



Original Article

# Microbiological Assessment of the Chronic Anal Fistula

A A J P Kumara<sup>1,\*</sup>, D L Jayaratne<sup>2</sup>, D J Antony<sup>3</sup>

Senior Lecturer, Gampaha Wickramarachchi Ayurveda Institute, University of Kelaniya, Srilanka.

Senior Lecturer, Department of Microbiology University of Kelaniya, Srilanka

Professor, Department of Anatomy, Faculty of Medicine, University of Colombo, Srilanka.

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ABSTRACT

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Fistula in ano is one of the commonest ailments pertaining to the ano-rectal area and has frequency of occurrence. Surgical treatment of fistula in ano is associated with significant risk recurrence and high risk of impaired continence. The *ksara sutra* refers to a medicated thread described in the Ayurvedic text 3000 years back. This thread is prepared by repeatedly smearing special medicines. The technique of treatment involves ligating the entire fistulous tract with a caustic ligature without performing excisional therapy. Infection would be an integral part of the pathogenesis of fistula in ano. The microbiology of acute anorectal sepsis is well documented but the only study on chronic anal fistula raised doubts about the relevance of infection in fistula persistence. So this study focused to assess the common microorganism in Chronic Anal fistula which were treated by using *ksarasutra* (medicated setone). Objective of the study was focused to detect the common microorganism in the chronic fistula tract. The study included 30 patients, 24 men and 6 women who had undergone parasurgical treatment procedure of *Kshara sutra* for chronic perianal fistulae with recurrences. The pus smear was taken from the fistulous opening by sterile cotton swab and sent to the department of microbiology, in sterile container, and where pus culture was done. Pus swab was inoculated on Nutrient Agar medium. The plated media were incubated at 37° C and examined at 48 hours after incubation. Smears from colonies that grew on the Nutrient Agar media were stained with Gram-stain. Gram-positive organisms and Gram-negative organisms were identified by conventional biochemical techniques. The incidence of fistula in ano and the origin of the predominant microorganism present in ano rectal fistula have been investigated using 100 pus samples obtained from the 30 patients. Total 312 Isolates were identified. (*Staphylococcus aureus* and *Streptococcus* spp were identified as skin derived organisms. Isolates of *Enterococcus* spp., *Escherichia coli*, *Bacteroides* spp were considered gastro intestinal tract derived organisms. In this study the skin-derived organisms isolated from pus of (30%) appear to behave less responsible for development of fistula-in-ano; in contrast, *Enterococcus* spp., *Escherichia coli* and *Bacteroides* spp (70%) grew bowel-derived organisms.

**Key Words:** Microbiology, Fistula in ano, Kshara sutra, microorganism.

Corresponding author \*

A A J P Kumara  
Senior Lecturer, Gampaha Wickramarachchi Ayurveda  
Institute, University of Kelaniya, Srilanka.  
E-mail: [mrsnhkumara@gmail.com](mailto:mrsnhkumara@gmail.com),

## 1. INTRODUCTION

Anorectal fistulous abscess are common, and it is now generally accepted that they develop in the intramuscular space as an intersphincteric abscess. Extension of this intersphincteric abscess results in perianal or ischioanal sepsis, and by definition, a fistula in ano<sup>1,2</sup>. The incidence

of fistula in ano in relation to acute anorectal sepsis has not been well defined<sup>3</sup>.

However fistula in ano is one of the commonest ailments pertaining to the ano-rectal area and usually causes pain and discharge of pus from the external opening which may be continuous or intermittent. These symptoms should not be underestimated. They often cause great discomfort and can make the patient's life a misery. Unfortunate part of the problem is that the treatment of this disease is not simple. Surgical treatment of fistula in ano<sup>4</sup> is associated with significant risk recurrence and high risk of impaired continence<sup>5</sup>

The *Ksara sutra* refers to a medicated thread described in the Ayurvedic text 3000 years back. This thread is prepared by repeatedly smearing special medicines. The technique of treatment involves ligating the entire fistulous tract with a caustic ligature without performing excisional therapy. *Susrutha* has mentioned the application of *kshara sutra* as a para surgical treatment procedure in the management of fistula in ano. In present study enumeration and identification of bacteria colonized in fistula in ano was carried and their possible relationship between the chronicity of perianal fistulae and the presence of probable permanent infection of the fistulae was investigated.

