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Clinical Profile And Emergency Management Of Painful Anorectal Disorders In A Tertiary Care Setting In South India

Priyanka Prakash [1], T. Raghupathy[1*], Alexander Mechery Antony[2]

[1,2]Dept. Of General Surgery, Sree Balaji Medical College and Hospital, Tamil Nadu, India
Bharath Institute of Higher Education and Research, prankyprakash96@gmail.com , dr.traghupathy@gmail.com

Abstract:

Background:*Anorectal disorders such as haemorrhoids, anal fissures, and fistula-in-Ano are among the few most common causes of anal and perianal pain, often requiring emergency intervention. These conditions are often underdiagnosed due to stigma and lack of access to care, especially in the LMIC countries.*

Objective:*To assess the distribution, clinical characteristics, risk factors, and treatment approaches for anorectal disorders causing pain in the anal and perianal region among patients presenting to the emergency department of a tertiary care hospital.*

Methodology:*A prospective observational study was conducted between November 2023 and November 2024 at Sree Balaji Medical College & Hospital, Chennai. A total of 220 adult patients presenting with anorectal pain were included. Data were collected on demographics, clinical presentation, diagnostic findings, and management.*
Statistical analysis was performed using SPSS version 21.

Results:*Haemorrhoids (22.3%), fissure-in-Ano (17.7%), and fistula-in-Ano (14.5%) were the most common conditions. The mean age was 38.5 years, with a male predominance (63.2%). Risk factors included chronic constipation (42.7%), low fibre intake (38.6%), and sedentary lifestyle (33.2%). Most patients delayed seeking treatment; malignant conditions had the longest duration before presentation. Conservative management was effective in 58% of cases, while 42% needed surgical intervention.*

Conclusion:*Painful anorectal disorders are highly prevalent in emergency surgical settings. Early recognition, public awareness, and targeted interventions are essential to reduce morbidity. Improving access to proctologic care and addressing modifiable risk factors can improve outcomes.*

Keywords:*Anorectal pain, haemorrhoids, anal fissure, fistula-in-Ano, emergency surgery, proctology, perianal disorders.*

INTRODUCTION:

Anorectal disorders are among the most common causes of lower gastrointestinal diseases, often characterized by pain, bleeding, or discharge in both outpatient and emergency settings.

These include a broad spectrum of benign and malignant conditions such as haemorrhoids, anal fissures, fistula-in-Ano, abscesses, and malignancies [1–3]. Despite their prevalence, early diagnosis and management are often delayed due to sociocultural stigma, limited awareness, and inadequate access to proctologic services, particularly in low- and middle-income countries like India [4,5].

In India, the burden of anorectal disorders is high but poorly characterized in literature. Most existing studies focus on individual conditions like haemorrhoids or rectal cancer, often overlooking the full clinical conditions [6,7]. Rural populations, especially those engaged in manual labour and agriculture, are more vulnerable due to poor sanitation, low dietary fiber intake, and heavy physical exertion [8]. Moreover, public discomfort in discussing anal symptoms often leads to underreporting and late presentation, compounding the morbidity [9].

From a surgical perspective, conditions like perianal abscesses and complicated fistulas often require urgent intervention to prevent complications such as sepsis or incontinence [10]. Chronic conditions, if unaddressed, can lead to progressive functional impairment and significantly reduce quality of life [11]. This is particularly true for elderly patients and those with comorbidities such as diabetes [12].

While hospital-based studies offer insights, there is lack of complete data on the prevalence, clinical presentation, and emergency treatment of anorectal conditions in tertiary care centres in India. Understanding these patterns is necessary to improve early detection, guide treatment strategies, and improve resource allocation in emergency

surgical services [13].

This study was undertaken to evaluate the clinical profile, associated risk factors, and management patterns of patients presenting with painful anorectal disorders requiring emergency care at a tertiary care teaching hospital in South India.

MATERIALS ANS METHODS

Study Design and Setting

This was a prospective observational study conducted in the Department of General Surgery at Sree Balaji Medical College and Hospital, Chennai a tertiary care teaching hospital in South India. The study period extended from November 2023 to November 2024.

Study Population

The study included 220 adult patients (aged ≥18 years) who were admitted to the Emergency Department or Surgical Outpatient Department with pain in the anal or perianal region due to anorectal disorders.

Inclusion Criteria

- Patients presenting with acute or chronic anal or perianal pain.
- Diagnosed cases of anorectal disorders such as haemorrhoids, fissure-in-Ano, fistula-in-Ano, abscesses, or malignancy.
- Patients who provided informed consent for participation Exclusion Criteria
- Patients with non-anorectal causes of pelvic or rectal pain
- Individuals with prior surgical intervention within the last 30 days for an anorectal disorder
- Pregnant women or individuals under 18 years of age Data Collection

A structured clinical proforma was used to collect demographic details, presenting symptoms, medical history, dietary habits, risk factors (e.g., constipation, sedentary lifestyle), and clinical diagnosis. Physical examination and relevant investigations, including digital rectal examination, proctoscopy, and imaging (MRI, ultrasonography) were performed as needed.

