

Study of clinical presentation and management of anal fistula

Jigarkumar Patel¹, Janakkumar Patel², Dax Prajapati³, Vikas Khakhariya²

¹ Senior Resident, Department of General Surgery, GMERS Medical college and Hospital, Valsad, Gujarat

² Senior Resident, Department of General Surgery, GMERS Medical college and Hospital, Gandhinagar, Gujarat

³ Assistant Professor, Department of General Surgery, GMERS Medical college and Hospital, Gandhinagar, Gujarat

Corresponding Author: Dr. Vikas Khakhariya

Abstract:

Background: Anal fistula is the commonest ailments seen by anorectal surgeons with many diagnostic and management related challenges even today. Pain and discharge associated with fistula hampers the Quality of life of patients also.

Objective: To investigate clinical presentation, various diagnostic approaches and treatment modalities for anal fistula.

Methodology: In this prospective study, 60 patients of anal fistula were enrolled and their demographic and clinical data, laboratory and radiological investigations like Endocanalulstrasonography (EUS), MRI were recorded. Various surgical procedures performed as per the suitability of patients with follow-up till 1 year. Clinical features, type of surgery performed, usage of antibiotics and complications were recorded and analysed.

Results: Majority 38.34% patients of anal fistula were of middle age (41-50 years) with male preponderance (81.7%). Commonest presenting symptom was perianal discharge and pain in 56 (93.34%) and 30 (50%) patients respectively. Out of 60, 35 (58.33%) and 25 (41.67%) patients were having simple and complex fistula respectively. 57 (95%) patients had low and 3 (5%) had high type of fistula. As per Park's classification, 28 (46.67%), 30 (50%) 1 (1.67%) fistula were intersphincteric, transsphincteric and suprasphincteric type. EUS and MR fistulogram were used in high fistula. Fistulotomy and fistulectomy were performed in 30 and 25 patients respectively. Most patients healed by 1.5 month with pain at site, temporary incontinence as early complications but successfully managed and 2 patient had recurrence.

Conclusion: Use of radiological investigations like MRI, EUS help in early diagnosis and the type of surgical procedure for management leading to 97% cure rate in anal fistula patients.

Key words: Anal fistula, endocanalultrasonography, fistulotomy, fistulectomy, simple anal fistula, complex anal fistula

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I. Introduction

A fistula-in-ano is defined as an abnormal external epithelialised connection between the perianal skin and anorectal canal. Perianal fistulas are commonly considered as sequelae to perianal abscesses (1). Chronic obstruction of anal gland results in infection of anorectal canal and abscess formation causing major damage to anal sphincters through abscess ulceration or incision drainage. Anal fistula manifests as the development of abnormal channels which connects the anal canal to rectum with the skin around the anus. There has been a tremendous rise in the incidence of fistula-in-ano which is one of the commonest ailments seen by anorectal surgeons. The prevalence of fistula-in-ano is 12.3 cases per 100,000 population in men, and 5.6 cases per 100,000 population in women which leads to significant morbidity, multiple operations, increased risk of local fibrosis and scarring and an increased risk of incontinence disturbance. (2) The early stage of the suppurative process involves inflammation of anal crypts with retention of purulent content which was later followed by expansion into the adjacent spaces of the rectum including inter-sphincter, perianal, ischio-rectal, and pelvirectal spaces. (3) Perianal cellulitis, anorectal pain, pruritus ani, pus drainage with blood, difficulty in controlling bowel movements are few common symptoms observed in patients with anal fistulas. In addition to infective episodes patients also experience severe perianal pain accompanied by ongoing discharge with a profound negative impact on quality of life (QoL) (4,5)

American Society of Colon and Rectal Surgeons (ASCRS) has laid down classification standards for Anal fistula which based on degree of lesions, anatomy and relation to Sphincter complex involving two categories including simple and complex anal fistula. (6) The former category of anal fistula includes low transphincteric, and intersphincteric fistulas accounting for less than 30% of the total sphincter complex with one external opening and no evidence of rectovaginal communication or anorectal strictures. Anorectal abscess arising due to glandular abscess is thought to be the cause of simple anal fistula that includes single tract, subcutaneous tract, and those that involve less than 30% of the external sphincter. (7) While the latter category of anal fistula involves transphincteric fistula considered to be a refractory type of disease accounting for more than 30% of sphincter complex most commonly encountered in colorectal surgery. Complex Fistula cross more than 30% of the external sphincter with or without a high-blind track with multiple tracts, recurrent fistulas, and those associated with other predisposing factors. Complex fistula are also associated with abscesses, active inflammatory bowel disease, chronic diarrhea, rectovaginal communications, anorectal strictures, pre-existing fecal incontinence, radiation, or carcinomas. (8)