## 2. MATERIALS AND METHODS

This study was carried out at the Department of Surgery, University Teaching Hospital, Gampaha Wickramarachchi Ayurveda Institute. The study included 30 patients, 24 men and 6 women who had undergone para surgical treatment procedure of *Kshara sutra* for chronic perianal fistulae with recurrences type II (according to the Parks classification).

Patients diagnosed with Clinical examinations and based on previous medical records were reviewed to identify patients with recurrent fistula in ano. Chronic perianal Crohn's fistulas, perineal and scrotal soft tissue necrosis, or pilonidal abscesses were excluded from the study.

Age, duration of symptoms at admission, clinical symptoms, results of physical examination, risk factors, location of abscesses, antibiotics administered, and duration of treatment and hospitalization were recorded.

Prior to collection of pus smears, the perianal skin was sterilized using alcohol, proper anorectal examination was carried out with or without local anesthesia, anal canal and the lower rectum were carefully examined for internal opening by inspection and pressure from outside to see if pus could be demonstrated. The pus smear was taken from the fistulous opening by sterile cotton swab to prevent contamination by local skin microflora and sent to the microbiology laboratory in sterile McCartney bottles and where pus cultured. The plated media were incubated at 37 C and examined at 48, hours. Smears from colonies that grew on the Nutrient Agar media were stained with Gram-stain. Gram-positive organisms and Gram-negative organisms were identified by conventional biochemical techniques.

Different types of bacteria produce morphologically distinctive colonies. The morphological characteristics including the colony shape, elevation, margins, surface appearance, opacity, pigmentation and size were recorded. Each distinct colony should represent an individual bacterial cell that has divided repeatedly bio chemical tests were carried out to confirm the identification.

It was decided that for the purpose of this particular study, identification of all isolates of micro-organisms cultured from these specimens would be wasteful of time and effort. Therefore, the intention was to divide the types of growth into either skin-derived or bowel-derived organisms.

( Isolates of *Staphylococcus aureus*, *diphtheroids* and *coagulase negative Staphylococci* were considered to be the skin -derived organism. Species of *Streptococcus* including *streptococcus faecalis* and *Pseudomonas* species, *Escherichia coli* and all other Gram-negative facultative anaerobes, loosely called coliforms, were considered to be derived from the mucous membrane of the bowel.)

## 3. RESULTS

### Common Analysis of ano rectal fistula

The previous medical records revealed that all of the 30 patients, 24 male and six female had abscesses and fistulas one to three or more previous episodes and had been treated with antibiotics before coming for *Kshara sutra* treatment. Of these patients, seventeen patients had perianal abscesses, while 13 had fistulas without history of perianal abscess 13 patients had one or more previous episodes of anorectal sepsis and 17 patients presented with the abscess at the same site as the previous sepsis.

### Surgical management

Out of 30 patients 14 were under went surgery (fistulostomy) at the initial stage and 10 were operated second time in low anal fistula (Table 1). 12 patients were operated in initial stage and 16 were operated for second time in high anal fistula. Initial examination thirteen patients merely had their abscess drained, Ten patients had the abscess drained and a low fistula laid open; two other patients had the abscess drained and a high fistula laid open. One abscess discharged spontaneously. Fourteen patients had low and 16 patients had high fistulas demonstrated; these included the twelve high fistulas found at the initial examination.

**Table 1: Surgical history based on medical report**

Operation	Low fistula	High fistula	Total
Initial EUA	14	12	26
Second EUA	10	16	26
Not laid open	04	0	04

EUA Excision under Anesthesia

At least six different species of bacteria were isolated from the 100 pus samples obtained from 30 patients the predominant gram negative organism in the anaerobic group was *Bacteroid* spp., the gram positive. *Enterococcus* spp

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 and *Escherichiacoli* was the predominant gram negative. *Staphylococcus aureus* was the predominant among the skin derive organism (Table 2).