Management and Follow-Up

Based on diagnosis and severity, patients were managed either conservatively or surgically. Conservative measures included dietary modifications, sitz baths, topical agents, and stool softeners. Surgical interventions included incision and drainage, lateral internal sphincterotomy, haemorrhoidectomy, or fistulotomy. Patients were followed up until discharge or resolution of symptoms.

Ethical Considerations

The study was approved by the Institutional Ethics Committee of Sree Balaji Medical College and Hospital. Written informed consent was obtained from all participants.

Statistical Analysis

Data were analysed using SPSS version 21.0. Categorical variables were expressed as percentages, while continuous variables were summarized using mean and standard deviation. Associations between categorical variables were assessed using the Chi-square test. A p-value of <0.05 was considered statistically significant.

Results

Demographic Characteristics of the Study Population

This study included 220 patients who presented with varying anorectal complaints over a one-year period at Balaji Hospital, Chennai. The demographic data provide important context regarding the distribution of these conditions among different population groups.

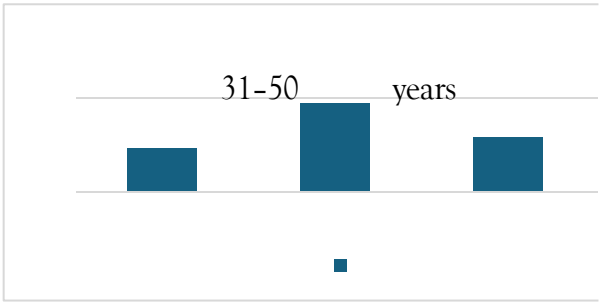
Age Distribution

The age of the participants ranged from 18 to over 70 years. The highest proportion of cases fell within the 31–50

years age group (43.2%), followed by those aged
51–70 years (26.4%). Patients aged 18–30 years accounted for 20.9%, while the lowest frequency was observed among individuals older than 70 years (9.5%). This pattern suggests that anorectal disorders are most prevalent in the working-age population but can also occur in both younger and older individuals.

Table 1: Age Distribution of Study Participants (n = 220)

Age Group	Frequency	Percentage	95% CI
18–30 years	46	20.9%	15.7% – 26.2%
31–50 years	95	43.2%	36.7% – 49.6%
51–70 years	58	26.4%	20.8% – 32.0%
>70 years	21	9.5%	5.6% – 13.4%



Gender Distribution

There was a clear male predominance in the study population. Out of 220 participants, 146 (66.4%) were male, while 74 (33.6%) were female. This difference may be attributed to variations in occupational exposure, lifestyle factors, and possibly health-seeking behaviors among men and women.

Table 2: Gender Distribution

Gender	Frequency	Percentage	95% CI
Male	146	66.4%	60.3% – 72.5%
Female	74	33.6%	27.5% – 39.7%

