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Original Article

Aspiration with Antibiotics for Anorectal Abscess at a Tertiary Care Hospital

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Abstract

Objective: Anorectal abscess is a common anorectal condition. Incision and drainage is standard treatment. Aspiration with antibiotics is an alternative in some cases, but evidence for its effectiveness is limited. The objective of the present study was to examine the results of aspiration with antibiotics for anorectal abscess, within 6 months of follow up. Factors associated with abscess recurrence and occurrence of fistula-in-ano were also examined.

Methods: Twenty patients with anorectal abscess who refused surgery and underwent aspiration with antibiotics were compared with 123 patients who underwent standard incision and drainage in a retrospective study. Outcomes included failure of treatment, the recurrence of perianal abscess and the incidence of fistula-in-ano.

Results: Demographic data were similar in both groups. In the aspiration and antibiotics group, 2 patients had treatment failure, 1 had recurrent abscess, but none had fistula-in-ano after 6 months of follow-up. In the incision and drainage group, 18 patients had recurrent abscess and 16 had fistula-in-ano.

Conclusion: Aspiration with antibiotics for anorectal abscess is effective for some patients. It is an alternative method for treating anorectal abscess in selected patients.

Keywords: Anorectal abscess, Aspiration, Antibiotic, Fistula-in-ano

Introduction

Anorectal abscess is a common anorectal disease.[1] The current standard treatment is still open or incision and drainage (I&D)[2], but this method is painful and is associated with recurrent abscess and the occurrence of fistula-in-ano. It can also cause sphincter injury[3] leading to fecal incontinence. Most patients undergoing, I&D may require spinal anesthesia and will need hospitalization. In the postoperative period, the wound care is a major concern

More conservative treatment of anorectal abscess, such as abscess aspiration and antibiotics, may be suitable in some situations, such as for pediatric patients. In the adult patient, aspiration as alternative method for treating abscesses is common. Aspiration of breast abscesses has been reasonably successful, with minimal complications[3,4], and aspiration of parasitic liver abscess and of peritonsillar abscess have been reported in the past. There are relatively few studies of aspiration for ano-rectal abscess.

The aim of the present study is to compare the results of aspiration and antibiotics with those of I&D in anorectal abscess at Rajavithi Hospital, and to determine factors associated with recurrent abscess and the occurrence of fistula-in-ano.

Patients and Methods

The Institutional Ethics Committee reviewed and

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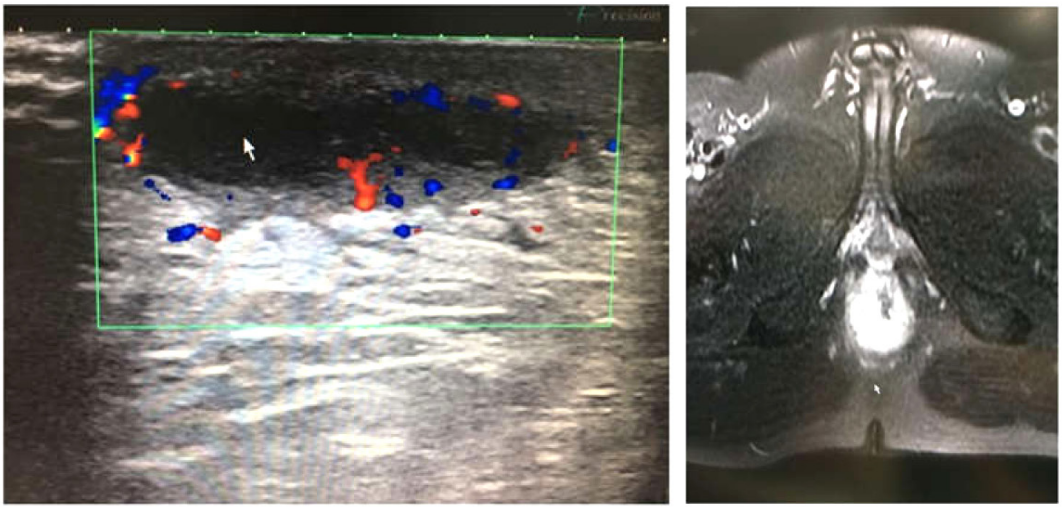
approved this study. A retrospective comparative study was conducted between January 2016 and December 2017. Patients included were diagnosed with anorectal abscess but were excluded if the patient's age was below 18 or more than 80 years, if he or she had underlying inflammatory bowel disease (IBD), cancer of rectal or anal canal and perianal area, immunocompromised status, was receiving concurrent immunosuppressive drugs such as prednisolone or cytotoxic drugs, having coagulopathy state or on antiplatelet drugs, and finally did not come for follow up after treatment.

