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Assessing the epidemiological and clinical characteristics of primary anal fissure among Jordanian patients: A cross-sectional study

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Abstract

Background

Anal fissures are painful tears in the anoderm often caused by constipation, hard stools, diarrhea, childbirth, or hemorrhoids. They commonly affect younger individuals and typically occur in the posterior midline of the anal canal. Their incidence and distribution are influenced by personal habits and lifestyle factors.

Objectives

To investigate the epidemiology, demographic distribution, clinical presentation, and contributing factors of primary anal fissures in the Jordanian population, with the goal of informing more effective diagnostic and treatment strategies.

Methods

A cross-sectional study was conducted across multiple hospitals in Jordan between September 2024 and February 2025. Adults aged 20 to 60 diagnosed with anal fissures were enrolled. Data were collected from medical records and patient questionnaires. A minimum sample size of 203 was calculated using Epicalc v1.02. Statistical analysis was performed using JASP, with significance set at $p < 0.05$. Ethical approval was obtained and patient confidentiality was maintained throughout.

Results

Of 214 patients, 209 were diagnosed with anal fissures; 64% were male. Diagnosis was made by bedside examination in 93.5% of cases, with general surgeons and general surgery clinics being the most common providers (58.4% and 60.7%, respectively). Surgical intervention was significantly associated with rectal pain during defecation ($p = 0.034$), bleeding ($p = 0.002$), prolonged symptom duration ($p = 0.004$), and higher symptom intensity ($p = 0.001$). Increased intake of vegetables and water was significantly associated with a lower need for surgical management ($p = 0.005$ for both). Conclusion: Primary anal fissures are more prevalent among Jordanian males and are commonly managed by general surgeons. Symptom severity is a key predictor of surgical intervention, while higher dietary fiber and fluid intake may reduce surgical need. Early lifestyle modification may be beneficial in reducing disease severity and improving outcomes.

INTRODUCTION

An anal fissure (AF) is a common anorectal condition characterized by a linear tear in the squamous epithelial lining of the anal canal, causing anal pain, bleeding and pruritus [1]. The predominant site of AF

is the posterior midline in 90%[2].

Most cases of anal fissures are acute and thought to heal within 4 weeks, but those that are still symptomatic after 4–6 weeks are often referred to as chronic AF[3]. In addition AF can be primary arising from local trauma like hardened stool, while secondary fissures are affiliated with other leading occasions[4].

Anal fissures affect various age groups, being more common among infants and middle-aged individuals (40–50) years. Moreover, there is rising in incidence among females aged (12–24) years and males aged (55–64) years[5].

Although the precise etiologies of anal fissures remain elusive, potential contributing factors include trauma from stool passage, previous anal surgeries, inflammatory bowel conditions, and specific nutritional habits[6].

The prevalent symptom is perianal pain during and after defecation[7],Patients commonly experience intense anal pain, lasting minutes to hours, often likened to passing broken glass stool, particularly occurs repeatedly with each bowel movement[8],this distinct pain is characteristic for anal fissures. This pain may radiate to adjacent areas like the back, buttocks, genitals, and urinary organs[9].

Accompanying symptoms may comprise rectal bleeding (small amounts of fresh red blood on stool or toilet tissue),discharge, sitting discomfort, roughness and itching in anal area[8, 9].

Treatment of anal fissures divide into surgical and non-surgical, AF treatment begin with non-surgical ways including stool softeners, fiber supplementation, sitz baths, and topical lidocaine gel for pain control. nearly half of fissures heal with stool softeners and lidocaine gel together[10, 11].Also nearly half of patient improve with topical nitrate[12], and more than half improve with calcium channel blocker like diltiazem[13].About surgical treatment of AF they have a higher successful rate, but more expensive and risk for chronic anal incontinence and other unpleasant complications[14, 15],Lateral internal sphincterotomy (LIS) has long been regarded as the surgical procedure of choice for chronic anal fissures[11, 16].Medical therapy is effective in treating the majority of anal fissures; nevertheless, it has limitations such as low compliance, adverse effects, and the possibility of fissure recurrence[17].

OBJECTIVES

Our study aimed to identify demographic variations among patients with anal fissures and describe their clinical presentation. By examining incidence rates, associated symptoms, and potential causative factors, we sought to provide valuable insights into understanding and managing this condition. We hoped that our findings would contribute to the medical community's knowledge base, aiding in the development of more effective strategies for the diagnosis and treatment of primary anal fissure patients in Jordan.