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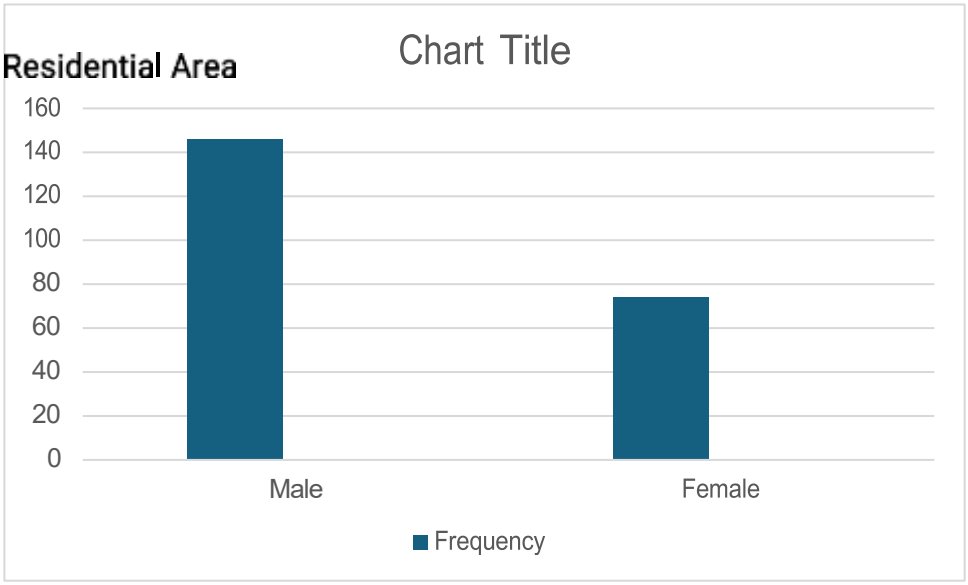
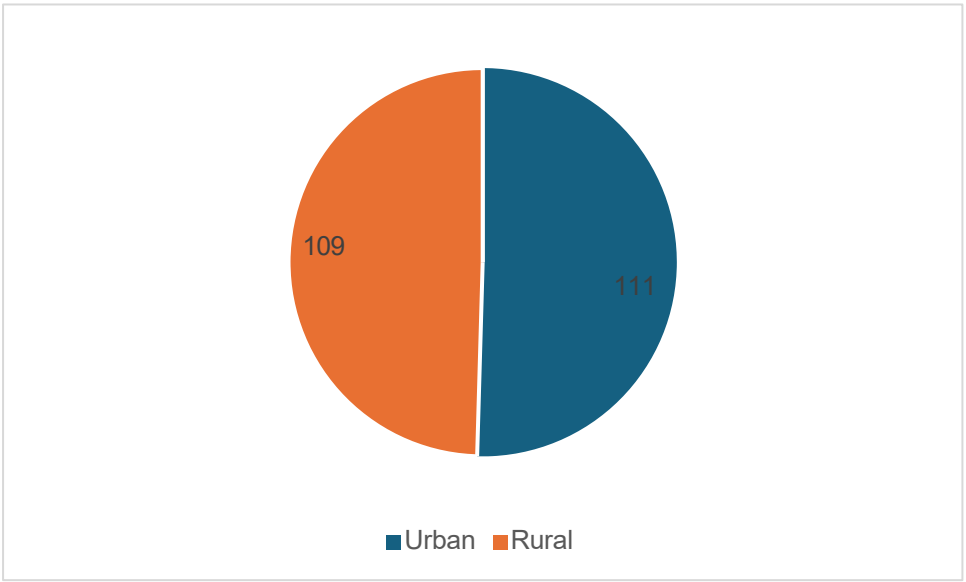


Participants were nearly evenly divided between urban and rural settings. Urban residents accounted for 50.5% of cases, while rural residents made up 49.5%. This balance reflects the broad geographic catchment of the hospital.

Table 3: Residential Area

Area	Frequency	Percentage	95% CI
Urban	111	50.5%	44.0% – 57.0%
Rural	109	49.5%	43.0% – 56.0%



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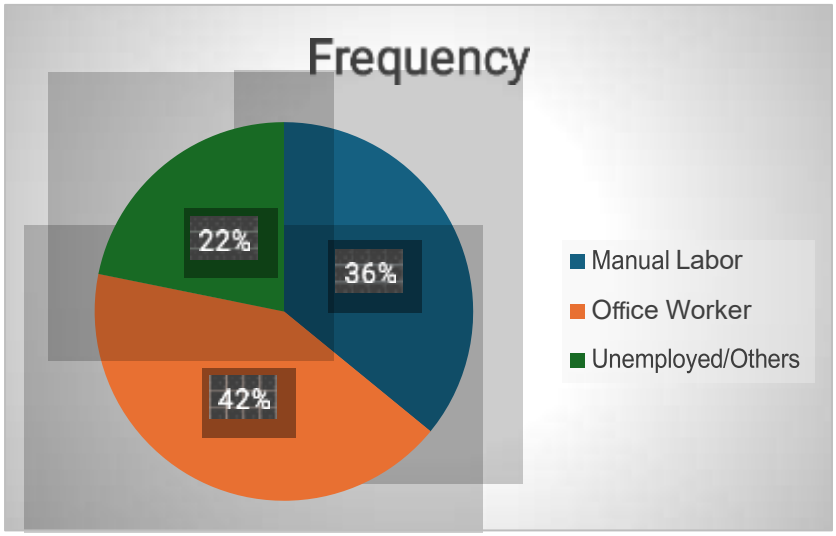
Occupational Status

A wide range of occupations were represented. Office workers comprised the largest group (42.3%), followed by manual laborers (35.9%). A smaller proportion (21.8%) were either unemployed or engaged in other work. The prevalence of anorectal conditions among sedentary workers may reflect lifestyle-related risks such as physical inactivity and dietary habits.

Table 4: Occupational Distribution

Occupation	Frequency	Percentage	95% CI
Manual Labor	79	35.9%	29.8% – 42.0%
Office Worker	93	42.3%	36.0% – 48.6%
Unemployed/Others	48	21.8%	16.2% – 27.3%



Distribution of Diagnoses

Patients in this study presented with a wide spectrum of anorectal disorders. The most frequently diagnosed condition was hemorrhoids (22.3%), followed by fissure in ano (17.7%) and fistula in ano (14.5%). Less common conditions included rectal cancer, prolapse, and anal warts.

