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KSHARA SUTRA IN THE MANAGEMENT OF FISTULA IN ANO**

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STUDY ON BACTERIOLOGY AND HISTOPATHOLOGY OF THE GUGGULU BASE KSHARA SUTRA IN THE MANAGEMENT OF FISTULA IN ANO

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ABSTRACT:

Introduction: 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 microbiology of acute ano-rectal sepsis is well documented but the only study on chronic anal fistula raised doubts about the relevance of infection in fistula persistence.

Aims: Study focused to assess the common microorganism in Chronic Anal fistula which were treated by using ksara sutra (medicated setone)

Materials and Methods: The study consists with three stages such as microbiology study, chemical analysis & clinical study. The present study included 30 patients, 24 men and 6 women who had underwent para surgical treatment procedure of Kshara sutra for chronic perianal fistulae with recurrences. The pus smear was taken from the fistulous opening by cleaned cotton swab and sent to the department of microbiology, in sterile container, & where pus culture was done. Pus swab was inoculated on Nutrient Agar medium. The plated media were incubated at 37° C & examined at 48 hours after incubation. Smears from colonies that grew on the Nutrient Agar media were stained with Gram-stain. Gram-positive organisms & Gram-negative organisms were identified by conventional biochemical techniques.

Observation: The incidence of fistula in ano & the origin of the predominant microorganism present in ano rectal fistula have been investigated using 100 pus samples obtained from the 30 patients. Total 240 Isolates were identified. Among isolates Staphylococcus aureus & streptococcus Spp were identified as skin derived organisms. Isolates of Enterococcus spp., Escherichia coli, Corynebacterium spp Lactobacillus spp-, Bacteriodes spp were considered as gastro intestinal tract derived organisms.

Result & Discussion: According to the bio chemical test for gram positive rods Corynebacterium spp, Lactobacillus spp & Bacillus spp & Clostridium spp, were detected. Gram positive cocci were identified as Staphylococcus aureus, Micrococcus spp, Streptococcus spp, Enterococcus spp & Streptococcus pyogenes. Under the gram negative rods the Pseudomonas spp & Escherichia coli were identified. Biopsy was taken from the fistula tract pre-treatment, during treatment & after treatment. Section of tissue before treatment specimens showed a similar pattern of intense active chronic inflammatory change characterized by large numbers of plasma cells, scattered multinucleate foreign body giant cells & prominent vascular proliferation. During the Kshara sutra treatment section of tissue in specimens showed decrease of inflammatory changes & marked aggregation of healthy granulation tissue. At the end of the treatment predominant fibroblast, collagen & less inflammatory changes showed in a section of tissue.

Key words: Bacteriology, Fistula Abscess, Histopathology, Microbiology

INTRODUCTION

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Infection would seem to be an integral part of the pathogenesis of fistula in ano. The Microbiology of acute anorectal sepsis is well documented, but the studies on chronic anal fistula have continuously raised doubts about the relevance of infection in fistula persistence. The present histological study complements the earlier work, which used microbiological methods alone where important organisms might have overlooked.

Granulation tissue from twenty patients with non specific fistula in ano was processed within 4h of medicated seton (Kshara sutra) therapy. Three samples from the intersphincteric part of the fistula were obtained. Pus samples were studied microbiologically. The pus smear was taken from the fistulous opening by sterile cotton swab and sent to department of microbiology, in sterile container, 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. 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 third sample was fixed in 10 per cent formal saline for histological processing. Multiple 4 µm paraffin sections were stained using haematoxylin and eosin, gram, cresyl fast violet, periodic acid – Schiff and Ziehl – Neelsen stains.

Unfortunate part of the problem is that the treatment of this disease is not simple. Surgical treatment of fistula in ano is associated with significant risk recurrence and high risk of impaired continence. (Garcia Agvilar et.al., 1996) 1

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(Su/Ch/17) 2. One of main objective is to identify the antimicrobial activity of the medicated thread

Anorectal fistulous abscess are common, and it is now generally accepted that they develop in the intramuscular space; an intersphincteric abscess. Extension of this

intersphincteric abscess results in perianal or ischioanal sepsis, and by definition, a fistula in ano [3,5]. The incidence of fistula in ano in relation to acute anorectal sepsis has, however, not been well defined. Most series refer merely to the initial management of the abscess [6] or the fistula.

