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FISTULA IN ANO : A PROSPECTIVE CLINICO-PATHOLOGICAL STUDY.

General Surgery

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ABSTRACT

BACKGROUND: To describe the incidence of various etiologies and to study the modes of clinical presentation including pathological characteristics of fistula in ano.

METHODS: This cross-sectional study entitled "Fistula in ano : A prospective clinico-pathological study" was conducted at The Department of General Surgery, Teerthanker Mahaveer Medical College & Research Centre during the study period November 2017 – November 2019 on patients who attended the surgery out-patient department and were diagnosed with fistula-in-ano and who underwent relevant surgical procedure.

RESULTS: In present study of 50 cases, 56% of cases were in the age group of 20-40 years. Male:female ratio was 8:2. 68.0% of population were of low socio-economic status. Perianal irritation was found among 28.0%, Pain among 4.0%, Swelling among 70.0%, Discharge among 96.0% and Perianal abscess among 24.0% of subjects respectively. Past history of TB was found among 2 (4.0%) patients.There was one external opening among 76.0%, two among 18.0% and more than 2 among 6.0% of patients. Fistula was found to be anterior among 30.0% cases and posterior among 70.0% of patients. Level of fistula was found to be High among 10.0% and Low among 90.0% patients.Associated Fissure was found among 8.0% and Haemorrhoid among 4.0% patients. Probing of Tract showed that 35 (70.0%) had Curved tract and 15 (30.0%) had straight tract.The most common surgical approach done was fistulectomy. Only Fistulectomy was done for 40 patients (80.0%). Fistulotomy was done for 6 patients (12.0%). And fistulectomy with fissurectomy with lateral anal sphincterotomy was done for 4 patients (8.0%) as these 4 patients had associated anal fissure.Complete healing period range from 2 weeks to 8 weeks. Maximum patients (72%) got healed in 3-6 weeks. Excised fistula tract on biopsy (HPE) showed no specific aetiology in 48 patients whereas in 2 patients it revealed specific tubercular aetiology. All the cases underwent definitive surgery. It was found that fistulectomy was superior treatment option compared to fistulotomy as there is evidence of complete healing with no recurrence following surgery.In our study, post-operative period were uneventful with minimal

CONCLUSION: Fistula in ano is common between 20 - 50 years with male predominance. Low socioeconomic status is one of the risk factor may be due to illiteracy and poor hygiene. Previously, burst abscess or inadequately drained perianal abscess is the main aetiological factor found. Low type and posterior type of perianal fistula is common with discharging sinus as a commonest mode of presentation. Fistulectomy is the commonest suitable procedure for low type of fistula with less postoperative complication.

KEYWORDS

Fistula in Ano, Sphincterectomy, Fistulectomy.

INTRODUCTION

Fistula-in-ano has been a worrisome clinical entity throughout the surgical history to both patient and surgeons. Per year, the non-specific fistula-in-ano prevalence is estimated to be 8.6 – 10 per 1 lakh population. And the estimated male : female ratio is 1.8 to 1. [1]

Fistula-in-ano is a chronic inflammatory process whereby there is an abnormal communication between the perianal skin and the rectum or the anal canal and is due to a previous anorectal abscess in nearly all the cases. History usually shows of recurrent abscess that was either surgically drained or ruptured spontaneously.[2,3] Development of these type of abscesses are mainly the result of infection of the anal glands (Cryptoglandular hypothesis : Eisenhammer). [4]

The standard classification that is frequently used divides fistula-in-ano into two broad categories:-
Low anal fistula : where the internal opening opens inferior to the anorectal ring and the High type : where the internal opening opens into the anal canal above the anorectal ring.

According to Park, fistula-in-ano is divided into 4 types:- [5]

- Inter-sphincteric (70%) : through the internal sphincter;
- Trans-phicteric (25%) : through the external and inernal sphincter;
- Supra-sphincteric (5%) : supralevator in location and opens into ischiorectal fossa;
- Extra-sphincteric (1%) : tract passes through the entire sphincter mechanism and opens on to the skin.