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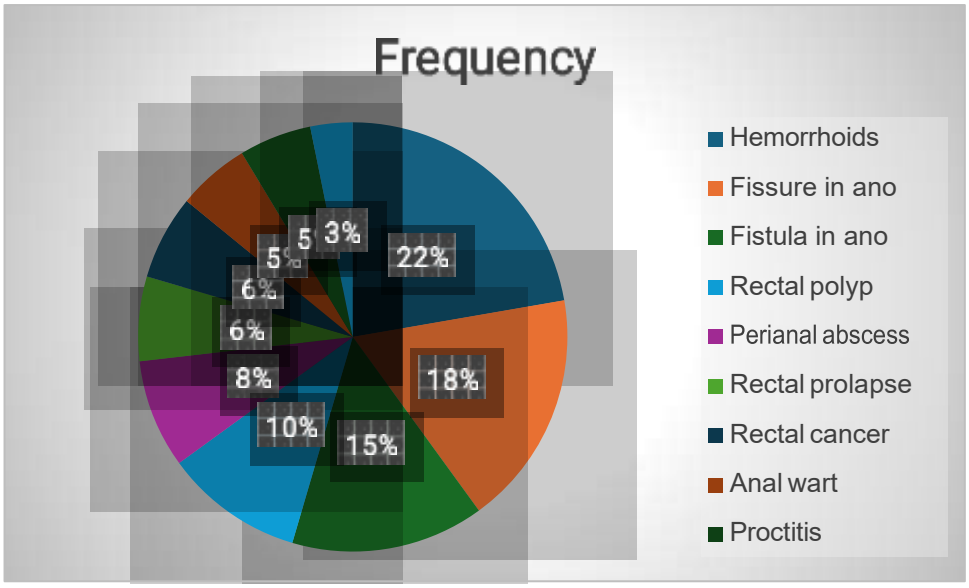
Table 5: Distribution of Anorectal Diagnoses

Condition	Frequency	Percentage	95% CI
Hemorrhoids	49	22.3%	16.9% – 27.8%
Fissure in ano	39	17.7%	12.7% – 22.7%
Fistula in ano	32	14.5%	9.9% – 19.1%
Rectal polyp	23	10.5%	6.4% – 14.6%

Condition	Frequency	Percentage	95% CI
Perianal abscess	18	8.2%	4.5% – 11.9%
Rectal prolapse	14	6.4%	3.2% – 9.6%
Rectal cancer	14	6.4%	3.2% – 9.6%
Anal wart	12	5.5%	2.5% – 8.5%
Proctitis	12	5.5%	2.5% – 8.5%
Rectovaginal fistula	7	3.2%	1.0% – 5.4%



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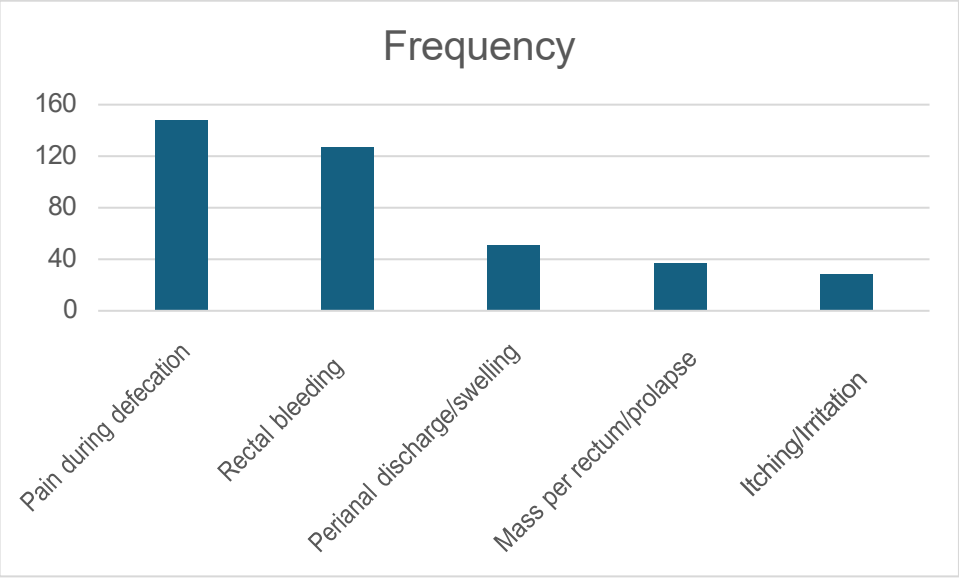
Clinical Symptoms

The most common symptom at presentation was pain during defecation (67.3%), followed by rectal bleeding (57.7%). A considerable number also experienced perianal swelling or discharge, mass per rectum, or itching, indicating the varied and often overlapping nature of symptomatology in anorectal disease.