MATERIAL AND METHODS

This study was retrospectively carried out at G.W.A.I, University Hospital, Department of Surgery, between January 2009 and December 2011.

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 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, presentation of Perianal abscess. Patients who had fistulas, fistula with Perianal abscess were included. 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.

Cases were selected for evaluation of antibacterial effect of Kshara Sutra in high anal fistula and low anal fistula. The cases were - treated with Kshara sutra and no antibiotics were used during the therapy. Before starting the therapy, 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 and sent to dept. of microbiology, in sterile container, and where pus culture and sensitivity was done. Pus swab was inoculated on nutrient agar medium.

Different types of bacteria produce morphologically distinctive colonies, some colonies may be colored, some colonies are circular in shape, and others are irregular. The characteristics of a colony (shape, size, pigmentation, etc.) are termed the colony morphology. Colony morphology is a way to identify bacteria.

Each distinct circular colony should represent an individual bacterial cell or group that has divided repeatedly. Being kept in one place, the resulting cells have accumulated to form a visible patch. Most bacterial colonies appear white, cream, or

yellow in color, and fairly circular in shape.

It was decided that for the purpose of this particular study, identification of all species of micro-organisms cultured from these specimens would be wasteful of time and effort. It was expected that most cultures would yield mixed growth and our intention was to divide the types of

growth, if possible, into either skin-derived or bowel-derived organisms. Furthermore, when culture yielded mixed growth it was considered necessary to identify only the predominant

Biopsy was taken from the fistula tract during pre treatment, during treatment and after treatment.

Table –1 past history of abscess/ fistula in 30 patients

Previous abscess	Different	Not known	Total	
Fistula same site	site		No	%
Abscess				
1	9	0	0	9
2	5	0	0	5
3+	3	0	0	3
Fistula	13	0	0	13

RESULT

Common Analysis of ano rectal fistula
 Thirty patients were studied, of whom 24 were male. 30 patients (100 %) had been treated with antibiotics before come to Kshara sutra treatment(table-5) The incidence was highest in the fourth decade; there were 06 female. Seventeen patients had a perianal abscess, while 13 had a fistula without history of perianal abscess. 13 patient s (43.23percent) had one or more previous episodes of anorectal sepsis'17(56.6 percent) of these patients presented with the abscess at the same site as the previous sepsis (table 1)

Surgical management

Out of 30 patients 14 were laid open initial stage and 10 were laid open for second time in low anal fistula (Table 2). 12 patients were laid open initial stage and 16 were laid open 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. All were laid open. 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 bacteroids spp. The gram positive organism, Enterococcus spp and E. coli

were the predominant gram negative. Staphylococcus aureus was the predominant among the skin derive organism (table-6)

Table 2-surgical history based on medical report

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

Table 3- Bowel derived and Skin derived organisms

Operational	No fistula (n=30)	Low fistula (n = 14)	High fistula (n = 16)
Bowel derived Organisms	22(74%)	08(26%)	14(47%)
Skin derived organisms	08(26%)	03(10%)	05(17%)
Sterile	0	0	1(3%)
No culture	0	0	0

Table 4 - Recurrence presenting bacteriology

Original bacteriology (n = 30)	Recurrence of fistula		Total
	same site	Different site (n-30)	
Bowel derived Organisms	17(57%)	0	17
Skin derived organisms	13(43%)	0	13
Sterile	0	0	0

Table 5- history of antibiotic, previous surgery & recurrences

	No of fistula(30)	%
Recurrences	30	100%
Previous history of antibiotics	30	100%
Previous history of surgery	26	86%