The patient presents with complaints of constant or intermittent discharge or drainage which is either purulent or blood stained. There is also history of perianal itching, pain, swelling or recurrent abscess formation. There may be perianal sites or lesion with exuding pus with red or pink elevation, or it may have healed. The margins are or may be raised with watery discharge in case of tuberculosis or Crohn's disease. [6] The mainstay of diagnosis remain the physical examination. The surgeon should inspect the whole perianal region for any evidence of an outer opening on to the skin which may be noted as an elevation of granulation tissue or an open sinus. On per rectal examination there may be evidence of discharge through the outer opening which may be either spontaneous or expressed.

A fibrous tract or cord beneath the skin may be felt on digital rectal examination and it often serves to discover the presence of any abscess or infection which needs further surgical drainage.

Induration felt posteriorly / laterally often point towards posterior / ischiorectal abscesses. [7]

Anal fistula can also result from tuberculosis, inflammatory bowel disease like ulcerating proctocolitis or Crohn's disease and lymphogranuloma inguinale. Fistula were also been documented to develop after an external perianal trauma, use of probe to determine fistula tract [8] and in chronic fissure-in-ano. Anal fistula can also be a manifestation of colloid carcinoma of the rectum. [9] In rare instances, reports have been documented of penetrating rectal trauma following foreign body ingestion like fish and or chicken bones. A high anal fistula can also be the result of a road traffic accident or piercing sharp injury after accidently falling over it. The chief complaint of anorectal fistula is constant or intermittent discharge. Often there is previous history of perianal swelling, pain, and or abscess with recurrences that was either spontaneously ruptured or was drained by surgical means. There may evidence of elevated outer openings with either discharge or healed. Tuberculosis or Crohn's disease may show serous discharge with violaceous margins. [10,11]

The key to the identification of anorectal fistula remains digital rectal examination. [4] The investigations which are vital for diagnosis of fistula-in-ano include :

- Small bowel series including barium enema,
- Ultrasonography (TRUS),
- Sigmoidoscopy and colonoscopy.
- Fistulography,
- Computerized Tomography Scan (CT scan) in selected cases,
- Magnetic Resonance Imaging (MRI) in selected cases. [12]

.Although thoroughly done physical examination including DRE and

procto scopy is most essential in the diagnosis.

Definitive treatment for fistula aims in preventing or stopping its recurrences. Treatment depends on the position and the part of the external and internal sphincter that is involved. Treatment modalities available include : fistulotomy, fistulectomy, seton stitch, fibrin glue injection - fistula plug, endorectal advancement flap, LIFT (ligation of intersphincteric fistula tract, fistula clip closure (OTSC Proctology, PERFACT (proximal superficial cauterization with regular emptying and curettage of tracts) and VAAFT PROCEDURE (also called as Video Assisted Anal Fistula Treatment).

Factors affecting recurrence of fistula are: [12]
- complex fistula,
- Horseshoe extension,
- Lack of localization,
- Lateral position of the internal opening,
- Previous surgery and
- Surgeon's expertise.

Fistula-in-ano is a common disease affecting the peri-anal region and although being a common disease there are few studies available in this part relating to its aetiology, pathogenesis, mode of presentation and its prevalence and incidence. Hence the study was planned to assess the various etiologies, various modes of presentations and its outcome.

MATERIALS AND METHODS

This cross-sectional study entitled "**clinico-pathological study of fistula in ano**" was conducted at The Department of General Surgery, Teerthanker Mahaveer Medical College & Research Centre during the study period November 2017 – November 2019 after clearance from college ethical committee on patients who attended the surgery out-patient department and were diagnosed with fistula-in-ano and under went surgery.

Sample Size :

The sample size has been calculated by using G-power software 80% power and 5% significance level. The total sample size was determined to be 50 consecutive cases, with complaints and clinical signs suggestive of fistula-in-ano over a period of one year.

Inclusion criteria

- All consecutive patients (males and females) above 18 years of age, who present with fistula-in-ano.

Exclusion criteria

- Recurrent Fistula at presentation.
- Not willing to participate in the study.
- Pregnant females.

Study procedure :

In al l the patients a detailed clinical history was acquired followed by detailed clinical examination with DRE and proctoscopy. Every patients underwent routine investigations i.e electrocardiogram, chest radiograph (CXR) etc. (pre-op work-up) prior to surgical intervention. Colonoscopy was reserved for selected cases where inflammatory bowel diseases or tuberculosis or malignancy are suspected, and MR-Fistulogram was done in selected cases where the fistula has multiple openings, or a high fi stula is suspected.