Literature Review:

Anal fissure(AF) is a small tear in the skin of the distal anal canal, and it is one of the most painful anorectal conditions, most frequently identical in both genders with variation according to age which affect young age more[2, 18].AF form quarter of proctological consultation[8].The lifetime occurrence rate of anal fissures is approximately 11%[19]. The majority, around 80–90% of cases, are typically located in the posterior midline [20]. Only 10% of females and 1% of males have a fissure located in the anterior midline [21]. Some studies show variation of prevalence between male and female, according to retrospective analysis during 2005–2011 gender affect AF and it is more prevalent among females in general with consideration to age they occur more commonly in younger age adolescents females and late middle aged males indicating that mean age of males affected with AF more than females[5].In contrast, a cross sectional study in a private Surgical Clinic in Al-Diwaniyah Province, Iraq shows that AF in males is more frequent[22].Some studies shows that AF is a common condition in children's [23].The average age for AF is approximately middle adulthood (40s)[9, 24].In addition, acute anal fissures are ones that remain less than 6 weeks[6].

An anal fissure (AF) is a small linear laceration in the skin of the anal canal, often extending from beneath the dentate line to the anal verge, and typically found in the posterior midline[16]. Despite thorough investigation of this condition, the precise cause of anal fissure remains uncertain unless it is secondary to an underlying disorder. Initially, anal fissures were attributed to trauma in the anal canal caused by hard or large stools or diarrhea, but this explanation only accounts for acute fissures[25] .However, in many cases, patients do not report constipation or may have a history of watery diarrhea. Additionally, while many fissures heal within weeks, others progress to become chronic in nature [25]. Furthermore, constipation and hard bowel movements are reported in only 13% of patients with fı

ssures[24].

Anal fissures(AF) is primarily linked to elevated anal sphincter pressure, and the majority of treatment options focus on reducing this raised pressure[26]. The fundamental underlying pathology involves persistent hypertonia of the entire internal sphincter, elevated resting anal canal pressure, and the associated ischemia of the anoderm over the posterior midline of the anal canal [27, 28]. The persistent hypertonia of the internal sphincter with reduced relaxation, along with mucosal ischemia of the posterior anal canal, are the primary pathologies in chronic anal fissures (CAF) [29]. It is important to note that the most common factor contributing to the non-healing of fissures is the spasm of the internal anal sphincter[18].This observation, although not fully clarifying the pathogenesis of fissures, did offer insight into the accepted (and successful) surgical therapies of the time: anal dilatation and internal sphincterotomy, both of which reduce resting pressure [28].

There is a distinct category of fissures linked to childbirth, seemingly resulting from shear forces exerted by the baby's head during delivery, leading to the tethering of mucosa to muscle and localized trauma. These fissures are not correlated with increased sphincter tone; rather, they exhibit normal or even reduced tone, making sphincterotomy unsuitable for treatment [30].

The exact cause of anal fissures remains unclear, but numerous factors increase the risk of developing them. These include trauma to the anal canal from the passage of hard stools or diarrhea, constipation, and exerting excessive pressure during childbirth[25]. Certain diseases, such as internal hemorrhoids (45%), erythematous rectitis (0.71%), and rectal polyps (0.71%), may also pose a risk for anal fissures[9]. In a prospective case-control study, it was observed that a high intake of white bread, sauces thickened with roux, and bacon or sausages is associated with an increased risk of developing anal fissures[2].

Moreover, less than 1% of fissures are located away from the midline or occur in multiple instances, these atypical fissures may be linked to conditions such as Crohn's disease, sexually transmitted diseases (HIV, syphilis, or herpes), anal cancer, or tuberculosis, AFs are frequently observed in individuals diagnosed with perianal Crohn's disease[16]. Other contributing factors include anorectal surgeries, dermatological conditions like psoriasis and pruritus, certain medications such as opioids and chemotherapy, furthermore Studies have indicated that poor anal hygiene, low-fiber diets, mixed or non-vegetarian diets, and a lack of exercise are common predisposing factors[31, 32].

Additionally, insufficient water intake and an increased BMI can be risk factors. It's noteworthy that anal contact(anal sexual habits) or the insertion of a foreign body are less common causes of fissures[5, 18].