Table 6 -organism grown from 30 fistulas in ano cases

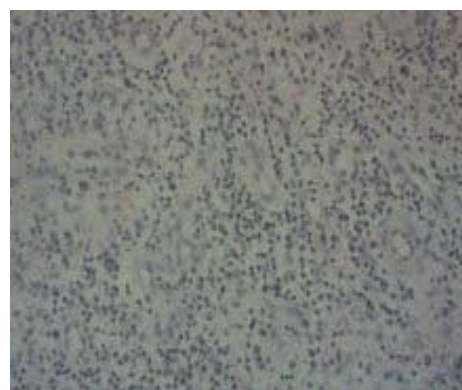
Organism	low fistula n=14	high fistula n=16	Number of Fistula % (n=30)
Bacteroids Spp	06	09	15(50%)
Escherichia coli	2	6	08(26%)
Staphylococcus	3	6	09(30%)
Enterococcus	1	2	03(10%)
Corynebacterium	1	1	02(6%)
Streptococcus	1	1	02(6%)

Histo-pathological study

Section of tissue from(Fig 1-3) before *kshara sutra* treatment specimens showed a similar pattern of intense active chronic inflammatory change characterized by large numbers of plasma cells, scattered multinucleate foreign body giant cells and prominent vascular proliferation. Acute inflammatory change (of variable degree) was superimposed. No granulomas were seen in any specimen.

During the *Kshara sutra* treatment section of tissue in (Fig- 4& 5) specimens showed decrease of inflammatory changes and

mark aggregation of healthy granulation tissue. At the end of the treatment predominant fibroblast, collagen and less inflammatory changes showed in a section of tissue(fig-5)

**Fig-1.Sub epithelial tissue edema, vascular proliferation, moderate**

lymphoplasmacytic infiltrate, scattered neutrophils

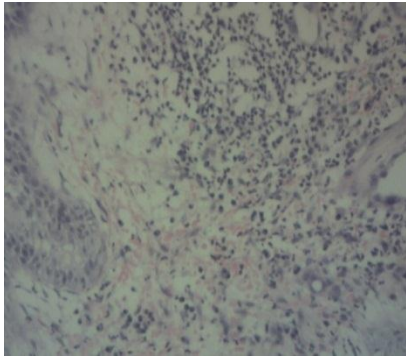


Fig-2. Endothelial cell proliferation and inflammatory cells of mixed nature

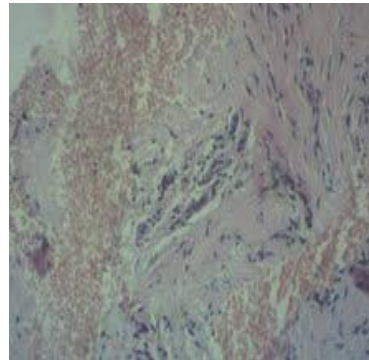


Fig-4. Healthy granulation tissue with decrease inflammatory cells

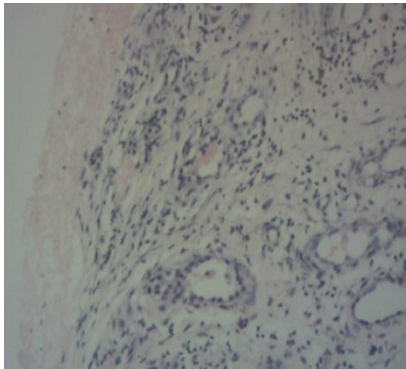


Fig-3 healthy granulation tissue with decrease inflammatory cells

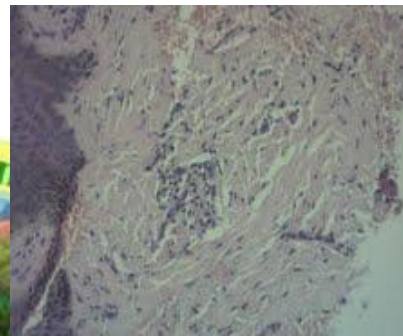


Fig-5. Healed lesion, having plump fibroblast with intervening collagen and minimum inflammatory cells



Table – 7 Unit Cutting Time of the guggulu base ksharasutra

Group	Unit cutting time (U.C.T.) (Days)
Average cutting time	5.6

Unit cutting time (U.C.T.) is defined as the number of days required for the excision of unit (1 cm) of the fistulous track.

$$U.C.T. = \frac{\text{Total no. of days}}{\text{Initial length in cm.}}$$

It was observed that average U.C.T. was 5.6 days.

