A retrospective study on the demographics, clinical presentations and management of Fissure in Ano

Umer Hamid wani[1], Saiyad Shah Alam[2], Benish Bashir Bhat[3], Rameez Raja Mallah[4]
[1,4]PG scholar, [2]Professor Dept. of surgery National institute of Unani medicine
[3]PG scholar, Dept. of Dermatology National institute of Unani medicine

***Abstract*—Background: Anal fissure (AF) is widely regarded as a common condition, yet there is a notable lack of published epidemiological data and information on current treatment practices. The purpose of this study was to investigate several key aspects of AF including its incidence, demographics, associated co morbidities, and the types of treatments being administered.**

Methods: This retrospective study was conducted at the NIUM Hospital, Bangalore, from August 2018 to August 2024, analyzing data from 513 patients diagnosed with anal fissure (AF). The study aimed to examine demographic characteristics, clinical presentations, and treatment outcomes to improve management protocols.

Results: Among the patients, females slightly outnumbered males (52.43% vs. 47.56%), with most cases (59.64%) occurring in individuals aged 21–40 years (mean age 37.48 ± 9.25 years). Higher socioeconomic status was noted in 41.2% of cases. Chronic constipation was the most common co-morbidity (39.7%), affecting females more (23.19% vs. 16.56%). Other co-morbidities included hypothyroidism (7.21%, exclusively in females), surgical history near the anal region (7.01%), pregnancy (4.4%), and solid tumors (1.94%). The primary symptoms were painful defecation (96.88%), bleeding per rectum (62.7%), rectal mass (31.57%), and passing hard stools (23.58%). The fissures were most frequently located at the 6 o'clock position (69.59%), followed by 12 o'clock (12.28%) and both (21.63%). Associated findings included skin tags (39.96%), anal papillae (14 patients), and lateral fissures (12 patients). Anal spasms were observed in varying degrees in 319, 134, and 60 patients, respectively. Treatment outcomes revealed that lateral internal sphincterotomy (performed on 314 patients) was more effective than conservative management (199 patients).

Conclusions: In conclusion, AF predominantly affects individuals aged 21–40 years, particularly females and those from higher socioeconomic backgrounds. Chronic constipation emerged as the most common co-morbidity. Painful defecation and rectal bleeding were the predominant symptoms, with fissures most frequently located at the 6 o'clock position. Lateral internal sphincterotomy provided superior outcomes, emphasizing its role as a preferred treatment option.

***Index Terms*—Anal fissure, Co-morbidity, Demography, LIS.**

I. INTRODUCTION

Anal fissures, if left untreated, significantly disrupt daily life. Factors such as lack of physical activity, fast food consumption, unhealthy diet, smoking, alcohol and tobacco use, prolonged sitting, and stressful jobs contribute to gastrointestinal disturbances and anorectal disorders. These issues place a severe economic and social burden on society. [1] An anal fissure is a leading cause of severe anal pain and a common reason for bleeding in infants and young children. The pain is often intolerable and disproportionate to the physical lesion's severity, causing patients to avoid defecation. This avoidance leads to hard stools, which can exacerbate the fissure and create a vicious cycle. Anal fissures are classified into two types: Acute (superficial) fissures and chronic fissures in Ano. Constipation is the primary cause of anal fissures. [2] Contributing factors include hard stools, irregular diet, spicy foods, faulty bowel habits, and poor local hygiene. In females, fissures are often triggered by pregnancy or childbirth. A low-fiber diet is also a significant factor. [3] Studies in India reveal regional variations in the demographic patterns of anal fissures. [4, 5]

The preferred surgical treatment for anal fissures is lateral internal sphincterotomy (LIS), which has a high success rate of 89% with low risks such as temporary anal incontinence, hematoma, infection etc. In recent years, topical medications like nitroglycerin ointments and calcium channel blockers (e.g., diltiazem, nifedipine) have been proposed as non-surgical alternatives, showing success in healing and reducing

symptoms. Besides these the management of anal fissure remains unclear. Keeping the above points in the mind, the present study was aimed to investigate demographic characteristics, symptom presentations, and treatment outcomes, offering insights into the epidemiology of anal fissures and the effectiveness of various management strategies.