The symptoms are quite specific, although anal fissures can sometimes be confused with other benign anal pathologies such as hemorrhoids[8]. Typically, patients experience intense tearing pain during bowel movements, often described as similar to passing broken glass, this pain persists for several minutes to hours afterward and happens with each bowel movement, so patients may develop fear to have bowel movements, which will cause a series of constipation, harder stool and increased anal pain[8]. Additionally, patients may present with rectal bleeding indicated by the presence of fresh blood on toilet paper or small amount of blood may drop into the toilet bowl, but substantial bleeding is not a common characteristic of an AF[8] .Certain individuals may describe a rough sensation at the anal opening, discomfort when sitting ,discharge ,itching, irritation, and a persistent sensation resembling a thorn in the anus[8, 22].Men commonly experienced pain with defecation and constipation, while women frequently reported rectal bleeding, itching, and discharge[22]. In terms of age, younger individuals (20–30 years old) primarily complained of rectal bleeding, middle-aged patients (31–40 years) mostly experienced pain and constipation, and older patients mostly had itching and discharge[22].An acute AF presents as a fresh tear, whereas a long-standing one exhibits elevated edges revealing the internal anal sphincter muscle fibers below[4].Chronic anal fissures often come with an external skin tag revealing the known as a sentinel pile at the fissure's lower end and an enlarged anal papilla at the upper end, which may be challenging to observe during a physical examination[4].in many cases, a diagnosis of an anal fissure can be made through history and physical examination alone, without the need for other investigations[8].

There are wide range of treatment for Anal Fissures (AF) from conservative measures to surgical interventions[33];Topical options for treating AF ranged from most common to less common are corticosteroids, lidocaine, nitroglycerine and diltiazem(calcium channel blocker)[5],review of the

randomized control data show effectiveness of topical minoxidil with 8 weeks healing for the half of the patients[33][1],patients also treated with combination of topical treatment and the most often used combination is lidocaine and nitroglycerin[5].some conservative measures like sitz bath, adequate fluid intake, fiber supplementation and topical analgesics also have high healing rate and improvement in vast majority of acute AF within 4–6 weeks and half of chronic AF [8, 16, 26].Botox injection another medical treatment when used as first medical treatment has higher healing rate than other topical agents with lower to no risk for incontinence compared to surgical [25],The goals of the first medical treatment are to reduce anal sphincter spasm, soften feces, and end constipation; but some individuals may recover without recurrence or may experience recurrence frequently and recurrence rate more than surgical treatment in general[34, 35].Gastroenterologists and other healthcare providers are strongly recommend to initiate non-surgical treatments and its considered the first line treatment for AF[25, 36]. Numerous of acute AF resolve even without any treatment or just the implementation of a bowel management regimen which include warm baths, fibers and fluid intake[37]. Surgical treatment divided into Lateral internal sphincterotomy (LIS), which entails a partial division of the internal anal sphincter (IAS), Fissurectomy transforming a chronic fissure into an acute one while preserving the integrity of the IAS complex and Anal Advancement Flap (AAF)[38].lateral internal sphincterotomy, traditionally considered the primary treatment for chronic anal fissures (CAF) for many years, now trends toward medical treatment. Surgery is typically saved for instances that are not responding to conservative treatment, which is normally advised as a first line of action[20].Surgical treatment especially LIS remain the gold standard treatment for persistent AF with higher healing rate and less recurrent rate but not the first line related to its higher complication rate and there is high chance for acute AF to improve depending on medical therapy[3, 11, 39].

RESEARCH DESIGN AND METHODS

Study setting:

The study was conducted at the general surgery clinics of Al Hussein Al-Salt New Hospital, King Hussein Medical Center, Prince Rashid Ben Al-Hasan Military Hospital, and Al-Karak Governmental Hospital. These hospitals, which provide a wide range of services to meet patient needs, are located across northern, central, and southern Jordan.

Study design:

This was a cross-sectional observational study. Data were collected from patients who presented with anal symptoms in the surgery clinic. They were interviewed by a member of the research team over a five-month period, spanning from September 2024 to February 2025, to investigate the epidemiological and clinical presentation of primary anal fissures. The study also examined the widely used approaches for diagnosing anal fissures, the most common treatment modalities, and the preferred treatment options among the Jordanian population.

Population and study sample:

Patients newly diagnosed with anal fissures, ranging in age from 20 to 60, who visited the outpatient department with complaints of anorectal pain, bleeding, pruritus, discharge, or rectal protrusion, were included in the study. The inclusion criteria were based on clinical findings from proctoscopy or digital examination used for anorectal assessment. Patients with hemorrhoids, fistulas, other anal pathologies, previous anal surgeries, and pregnant women were excluded from the study.

Sample size calculation

Epicalc version 1.02 was used in this investigation to determine the sample size. The minimal sample size will be 203 patients when taking into account a level of significance of 0.05, a power of 95%, a proportion of 50%, and a null hypothesis value of 40%.

