

Clinico-Anatomical Mapping of Benign Perianal Disorders with Emphasis on Perianal Structural Involvement in Gadap Town, Karachi

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ABSTRACT

Background: Benign perianal conditions like hemorrhoids, fissures, fistula-in-ano, and perianal abscesses are common surgical presentations that significantly impair quality of life. Data remains scarce in Pakistan, particularly among underprivileged groups. This study aimed to evaluate the clinico-anatomical spectrum, risk factors, and management of these diseases within the Baloch population of Gadap Town, Karachi.

Methodology: This cross-sectional study at Al-Tibri Medical College Hospital, Gadap Town, Karachi included 300 Baloch patients. Clinical assessment included presenting complaints, examination findings, and risk factors. Patients received either conservative or surgical treatment, depending on the diagnosis. Data were analyzed descriptively using frequencies and mean±standard deviation.

Results: The mean patient age was 33.2 ± 10.7 years, with a male predominance (56.3%). The primary complaint was bleeding per rectum (50.3%), followed by pain with bleeding (24%) and perianal pain (14%). On examination, anal fissures (47%) and internal hemorrhoids (34%) were the predominant diagnoses. Constipation and low dietary fiber intake were identified as major risk factors in over 80% of patients. Treatment was diagnosis-specific, managed conservatively or surgically.

Conclusion: Perianal diseases, specifically fissures and hemorrhoids, are highly prevalent in the Baloch population of Gadap Town. Constipation and dietary habits are critical contributors. Management aligns with diagnosis, combining conservative and surgical approaches. These findings highlight the importance of community education regarding preventive strategies for lifestyle modification.

Keywords: Perianal Diseases, Anal Fissure, Hemorrhoids, Constipation, Pakistan / Karachi.

INTRODUCTION

Benign perianal lesions are a group of non-neoplastic disorders affecting the anal canal and perianal skin, manifesting as pain, bleeding, discharge, or a local mass effect. Common conditions include anal fissures, hemorrhoids, fistula-in-ano, and perianal abscesses, which collectively contribute to a significant proportion of surgical outpatient visits worldwide [1]. This imposes a considerable burden on healthcare systems, particularly in low- and middle-income countries (LMICs) where resources may be limited. The frequency and management of these conditions vary across populations, influenced by factors such as lifestyle, demographic characteristics, and access to

healthcare services, highlighting the need for context-specific approaches to diagnosis, treatment, and prevention.

These conditions significantly impair quality of life and may progress to chronicity or complications if untreated [1, 2]. Global data suggest that hemorrhoids affect up to 40% of adults [3]. In Pakistan, the burden of anorectal disease is compounded by delayed access to care and limited resources, while systematic data remain scarce. Hemorrhoids, fissures, abscesses, and fistulae are the most frequently reported diagnoses, with hemorrhoids accounting for over 40% of cases in local series [1]. Age-related increases in colorectal disease, including benign lesions, further influence surgical service planning [4].

Karachi, Pakistan's largest city, is ethnically diverse and includes a sizeable Baloch community [5]. While Balochi speakers comprise about 3.9% of the city's overall population, their proportion is much higher in peripheral areas such as Gadap Town, where they represent nearly 18% [5,6]. Gadap, with an estimated population of 300,000, is marked by socioeconomic deprivation, limited healthcare access, and variable literacy levels [6]. These factors may increase the burden of untreated anorectal disease.

This study aims to determine the prevalence and patterns of benign perianal diseases among residents of Gadap Town, Karachi, with a specific focus on the Baloch population. By doing so, it aims to address a significant gap in local literature and generate evidence to inform healthcare strategies that cater to the unique needs of this community, ultimately contributing to more equitable healthcare delivery in the region. The study's focus on a specific geographic area and population subgroup is designed to provide targeted insights that can shape local healthcare policies and interventions.

OBJECTIVES

The goal of this study is to evaluate the clinico-anatomical spectrum, risk factors, and management patterns of benign perianal disorders among Baloch residents of Gadap Town, Karachi, with particular emphasis on perianal structural involvement. Specifically, the study aims to determine the prevalence and distribution of common benign perianal conditions, including anal fissures, hemorrhoids, fistula-in-ano, perianal abscesses, and rectal polyps, and to examine demographic patterns such as age and gender in relation to these disorders. It seeks to identify key risk factors, including constipation, low dietary fiber intake, and lifestyle-related contributors, and to describe the characteristic clinical presentations and symptom patterns associated with each condition. Additionally, the study intends to map structural involvement of the perianal region based on clinical examination and proctoscopy findings, evaluate management strategies, both conservative, surgical and assess their alignment with diagnosis-specific treatment protocols. Through statistical analysis of associations between demographic factors, risk factors, clinical presentation, and treatment outcomes, the study aims to provide evidence-based, context-specific

recommendations for prevention, early detection, and effective management of benign perianal diseases within underserved populations.