**Table 2: Bacteria isolated from the patients (n=30)**

Bacteria	low fistula (n=14)	high fistula (n=16)	No Fistula (%) (n=30)
<i>Bacteroids</i> Spp	70	40	110(35%)
<i>Escherichia coli</i>	20	50	70(22%)
<i>Staphylococcus</i>	30	40	70(22%)
<i>Enterococcus</i>	12	24	36(12%)
<i>Streptococcus</i>	12	14	26(08%)

#### 4. DISCUSSION

These results further confirm that anorectal fistula abscesses are a common surgical problem and that they occur more commonly in men<sup>6,7</sup>.

The present study found that 30 patients (100 per cent) presented with fistula abscess at the same site as their previous sepsis emphasize this problem. A total of 30 patients had antibiotic therapy but still required treatment that is antibiotics had failed before underwent Kshara sutra treatment. The fact that antibiotics had been given by the patients general practitioners suggest that sepsis may settle with antibiotic But there were no place for antibiotics in the management of chronic anorectal fistula<sup>8</sup> except anorectal gangrene. Skin derived organisms, mainly *Staphylococcus aureus*<sup>9, 10</sup>, account for 22 per cent of the organisms isolated from pus in chronic anorectal fistula. *Staphylococcus aureus* forms only a very small proportion of the fecal flora<sup>11</sup> And the possibility of anal gland infection by Staphylococci is therefore low. If all anorectal fistula are due to intersphincteric sepsis a fistula should be found irrespective of the bacterial infection but no previous study has related bacterial infection to the occurrence of a fistula. In this study the pus from 30% isolates were skin-derived bacteria in contrast, the isolates of 70% were bowel-derived organisms. So this study suggests that the skin derived organisms on culture, may less responsible for anal gland infection which leads to develop fistula in ano.

#### 5. CONCLUSION

Anal fistulae can be colonized by intestinal or skin microflora or a combination of both. This report suggests that bowel derived organism were common in chronic anal fistulae.

#### 6. REFERENCES

1. Eisenhammer S: The internal anal sphincter and the anorectal abscess. *Surg, Gynecol. Obstet.* 1956: 103, 501-6
2. Parks A C Pathogenesis and treatment of fistula -in-ano *Br. Med J* 1961; 1:463-9
3. Leaper D J Page RE, Rosendberg I I et al A controlled study comparing the conventional treatment of idiopathic anorectal abscess with that of

incision, curettage and primary suture under antibiotic cover *Dis, Colon Rectum* 1976:19 46-50.

4. Goligher J C *Surgery of the Anus Rectum and Colon*, 2<sup>nd</sup> ed., London Baillier Tindall 1967:188-200
5. Garcia – Aguilar J (1996): The cutting seton. In Phillips RKS & Lunniss Pj (eds) *Anal Fistula* London: Chapman & Hall.
6. Wilson DH The late results of anorectal abscess incision curettage and primary suture under antibiotic K. *Surg.* 1964; 51: 828-31
7. Hill JR *Fistulas and fistulous abscesses in the anorectal region personal experience in management Dis Colon Colon Rectum* 1967-10 421 -34
8. Page RE and Freeman R *Superficial Isepsis the antibiotic of choice for blind treatment Br.J.Surg.* 1977: 64; 281-4
9. Ellis M *Incision and primary suture of abscesses of the anal region. Proc. R. Soc, Med.* 1960:53 652-
10. Neuskub GW Lerner SA Graves MH et.al. *Cutaneous abscesses; anaerobic and aerobic bacteriology and outpatient management Ann. Intern. Med.* 1977:87: 145 -9
11. Wilson GS and Miles A *Principles of Bacteriology Virology and Immunity*, 6<sup>th</sup> ed. London: Edward Arnold, 1975: 2607

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