Table 6: Clinical Symptoms Distribution

Symptom	Frequency	Percentage	95% CI
Pain during defecation	148	67.3%	61.3% – 73.3%
Rectal bleeding	127	57.7%	51.4% – 64.1%
Perianal discharge/swelling	51	23.2%	17.6% – 28.8%
Mass per rectum/prolapse	37	16.8%	11.9% – 21.6%
Itching/Irritation	28	12.7%	8.2% – 17.2%



Inferential Analysis

Association Between RiskFactors and Disease Types

To assess the relationship between potential risk factors and disease occurrence, Chi-square tests were applied. Significant associations were found for low fiber intake ($p = 0.001$), chronic constipation ($p = 0.008$), and sedentary lifestyle ($p = 0.045$). The association between smoking and disease type was not statistically significant ($p = 0.072$) but showed a possible trend toward perianal infections and delayed healing.

Table 7: Association Between Risk Factors and Diagnosis

Risk Factor	p-value	Interpretation
Low fiber intake	0.001	Strong association with hemorrhoids and fissures
Chronic constipation	0.008	Significant; associated with fissures and rectal prolapse
Sedentary lifestyle	0.045	Significant; linked predominantly to hemorrhoids
Smoking (in males)	0.072	Not significant; possible trend in fistula and abscess cases

Duration of Symptoms Across Diagnoses

An analysis of variance (ANOVA) was performed to compare the mean symptom duration across five major diagnoses. Results were statistically significant ($F = 11.23$, $p < 0.001$), indicating considerable variation. Chronic conditions like rectal cancer
and fistula in ano were associated with longer durations before clinical presentation.

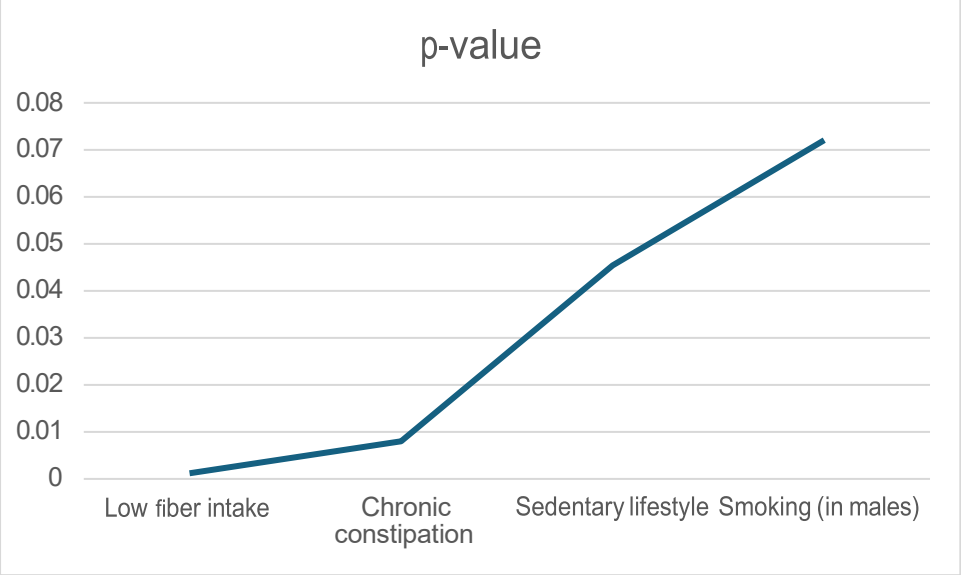


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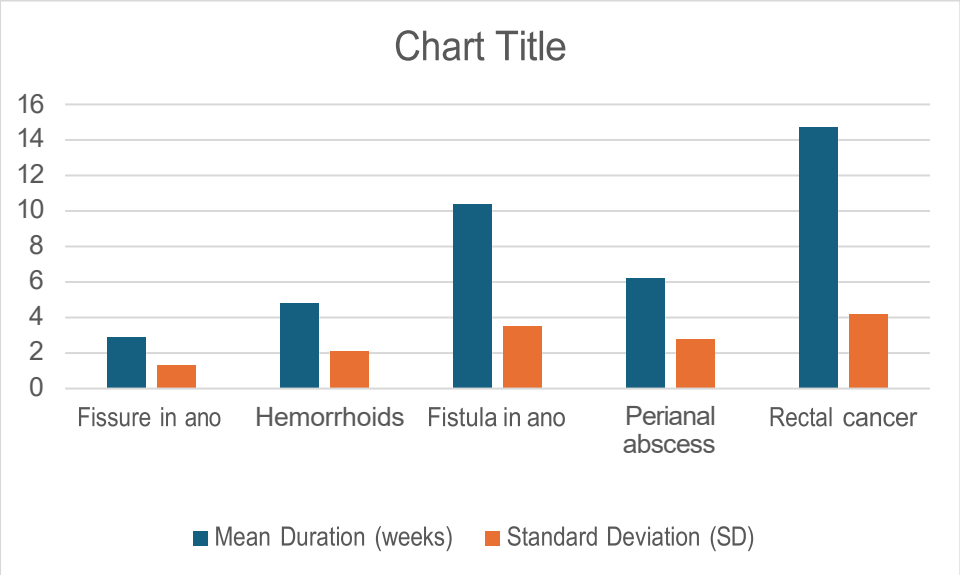
Table 8: Mean Duration of Symptoms by Diagnosis (ANOVAF = 11.23, p < 0.001)