DISCUSSION

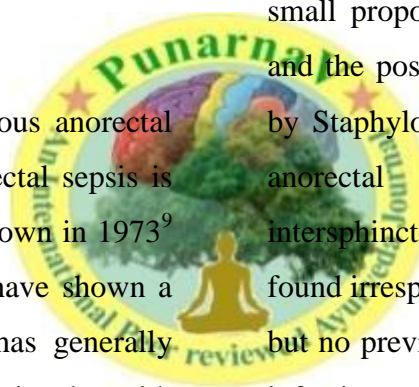
These results further confirm that ano-rectal fistula abscesses are a common surgical emergency and that they occur more commonly in men,^{7,8} but there was no clue as to why this incidence was greater in men. The types of abscesses, the incidence of a fistula and the infection were similar in the two sexes. Men may be less fastidious, may sweat more profusely and may wear rougher underclothes but the incidence of sepsis in men caused by skin organisms was not different from that in women.

The high incidence of previous anorectal sepsis emphasized that anorectal sepsis is badly managed. This was shown in 1973⁹ and, although other studies have shown a lower recurrence rate, this has generally reflected difficulties associated with adequate follow-up¹⁰. The finding that 30 patients (100 per cent) presented with fistula abscess at the same site as their previous sepsis underlines this problem.

The place of antibiotics needs to be defined. 30 patients (100 %)(Table V) had antibiotic therapy before underwent Kshara sutra but still required treatment that is antibiotics had failed. The fact that antibiotics had been given by the patients general practitioners suggest that there

may be a population whose sepsis does settle with antibiotic and who are therefore, not seen in hospital practice. We think that this is unlikely and we feel that, excluding ano-rectal gangrene, there is no place for antibiotics in the management of chronic ano-rectal fistula¹¹.

Skin derived organisms, mainly *Staphylococcus aureus* (12&13), account for 15-25 per cent of the organisms grown from pus in chronic ano-rectal fistula. *Staphylococcus aureus* forms only a very small proportion of the faecal flora (14) and the possibility of anal gland infection by *Staphylococci* is therefore low. If all anorectal abscesses 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 13 patients grew skin-derived organisms but none of these patient was found to have a fistula-in-ano; in contrast, the pus from 17 patients grew bowel-derived organisms and 13(43percent) of these patients had a fistula-in-ano with history of abscess. This suggests that the aetiology of those abscess, which grow skin organisms on culture cannot be associated with anal gland infection going on to an intersphincteric abscess.



Of these 17 have developed a further, fistula abscess at the same site as the presenting . In contrast no patient with skin organisms has yet presented either with a further abscess or a fistula at the same site.

CONCLUSIONS

Anal fistulae can be colonized by poli- or mononormal intestinal or skin micro flora or a combination of both. This report suggests that neither the type or the number of germs it's related to the chronicity of cryptoglandular anal fistulae.

Among isolates *Staphylococcus aureus* and *Streptococcus* Spp were identified as skin derived organisms. Isolates of *Enterococcus* spp., *Escherichia coli*, *Corynebacterium* spp *Bacteriodes* spp were considered as gastro intestinal tract derived organisms.

According to the bio chemical test for gram positive rods *Corynebacterium* spp, *Lactobacillus* spp and *Bacillus* spp & *Clostridium* spp, were detected. Gram positive coci were identified as *Staphylococcus aureus*, *Micrococcus* spp, *Streptococcus* spp, *Enterococcus* spp & *Streptococcus pyogene* Under the gram negative rods the *Escherichia coli* were identified.

The present study has confirmed the relative paucity of organisms and demonstrates through micro biological

study but histological examination revealed details of the inflammatory changes. Section of tissue before treatment specimens showed a similar pattern of intense active chronic inflammatory change characterized by large numbers of plasma cells, scattered multinucleate foreign body giant cells and prominent vascular proliferation. Acute inflammatory change (of variable degree) was superimposed. No granulomas were seen in any specimen. During the *Kshara sutra* treatment section of tissue in specimens showed decrease of inflammatory changes and mark aggregation of healthy granulation tissue. At the end of the treatment predominant fibroblast, collagen and less inflammatory changes were seen in a section of tissue.



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