The aspiration procedure was done in the outpatient clinic under ultrasound guidance or clinical palpation, with the patient in the Sims position, using a no. 18 gauge needle, 1.2 x 40 millimeter (Nipro, Japan), removing as much pus as possible. Patients were discharged after aspiration. **Figure 1** demonstrates an imaging study of perianal abscess, **Figure 2** demonstrates pus in the aspiration group. In the I&D group, patients were admitted to the hospital and underwent I&D under regional anesthesia and were discharged the next day. A cruciate incision was made above the abscess cavity, the pus was removed, and a piece of gauze was used to swab and clean the cavity.



A : Ultrasonographic study showed parianal abscess B : MRI study showed intersphincteic abscess

Figure 1 Imaging study of perianal abscess

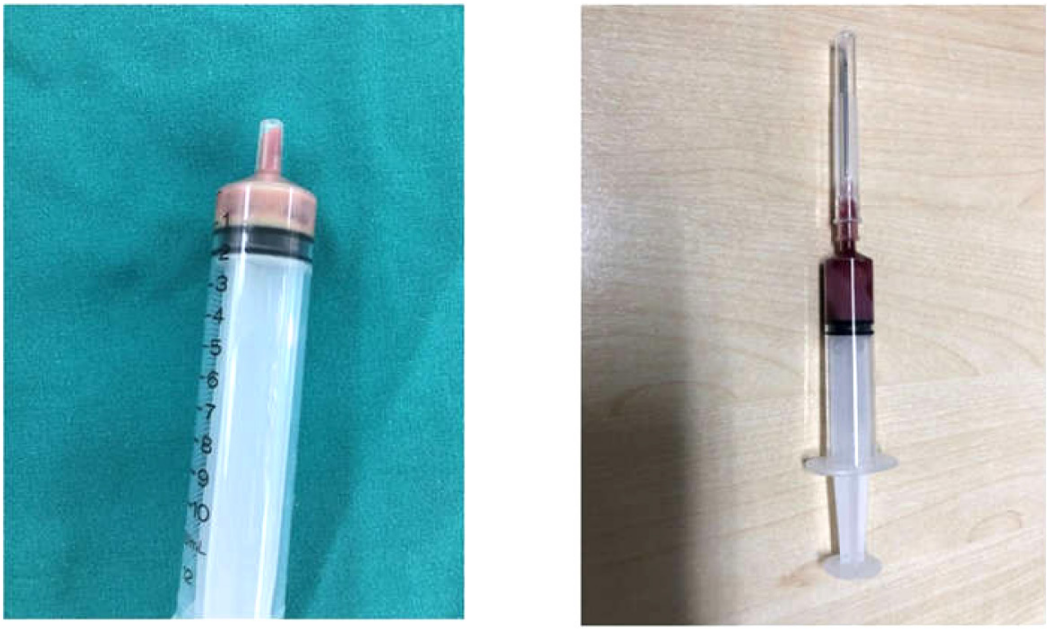


Figure 2 Demonstration of pus in the aspiration group

The wound was left open for secondary wound healing. During the the follow up period, both groups were instructed to clean the wound using warm sitz bath. All patients were followed at the out-patients clinic on day 3, at 1 week and at 2 weeks after treatment. All patients were prescribed metronidazole 400 mg, three times a day for 14 days and ciprofloxacin 500 mg, twice a day for 14 days. On the 3rd and 6th month patients were followed by telephone.