II. MATERIALS AND METHODS

A. Place of study:
Department of Surgery, NIUM Hospital associated with Rajiv Gandhi University of Health Sciences (RGUHS), Bangalore (KARNATAKA).
B. Type of study:
Retrospective study
C. Sampling Method:
Consecutive
D. Sample Collection:
Data for the study were gathered from the medical record department of 513 patients diagnosed with anal fissure (AF). Relevant patient details, including age, sex, socioeconomic status, symptoms, and risk factors, were recorded using a detailed proforma. The diagnosis was made based on a thorough history, clinical examination, per rectal examination, and proctoscopy when necessary. Conservative and topical management were used for superficial fissures with less severe symptoms, while lateral internal sphincterotomy (LIS) was performed under spinal anesthesia for chronic fissures with skin tags.
E. Inclusion Criteria:
Patients aged 10 to 80 years with AF admitted to the surgery ward were included.
F. Exclusion Criteria:
Patients with AF secondary to anorectal tumors or those less than 10 years old were excluded.
G. Statistical Analysis:
Data analysis was performed using SPSS software (version 17.0), with results presented through descriptive statistics (means, standard deviations, and percentages). All categorical variables were compared using Chi-square statistics with the Yates correction. For normally distributed data, the Student's t-test was used to compare means, while non-parametric continuous data were compared using the Wilcoxon rank-sum test. All data processing and analyses were performed using SAS® software, and the medical record data were organized using Microsoft Access®.
H. Ethical Permission:
Yes.

III. RESULTS

The aim of this study was to analyze the statistics of patients with anal fissures (AF) to explore the demographic details, risk factors, and treatment approaches associated with AF. Records of patients with AF admitted to the surgical wards were obtained from the medical record department. After thorough analysis, the data provided the following observations and results, offering insights into the epidemiology, risk factors, clinical presentation and management strategies for AF.

Table-1-Summary of demographics and risk factors of AF.

Parameter	Total N Patients with fissure =513	%	p-value
Age (years), mean (SD)	37.48 (9.25)	-	-
Sex			
Males	244	47.56	
Females	269	52.43	
Age group (years)			
10-20	19	3.70	
21 to 40	306	59.64	
41 to 60	165	32.16	
≥61	23	4.48	
BMI	Males	Females	
Severely Under wt <16	9	4	<0.05
Underweight 16-18.4	12	22	
Normal 18.5-24.9	126	90	

Overweight 25.0-29.9	81	78	
Mod. Obese 30.0-34.9	17	54	
Sev. Obese 35.0-39.9	2	12	
Morbid Obese >40	2	4	
Dietary habits			
Non-Veg.	57	11.11%	0.081
Mixed	429	83.62%	
Vegetarian	27	5.26%	
Risk factors			
Hard stools	121	23.58%	
Constipation			
Males	85	16.56%	<0.05
Females	119	23.19%	
Hypothyroidism (females)	37	7.21%	
Pregnancy	23	4.48%	
Anal canal surgeries	36	7.01%	
Abd. and pelvic tumors (F)	11	2.14%	
Medical history			
Hypertension	26	5.06%	-
Diabetes mellitus	23	4.48%	
History of exercise or physical activity			
Yes	108	21.05%	<0.05
No	405	78.94%	
Data presented as n (%), unless otherwise specified.			

The study enrolled 513 patients with a mean age of 37.48 (9.25) years. Of these, 47.56% were males (244 patients) and 52.43% were females (269 patients). The majority (59.64%) were aged 21-40 years, followed by 32.16% aged 41-60 years. When comparing prevalence based on BMI, those with normal BMI (42.10%) had the highest occurrence of AF, with a male-to-female ratio of 7:5. 31% were overweight, and 13.84% were moderately obese, showing a higher prevalence in females, suggesting obesity as a risk factor for AF.