Data collection methods

All relevant data were collected from patients using a questionnaire that included demographic information, clinical profiles, risk factors, medical history, and treatment details. The questionnaire was reviewed by the organizing physicians. It was initially translated from Arabic to English and then back-translated by a different translator to ensure accuracy. Most of the questions were adapted from Omar Mansour's research, Effectiveness of 2% Diltiazem vs. 0.2% Glyceryl Trinitrate in the Treatment of Chronic Anal Fissures: A Study from Jordan, while the remaining ordinal questions were piloted with 18 randomly selected participants from different populations to verify clarity and content validity. The questionnaire consisted of 57 questions divided into eight sections to examine the epidemiological and clinical characteristics of anal fissure patients, the presentation of primary anal fissures, the widely used diagnostic approaches, the most common treatment modalities, and the preferred treatment options among the Jordanian population. The eight sections included: (1) personal information, (2) risk factors, (3) previous illnesses, (4) clinical characteristics and risk factors for anal fissures, (5) treatment type, (6) conservative treatment, (7) topical treatment, and (8) surgical treatment. The questionnaire also included six new Likert-type questions, with a score scale ranging from 1 ("very little") to 5 ("a lot") for all items.Informed consent was obtained after a thorough explanation of the study protocol.

Data Management and Analysis

For data analysis, JASP software (JASP team, 2025). Version 19.3. https://www.jasp-stats.org) was used. To analyze the association between symptom's data and having surgical management, Pearson's chi-square test and Chi-square test for trend were used, each were applicable. Also, to analyze the association between ordinal variables like dietary habits and categorical ones like having surgical management or not, Mann-Whitney U test was used. Of note, the statistical assumptions of the tests were met prior to conducting them.

A p-value less than 0.05 was used for significance. Descriptive statistics like percentages, mean, and standard deviation (SD) were presented in-text and tables. Also, visualization for data was done via bar plots and box plots, presented with 95% confidence intervals around the medians.

RESULTS

After analyzing the data, the following results were seen. The total number of participants was 214, with the majority of them (n = 137) being males (64%). The main age group of participants was 50 or more years (29.9%), with minimal difference in prevalence with other age groups (30–50 years). Notably, 97.7% of our study participants had anal fissures (n = 209). In addition, 87 participants (40.7%) use medications -unspecific to anal fissures- chronically. Table 1 demonstrates the demographics and basic features of the participants.

Table 1
Participant's demographics and basic features

Age group	**Frequency**	**Percent**
Less than 20	8	3.74
20–30	33	15.42
30–40	57	26.64
40–50	52	24.30
More than 50	64	29.91
Sex	Frequency	Percent
Female	77	35.98
Male	137	64.02
Residency	Frequency	Percent
South	35	16.36
Middle	42	19.63
North	137	64.02
Weight	Frequency	Percent
Less than 50	7	3.27
50–60	14	6.54
60–70	59	27.57
70–80	49	22.90
80–90	47	21.96
90–100	31	14.49
More than 100	7	3.27
Height	Frequency	Percent
Less than 150 cm	7	3.27
150–160 cm	39	18.22
160–170 cm	89	41.59
170–180 cm	69	32.24
More than 180 cm	10	4.67
Currently smoker?	Frequency	Percent

Age group	Frequency	Percent
Prefer not to answer	33	15.42
No	83	38.79
Yes	98	45.79
Employment	Frequency	Percent
Have a job	116	54.21
Don’t have a job	65	30.37
Retried	33	15.42
Duration of smoking	Frequency	Percent
Not smoker	82	38.32
Since 3 or less months	1	0.47
Since 6 months to 1 year	1	0.47
1 to 3 years	14	6.54
3 to 6 years	21	9.81
More than 6 years	58	27.10
Prefer not to answer	37	17.29
Was you diagnosed with anal fissure?	Frequency	Percent
No	5	2.34
Yes	209	97.66
Missing	0	0
Total	214	100

Diagnostic evaluation for anal fissures

Regarding the medical evaluation of anal fissures, note that a large proportion of patients either diagnosed recently (21%) or since a year (25.2%). Also, bedside examination was used to confirm diagnosis in 200 patients (93.5%). As expected, general surgery clinics and general surgeons were the most to diagnose anal fissures. See Table 2.