Anal fistula has always been difficult to diagnose and manage appropriately. Despite of several advancement in the field of treatment, the management of complex anal fistulae is yet quite difficult and still eludes us. Higher rate of recurrence and fecal incontinence, fistula with multiple tracts and associated abscess, lack of internal opening localization are common challenges encountered by majority of surgeons posing a great therapeutic challenge. (9) The main objective of the study is to investigate various diagnostic approaches and treatment modalities for appropriate management of anal fistula.

II. Methodology:

This was a prospective study involving patients of anal fistula presenting to the surgery department of tertiary care teaching hospital of western India. The study was conducted after obtaining approval from the Institutional Ethics Committee. Written informed consent was obtained from all patients before enrolling them for the study. All patients of more than 18 years age and, either gender and presented to surgery department with diagnosis of anal fistula during June 2018 to June 2020 for a period of 2 years were included in the study. Patients who are non-cooperative and not willing to sign consent, patients with neurological lesions, fistulae associated with tuberculosis, patients who are hemodynamically not stable and require ICU admission were excluded from the study.

All the patients fulfilling inclusion- exclusion criteria and admitted to the surgery ward were enrolled for the study. Their demographic details, case history, comorbidities, past history i.e. h/o spontaneous rupture of abscess or drainage of abscess or h/o fistula surgery were recorded. All the patients were examined thoroughly by a surgeon. Various type and complexity of fistula were determined by examination, blood investigation and radiological investigations. Patients were advised about the different treatment options for them and suitable modalities were explained. Various surgical procedures performed as per the suitability of patients were Fistulotomy, Fistulectomy, LIFT procedure, Seton placements, Stoma in our study. Clinical features, reports of investigations, type of surgery performed, usage of antibiotics during the surgery and intra-/post-operative complications (early and late), and duration of hospital stay were recorded. After discharge all patients were asked to come for follow up in Out Patient Department (OPD) twice weekly till the end of 1.5 month and condition of wound and any complications were noted. Then patient were to come once every 2 weeks till the end of 3rd month and then at the end of 6th month and at the end of 1 year for evaluation of any recurrence or complications. Patients were advised for avoid constipation regular dressing, cleaning of the wound and follow up regularly in OPD.

Statistical analysis: Data were analysed using Microsoft excel 2010. Data were represented as actual frequencies, percentage, mean and standard deviation as appropriate. Descriptive statistics were used for analysing study results.

III. Results:

A total of 60 cases who underwent fistula surgery could enrol in the study duration. In our study, maximum number of patients were seen in age group of 41-50 years of age group (38.34%) patients. In our study, out of 60 cases, 49 (81.7%) were males and 11 (18.34%) were females. Demographic details of the study patients is shown in table 1.

In this study, most common presenting complaint was perianal discharge in 56 (93.34%) patients, followed by perianal pain in 30 (50%) patients and perianal itching in 15 (25%) patients. Fever, swelling and constipation seen in 7 (11.67%) patients each. Out of total 60 patients, 13 (21.67%) were having comorbidities like diabetes mellitus, hypertension and hypothyroidism. 35 (58.33%) patients were having simple fistula and 25 (41.67%) were having complex fistula. In our study out of 60 patients, 57 (95%) patients had low type of fistula i.e. internal opening was below the anorectal ring and 3 (5%) had high type of fistula i.e. internal opening was above the anorectal ring. As per Park's classification, in our study 28 (46.67%) were intersphincteric, 30 (50%)

were transsphincteric, 1 (1.67%) was suprasphincteric and 1 (1.67%) was of superficial type of fistula. In our study extrasphincteric was not found as it is very rare. (Table 2)

In our study past history of perianal abscess was present in 37(61.66%) of patients among which 21(35%) patients had history of spontaneous burst of abscess and 16(26.66%) were underwent drainage of an abscess in the past and 2(3.34%) patients were having past history of fistula surgery at some other centre.