The majority of patients (83.62%) had mixed dietary habits, and 78.94% reported no history of regular physical activity. Constipation was present in 39.76% (119 females, 85 males). Hard stools were found in 23.58% of cases, while other risk factors included hypothyroidism (7.21%), previous anal surgeries (7.01%), pregnancy (4.48%), and abdominal/pelvic tumors (2.14%). Additionally, 12.24% of patients had hypertension, and 10.33% had diabetes mellitus.

Table-2**:** Summary of patient symptoms.

Parameter	Total N=513	%
Pain	497	96.88
Bleeding	322	62.76
Mass P/R (per rectum)	162	31.57
Pruritus ani	24	4.67
Discharge	21	4.09
Bleeding+Pain	502	97.85
Bleeding+ Mass P/R	298	58.08
Bleeding+Pain+ Mass P/R	398	77.58
Bleeding+Pain+ Anaemia	32	6.23
Chronicity in Studied Cases. < 6 Month < 1 year < 1-2 years < 2-4 years	253 116 76 68	50.1 22.75 13.98 13.38

Table-2 presents the signs and symptoms of patients diagnosed with anal fissures (AF). The key findings include:

- Painful defecation was the most common symptom, affecting 96.88% of patients (497 patients).
- Bleeding per rectum (P/R) was reported in 322 patients.
- Mass per rectum (P/R) was observed in 162 patients.
- Less common symptoms included discharge per rectum (21 patients) and Pruritus ani (itching, in 24 patients).
- Thirty-two individuals were anemic, in addition to having pain and bleeding.
- The majority of patients (50.1%) attended the hospital with a history of less than 6 months, indicating early presentation of their condition. Additionally, 22.75% had a history of less than one year, while 13.98% had symptoms for 1–2 years, and 13.38% reported having the condition for 2–4 years. This distribution reflects a significant proportion of patients seeking medical attention relatively early in the course of their condition, with a smaller group presenting after a longer duration. The chronicity of the condition in these patients may be reflective of delayed treatment, recurrent fissures, or difficulties in managing symptoms.
-

Table-3- Summary of per rectal examination findings.

Per Rectal examination	Total N=513	%
Position of AF		
Posterior (6 o clock) Males Females	357 193 174	69.59%
Anterior (12 o clock) Males Females	63 18 45	12.28%
Both 6 & 12 o clock	111	21.63%
Lateral positions	12	
Skin tags Anterior (12oclock) Males Females Posterior (6 clock) Males Females	230 105 15 90 125 50 75	44.83%
Anal papillae	12	2.33%
Anal Spasm 1+ 2+ 3+	 134 319 60	
Anal tenderness 1+ 2+ 3+	 86 366 61	

Per rectal examination findings for 513 patients, as presented, indicate several significant patterns:

- Location of Anal Fissures (AF): The majority of anal fissures (69.59%) were located in the posterior (6 o'clock) position, with a higher incidence in males (193) compared to females (174). In contrast, 12.28% of fissures were located in the anterior (12 o'clock) position, with a greater preponderance in females (45) compared to males (18).
- Multiple Positions: A considerable number of patients (21.63%) had fissures in both the anterior and posterior positions, while a small percentage (2.34%) had fissures in lateral positions.
- Skin Tags: Skin tags were present in 44.83% of patients, predominantly in females, with more frequent occurrence at the posterior (6 o'clock) position, where the male-to-female ratio was 2:3. In the anterior position (12 o'clock), the male-to-female ratio was 1:6.
- Anal Papillae: Anal papillae were found in 12 patients.
- Anal Spasm: Various degrees of anal spasm were noted, with the majority of patients presenting moderate spasm (2+).
- Anal Tenderness: Most patients exhibited moderate tenderness (2+).
- These findings help to illustrate the common characteristics and severity of rectal issues in this patient group diagnosed with anal fissures (AF).