Table 2
medical evaluation and diagnosis of anal fissures

When was you diagnosed with anal fissure?	Frequency	Percent
Recently (less than a month)	45	21.028
Since months	81	37.85
One to 3 years	19	8.879
Since a year	54	25.234
3 to 6 years	5	2.336
More than 6 years	5	2.336
Method of diagnosis	Frequency	Percent
Lower endoscopy	9	4.206
Physical exam	200	93.458
Specialty of doctor who diagnosed you	Frequency	Percent
Colon and rectum specialized surgeon	61	28.505
General surgeon	125	58.411
General practitioner	12	5.607
Don’t know	11	5.14
Place of diagnosis	Frequency	Percent
Emergency	19	8.879
Colon and rectum clinic	60	28.037
General surgery clinic	130	60.748

Symptomatology of anal fissures

Figure 1 shows the prevalence of symptoms of anal fissures, as reported by the participants. Note that pain upon and after defecation were the most common ones, while abnormal secretions was the least common. Of note, among these symptoms, those who had rectal pain upon defecation were more likely to have surgical management compared to those who didn’t have pain (P = 0.034; 29.4% vs 13.6%). Bleeding had similar association (P = 0.002; 34.5% vs 15.8%). Nevertheless, itching was associated with decreased probability to have surgery (P = 0.002) as 12.9% of those with this symptom underwent surgery compared to 32.6% of those with it but who didn’t have surgery. Other symptoms didn’t have significant association with surgical management of fissures.

Association of symptom’s frequency, intensity, and duration with having surgical management

We found that pain intensity, duration, and frequency had significant association with choosing surgical intervention. For example, pain impro

vement after hours or more was significantly associated with having surgical intervention rather than non-surgical one (P = 0.004). also, there was significant association between seeing the blood in toilet and having a surgical intervention (P = 0.024; 35.7% of those who went surgery had blood in toilet vs 19% among who didn’t have surgery saw blood). Moreover, those with higher symptoms intensity were more likely to underwent surgical procedure (P = 0.001) as revealed by the Mann-Whitney U test. See Fig. 2. Furthermore, those who had surgery were more likely to report that symptoms negatively affected their life quality (89.3%) compared to those who didn’t have surgery (71.2%) (P = 0.007). Check Table 3.

Table 3
association between symptoms frequency, intensity, and duration with the surgical management of anal fissures

Factor		surgical intervention			
	Group	No (n (%))	Yes (n (%))	P	Used test
N		158	56		
time for pain improvement after defecation	don't have pain with defecation	26 (17.0)	4 (7.1)	0.004	*
	less than hour	60 (39.2)	15 (26.8)		
	Hours	60 (39.2)	32 (57.1)		
	full day	7 (4.6)	5 (8.9)		
frequency of symptoms last period	once since appearance	13 (8.5)	1 (1.8)	0.31	*
	once monthly	17 (11.1)	1 (1.8)		
	once weekly	30 (19.6)	20 (35.7)		
	two to three times weekly	48 (31.4)	18 (32.1)		
	once daily	30 (19.6)	11 (19.6)		
	more than once daily	15 (9.8)	5 (8.9)		
If blood was seen, how you noted it?	blood spots in toilet	29 (19.0)	20 (35.7)	0.024	**
	no blood	59 (38.6)	13 (23.2)		
	mixed with stool	27 (17.6)	6 (10.7)		
	seen on toilet paper	38 (24.8)	17 (30.4)		
If blood seen, how much it was?	no bleeding	59 (38.6)	12 (21.4)	0.053	*
	Little	49 (32.0)	24 (42.9)		

Factor		surgical intervention			
	Group	No (n (%))	Yes (n (%))	P	Used test
	Medium	41 (26.8)	17 (30.4)		
	Large	4 (2.6)	3 (5.4)		
duration of symptoms	< 6 weeks	55 (35.9)	12 (21.4)	0.046	**
	> 6 weeks	98 (64.1)	44 (78.6)		
Did the symptoms affect your quality of life?	not sure	23 (15.0)	6 (10.7)	0.007	**
	No	21 (13.7)	0 (0.0)		
	Yes	109 (71.2)	50 (89.3)		
Does straining increase aforementioned symptoms?	No	19 (12.4)	8 (14.3)	0.72	**
	Yes	134 (87.6)	48 (85.7)		
Do you think that symptoms intensity is related to certain foods?	not sure	41 (26.8)	36 (64.3)	< 0.001	**
	No	35 (22.9)	10 (17.9)		
	Yes	77 (50.3)	10 (17.9)		
* Chi-square test for trend					
** Pearson's chi square					

Figure 2: Intensity of symptoms in surgical vs non-surgical patients

Can dietary habits have significant association with surgical management of anal fissures?

We found that, based on Mann-Whitney U test results, those who had higher usual intake for vegetables were less likely to underwent surgical management (P = 0.005). similar finding was seen among participants having higher daily water intake (P = 0.005). Check Table 4 for mean differences and associations of other dietary habits. Of note, having a constipation medication continuously wasn't associated with reduced probability of undergoing surgery (P = 0.492).