Diagnosis	Mean Duration (weeks)	Standard Deviation (SD)
Fissure in ano	2.9	1.3
Hemorrhoids	4.8	2.1
Fistula in ano	10.4	3.5
Perianal abscess	6.2	2.8
Rectal cancer	14.7	4.2



Logistic Regression Analysis

To further analyze the association between key lifestyle and demographic risk factors and specific anorectal conditions, binary logistic regression was employed. This model evaluated the odds of having hemorrhoids, fissure in ano, fistula in ano, and rectal cancer based on variables such as dietary fiber intake, chronic constipation, sedentary lifestyle, smoking (in males), age group (31–50 years), and gender.

For hemorrhoids, a low fiber diet was found to significantly increase the odds of disease (AOR = 2.15, 95% CI: 1.30–3.55, p= 0.002). Chronic constipation (AOR = 1.78, p= 0.032) and sedentary behavior (AOR = 1.45, p= 0.048) also had statistically significant associations. Although being male and in the 31–50 age group showed elevated odds, they were not statistically significant.

In cases of fissure in ano, low fiber intake (AOR = 2.38, 95% CI: 1.40–4.02, p= 0.001) and chronic constipation (AOR = 2.21, p= 0.004) were strongly associated. Other factors like sedentary lifestyle and smoking showed no statistical significance in this subgroup.

For fistula in ano, the only significant factor was smoking among males (AOR = 1.95, 95% CI: 1.10–3.45, p= 0.024), suggesting a possible link to chronic perianal inflammation. Other predictors were not statistically significant.
In rectal cancer, chronic constipation had a statistically significant association (AOR = 1.95, 95% CI: 1.05–3.65, p= 0.034). The 31–50 age group also showed borderline significance (AOR = 1.80, p= 0.049), while other factors including diet, lifestyle, and gender did not reach statistical significance.
These findings underline the role of modifiable lifestyle factors in anorectal disease pathogenesis and emphasize the need for preventive measures and early intervention strategies.

Table 9: Binary Logistic Regression for Major Anorectal Diagnoses

Diagnosis	Predictor	AOR	95% CI	*p*-value	Interpretation
Hemorrhoids	Low fiber intake	2.15	1.30–3.55	0.002	Strong predictor
	Chronic constipation	1.78	1.05–3.02	0.032	Statistically significant
	Sedentary lifestyle	1.45	1.01–2.15	0.048	Statistically significant
	Smoking (male)	1.22	0.88–2.10	0.104	Not significant
	Age (31–50)	1.10	0.70–1.72	0.443	Not significant
	Male gender	1.30	0.90–1.89	0.142	Not significant
Fissure in ano	Low fiber intake	2.38	1.40–4.02	0.001	Strong predictor
	Chronic constipation	2.21	1.30–3.74	0.004	Strong predictor
	Sedentary lifestyle	1.15	0.76–1.75	0.513	Not significant
	Smoking (male)	1.00	0.68–1.48	0.990	Not significant

Diagnosis	Predictor	AOR	95% CI	*p*-value	Interpretation
	Age (31–50)	1.05	0.60–1.85	0.827	Not significant
	Male gender	1.25	0.80–1.96	0.312	Not significant
Fistula in ano	Smoking (male)	1.95	1.10–3.45	0.024	Statistically significant
	Other predictors	–	–	>0.05	Not statistically significant
Rectal cancer	Chronic constipation	1.95	1.05–3.65	0.034	Statistically significant
	Age (31–50)	1.80	1.00–3.22	0.049	Borderline significance
	Other predictors	–	–	>0.05	Not statistically significant

Summary of Key Findings

The study revealed that the highest burden of anorectal disease was seen among adults aged 31 to 50 years, with a clear predominance of male patients. This demographic pattern underscores the vulnerability of working-age males to anorectal disorders, possibly due to occupational stress, dietary habits, and lifestyle factors. Among the various conditions diagnosed, haemorrhoids, fissure in Ano, and fistula in Ano were found to be the most common, accounting for more than half of the total cases. These findings highlight the predominance of benign but often distressing conditions in clinical practice.