Patients went with either fistulotomy (laying open) / fistulectomy (excision) / partial fistulectomy and seton placement / LIFT (Ligation of Intersphincteric Fistulous Tract). Tissue from fistulous tract was sent for histo-pathological study in all the patients.

STATISTICALANALYSIS :

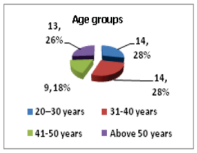
Microsoft excel was used for entry of study data and statistical software SPSS version 21.0 was used for statistical analysis. The Quantitative or Numerical variables were present in the form of mean and standard deviation (SD) whereas the Qualitative or Categorical variables were present in the form of fr e quency and percentage.

The student t-test was used for comparing the mean values between the 2 groups whereas chi-square test was applied for comparing the frequency. The p-value was considered to be significant if it is less than 0.05.

OBSERVATION AND RESULTS

Table 1: Age Distribution

Age groups	Frequency	Percentage
20-30 years	14	28.0%
31-40 years	14	28.0%
41-50 years	9	18.0%
Above 50 years	13	26.0%
Total :	50	100.0%



The study population consisted of 14 (28.0%) subjects from 20-30 years age group, 14 (28.0%) subjects from 31-40 years age group, 9 (18.0%) subjects from 41-50 years age group and 13 (26.0%) subjects from above 50 years age group.

Table 2: Sex Distribution

Sex	Frequency	Percentage
Male	40	80%
Female	10	20%
Total :	50	100%

The study data showed male - 40 (80%) and female - 10 (20%).

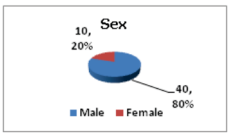


Table 3: Distribution as per socio-economic status

SocioeconomicStatus	Frequency	Percentage
High	16	32%
Low	34	68%
Total:	50	100%

Among study population, 16 (32.0%) were of high and 34 (68.0%) were of low socio-economic status.

Table 4: Distribution as per Occupation

Occupation	Frequency	Percent
AD	1	2.0%
AG	16	32.0%
CP	6	12.0%
HW	9	18.0%
T	4	8.0%
Vender	14	28%
Total :	50	100%

The data showed 1 (2.0%) subject occupation as auto-driver (AD), 16 (32%) as agriculturist (AG), 6 (12%) as carpenter, 9 (18%) as housewife (HW), 4 (8%) as technician and 14 (28%) subjects as vender.

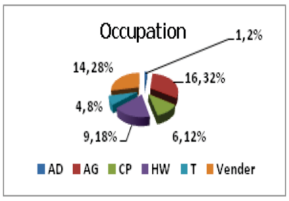


Table 5: Distribution as per presenting complaints

	Frequency	Percent
Perianalirritation	14	28.0%
Pain	2	4.0%
Swelling	35	70.0%
Discharge	48	96.0%
Perianalabscess	12	24.0%

Perianal irritation was found among 14 (28.0%), Pain was found among 2 (4.0%), Swelling was found among 35 (70.0%), Discharge was found among 48 (96.0%) and Perianal abscess was found among 12 (24.0%) subjects.

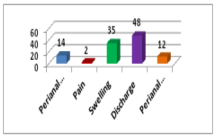


Table 6: Distribution according to past history of TB

Past history of TB	Frequency	Percent
Absent	48	96.0%
Present	2	4.0%
Total	50	100.0%

Past history of TB was found among 2 (4.0%) patients.

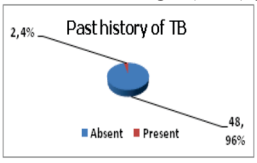


Table 7: Distribution according to previous perianal surgery.

AnyPeri-analsurgery	Frequency	Percentage
Absent	33	66%
Present	17	34%
Total:	50	100%

Any Peri-anal surgery was reported among 17 (34.0%) patients.