Table 4
association between rate of dietary habits (rated via 5 points scale) and undergoing surgical management for anal fissures

Evaluate dietary habits on a scale of 1 to 5 points	Surgical management	N	Mean score	SD	P (difference significance)
consumption rate of vegetables	No	153	2.856	0.854	0.005
	Yes	56	2.464	0.83	
consumption rate of brown bread	No	153	2.288	1.128	0.163
	Yes	56	2.518	1.095	
avoiding fast food	No	153	2.935	1.139	0.101
	Yes	56	2.625	0.983	
rate of exercise	No	153	2.072	0.981	0.293
	Yes	56	1.929	0.97	
daily water intake	No	153	3.092	0.653	0.005
	Yes	56	2.804	0.672	
low intake of caffeine	No	153	3.176	1.014	0.338
	Yes	56	3.286	0.986	

Management of anal fissures

Method of management played an important role in reducing the symptoms. For example, type of primary management were significantly associated with having surgery for anal fissures, as 77.6% of those who used conservative treatment didn't need surgery, and as 76.4% of those used ointments neither did ($P < 0.001$). Of note, descriptive statistics revealed that 77 patients (36%) reported improvement with management whatever was its type. Conservative treatments were the main primary method for management (39.7%). Interestingly, 56 patients (26.2%) underwent surgical management versus (part of them after unsuccessful conservative management), and 140 (67%) underwent conservative management. After surgery, only 11 patients (5.1%) said that they had complications after the management of anal fissures. See Table 5.

Table 5
Management types and outcomes

Did you receive any treatment for anal fissure	**Frequency**	**Percent**
No	49	22.897
Yes	160	74.766
Any improvement in symptoms following management	Frequency	Percent
No	22	10.28
Yes	77	35.981
Not sure	43	20.093
Primary management option	Frequency	Percent
Surgical	25	11.682
Ointments	55	25.701
Conservatives (laxatives, water bath hubs, ..)	85	39.72
None	44	20.561
surgical intervention (as primary or later on)	Frequency	Percent
No	158	73.832
Yes	56	26.168
Complications after surgery?	Frequency	Percent
Don’t remember	20	9.346
No	25	11.682
Yes	11	5.14

DISCUSSION

Our study found that the primary diagnostic method for anal fissures was a physical examination, with general surgeons being the most frequent diagnosticians. A physical exam remains the gold standard for diagnosing anal fissures, as it allows direct visualization of the fissure, identification of its location, and assessment of associated conditions such as sphincter hypertonicity or skin tags. Several studies have supported the effectiveness of bedside physical examinations in diagnosing anal fissures, emphasizing their simplicity, cost-effectiveness, and reliability ([26, 40]; [41] ; While most anorectal conditions are benign, skilled medical intervention is often needed. Understanding their pathophysiology helps guide treatment, and early, appropriate therapy ensures timely and cost-effective symptom relief. [42, 43]

Anal pain and bleeding during defecation were significantly associated with a higher probability of undergoing surgical management. Anal pain can severely impact a patient's quality of life, leading to anxiety, social discomfort, and avoidance of defecation, which in turn exacerbates constipation and worsens fissures [16, 44]. Chronic pain and persistent bleeding contribute to emotional distress and decreased productivity, emphasizing the necessity of effective treatment. Studies have shown that patients experiencing severe anal pain and bleeding are key factors in prompting surgical intervention. ([37, 45] ;Furthermore, [33] and [38] pointed out that the intensity of symptoms, particularly pain, is a key factor in deciding whether conservative treatments are effective or if surgical intervention is needed.;Therefore, early symptom management is crucial to prevent deterioration and the eventual need for surgery.

Our analysis indicated that a higher intake of vegetables and water was significantly associated with a reduced probability of undergoing surgical management for anal fissures. his aligns with the findings of [10]and [8], who emphasized the significance of diet in the management of anal fissures. Adequate dietary fiber from vegetables helps to soften stool and improve bowel movements, reducing straining and minimizing bleeding per rectum[46] .Additionally, proper hydration supports bowel regularity and prevents constipation, a key risk factor for anal fissures. Previous studies have confirmed that a high-fiber diet and sufficient water intake significantly improve fissure healing rates and decrease the likelihood of chronic fissures requiring surgical intervention ([17] [47]).

Conservative management was found to be an effective initial approach for treating anal fissures, leading to symptom improvement in a large proportion of patients. Conservative treatments such as sitz baths, topical ointments, dietary modifications, and stool softeners aim to alleviate symptoms and promote natural healing without the need for surgical intervention. Several studies have demonstrated the efficacy of conservative treatments in reducing pain, healing fissures, and preventing recurrence and another researches highlighted that conservative management is often successful, particularly when pain and bleeding are less severe. [15, 39]([40]. As our findings suggest, conservative management should be the first-line treatment before considering surgical options, particularly in patients with mild to moderate symptoms. However, this study also confirmed that for many patients, surgery becomes necessary when conservative treatments are ineffective. This aligns with the findings of [38] and [29], who reported that surgery is typically considered when other treatment options fail.