MATERIALS AND METHODS

This cross-sectional study was conducted in the surgical outpatient department of Al-Tibri Medical College Hospital, Gadap Town, Karachi, and included a total of 300 patients, all belonging to the Baloch population. Detailed demographic information, including age, gender, religion, and employment status, was recorded for each participant. The study assessed a range of benign perianal conditions, including internal and external hemorrhoids, anal fissures, fistula-in-ano, perianal abscesses, rectal polyps, rectal prolapse, perianal hematomas, proctitis, and perianal skin tags. Patients presenting with symptoms indicative of benign perianal disease underwent a systematic clinical evaluation comprising inspection, digital rectal examination, and, where indicated, proctoscopy. Management strategies were tailored according to the specific diagnosis.

Conservative treatment included dietary modifications such as increased intake of whole-fiber wheat, adequate hydration, and use of Ispaghula husk in warm milk before sleep, alongside pharmacological measures like topical nitrates and lidocaine. Lifestyle interventions, including regular walking, physical exercise, and sitz baths in lukewarm salted water three times daily for 15 minutes, were also recommended. Surgical interventions, applied when necessary, included procedures such as sphincterotomy, hemorrhoidectomy, fistulectomy, incision and drainage, and polypectomy, ensuring that management was aligned with the clinical condition of each patient.

Data were analyzed by SPSS version 26 for demographic patterns, presenting complaints, examination findings, associated risk factors, and treatment outcomes. Chi-square test with Cramér's V were used to examine associations between categorical variables (diagnosis, gender, constipation, complaints, treatment, and age group). P value was set at < 0.05 to be statistically significant. One-way ANOVA and Kruskal-Wallis tests were performed to compare age and different diagnoses to confirm that any observed age differences were genuine and not an artifact of assumptions. Moreover, t-test was performed to compare the age of patients with

constipation and without constipation to find whether older or younger patients are more prone to constipation in this cohort.

RESULTS

The mean age of patients was 33.2 ± 10.7 years (range 4–65), with the majority ranging between 25 and 40 years. There were 169 males (56.3%) and 131 females (43.7%). The most frequent presenting complaint was only bleeding per rectum (50.3%), followed by combined pain and bleeding per rectum (24.3%). Perianal pain only (13.7%) and discharge of pus (11.0%) were also common, whereas itching and swelling were rare (<1%). As shown in Figure 1, anal fissure was

the most common diagnosis (46.7%), followed by internal hemorrhoids (33.7%). Other conditions included fistula-in-ano (9.3%), perianal abscess (5.7%), rectal polyps (2.3%), perianal hematoma (1.3%), and external hemorrhoids (1.0%).

Constipation and low dietary fiber intake were the leading risk factors, observed in more than four-fifths of patients. Management outcomes reflected diagnosis-specific trends: fissures responded primarily to GTN ointment or sphincterotomy, internal hemorrhoids to conservative therapy or hemorrhoidectomy, and fistula-in-ano and abscesses to surgical drainage procedures.

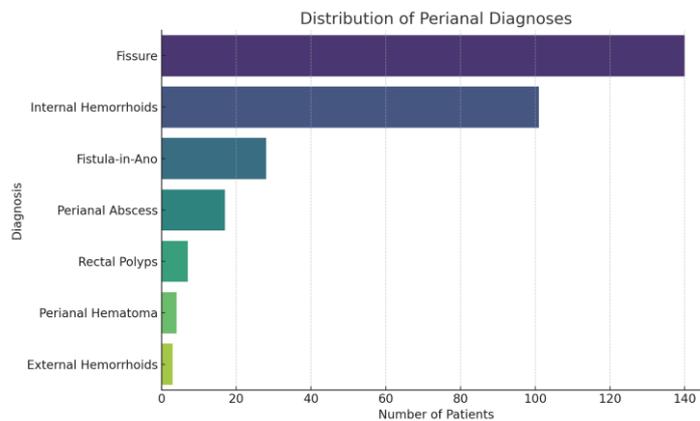


Figure 1. Distribution of Benign Perianal Diagnoses Among Study Participants (N=300).