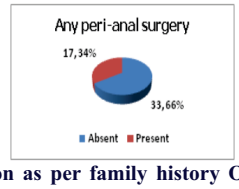


Table 8: Distribution as per family history Of TB

FamilyhistoryofTB	Frequency	Percent
Absent	40	80.0%
Present	10	20.0%
Total:	50	100.0%

Past history of TB was found among 10 (20.0%) patients.

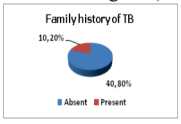


Table 9 : Distribution according to no. of external openings

No.of External openings	Frequency	Percent
1	38	76.0%
2	9	18.0%
>2	3	6.0%
Total	50	100.0%

There was one external opening among 38(76.0%), two among 9 (18.0%) and more than 2 among 3 (6.0%) patients.

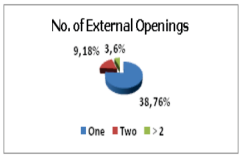


Table 10: Distribution according position of fistula

Position of fistula	Frequency	Percentage
Anterior	15	30%
Posterior	35	70%
Total:	50	100%

Fistula was found to be anterior among 15 (30.0%) and posterior among 35 (70.0%) patients.

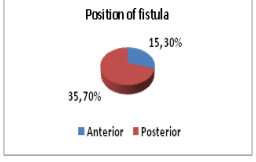


Table 11: Distribution as per internal opening on PR examination

PR examination for internal opening	Frequency	Percentage
Absent	14	28%
Present	36	72%
Total:	50	100%

PR examination for internal opening was done for 36 (72.0%) patients.

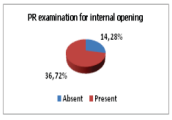


Table 12: Distribution according to level of fistula

Level of fistula	Frequency	Percent
High	5	10.0%
Low	45	90.0%
Total :	50	100.0%

Level of fistula was found to be High among 5 (10.0%) and Low among 45 (90.0%) patients.

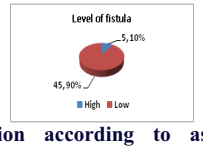


Table 13: Distribution according to associated co-morbid conditions

Associated with haemorrhoids or Fissure	Frequency	Percent
No	44	88.0%
Fissure	4	8.0%
Haemorrhoid	2	4.0%
Total :	50	100.0%

Fissure was found among 4 (8.0%) and Haemorrhoid among 2 (4.0%) patients.

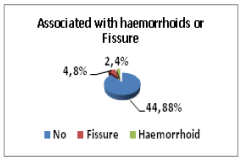


Table 14: Distribution as per probing of tract

Probing of Tract	Frequency	Percent
Curved	35	70.0%
Straight	15	30.0%
Total:	50	100.0%

Probing of Tract showed that 35 (70.0%) had Curved and 15 (30.0%) Straight tract.

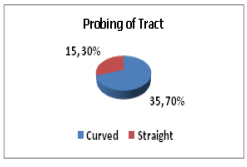


Table 15: Distribution of Internal Opening on Proctoscopy.

Proctoscopy for internal opening	Frequency	Percentage
Absent	6	12%
Present	44	88%
Total:	50	100%

Proctoscopy for internal opening was found among 44 (88.0%) patients.

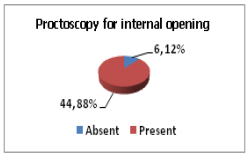


Table 16: Distribution according to HPE

HPE	Frequency	Percent
TB	2	4.0%
NS-CGI	48	96.0%
Total:	50	100.0%

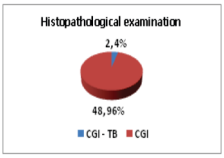
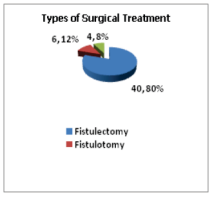


Table 17: Distribution according to surgery done

SurgeryDone	Patient'sno.	Percentage
A	40	80.0%
B	6	12.0%
C	4	8.0%

A*Fistulectomy B*Fistulotomy C*Fistulectomy with fissurectomy with LAS Fistulectomy was done for 40 (80.0%), Fistulotomy was done for 6 (12.0%) and Fistulectomy with fissurectomy with lateral anal Sphincterotomy was done for 4 (8.0%) patients.