After digital rectal examination and proctoscopy all patients were subjected to EUS and diagnosed to have high fistula in 03 (5.0%) cases and low fistula in 57(95%) cases. In low variety of fistula 24 (40%) cases were advised MR fistulogram to determine its complexity. All the high fistula patients 3(5.0%) cases were advised MR fistulogram. All the low variety fistula cases 57 (95%), were diagnosed mainly by DRE. Amongst these, 24 cases were were advised MR fistulogram, MRI is beneficial in our study in the form of diagnosis, and management to decide which type of surgery should performed. (Table 3)

In our study fistulotomy (in 30 patients), fistulectomy (in 25 patients) and LIFT procedure (in 2 patients) was performed mainly for low variety of fistula. While combination of procedures like fistulectomy + stoma performed in 1 patient and Seton placement in 2 patients for high complex fistulas. (Table 4)

Most patients healed by the end of 1.5 month follow up period. Only 2 patient having unhealthy wound and persistent discharge and considered as recurrence. All the patients were prescribed appropriate antibiotics for healing. In our study antibiotics of preference was Ceftriaxone+ Metronidazole in 41 cases and Amoxiclav+ Metronidazole in 19 cases. Injection Amikacin was added in case of high complex fistula who underwent fistulectomy+ sigmoidostomy to cover aerobes (Gram+ve and Gram -ve both) and anaerobes. In our study, injectable antibiotic in the form of ceftriaxone plus metronidazole and amoxiclav and metronidazole for one day followed by oral antibiotics in the form of tablet cefexime plus tablet metronidazole and tablet amoxiclav plus tablet metronidazole followed by local antibiotic and antiseptic solution.

Early complications: In our study pain at operative site(all 60 cases) and temporary incontinence to flatus (2 cases) were the most common early complication. Post-operative pain was managed by analgesics and Sitz bath and minor incontinence to flatus in 1 fistulotomy cases and 1 fistulectomy case was successfully treated with pelvic muscle floor exercise and no incontinence was found on follow up visits when wound healed completely.

Late complications: Late complications in the form of recurrence only 2 cases (3.34%) had recurrence 1 in fistulotomy patient and 1 in fistulectomy patient in our study at 1 year of follow-up which were operated by fistulotomy.

Table 1 Age and gender wise distribution of study patients (n=60)

| Age (year) | Male | Female | Total (%) |
|------------|------|--------|-----------|
| 11-20 | 1 | 0 | 1 (1.7) |
| 21-30 | 5 | 0 | 5 (8.3) |
| 31-40 | 12 | 3 | 15 (25.0) |
| 41-50 | 19 | 4 | 23 (38.3) |
| 51-60 | 10 | 4 | 14 (23.3) |
| 61-70 | 2 | 0 | 2 (3.3) |
| Total | 49 | 11 | 60 (100) |

Table 2 Symptoms, comorbidities and types of fistulas among study patients (n=60)

| Symptoms | No. of cases (%) |
|-------------------|------------------|
| Discharge | 56 (93.34) |
| Pain | 30 (50) |
| Itching | 15 (25) |
| Fever | 7 (11.67) |
| Swelling | 7 (11.67) |
| Constipation | 7 (11.67) |
| Comorbidities | No. of cases (%) |
| Diabetes mellitus | 10 (16.67) |
| Hypertension | 2 (3.33) |
| Hypothyroidism | 1 (1.67) |

| | |
|---|-------------------------|
| Total | 13 (21.67) |
| Types of Fistula | No. of cases (%) |
| Simple | 35 (58.33) |
| Complex | 25 (41.67) |
| Types of Fistulas | No. of cases (%) |
| Low | 57 (95) |
| High | 3 (5) |
| Types of Fistulas according to Park's classification | No. of cases (%) |
| Superficial | 1 (1.67) |
| Intersphincteric | 28 (46.67) |
| Transsphincteric | 30 (50) |
| Supersphincteric | 1 (1.67) |
| Extrasphincteric | 0 (0) |

Table 3 Various investigation in relation with type of fistulas

| Types of fistulas (No. of cases) | Investigation | |
|-------------------------------------|---------------|---------|
| | EUS (%) | MRI (%) |
| High (03) | 3 (5) | 3 (5) |
| Low (57) | 57 (95) | 24 (40) |
| Total (60) | 60 (100) | 27 (45) |

Table 4 Types of fistulas and procedure performed with duration of hospital stay accordingly

| | Surgeries performed | | | | |
|----------------------------------|---------------------|--------------|----------------|-----------------|----------------------|
| | Fistulotomy | Fistulectomy | LIFT Procedure | Seton placement | Fistulectomy + Stoma |
| Types of fistulas | | | | | |
| High (03) | 0 | 0 | 0 | 2 (3.34%) | 1 (1.6%) |
| Low (57) | 30 (50%) | 25 (41.66%) | 2 (3.34%) | 0 | 0 |
| Duration of Hospital stay | | | | | |
| 0-3 days | 27 | 22 | 2 | 2 | 0 |
| 4-6 days | 3 | 3 | 0 | 0 | 1 |