Table-4: Summary of treatment of AF.

Parameter	Total N=513	%
• Conservative Management*	199	38.79
• Stool softeners	45.77	23
• Laxatives	95.52	48
• Lidocaine (topical ointment or gel)	109	55
• Warm water sitz bath with or without adding potassium permanganate in H_2O	169.15	85
• Specific Diet restrictions		

	139	70
• Operative management • Stretching of anal sphincter [Lord's anal dilatation] • Open posterior internal sphincterotomy. • Lateral subcutaneous internal sphincterotomy (LIS).	314 19 12 283	62.76 6.05 3.82 90.12
• Patients underwent LIS after unsuccessful conservative treatment.	59	29.64

Conservative management was employed in various combined forms

The data highlights a significant reliance on operative management for anal fissures (AF), with over 60% of patients undergoing surgery, primarily lateral internal sphincterotomy (LIS). The high usage of specific conservative measures, like dietary restrictions (70%) and sitz baths (85%), reflects their perceived importance in managing AF symptoms. However, the need for surgery in a significant proportion of these patients suggests that conservative treatment alone might not suffice for more severe or persistent cases. The predominance of LIS (90.12%) among surgical options also underscores its effectiveness and preference compared to other procedures like Lord's anal dilatation and open posterior internal sphincterotomy.

The overall data suggests that while conservative treatments are widely used, surgery remains a common and often necessary option, particularly for those who do not respond to initial non-invasive therapies.

Table-5**:** -An outline of management complications in AF.

Parameter	Total =513 N	%
Conservative Management • Recurrence of AF (Patients underwent LIS after unsuccessful conservative treatment) • Pain and discomfort • Bleeding P/R	• 199 • 59 • 37	• 38.79 • 29.64 • 18.59
	• 15	• 7.53
• Operative management • Lords dilatation • Fecal incontinence • Recurrence of AF • LIS • Fecal incontinence • Fistula formation • Hematoma & Ecchymoses • Recurrence	• 314 • 13 • 1 • 5 • 280 • 2 • 1 • 3 • 2	• 62.76 • 4.14 • 7.69 • 38.46 • 89.17 • 0.71 • 0.35 • 1.07 • 0.71

The data (Table 5) shows that conservative management for anal fissures (AF), although initially used in 38.79% of patients, had a significant recurrence rate of 29.64%, often necessitating surgery. Common complications in this group included pain and discomfort (18.59%) and bleeding (7.53%). On the other hand, operative management, particularly lateral internal sphincterotomy (LIS), was the predominant surgical approach (89.17%) and had low complication rates, with fecal incontinence and recurrence both at 0.71%. Lord's anal dilatation, used less frequently, had higher complication rates, including a 38.46% recurrence rate and 7.69% fecal incontinence. Overall, while conservative treatment is widely attempted, LIS is the most effective surgical option with fewer complications.

IV. DISCUSSION

This retrospective study provides a comprehensive analysis of the demographic characteristics, risk factors, and treatment approaches for anal fissures (AF) in 513 patients at NIUM Hospital. The study highlights that AF predominantly affects younger to middle-aged adults, with the majority of cases (59.64%) occurring between the ages of 21 and 40.

Interestingly, females were slightly more affected than males, and the condition showed a higher prevalence among those with normal BMI (42.10%), though obesity was also identified as a notable risk factor, particularly among females. This suggests a multifactorial etiology for AF, with both gender and weight contributing to disease susceptibility.

The study also identified lifestyle factors, such as dietary habits and physical activity, as important contributors. The majority of patients (83.62%) followed mixed diets, and a substantial proportion (78.94%) reported no regular physical activity, which correlates with the high incidence of constipation (39.76%) and hard stools (23.58%) among patients. These findings are consistent with the established understanding that poor bowel habits and a sedentary lifestyle increase the risk of AF.