Overall, constipation was reported by **83.7%** of patients (Figure 2). It was found in nearly all fissure (99.3%) and internal hemorrhoid (99.0%) cases, whereas it was far less

common in fistula-in-ano (14.3%). and perianal abscess (11.8%). These differences were statistically significant ($\chi^2=260.2$, $p<0.001$).

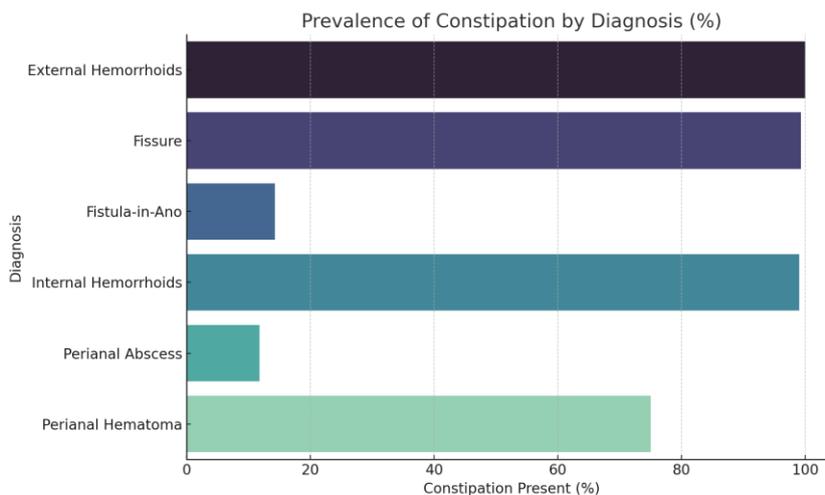


Figure 2. Prevalence of Constipation in Different Benign Perianal Conditions

Age patterns varied significantly between diagnostic groups (ANOVA F=11.39, p <0.001)

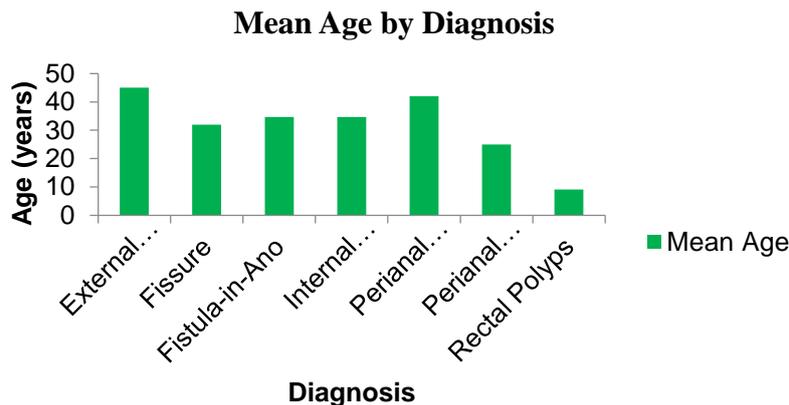


Figure 3. Age Patterns of Patients with Different Diagnosis

As illustrated in figure 3, patients with fissures and hemorrhoids were predominantly in their 30s, whereas perianal abscesses were

observed in older patients (mean age 42 years). Rectal polyps occurred almost exclusively in children (mean age 9 years).