DISCUSSION

In our study, the study population consisted of 14 (28.0%) subjects from 20-30 years age group, 14 (28.0%) subjects of 31-40 yrs, 9 (18.0%) subjects of 41-50 yrs and 13 (26.0%) subjects from above 50 yrs age group.

Our study resembles with the study conducted by Hareesh et al, [18] where 42.70% patients belonged to 41-50 yrs, 28% belonged to 31-40 years, above 51 years age were 18.70%. This showed that most common age group involved is middle age around 40 years.

Majority of anal fistulas were noted between 3rd – 5th decade of life. [19,20] Our study resembles with data of Kapoor et al, [16] maximum age incidence noted among 31 – 40 years (36%) followed by nearly equal incidence (24%) in 21-30 years age group and (18%) 41-50 years age group. The incidence of 12% was found among 51-60 yrs age group. The minimum age incidence of disease was found to be in the age group of less than 20 years (6%) and in the elderly (4%). Sainio P [19] noted the mean age of incidence – 38.3 years whereas Vasilevsky and Gordon [21] and Bruhl [22] found majority of cases among 3rd – 4th decade of life.

Our study population consisted of 40 (80%) - males and 10 (20%) – females and it resembles with the data of Hareesh et al, [18] 80% of patients were male and 20% are female. Kapoor et al, [16] the age group specific sex incidence of disease was found to be higher in males across all the age groups and was found to be nearly same among all the age groups, Kim et al. [23] in Korea noted male to female ratio of 4.6 to 1 and Kumar et al, [13] found majority of patients to be male with a ratio of 11.5:1.

This is in accordance with the reports available in the literature where a range of 2:1 – 5:1 are noted. [24,25] Low trans-sphincteric fistulas are commoner among females with a ratio of 1:1.

In our study, perianal irritation was found among 14 (28.0%), pain was found among 2 (4.0%), swelling was found among 35 (70.0%), discharge was found among 48 (96.0%) and perianal abscess was found among 12 (24.0%) subjects.

This resembles with data of Hareesh et al, [18] 82.70% patients presented with discharge in perianal region. 33.30% patients presented with history of perianal abscess. 66.70% patients presented with pain, Kapoor et al, [16] the presenting symptom common in all the patients was persistent perianal discharge from the external opening of the fistula and was present in all cases (100%), Yadu and Toppo, [17] 74% Patients had perianal discharge while 78% patients presented with perianal pain and 40% patients had history of perianal abscess. Most common mode of presentation was discharge whereas least common was perianal irritation in 10% subjects and Siddhartha R et al, [26] perianal pain - 72%, discharging wound - 70% subjects.

Dash and Agrawal [27] showed discharge – 92% subjects being the most common presenting feature and it resembles with our study data.

Vasilevsky and Gordon (1984) [22] noted 65% - discharge, 34% - anal pain, 34% - perianal swelling (recurrent), 12% - bleeding and 70% - pruritis. In the study by Kumar et al, [13] noted100% - discharge history, 52% - anal pain, 44% - perianal swelling, 8% - bleeding and 68% - pruritis.

In our study, there was one external opening among 38 (76.0%), two among 9 (18.0%) and more than 2 among 3 (6%) subjects. This resembles with the data of Hareesh et al, [18]89.30% patients presented with only one opening in perianal region, 8.0% patients are presented with 2 openings and 2.70% patients presented with >2 openings, Yadu and Toppo, [17] 76% patients had single opening while 14% patients had 2 external opening and rest 10% patient had multiple external opening indicating that single opening is more common and Sidhdartha R et al, [26] observed that 76% - 1 one external opening, 12% - 2 external opening and another 12% - 2 or more openings. Here also majority being 1 external opening.

In the data of Kumar et al, [13] fistula was seen 24% - anterior, 66% - posterior and 10% - lateral.

In current study, fistula was found to be anterior among 15 (30.0%) and posterior among 35 (70%) subjects. In the data of Hareesh et al, [18] posterior fistulas are seen in 93.3% and anterior among 6.7% patients which resembles with our data. In the data of Yadu and Toppo, [17] 76% patients had posterior opening while 24% patients had anterior opening. In the study by Siddhartha R et al, [26] 80% - posterior opening and 20% - anterior opening, and therefore posterior location is commoner and it resembles with our findings.