The outcomes of treatment were defined as follows. Treatment failure was defined as persistent pain requiring re-operation within a few days after initial treatment. Recurrent abscess was defined as the recurrence of pain at the same site with the presence of fluctuation and inflammation 30 days or more after initial treatment. Fistula-in-ano was defined as persistent discharge from external wound or opening 30 days or more after initial treatment, with imaging study showing an internal opening, a fistula tract, and an external opening.

All statistical analysis was performed using the software SPSS version 20.0. Descriptive statistics included frequency and percentage for categorical variables; mean and standard deviation for continuous variables with normal distribution, and median, minimum and maximum for non-normally distributed quantitative variables. Data were compared between two groups using Student's *t*-test or Mann-Whiney U test for continuous variables, and chi-square test for categorical variables.

Results

There were 20 patients in the aspiration and antibiotics group and 123 patients in the I&D group. Characteristics of patients in both groups are shown in Table 1.

Table 1 Characteristics of patients in the aspiration with antibiotics and I & D groups

	Open and drainage (n = 123)	**Aspiration and Antibiotic (n = 20)**	***P* value**
Sex (Male) (%)	84 (68.3)	12 (60.0)	0.464
Age (year) (mean ± S.D.)	41.16 ± 16.290	41.90 ± 17.155	0.852
BMI (kg/m^2) (mean ± S.D.)	25.57 ± 6.37	23.22 ± 4.37	0.056
BMI ≥ 25 (%)	61 (49.6)	5 (25.0)	0.053
Fever on presentation, n (%)	22 (19.5)	4 (20.0)	1.000
Interval of pain to hospital (days) (mean ± S.D.)	2.90 ± 1.70	3.50 ± 1.27	0.140
Underlying disease (%)			0.431
Diabetes mellitus	18 (14.6)	0 (0)	
Hypertension	17 (13.8)	1 (5)	
Coronary artery disease	5 (4.1)	3 (15)	
HIV Infection	5 (13.0)	0 (0)	
Cirrhosis	3 (2.4%)	0(0)	
Pus volume (ml) (mean ± S.D.)	7.18 ± 8.89	16.90 ± 24.46	**< 0.001**
Type of perianal abscess (%)			0.654
Perianal abscess	67 (54.5)	12 (60.0)	
Ischiorectal abscess	39 (31.7)	7 (35.0)	
Intersphincteric abscess	15 (12.2)	1(5.0)	
Supralevator abscess	2 (1.6)	0	
Post-op clinical incontinence	0 (0)	(0)	
Bacteriology (%)			0.832
Bacteroides fragilis	29 (23.6)	5 (25.0)	
Escherichia coli	64 (52.0)	12 (60.0)	
Peptostreptococcus species	6 (4.9)	1 (5.0)	
Mixed organism	7 (5.7)	2 (10.0)	
Pseudomonas species	1 (0.8)	0 (0)	
No growth	16 (13.0)	0 (0)	

There were no significant differences between the two groups in terms of age, gender, BMI, underlying disease and type of perianal abscess (see Table 1).

Looking at the results of treatment, failure of treatment was similar in both groups. In the aspiration group, 2 patients with failed treatment underwent incision and drainage under spinal anesthesia. There were no recurrent abscesses or fistula-in-ano in the aspiration group. Also, no antibiotic side effects were seen. In the I&D group, 18 patients (15%) had recurrent abscess and 16 patient had fistula in ano (13%), but no patient had clinical incontinence (see Table 2).

Possible risk factors associated with recurrent abscess are shown in Table 3. Absence of fever, larger amount of pus, and presence of underlying diseases seemed to be associated with the occurrence of recurrent abscess.