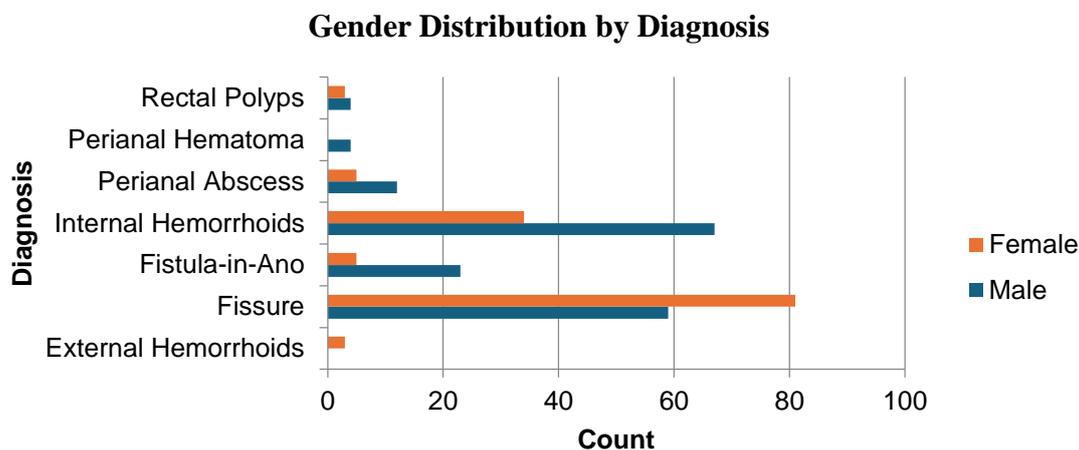


Figure 4. Gender Distribution Vs Diagnosis

Figure 4 illustrates that fissures were slightly more frequent in females (57.9%), while internal hemorrhoids and fistula-in-ano were more common in males (66.3% and 82.1%, respectively). Perianal abscesses and rectal polyps also showed male predominance. Bleeding per rectum was most common in internal hemorrhoids, while combined pain and bleeding characterized fissures. Discharge of pus was typical for fistula-in-ano and perianal abscess. The relationship was statistically significant ($\chi^2=557.8$, $p < 0.001$). Our results showed that dietary habits dominate as risk contributors. Most of the patients (86%) used low dietary fibre. Out of these, 14% admitted to less use of water and no physical exercise in addition to low fibre,

1.5% claimed only less water intake along with low dietary fibre. 12% did not have any identifiable risk factor. Treatment was tailored according to the nature of the clinical condition as shown in Figure 5. The bulk of the patients presented with an anal fissure. Out of 140 patients with anal fissure, the majority (59.7%) of the patients were treated conservatively, while 41% underwent sphincterotomy. Out of 101 patients with internal hemorrhoids, 59% were managed through conservative treatment, and only 40% underwent hemorrhoidectomy. Therefore, the majority was managed conservatively, but a significant proportion also required surgery.

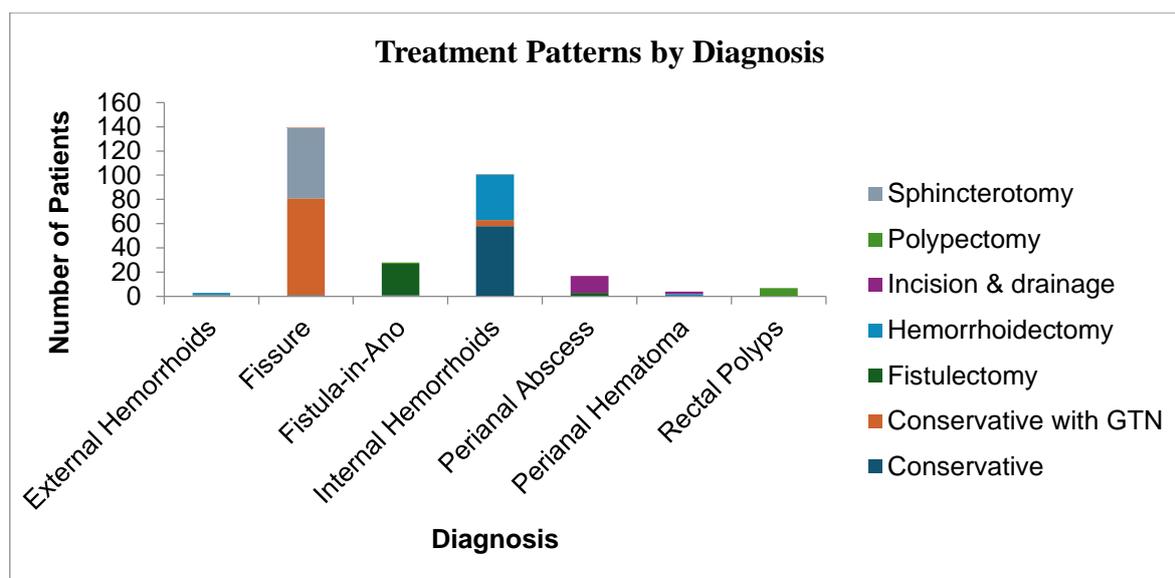


Figure 5. Treatment Patterns According To Diagnosis

Fistula-in-ano required fistulectomy, while perianal abscesses were managed with incision and drainage. Rectal polyps were treated with polypectomy. The distribution of treatments by diagnosis was highly significant ($\chi^2=1022.9$, $p<0.001$), confirming alignment of management strategies with clinical diagnosis.