CONCLUSION

This study found that physical examination was the primary diagnostic method for anal fissures, with general surgeons playing a significant role in diagnosis. Anal pain and bleeding were significantly associated with an increased likelihood of undergoing surgical intervention, emphasizing their impact on patients' quality of life. Additionally, higher consumption of vegetables and water intake was linked to a lower probability of requiring surgery, reinforcing the importance of dietary modifications in managing anal fissures. Conservative management was effective for many patients, highlighting its role as an essential first-line treatment. Further studies are needed to assess long-term outcomes of conservative

treatments, the effectiveness of different surgical techniques, and the impact of dietary habits on anal fissure recurrence.

Declarations

Author Contribution declaration:

Omar S Masnour: Primary author, supervisor, designed the study, wrote and revised the manuscript

Saif Eddin M., Al Kharabsheh: conducted analysis, methodology, questionnaire validation and review of paper

Lujain S. Al Khlifat: conducted analysis

Leen S Al Khlifat Taher M Hrahsheh: conducted literature review & methodology

Rahaf H. Alnatour & Orwa M. Aladaileh: contributed in literature review

Yaman A. Al Ghunimat, Tala M. Al-Lama, Enas F. Khawaldeh & Mohammad B. Al-Hawawsheh, conducted data collection

All authors read and approved the current final version of the manuscript. All the above-mentioned authors were involved in the writing and reviewing of the final manuscript.

Ethical Conisderations, Consent, Data, Material, Code availability and Data Availability

Ethical approval was obtained from the institutional review board at Al-Balqa Applied University. The questions in the questionnaire were written with respect to patient autonomy, keeping in mind the cultural background of the Jordanian population. They were not intrusive in nature, and the individual's privacy was fully respected. All information was coded during storage, transfer, and analysis to ensure the anonymity of the patients' information. All study data were stored in a secure digital copy with a passcode and only shared with strict access among the research team.

Authors' contribution statements:

The authors have no competing interests to declare that are relevant to the content of this article.

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Conflict of interest: The authors declare no conflict of interest

Consent to Participate declaration: Verbal consent was obtained from all individual participants included in the study.