Discussion

The standard treatment for anorectal abscess is incision and drainage (I&D)[2], but complications included pain, risk of sphincter injury, and occurrence of fistula-in-ano.[3] The incidence of sphincter injury after I&D could be up to 7%.[3] Aspiration with antibiotics in the management of anorectal abscess has been reported to have good results in pediatric patients. A study in 2006[4] showed an 81% success rate using aspiration with antibiotics, with a recurrence rate of 8% and 11% rate of fistula-in-ano. Other studies also showed comparable success rate to I&D, in the range of 77 to 100%.[5,6] The use of drainage catheters had a success rate of 64% with a risk of fistula-in-ano of 29 %.[7]

In adult patients, a success rate of 82 % has been reported for aspiration treatment of breast abscess[8], where the risk of failure was associated with large abscesses > 6 cm and multi-loculation.[8,9] A recent report on breast abscesses showed better success rate of aspiration compared to that of open drainage (93% vs 77 %; $p = 0.033$).[10] The result of aspiration for the treatment of anorectal abscess in adults is less clear.

The present study showed comparable success rates of I&D with those of aspiration with antibiotics for the treatment of adult anorectal abscess (93% and 89%, respectively; $p = 0.633$). Recurrent abscess occurred in 18 (15%) and 1 (6%) patients ($p = 0.467$), fistula-in-ano occurred in 16 (13%) and 0 (0%) patients ($p = 0.224$) in the I&D group and aspiration with antibiotics group, respectively. The types of recurrent abscesses in the present study were perianal and ischioretcal abscesses, similar to those of a previous study.[11]

A recent study showed a high recurrent abscess rate of 41% with aspiration[12], in contrast to the results of the present study. Possible explanations include, firstly, a higher average BMI in the study with higher recurrence, which could make effective pus clearance via aspiration difficult due to the thickness of the subcutaneous fat. Secondly, the use of antibiotics in that study covered only aerobic organisms, whereas in the present study the anti-

Table 2 Result of treatment of patients in the aspiration with antibiotics and I&D groups

	Open and drainage (n = 123)	Aspiration and Antibiotic (n = 18)	*P* value
Treatment failure (%)	9 (7.3)	2 (10.0)	0.653
Follow up at 3 days: clinical improvement (%)	122 (99.2)	18 (90.0)	0.51
Persist discharge (%)	106 (86.2)	1 (5.0)	***< 0.001***
Follow up at 1 week: clinical improvement (%)	115 (93.5)	19 (95.0)	1.000
Persist discharge (%)	79 (64.2)	1 (5.6)	***< 0.001***
Follow up at 3 Months (%)			0.076
Recurrent abscess	9 (7.3)	0 (0)	
Fistula-in-ano	10 (8.1)	0 (0)	
Follow up at 6 Months (%)			0.698
Recurrent abscess	9 (7.3)	1 (7.1)	
Fistula-in-ano	6 (4.9)	0 (0)	
All recurrences (%)			
Recurrent abscess	18 (14.6)	1 (5.0)	0.467
Fistula-in-ano	16 (13)	0 (0)	0.224