Our data showed, level of fistula to be High among 5 (10.0%) and Low among 45 (90%) subjects and the data resembles with Hareesh et al, [18] 94.7% patients have low level fistula and 4.3%are having high level of fistula, Kapoor et al, [16] 49 (98%) cases that were present had low level fistula-in-ano, 1 (2%) had high level or complex fistula, Sreenivasa et al, [15]low level – 88% and high level - 12% cases and Siddhartha R et al, [26] found low level - 88% and high level - 12% cases.

This difference could be attributed to the low sample size and regional difference of lifestyle and habitat in this part of the world.

In our study, fissure was found among 4 (8.0%) and Haemorrhoid among 2 (4.0%) patients. Vasilevsky and Gordon [12] reported associated fissure-in-ano among 14% of subjects. Our data also resembles with data published by Kumar et al, [13] where anal fissure was noted among 4% and 8% subjects presented with haemorrhoids.

Our data found Goodsall's rule to be accurate in every subjects, in contrast to the data published by Alexander et al. [14] where 66% - anterior opening and posterior opening - 29% of subjects.

The study data published by Cirocco and Reilly found Goodsall's rule to be correct among posterior opening – 90% and anterior opening – 49%. [28] whereas Barwood et al. revealed Goodsall's rule to be correct among posterior opening – 91% and anterior opening 69%. [29] Gunawardhana and Deen found an overall 59% patients that followed Goodsall's rule [30] whereas Hirranyakas et al. found overall 58.82% to follow Goodsall's rule [31] and Mallick and Kamil found posterior opening – 53% and anterior opening – 54% to follow Goodsall's rule. [32]

In our study, Fistulectomy was done for 40 (80.0%), Fistulotomy was done for 6 (12.0%) and Fistulectomy with fissurectomy with lateral anal Sphincterotomy was done for 4 (8.0%) patients.

This resembles with the data published in the study of Kapoor et al, [16]Of 50 patients 24 underwent fistulectomy as surgical procedure, 8 patients underwent Fistulotomy, 17 patients underwent Fistulectomy with Advancement Flap and 1 underwent Fistulectomy with Seton placement under Spinal Anasthesia, Siddhartha R et al, [26] fistulectomy done in 84%, fistulotomy – 6% and fistulectomy with fissurectomy with LAS – 10% subjects and Yadu and Toppo, [17] Fistulectomy was performed in 39 subjects (78%), fistulotomy was performed in 7 subjects (14%), fistulectomy with primary closure was performed in 1 subject (2%), while seton placement was done in 2 persons (4%).

The aim of surgery for anal fistula is to cure the patient with minimal or no sequel. It takes an accurate assessment of the fistula and an experienced surgeon who deals with fistulas on a daily basis to perform the appropriate operation and prevent postsurgical incontinence. Fistulectomy is usually recommended for low anal fistulas, as the success rate is high with this procedure, and with minimal incontinence. The success rates can be as high as 93-100% in experienced hands.

Effective drainage of communicating abscess is very important to prevent recurrence.

In most of the cases biopsy report was non-specific. Two cases were reported as tuberculous. This resembles with the data shown by Kapoor et al, [16] where histopathological exam reported 48 (96%) cases of non-specific chronic inflammatory infiltrates and 2 (4%) cases of tuberculosis and Veerendra kumar et al [13] reported 32 cases of nonspecific chronic inflammation and 2 case of tuberculosis.

CONCLUSION

We conclude from the study that fistula in ano is common between 2nd - 5th decade with male preponderance. Most of the patients belong to lower socioeconomic status and discharging sinus is the most common clinical presentation. Low lying fistula with posterior external opening is most common.

We also conclude that history of recurrent abscess that was either surgically drained or ruptured spontaneously is the most common aetiology of fistula in ano.

Excised fistula tract on biopsy (HPE) showed no specific aetiology in majority of patients whereas in 2 patients it revealed specific tubercular aetiology. Fistulectomy by far the commonest operation performed and found to be excellent method with fewer recurrence along with postoperative complication.

For high - fistula in ano seton placement or partial fistulectomy with seton application is carried out.

There were minimal postoperative complications with healing period ranging from 3weeks to 6weeks, however this was prolonged in the cases of high type fistula in ano.

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