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Figures

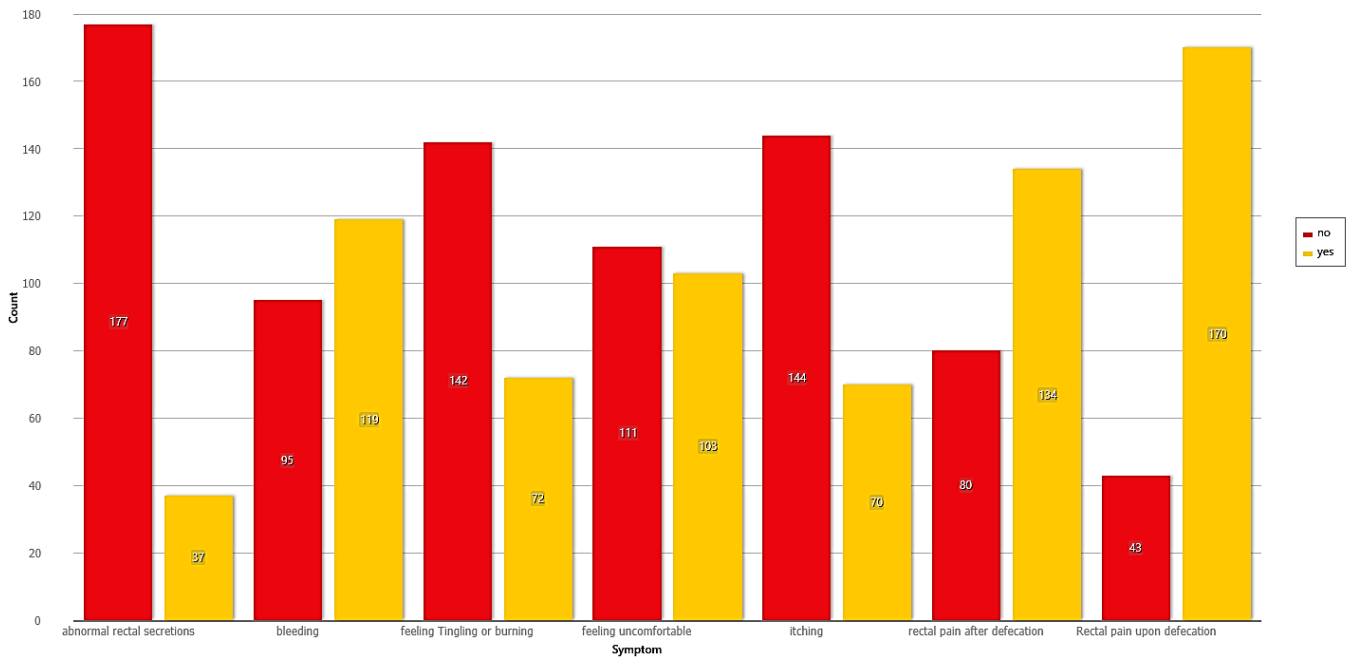


Figure 1

Prevalence of symptoms of anal fissures

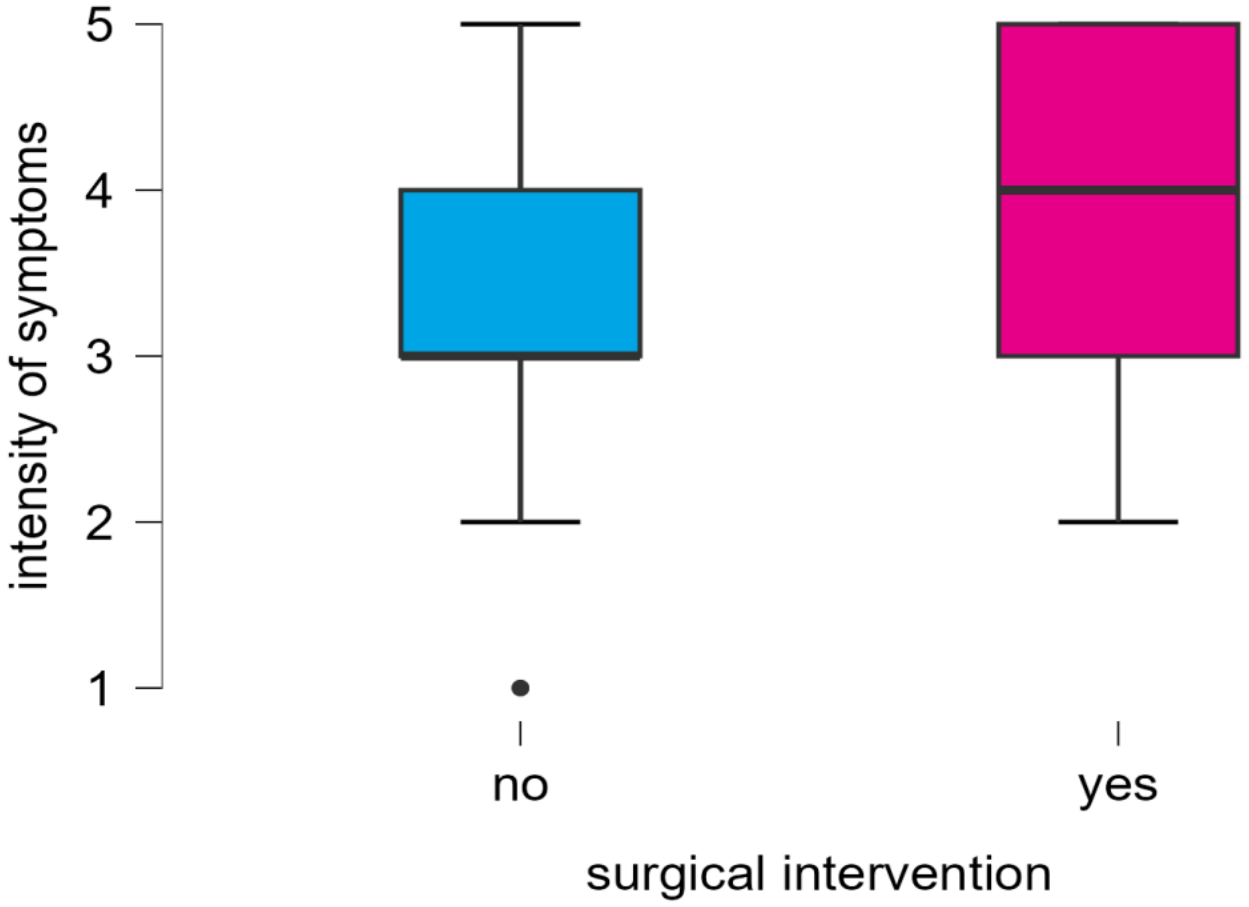


Figure 2

Intensity of symptoms in surgical vs non-surgical patients