The predominant symptom of AF was painful defecation, affecting nearly all patients (96.88%), while bleeding per rectum was present in 62.76% of cases. This reflects the typical clinical presentation of AF, where pain and bleeding are hallmark symptoms. The study also found that nearly half of the patients presented within six months of symptom onset, suggesting that AF symptoms prompt relatively early medical intervention. However, a notable minority had a prolonged course, which may indicate treatment delays or challenges in symptom management.

Regarding the anatomical characteristics of AF, the posterior midline was the most common location (69.59%), with a higher incidence in males, whereas anterior fissures were more common in females. Skin tags, a common finding in chronic AF, were present in 44.83% of patients, with a female predominance, particularly in the anterior position. The presence of skin tags and anal spasm, both of which were frequently observed, indicates the chronicity and severity of the fissures in many patients.

The management of AF in this cohort highlights a significant reliance on operative interventions, particularly lateral internal sphincterotomy (LIS). Although conservative measures like dietary restrictions and sitz baths were commonly employed, 62.76% of patients required surgical treatment, with LIS being the procedure of choice for 90.12% of these cases. The high success rate of LIS, as reflected by its low recurrence rate (0.71%) and minimal complications reinforces its status as the gold standard for chronic AF management. In contrast, Lord's anal dilatation, though less commonly used, had higher rates of recurrence (38.46%) and fecal incontinence (7.69%), indicating it is a less favorable option. The study also underscores the limitations of conservative management. Despite its use in nearly 39% of patients, a significant proportion (29.64%) eventually required surgery due to treatment failure. Common complications associated with conservative management, such as pain and bleeding, were notable, further supporting the need for surgical intervention in chronic or refractory cases.

In summary, this study illustrates that while conservative management plays an important role in the initial treatment of AF, surgery, particularly LIS, is often necessary for more severe or persistent cases. The low complication rates and high efficacy of LIS make it the preferred surgical option. This data highlights the importance of early intervention and individualized treatment approaches based on the severity and chronicity of AF symptoms

Table-6: Summary of previous reports [6-10].

Author	Location	N	Patients with fissure	Age group with highest number	Males	Major symptom/sign	Position of fissure	LIS %	Complications of LIS %
Varadarajan MS et al., [6]	Tirunelveli (Tamil Nadu)	325	100	31-40: 42%	54%	Pain during defecation (86%) Bleeding (62%) Constipation (56%)	Posterior midline		
Khan RM et al., [7]	Bangalore (Karnataka)	41	65	15-40: 64.62%	73.85 %	Bleeding+ pain (57%) Pain (24%)			

Varsha SB et al., [8]	Nagpur (Maharashtra)	9	90	21-30: 48.90%	1.57:1	Pain, Bleeding PR and Constipation	Posterior (96.7%)		
Samuel A et al., [9]	Haif (Israel)	2340	2340					62.2 %	0 %
Chaudary R et al., [10]	Bhopal (Madhya Pradesh)	62	112	18-40: 68.75%	75.89 %	Bleeding+ pain (79.46%) Pain (12.5%)	Posterior midline 69.59%	96 %	3% (temporary fecal incontinence)
Current study	Bangalore (Karnataka)	513	513	21-40: 59.64%	1:1.2	Bleeding+pain 97.85%		66.08%	<1 % (temporary fecal incontinence, etc)

The table summarizes findings from multiple studies on anal fissures across different regions: [6-10]