Chi-square analyses demonstrated statistically significant associations across all tested variables. A moderate association was observed between diagnosis and gender ($\chi^2(6)=31.53$, $p<0.001$, $V=0.32$), with fistula-in-ano disproportionately affecting males (82.1%) while fissure-in-ano was more frequent among females (57.9%). A very strong association was found between diagnosis and constipation ($\chi^2(12)=260.21$, $p<0.001$, $V=0.66$). Constipation was present in almost all cases of fissure and internal hemorrhoid (99–100%), but was infrequent in fistula (14.3%) and perianal abscess (11.8%), indicating differing etiological pathways. Similarly, presenting complaint was strongly linked to diagnosis ($\chi^2(30)=557.75$, $p<0.001$, $V=0.61$). Patients with fissures mostly reported pain with bleeding, internal hemorrhoids primarily presented with bleeding, while fistula and abscess were predominantly associated with pus discharge and pain.

The association between treatment modality and diagnosis was very strong ($\chi^2(42)=1022.86$, $p<0.001$, $V=0.75$), reflecting appropriate therapeutic patterns. Finally, association of age group with diagnosis showed a moderate association (χ^2

(24)=155.68, $p<0.001$, $V=0.36$), such that perianal abscesses occurred at a relatively older mean age (~42 years), whereas rectal polyps were confined to younger individuals (mean ~9 years).

Analysis of variance showed a significant difference in age across diagnostic categories (ANOVA: $F=11.39$, $p<0.001$; Kruskal–Wallis: $H=38.61$, $p<0.001$). Both parametric and non-parametric tests confirmed that age varied meaningfully between conditions. As observed, perianal abscess patients were generally older (mean ~42 years), whereas rectal polyps were confined to much younger patients (mean ~9 years). This demonstrates that certain perianal conditions are age-dependent.

In contrast, no significant difference in age was found between patients with constipation and those without ($t=-0.52$, $p=0.60$). This indicates that constipation was distributed relatively evenly across all age groups, suggesting it is not an age-related phenomenon in this cohort.

DISCUSSION

The present study provides an in-depth evaluation of the clinico-anatomical spectrum of benign perianal disorders among the Baloch population of Gadap Town, Karachi, highlighting disease prevalence, associated risk factors, demographic patterns, and management approaches. Given the scarcity of population-specific data from underprivileged communities in Pakistan, these findings contribute valuable evidence to existing literature and underscore the importance of context-specific healthcare planning.

Anal fissure emerged as the most prevalent perianal condition in this study, accounting for nearly half of all cases, followed by internal hemorrhoids. This distribution is consistent with several regional studies conducted in Pakistan and South Asia, which report fissures and hemorrhoids as the leading causes of anorectal morbidity presenting to surgical outpatient departments.

In our study, anal fissures and internal hemorrhoids were the most common benign perianal conditions, followed by fistula-in-ano, perianal abscess, and a smaller incidence of rectal polyps, mainly in children. This aligns with current proctology guidelines, which highlight the significant burden of hemorrhoids and fissures. Typically, internal hemorrhoids present with painless bleeding, while anal fissures are characterized by severe, defecation-related pain and possible bright-red bleeding upon wiping, as noted in the 2024 ASCRS Hemorrhoid Guideline. [7,8].

For anal fissures, our approach to managing anal fissures aligns with ASCRS recommendations, starting with medical therapy (fiber, sitz baths, topical agents) and progressing to topical nitrates, calcium-channel blockers, or botulinum toxin. For chronic fissures not responding to conservative treatment, lateral internal sphincterotomy (LIS) is the most effective surgical approach, offering excellent healing with low incontinence rates when properly tailored. [9-11]

A study on fissures documented that the most frequent diagnosis, particularly among younger adults, attributing this trend to dietary fiber deficiency and chronic constipation. The predominance of fissures in the present cohort further supports the hypothesis that lifestyle-related risk factors play a central role in the pathogenesis of benign perianal diseases[12-14].

The mean age of 33.2 ± 10.7 years indicates that benign perianal disorders predominantly affect individuals in their most productive years, imposing not only physical discomfort but also socioeconomic consequences. Comparable age distributions have been reported in many studies where the majority of patients were in the third and fourth decades of life[15]

The significant variation in age across diagnostic categories observed in this study is noteworthy. Fissures and hemorrhoids were more common in younger adults, while perianal abscesses tended to present in older

patients. This age-dependent pattern likely reflects differences in underlying pathophysiology, with degenerative changes, immunological factors, and delayed presentation contributing to infectious perianal conditions in older individuals.

