - infants between 12-24 months (**Table 1**). Each group is subdivided into those presenting as discharging sinuses and whether these sinuses were present since birth or followed previous perianal abscess, and to those cases presenting as perianal abscess requiring surgery and whether these abscesses healed or developed a sinus later. The patients with blind end sinuses were studied carefully considering the presence of blind inner end, and its relation to the anal mucosa, whether these sinuses was present since birth or following an abscess and their histopathology and the microbiology of their discharge. The follow up period was between 1.5-10 years.

Results. Out of the 81 neonates and infants studied over the last 13 years (1988-2000 inclusive), 50 patients (62%) were presented with a discharging opening in the perianal region, 6 of them had multiple sinuses, all were males (except one female) and most of them were in Group II and III (**Table 1**), and the remaining 31 patients (38%) were presented with perianal abscesses. On screening, out of the 50 cases with discharging perianal opening, 30 (60%) had a proper fistula-in-ano, 20 (40%) had a blind

perianal sinuses. Of the 30 cases with real fistulae, 25 had a history of preceding abscess and 5 cases had a congenital fistula since birth. Of the 20 patients with blind sinuses, 13 followed a perianal abscess and 7 were congenital. Of the 31 patients presenting with perianal abscess, 5 patients healed after drainage or spontaneous rupture without surgical drainage (refusal of the family on any surgical intervention), the remaining 26 cases developed discharging sinuses after drainage of the abscess (some of them were more than one time or one site), of these 26 cases 16 (61%) proved to be fistula-in-ano and 10 (39%) blind proper sinuses. The above mentioned numbers show that out of 81 patients under the study, 30 (37%) cases proved to have an actual perianal sinuses instead of fistulae and a significant number of them as congenital perianal sinuses 58% (7 of 12). On studying the microbiology of the pus or discharge, cultures from the discharge of the fistulae were predominantly of gut derived organism (mainly *Bacteroides fragillis* and *Vulgaris* and *E. coli*), while the cultures obtained from the sinuses were predominantly of organisms non specific to the gut (*Bacteroides assacharyolytics* and *Ureolyticus*, *Staphylococcus aureus*, *Streptococci* and others). There were few cases in which the culture of pus or discharge did not grew organisms but as those cases were under cover of drugs (mainly antibiotics) given by their local doctors, they were not included in the study. The histopathology of a significant number of the sinuses (8 out of 30) reported to show a sinus tract lined by stratified squamous epithelium surrounded by heavy infiltration of inflammatory cells and foreign body giant cells, the internal end was blind surrounded by fibrosis, no evidence of granuloma. Three of these were congenital. The histopathology of the remaining sinuses was a blind tract lined by granulation tissue surrounded by inflammatory cell

Table 1 - The distribution of the different presentations of perianal abscess, fistulae and sinuses within the 3 different age groups.

Group	Age (months)	Presenting as abscess		Presenting as fistula or sinus		Total
		Followed by fistula or sinus	Healed	Followed an abscess	Since birth	
I	0 - <2	Fistula 6 Sinus 4	3 0	1*	Fistula 2 Sinus 3	19
II	2 - <12	Fistula 8 Sinus 5	2* 0	Fistula 10 Sinus 6	Fistula 2 Sinus 3	36
III	12 - 24	Fistula 2 Sinus 1	0 0	Fistula 14 Sinus 7	Fistula 1 Sinus 1	26
*Female						

infiltrate, and fibrosis that of the fistulae was a fistulas tract lined by granulation tissue surrounded by inflammatory cell infiltrate and fibrosis, the inner end was in continuity with the anal mucosa. In 2 cases with multiple recurrent sinuses the histology was different giving an impression of rectal duplication, some of these sinuses were a blind tract with lining of gastrointestinal at the end of the tract and deep to the margins multiple islands of dilated glands and mucus surrounded by lymphocytic aggregate, germinal center and scattered smooth muscles as a heterotopic gut, other sinus in the same patients reported to be an epidermal invagination (Epidermoid) cysts. After surgical excision of all the sinuses and fistulae (coring and primary closure of the sinuses and fistulectomy for the fistulae) their post operation course was uneventful and cured at 1.5-10 years follow-up.

Discussion. Although some excellent reviews of the subject of perianal fistulae and abscesses in children have been published,¹⁻¹³ the occurrence of a proper perianal sinus and its way of surgical treatment has not been clearly mentioned. The male predominance in this study is in keeping with that reported by other authors^{4-6,9} this predominant occurrence in males was depending on the proposed relationship to androgens resulting into abnormal or deeply epithelialized crypts, but in our study with identification of the blind sinuses without connection to the anal canal lining and to the crypts one need to review such a proposed relationship or find another explanation. The peak age incidence in this study is during the first year of life for the abscess and during second year for the fistulae, but for the proper sinuses, alone the first year of age is the usual age. Some authors have suggested a congenital cause in children,^{1,2} the occurrence of blind sinus especially those having different epithelial lining support that suggested congenital etiology. It has been found that 40-50% of perianal abscess will eventually develop fistula,^{1,3} in our study the total number of cases developed discharging points was 26 out of 31 (80%) indicating an apparent high incidence, but 10 out of the 26 cases were sinuses instead of fistulae leaving 16 cases of fistulae correcting the incidence to 51%, and as this study is limited to neonates and infants one might anticipate that some of these cases with the actual sinuses might heal if they are left to grow into older children. When considering the histopathology of the excised specimens, their lining has not been clearly mentioned in most of the other studies. In this study there is a significant number of the sinuses (8 out of 30) lined by stratified squamous epithelium, this might indicate an underlying congenital cause especially in those cases with their sinuses present since birth, we believe that the rest of the excised blind sinuses could have been lined by a