Table 3 Comparative data of recurrence patients

	Non-Recurrence abscess (n = 124)	Recurrence abscess (n = 19)	*P* value
Age (years) (mean ± S.D.)	40.86 ± 16.28	43.53 ± 17.59	0.773
Age group (years) (%)			0.460
< 40 yr	59 (89.4)	7 (10.6)	
≥ 40 yr	63 (84.0)	12 (16.0)	
Sex (%)			0.673
Male	83 (87.4)	12 (12.6)	
Female	39 (84.8)	7 (15.2)	
BMI (kg/m^2) (mean ± S.D.)	26.11 ± 6.98	24.528 ± 4.89	0.776
BMI ≥ 25 (%)	59 (89.4)	7 (10.6)	0.460
With underlying disease (%)	9 (9.4)	10 (22.2)	***0.037****
Present with fever (%)	26 (100)	0 (0)	***0.023****
Duration of symptom to hospital (days) (mean ± S.D.)	2.94 ± 1.63	3.26 ± 1.85	0.333
Type of abscess (%)			0.088
Perianal	69 (55.6)	10 (52.6)	
Ischiorectal	37 (29.8)	9 (47.4)	
Intersphincteric	16 (12.9)	0 (0)	
Supralevator	2 (1.6)	0 (0)	
Pus volume (ml) (mean ± S.D.)	8.53 ± 12.11	15.42 ± 17.74	***0.002****
Bacteriology (%)			0.508
Bacteroides fragilis	31 (25.0)	3 (18.8)	
Escherichia coli	67 (54.0)	9 (56.3)	
Peptostreptococcus species	5 (4.0)	2 (12.5)	
Mixed organisms	7 (5.6)	2 (12.5)	
Pseudomonas species	1 (0.8)	0 (0)	
No growth	13 (10.5)	3 (15.8)	

biotics given covered both gram negative and anaerobic organisms. Therefore, aspiration with antibiotics may be an option for treating perianal abscess in healthy adult patients, with normal BMI and small abscess size, and who are able undergo close follow up.

The pathogenesis of breast abscess is external infection following nipple cracking during breast feeding. Cessation of breast feeding after aspiration will help stop further contamination. In anorectal abscess, the pathogenesis is different, and is probably due to internal infection from fecal impaction in the anal crypts leading to infection of the anal glands. It is also not practicable to reduce further contamination by bowel confinement after ano-rectal abscess treatment. However, the true incidence of patent anal crypts is not known. But indirect estimation by observing the subsequent occurrence of fistula-in-ano puts that incidence in the range of 26% to 37%.[13-15] Thus, it might be assumed that spontaneous anal crypt closure can occur in two-thirds of patients.

Factors associated with recurrence include the presence of underlying disease, absence of fever, and a high estimated pus volume. All three factors suggested poor wound healing and more virulent disease. Certain underlying diseases may be associated with poor wound healing and poor immune response leading less effective clearance of infection.[16,17] Fever is one marker of systemic inflammatory response to injury.[18] Previous studies of acute disease conditions showed higher hospital mortality in the presence of SIRS[19,20], due to high virulence of disease and risk of septicemia or sepsis. More virulent disease may be associated with less fever. High estimated pus volume should also directly relate to severity of disease. In the past, I&D is standard because the environment of an abscess, such as low pH and the presence of inactivating enzymes, is detrimental to the effect of antimicrobial agents. But in the present study

most of the causative organisms were gut flora, and antibiotics used were metronidazole and ciprofloxacin, to which the response is good in anaerobic infections. Also, the chance of microbial resistance is low with metronidazole.[21-23]

The incidence of fistula-in-ano after perianal abscess treatment is reported to be in the range of 26 to 37%[13-15] and a study in Thailand reported 31%.[24] The risk of fistula-in-ano was reported to increase in patients younger than 40 years, who are non-diabetic, and who underwent insufficient drainage or delayed drainage.[24-27] The present study showed that aspiration with antibiotics was not inferior to I&D in terms of fistula-in-ano occurrence. The use of antibiotics should help to eradicate causative microorganisms in the tissues and in the blood and reduce the chance of recurrent abscess and the occurrence of fistula-in-ano.[24,28-30] In the present study, type of bacteria was not significantly associated with recurrence and fistula-in-ano formation.[31,32]

Limitations of the present study included limited imaging information, absence of bacterial culture data in some cases, and the lack of incontinence scoring. Potential treatment failure beyond 6 months was not assessed and will require further study in the future.

Conclusion

The present study is first in adult patients to demonstrate comparable results of aspiration with antibiotics to that of incision and drainage for anorectal abscess. Aspiration with antibiotics can be an alternative management option in selected patients with anorectal abscess.

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