Gender distribution revealed an overall male predominance, consistent with findings from multiple studies conducted in South Asia. However, fissures were more frequent in females, whereas internal hemorrhoids, fistula-in-ano, and perianal abscesses were significantly more common in males[16]. This gender-based variation has been widely reported and may be explained by biological and sociocultural factors. Higher fissure prevalence in females has been linked to pregnancy, childbirth-related anal sphincter trauma, and hormonal influences, while male predominance in fistula and abscess has been associated with increased exposure to perianal sepsis, smoking, occupational strain, and delayed healthcare-seeking behavior [17].

Dietary habits further reinforced this association, with the majority of patients reporting low dietary fiber intake, often accompanied by inadequate water consumption and sedentary lifestyle [18]. These findings are consistent with global literature emphasizing the protective role of dietary fiber in maintaining normal bowel habits and reducing anorectal trauma. Biggs and Tang have highlighted the role of lifestyle modification in preventing gastrointestinal and anorectal disorders, particularly in low-resource settings where dietary imbalance is common.

In this study, fistula-in-ano typically manifested as purulent discharge accompanied by chronic perianal irritation and discomfort, and in some cases, developed secondary to a preceding perianal abscess. This presentation aligns with patterns documented in standard case series and clinical literature. Analysis of our dataset revealed a notable male predominance among patients with fistula-in-ano, while cases of perianal abscess tended to occur in relatively older individuals[19,20]. These findings are consistent with population-based and multicenter studies, which indicate that men are disproportionately affected by the progression from abscess to fistula, with approximately 20–35% of abscess cases developing fistulous tracts within six to twelve months following initial drainage. Additionally, large-scale cross-sectional data have identified constipation as an independent risk factor for

the development of hemorrhoidal disease, alongside other contributing variables such as age and lifestyle practices. For instance, studies involving over 190,000 patients undergoing screening colonoscopy demonstrated a strong association between chronic constipation and hemorrhoid formation, reflecting trends observed at the community level and reinforcing the importance of modifiable lifestyle factors in the pathogenesis of benign anorectal disorders.

A research on benign perianal conditions exhibit a non-random distribution, influenced by factors such as gender, age, and lifestyle. Notably, males are more prone to developing fistula-in-ano, with a striking 80:20 male-to-female ratio reported in some studies, suggesting underlying anatomical or microbial influences [21,22]. Constipation plays a pivotal role in the development of fissures and hemorrhoids, underscoring its importance as a modifiable risk factor in prevention strategies. In contrast, fistulas and abscesses are more closely linked to infectious etiologies, rather than constipation. The strong predictive value of symptomatology for diagnosis highlights the need for thorough clinical history-taking, particularly in settings with limited diagnostic resources. Treatment approaches are largely diagnosis-driven, reflecting adherence to standard surgical principles. Age significantly impacts the distribution of perianal diseases, with rectal polyps more prevalent in pediatric populations and abscesses in older adults. Interestingly, constipation acts as an age-independent risk factor, emphasizing its universal relevance in disease prevention [23-26].

Overall, the findings of this study are consistent with existing national and international literature while providing novel insights into an underserved ethnic population. The high prevalence of modifiable risk factors, coupled with delayed presentation and limited access to healthcare, underscores the need for targeted preventive strategies. Community education focusing on dietary fiber intake, hydration, bowel habits, and early medical consultation may significantly reduce the burden of benign perianal diseases in similar populations

CONCLUSION

This study highlights the high prevalence and diverse spectrum of benign perianal disorders among the Baloch population of Gadap Town, Karachi, with anal fissures and internal

hemorrhoids emerging as the most common conditions. The findings underscore the critical role of modifiable risk factors—particularly chronic constipation and low dietary fiber intake—in the development of these diseases. Age and gender were also significant determinants, with fistula-in-ano predominantly affecting males and perianal abscesses presenting more frequently in older patients, while fissures were slightly more common in females. Management strategies were appropriately aligned with clinical diagnoses, combining conservative measures, lifestyle interventions, and surgical procedures as indicated.

These results emphasize the need for targeted preventive strategies, including community education on dietary modification, hydration, physical activity, and early medical consultation, to reduce the burden of benign perianal conditions. Furthermore, healthcare systems in underserved areas should prioritize accessible diagnostic services and evidence-based treatment protocols to address the clinical and quality-of-life impacts of these conditions. Future studies with structured long-term follow-up are warranted to evaluate outcomes such as recurrence, post-surgical continence, and effectiveness of preventive interventions, which will further inform context-specific clinical guidelines and public health strategies in similar populations.

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