similar epithelium but have been destroyed by inflammatory reaction. Perianal Crohn's disease has been mentioned to be an underlying cause of recurrent perianal infection¹¹⁻¹⁴ but none of our cases showed histopathological changes of Crohn's disease or other granulomas, on the other hand 2 of the cases studied presented with multiple perianal sinuses, one of them with recurrent multiple sinuses after previous unsuccessful operations (one aged 22 months and the other 20 months) showed to have intestinal tissues with mucus glands and cystic changes and elements, which can be considered as cases of rectal duplications which has been reported by others.^{15,16} All the cases of the sinuses under study managed operatively on the assumption that nonoperative management cannot always be cured by a period of conservative treatment.⁵ However, some of the cases of these blind sinuses might cure by non-operative line under proper cover of antibiotics, and this need further studies. The study of the bacterial growth and the relevance of microbiology in the diagnosis and management of our cases was considered, all the cases with the proved blind sinuses showed a high yield of non bowel derived organisms on culture of the pus or the discharge, while cases with proper fistulae showed a high yield of gut derived organisms, this in keeping with that reported by others when they have studied this point in all age groups with perianal sepsis.^{17,18} The treatment of these cases with blind sinuses was successful by simple excision (coring) leaving the rectal mucosa intact and without interfering with the anal sphincters, then primary closure of the wounds.

Acknowledgment. I would like to thank Mr. Asal Y. Izzidien Al-Samarrai, Consultant Surgeon at Prince Charlie's Hospital, Cardiff, United Kingdom, for reviewing the article. And to Dr. Bedoor Irhaim and Dr. N. Al-Sakkal of the Department of Pathology for their help.

References

1. Poenara J, Yazbeck S. Anal fistula, etiology and features. *J Pediatr Surg* 1993; 28: 1193-1195.
2. Takatsuki S. An etiology of anal fistula in Infants. *Kew Journal of Medicine* 1967; 25: 21-23.
3. Duhamel J. Anal fistula in children. *Am J Proctol* 1985; 26: 40-43.
4. Al Salem AH, Laing W, Talwalker V. Fistula in ano in infants and childhood. *Arab Journal of Pediatric Surgery* 1994; 29: 436-439.
5. Oh JT, Han A, Han SJ, Chol SH, Hwang EH. Fistula-in-ano in infants, is non operative management effective. *J Pediatr Surgery* 2001; 36: 1367-1369.
6. Piazza DJ, Rodhakrishnan J. Peri anal abscess and fistula in ano in children. *Dis Colon Rectum* 1990; 33: 1014-1016.
7. Ross SF. Fistula in ano. *Surg Clin North Am* 1988; 68: 1417-1419.
8. Al-Salem AH, Qaisorudden S, Qureshi ST. Perianal abscess and fistula-in-ano in Infancy and childhood. A clinicopathological study. *Pediatr Pathol Lab Med* 1996; 16: 755-764.

9. Fitzgerald RJ, Harding B, Ryan W. Fistula-in-ano in childhood, a congenital etiology. *J Pediatr Surg* 1985; 20: 80-83.
10. Eisenhammer S. Internal anal sphincter and anorectal abscess. *Surg Gynecol Obstet* 1956; 21: 103-106.
11. Paider SB, Shabdling B, Bilik R, Griffiths AM, Scherman P. Perianal complications of Pediatric Crohn's disease. *J Pediatr Surg* 1991; 26: 513-515.
12. Pople IK, Ralpus DM. An etiology for fistula-in-ano. *Br J Surg* 1988; 75: 904-906.
13. Morkowitz J, Graneher K, Roso J, Simpsok Aigen H, Daun F. Highly destructive Perianal disease In children. With Crohn's disease. *J Pediatr Surg* 1995; 21: 149-153.
14. Talia V. Perianal Crohn's disease in children and adolescents. *Am J Gastroenterol* 1996; 91: 9226-9229.
15. La Qnaglia MP, Feins N, Eraklis A, Hendren WH. Rectal duplication. *J Pediatr Surg* 1990; 25: 980-984.
16. Tyor CP, Mahour GH. Duplication of the alimentary tract in infants and children. *J Pediatr Surg* 1995; 30: 1267-1270.
17. Eykyn SJ, Gracc RH. The relevance of microbiology in the management of ano-rectal, Sepsis. *Ann R Coll Surg Engl* 1986; 68: 237-239.
18. Fielding MR, Berry AR. The management of Perianal Sepsis In a district general hospital. *J R Coll Surg Edinb* 1992; 37: 232-234.

Related Abstract

Source: Saudi MedBase



Saudi MedBase CD-ROM contains all medical literature published in all medical journals in the Kingdom of Saudi Arabia. This is an electronic format with a massive database file containing useful medical facts that can be used for reference. Saudi Medbase is a prime selection of Abstracts that are useful in clinical practice and in writing papers for publication.

Search Word: fistula-in-ano

Authors:

Jehoram T. Anim, Saleh A. Sowayan, Chris S. Grant, Hassan Breiki

Institute:

King Fahad Hospital of the University, Al-Khobar, Saudi Arabia

Title:

Fistula-in-ano: A pathology study

Source:

Annals of Saudi Medicine 1991 July, 4: 366-380

Abstract

A review of 229 cases of fistula-in-ano in our institution has shown that nonspecific inflammatory tissue lines the majority of tracts. Epithelial lining was present in 50 cases and was encountered proportionately more. Frequently in subjects under 10 years of age, thus supporting a congenital origin as well as infection of anal glands, earlier proposed by other workers. Intestinal contents may have a role in the foreign body response seen in many cases. Locally endemic infectious conditions do not appear to play a significant role in the cause of the disease.