IV. Discussion

For over 2,500 years Anorectal fistulas have been the subject of medical concern. The annual incidence of anal fistula determined from the number of anorectal abscess is estimated to be around 68,000–96,000 cases in the US as per the reported studies with overwhelming in majority of cases arising from prior abscesses. (10) Hemorrhoidectomy, Inflammatory bowel disease commonly Crohn's disease, foreign body perforation, and trauma has been known since long to be associated with anorectal fistulas. (11) Infection of the anal glands and anorectal lesions produced by transmural inflammatory process are assumed to be the major reasons for cryptoglandular anal fistulas. In extremely rare occasions anal fistulas have been reported in patients with certain infections, diabetes, ulcerative colitis, and diverticulitis. (12) Majority of anal fistula are believed to occur due to occlusion of drainage pathway caused by impaired drainage of the anal glands leading to formation of abscess. The abscess usually drains into anal canal via internal drainage or may need surgical incision. (13,14)

In present study it is observed that men in the age group of 41-50 years of age are most affected by the disease, usually without associated co-morbidities. Earlier studies have found that the prevalence of anal fistula is 8.6 cases per 100,000 population, but in case of men the prevalence is 12.3:100,000. A lower rate of incidence is observed in women which is about 5.6:100,000; in a ratio of 1.8:1 with an average age of 38 years. (2)

Surgical data of patients with anal fistula in Helsinki revealed an incidence of 8.6:100,000; with a ratio of 2:1 among men and women supporting the conclusion of higher incidence of disease in men compared to women; similar to what was observed here, as in the present study also there was a predominance of the disease in subjects under 60 years and a ratio 2:1 between men and women, which is quite similar to literature data. (15) Earlier study performed by Hill et, al (16) on 636 patients with anal fistula reported a rare prevalence of disease in children. It was observed that there were only 9 cases of children with less than 9 years of age suffering from anal fistula and all of them were boys. It is well evident that the data found in our study is in accordance with literature showing that the disease occurs mainly in adults and in males. In present study we report that the most common comorbidity of interest among patients with anal with and without chrons' disease is diabetes mellitus with discharge and perianal pain a common presenting symptom. As elderly patients to be most frequently affected with diabetes as comorbidity, they are more susceptible to skin lesions and systemic infections with increased risk for anal abscess-es. Similar observations were been also made in previous literatures with diabetes as an important risk factor for development of anal fistula. (17,18)

A thorough physical examination plays a vital role in precise classification of the fistula and deciding an appropriate treatment plan. Previous history of patients with diagnoses of inflammatory bowel disease, rectal or anal neoplasm, previous anorectal disease, and prior surgeries are important in diagnosis and treatment planning. A complete rectal examination including inspection of the perianal skin, site of cryptoglandular infection, abscess and any external openings assists in accurate diagnosis of fistula-in-ano. (19) Careful digital examination helps in delineation of simple fistula while modern radio-diagnostic techniques like endoanal/transrectal ultrasonography (EUS/TRUS), MRI, X-ray fistulography are commonly used for precise evaluation of complex fistula due to several advantages including rapid process, minimal invasiveness, high-resolution imaging of the anal canal and the adjacent structures. This helps in detailed study of fistula anatomy with respect to the sphincter complex, levator plates, and associated potential spaces. EUS and pelvic MRI are associated with highest success rates of > 85% in locating internal opening which on failure would lead to substantial increase in the risk of recurrence (20) Similar diagnostic approach using MRI and EUS were employed in our study as well and were found to be highly accurate and precise and in consistence with previous studies. (19,20)