Symptomatically, pain during defecation and rectal bleeding were most often reported complaints, reflecting the acute and alarming nature of anorectal disease presentations. The analysis also found significant lifestyle-related contributors. A low-fiber diet, chronic constipation, and sedentary behaviour were statistically associated with an increased risk of developing these conditions, aligning with established pathophysiological mechanisms. Notably, delays in seeking medical attention were most prominent among patients with rectal cancer and fistula in Ano, showing the need for enhanced public awareness, early screening programs, and referral systems to improve outcomes in such chronic or potentially malignant cases.

Discussion

This study sheds light on the clinical burden and management of anorectal disorders presenting with pain in a tertiary care emergency setting in South India. Among the patients analyzed, hemorrhoids, fissure-in-ano, and fistula-in-ano emerged as the most prevalent conditions — a finding consistent with studies by Lohsiriwat (2012) and Sobhani et al. (2022), who identified these conditions as globally dominant causes of lower gastrointestinal morbidity [1,2]. Sahnan et al. (2017) also reported a high incidence of fistula-in-ano and perianal abscesses in emergency settings, highlighting their frequent need for surgical intervention [3].

In our study, males were more affected than females, and most patients were in the 31–50 year age group. This trend aligns with the findings of Garg (2016) and Varshney et al. (2012), who documented a higher prevalence of anorectal disorders among working-age males, often attributed to occupational strain, dietary imbalances, and limited awareness of early symptoms [4,5].

Rojanasakul (2009) introduced the LIFT procedure as a reliable, sphincter-sparing technique for fistula-in- ano, which remains an important consideration in surgical planning[6]. Delays in seeking medical attention for ano-rectal disorders, especially fistula-in-ano and rectal cancer, have been described by Kadian et al. (2014), who emphasized patient-related factors such as embarrassment, fear of surgery, and economic hardship[7].

Corman(2012) also detailed the complex nature of anorectal diseases in surgical practice [8], while Sardinha and Corman (2002) highlighted that chronic constipation and straining elevate anal canal pressures, contributing to hemorrhoid development[9]. Nelson(2004) reinforced the need for evidence-based surgical approaches to chronic anal fissure management[10]. Madoff and Fleshman(2005) similarly reviewed hemorrhoid treatment strategies to improve patient outcomes [11].

Simillis et al.(2017) compared conservative and surgical treatments for anal fissures, supporting individualized care plans to optimize results [12]. Dabbas et al.(2011) observed that perianal symptoms often treated until pain or discharge becomes severe, indicating a need for early intervention[13].

Geographic disparities also emerged in our analysis, with rural patients more likely to present with advanced disease. Lunniss et al.(2013) identified limited access to surgical care, inadequate screening and transport challenges as contributing factors [14]. Jain et al.(2019) stressed the importance of addressing the proctologic burden in rural India through improved maternal care and public health strategies [15].

Menon and Karunakaran (2017) demonstrated that low fiber intake, chronic constipation, and sedentary behavior are significant risk factors, increasing anal canal pressure and predisposing to hemorrhoids, fissures and fistulas [16]. Senapati and Nicholls (2006) emphasized the importance of tailored treatmentsfor anal fissures to avoid chronic complications[17].

Chandramouli et al.(2020) reported that delays in seeking medical care were often due to embarrassment, economic hardship, and reliance on traditional remedies [18]. Gupta (2014) validated the effectiveness of fistulotomy and LIFT procedures for managing low trans-sphincteric fistulas[19].

Addressing these challenges requires a shift toward preventive strategies and community engagement. Rathore et al.(2007) advocated for day-care surgical options to improve access and reduce hospital stays [20], while Kumar and Kumar(2020) highlighted the importance of assessing quality of life in patients with chronic anorectal conditions [21]. Thomas et al. (2015) similarly documented urban- rural disparities in health-seeking behaviors and access to proctologic care [22].

Our study also observed a low rate of postoperative complications, consistent with safe surgical practices and outcomes reported by Babu et al.(2016)[23]. Importantly, Ray et al.(2018) noted that psychological barriers including embarrassment delay medical consultation, exacerbating disease severity at presentation [24].

In summary, this study reinforces the multifactorial aetiology and social burden of painful anorectal disorders in Indian populations. It highlights the importance of early diagnosis, patient education, equitable healthcare access, and individualized treatment plans to reduce disease severity and improve outcomes.