1. Prevalence: The proportion of patients with anal fissures varied, with rates ranging from 17.80% (Chaudary et al.) to 30.07% (Khan RM et al.).
2. Age Group: The most commonly affected age group was 18-40 years, with significant percentages in this range: 64.62% (Khan RM et al.) and 68.75% (Chaudhary R et al.).
3. Gender: Males were more frequently affected, with male percentages ranging from 54% (Varadarajan MS et al.) to 73.85% (Khan RM et al.). Varsha SB et al. had a male-to-female ratio of 1.57:1, while the current study showed near parity (1:1.2).
4. Major Symptoms: The most common symptoms were pain and bleeding. Varadarajan MS et al. found 86% of patients experiencing pain during defecation, while 97.85% of patients in the current study reported both pain and bleeding.
5. Fissure Position: The posterior midline was the most frequent fissure location, reported in 69.59% of cases (current study) to 98% (Varadarajan MS et al.).
6. Lateral Internal Sphincterotomy (LIS): LIS was an effective treatment where recorded, with 96% success reported by Samuel A. et al. and minimal complications (<3%), such as temporary fecal incontinence. The current study reported a <1% complication rate.

Summary: Anal fissures primarily affect young adults, especially males, and typically present with pain and bleeding. Most fissures occur in the posterior midline, and Lateral Internal Sphincterotomy (LIS) is an effective treatment with a low rate of complications.

V. LIMITATION

The author acknowledges that the study was conducted at a single site, which limits the ability to generalize the findings to a broader population.

VI. CONCLUSION

This retrospective study provides a comprehensive overview of anal fissures (AF) in 513 patients, highlighting key demographic, lifestyle, and clinical factors. AF predominantly affects young to middle-aged adults, with females slightly more affected (1:1.2). Poor dietary habits and lack of physical activity were significant contributors, leading to common symptoms like painful defecation and bleeding. The posterior midline was the most frequent fissure location, especially in males, with skin tags and anal spasms indicating chronicity.

Management often required surgical intervention, with lateral internal sphincterotomy (LIS) emerging as the most effective treatment, demonstrating low recurrence and complication rates. Conservative measures were useful initially but frequently led to surgical intervention due to failure. The study emphasizes the need for early, individualized treatment, with LIS being the preferred option for chronic or severe cases.

A. Financial or other competing interests:
None.

REFERENCES

[1] Gupta PJ. Treatment of fissure in ano-revisited. African Health Sciences. 2004 Nov 10;4(1):58-62.

[2] Jensen SL. Diet and other risk factors for fissure-in-ano: Prospective case control study. Diseases of the colon & rectum. 1988 Oct; 31:770-3.
[3] Mapel DW, Schum M, Von Worley A. The epidemiology and treatment of anal fissures in a population-based cohort. BMC gastroenterology. 2014 Dec; 14:1-7.\
[4] Varadarajan MS, Sony PS, Anandan H. Prevalence and clinical presentation of Fissure-In-ANO in a tertiary care centre. Int J S.
[5] Alam AA, Dandroo JN, Fatimah M, Ansari MS. Prevalence and risk factors of different ano rectal disorders among indoor patients having ano rectal complaints: An observational retrospective study. J Biol Sci Opin. 2018;6(1):9-12.
[6] Varadarajan MS, Sony PS, Anandan H. Prevalence and clinical presentation of Fissure-In-ANO in a tertiary care centre. Int J Scientific Study. 2018;5(12):70-2.
[7] Khan RM, Itrat M, Ansari AH, Ahmer SM. Zulkifle (2015) Prevalence of Fissure-in-Ano among the Patients of Anorectal Complaints Visiting Nium Hospital. J Community Med Health Educ. 2015;5(344):2161-0711.
[8] Varsha SB, Jagadish H, Nitroglycerine: A paradigm in treatment of chronic anal fissure *Med J Clin Trials Case Stud* 2017 1(1):00010210.23880/MJCCS-16000102.
[9] Argov S, Levandovsky O. Open lateral sphincterotomy is still the best treatment for chronic anal fissure. The American Journal of Surgery. 2000 Mar 1;179(3):201-2.
[10] ChaudhaRy R, DAUSAGE CS. Prevalence of Anal Fissure in Patients with Anorectal Disorders: A Single-Centre Experience. Journal of Clinical & Diagnostic Research. 2019 Feb 1;13(2).