In present study majority patients were suffering from low type of fistula with an internal opening below the anorectal ring while fewer patients had high type of fistula with internal opening above the anorectal ring. A similar trend was observed in earlier studies as well wherein higher incidence of low type of fistula was observed among majority of study population. (17) Ideal treatment modality depends on careful and precise classification of anal fistula which involves majorly on 3 central verticals involving control of sepsis, closure of fistula and maintenance of continence. Clinically perianal fistulas as divided into simple and complex fistula based on involvement of sphincter complex which facilitates operative decision making. (21) Simple fistulas include superficial, low intersphincteric or low trans-sphincteric fistulae and involves a small (or sometimes none) portion of sphincter with only one tract communication between the anal canal and skin without involvement of other organs. Intersphincteric and transsphincteric fistulas are the most common type formed as a result of a drained perianal abscess originating from a gland that did not extend beyond the external sphincter. Intersphincteric traverse a minimal distance and extend from an internal opening near the intersphincteric groove to an external location typically located outside the anal margin. While transsphincteric fistulas results from peri-rectal abscess and involve both the internal and external sphincters and pass into the ischioanal fossa Similar higher prevalence of Intersphincteric and transsphincteric fistulas was observed in our study as well among the total patient population. (22) In parallel to results of our study suprasphincteric fistulas and Extrasphincteric fistulas are relatively associated with rare incidence which either originate at the level of the dentate line traversing above the puborectalis or passes through the levators caused by overzealous probing and are amongst the most difficult types to treat. (23)

Management of superficial fistula is simple and straightforward, especially in distal cases, fistulotomy is considered to be an ideal choice of treatment modality to obtain better treatment results. (24) Majority of patients in our study were successful treated with fisulotomy which entails opening the fistula tract and possibly dividing sphincter muscle. Fistulectomy is a less commonly performed technique for trans-sphincteric fistulae. It involves removal of the chronic, epithelialized tract which allows healing by secondary intention of healthier tissue and dissection from external opening upto external sphincter. Similar surgical treatment was followed and was proved to be effective for management of simple fistulas in previously reported studies. (25)

In our study complex transsphincteric fistulas were treated with Ligation of the intersphincteric fistula tract (LIFT) as sphincter-sparing technique. The average duration of healing was observed to 6-7 weeks with healing rate of 68-83%. Similar surgical treatment modalily was followed in previous study by Rojanasakul et al. with a success rate of 94.4%. (26) It mainly involved water-tight ligation and cutting the fistula between the sphincters, scraping the infected tissue of the fistula wall, and tightening the fistula tract with ligation, which can effectively avoid repeated infections caused by fecal particles. It is appropriate for patients with well-formed fistulas including most complex anal fistulas, recurrent anal fistula, and fistulas that fail after other surgical

procedures. (26) Patients with high trans-sphincteric fistulas can be treated with drainage of inter-sphincteric space, internal sphincterotomy, complete preservation of external sphincter with loose seton placement. Seton helped in both draining the sepsis and maturing the track due to fibrosis of the transection site and prevented the retraction of the sphincter and reduction in incontinence. The healing time with medicated seton ranged from 8 to 16 weeks which was low compared to earlier studies and no recurrences were noted in high anal fistulae patients treated with chemical seton. This was found to be in consistence with previous studies. (25,26) Complex anal fistula with large pelvirectal abscess, associated necrotizing fasciitis or Fournier's gangrene could be better managed by Fecal diversion, preventing fecal matter from reaching the site of sepsis and control of the fulminant infection. Similar studies were done earlier on patients with highly complex and extensive cryptoglandular anal fistula, anal fistula associated with severe anorectal Crohn's disease, recurrent rectovaginal fistula, radiation-induced fistula and anal fistula with associated necrotizing fasciitis had fecal diversion in addition to local therapy and medical treatment. This suggests that fecal diversion possibly should be used only as an adjunct to other treatments and not as a definitive treatment in itself. (6,17) In the present study patients with high complex fistula and with comorbidities like diabetes were associated with a recurrence rate of 3.3.4% which is again in accordance to existing literature suggesting a wide range of recurrence rate between 2–32% in patients with complex anal fistula. (17)

This study has highlighted the main clinical presentation and management of anus fistula in western India. Few limitation of the study include single centre, small sample size and limited duration of the followup. Further larger studies involving multiple centers and long term follow up are required in this are.

V. Conclusion:

Anal fistula pose a plethora of challenges in their diagnosis, appropriate classification and proper management. These challenges and their solutions are quite overlapping and interlinked due to poor prognosis. As there is no gold standard procedure for diagnosis and treatment of anal fistula, therefore, it is important to have an appropriate surgical modality selection method based on all the challenges together faced in diagnosis and then analyze the solutions to each diagnostic challenge. Recent developments in radio-diagnostic fields like MRI, EUS and CT in the last decade have significantly enhanced understanding of the pathophysiology and management of the different grades of anal fistula. Due to this, it is possible to select appropriate surgical modality timely and achieve healing rates of 97% in patients with both simple and complex cryptoglandular anal fistulae in this study. Proper selection of type of surgical procedure, appropriate antibiotic use along with wound dressing, and avoiding constipation are mainstay of therapy in anal fistula patients.

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