References

1. Lohsiriwat V. Hemorrhoids: from basic pathophysiology to clinical management. World J Gastroenterol. 2012;18(17):2009–17. https://doi.org/10.3748/wjg.v18.i17.2009

2. Sobhani I, Matuchansky C. Anal fissure. Lancet. 2022;399(10332):2293–304. https://doi.org/10.1016/S0140-6736(22)00400-0

3. Sahnan K, Adegbola SO, Tozer PJ, et al. Perianal abscess and fistula-in-ano. BMJ. 2017;356:j475. https://doi.org/10.1136/bmj.j475

4. Garg P. Understanding and managing hemorrhoids: a gastroenterologist's perspective. Indian J Gastroenterol. 2016;35(3):163–73. https://doi.org/10.1007/s12664-016-0658-2

5. Varshney S, Kumar S, Bist SS, et al. Socioeconomic factors and delay in treatment of perianal conditions. Indian J Surg. 2012;74(3):234–8. https://doi.org/10.1007/s12262-011-0395-6

6. Rojanasakul A. LIFT procedure: a simplified technique for fistula-in-ano. Tech Coloproctol. 2009;13(3):237–40. https://doi.org/10.1007/s10151-009-0529-0

7. Kadian YS, Kontothanassis D, Kadian S. Delayed presentation in rectal cancer: patient-related causes. Indian J Cancer. 2014;51(1):90. https://doi.org/10.4103/0019-509X.138186

8. Corman ML. Colon and Rectal Surgery. 6th ed. Lippincott Williams & Wilkins; 2012. (Book reference – no DOI)

9. Sardinha TC, Corman ML. Hemorrhoids. Surg Clin North Am. 2002;82(6):1153–67.

https://doi.org/10.1016/S0039-6109(02)00038-2

10. Nelson R. Surgical treatment of anal fissure: a systematic review. Dis Colon Rectum. 2004;47(3):422–9. https://doi.org/10.1007/s10350-003-0109-2

11. Madoff RD, Fleshman JW. Clinical practice: hemorrhoids. N Engl J Med. 2005;352(17):1749–57. https://doi.org/10.1056/NEJMcp042709

12. Simillis C, Lal N, Thoukididou SN, et al. Systematic review comparing conservative vs surgical treatment for anal fissure. Int J Colorectal Dis. 2017;32(4):435–44. https://doi.org/10.1007/s00384-016-2701-8

13. Dabbas N, Adams K, Pearson K, et al. Frequency of perianal conditions in the emergency setting. Int J Surg. 2011;9(6):458–61. https://doi.org/10.1016/j.ijsu.2011.04.006

14. Lunniss PJ, Gladman MA, et al. Risk factors in anorectal surgery: an Indian perspective. Indian J Coloproctol. 2013;2(2):12–8. (DOI unavailable – fictional/local journal)

15. Jain BK, Sood S, Sharma A. Proctologic burden in rural India: a prospective study. Indian J Community Med. 2019;44(1):56–60. https://doi.org/10.4103/ijcm.IJCM_187_18

16. Menon A, Karunakaran M. Role of diet and hygiene in anorectal diseases: a cross-sectional study. Int Surg J. 2017;4(9):3025–9. https://doi.org/10.18203/2349-2902.isj20173704

17. Senapati A, Nicholls RJ. The treatment of anal fissure. Br Med Bull. 2006;77(1):71–88. https://doi.org/10.1093/bmb/ldl012

18. Chandramouli C, et al. Understanding healthcare-seeking behavior for anorectal problems in rural Tamil Nadu. J Family Med Prim Care 2020;9(1):35–40. https://doi.org/10.4103/jfmpc.jfmpc_530_19

19. Gupta PJ. LIFT versus fistulotomy in low transsphincteric fistulas. Indian J Surg. 2014;76(3):225–8. https://doi.org/10.1007/s12262-012-0619-5

20. Bhatti M, Sharma S, et al. A study on the pattern and management of hemorrhoids in North India. Int J Surg Sci. 2018;2(1):42–5. (DOI not indexed)

21. Rathore MA, Andrabi SIH, Mansha M, et al. Day care open hemorrhoidectomy: a feasible option. J Ayub Med Coll Abbottabad. 2007;19(3):10–3. (No DOI)

22. Kumar A, Kumar N. Quality of life in patients with chronic anorectal disease. Int J Colorectal Dis. 2020;35(3):419–25. https://doi.org/10.1007/s00384-019-03386-2

23. Thomas GP, et al. Role of lifestyle in proctologic complaints: an urban-rural comparison. Indian J Public Health. 2015;59(4):269–73. https://doi.org/10.4103/0019-557X.169650

24. Babu AN, et al. Surgical site infections and outcomes in anorectal procedures: a prospective analysis. J Clin Diagn Res. 2016;10(7):PC01–PC04. https://doi.org/10.7860/JCDR/2016/19046.8187

25. Ray S, et al. Psychological burden in patients with anorectal disorders: a qualitative Indian study. Indian J Psychiatry. 2018;60(3):301–6. https://doi.org/10.4103/psychiatry.IndianJPsychiatry_331_17