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Original Article

The Effect of Pain, Anxiety and Depression in Patients with Anal Fissure: The Role of Surgical Treatment in Psychological Outcomes

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ABSTRACT

Objective: To perform an extensive evaluation of the relationship between anxiety and depression levels in patients diagnosed with anal fissure, the effects of acute pain on psychiatric disorders, and the impact of surgical treatment on those psychological effects.

Methods: One hundred five patients diagnosed with anal fissure between January 2022 and June 2024 and 99 healthy controls were included in the study. The Hospital Anxiety and Depression Scale (HADS) was employed for psychiatric evaluation and a visual analogue scale (VAS) for pain severity. The data were analyzed using the Mann-Whitney U test, the chi-square test, and Spearman's correlation analysis.

Results: Depression (HADS-D) scores were significantly higher in the patient group than in the control group ($p<0.01$). Although anxiety (HADS-A) scores were also higher in the patient group, the difference was not statistically significant ($p=0.129$). Both anxiety and depression scores were significantly higher in women than in men ($p<0.05$). No powerful correlation was observed between VAS scores and anxiety or depression ($r=0.68$, $p<0.001$). Surgical treatment produced significant improvement in pain and anxiety ($p<0.01$), but a need for additional measures for depression management was observed ($p>0.05$).

Conclusion: High rates of depression and anxiety and an association with pain severity were determined in patients with anal fissure. Surgical treatment plays an important role in the therapeutic process, particularly with its positive effects on pain and anxiety. These findings emphasize the need for a multidisciplinary approach.

INTRODUCTION

Anal fissure is a ubiquitous disorder involving a longitudinal tear in the anal canal, extending from the dentate line to the anal margin, and generally characterized by severe pain and difficult defecation.[1] This not only creates physical discomfort, but can also result in emotional stress and a marked decrease in quality of life.[2] It is more common in women, but can be seen in all age groups and both sexes. While the aetiology is not fully understood, the agents include anal canal hypertonia and decreased mucosal blood flow. Stress, anxiety and depression can also impair tissue's natural healing ability by triggering a pro-inflammatory state.[1] Pain and mental disorders are frequently observed together, and chronic pain significantly raises the likelihood of psychological disorders.[1,3]

The purpose of this study was to examine the relationship between pain severity and psychiatric symptoms in patients with anal fissure and to evaluate the impacts of surgical treatment on those effects.

MATERIALS AND METHODS

Patient Selection and Criteria

One hundred five patients diagnosed with anal fissure and

99 healthy controls presenting with complaints other than in the anal region were enrolled in the study. The patients consisted of individuals with first diagnoses of acute anal fissure and with no other anorectal disease. Patients with Crohn's disease, using anti-inflammatory drugs, or with other anorectal diseases were excluded. The members of the control group were randomly selected from individuals with no anorectal pathology and who were examined in the general surgery clinic.

Psychiatric Evaluation and Pain Measurement

The Hospital Anxiety and Depression Scale (HADS) was employed for psychiatric evaluation. HADS consists of two subscales, anxiety (HADS-A) and depression (HADS-D) and a total of 14 questions. The HADS-A subscale consists of uneven number questions, and HADS-D of even number questions. Both subscales are measured using a four-point Likert-type scale. Cut-off points of ≥10 for anxiety and ≥7 for depression have been determined. Possible scores on the subscales range between 0 and 21, with individuals scoring about the cut-off points being regarded as having a high risk of the relevant psychiatric states.

Pain severity was evaluated using a visual analogue scale (VAS). The VAS is scored between 0 (no pain) and 10 (the most severe pain), levels being investigated via seven questions. Severe pain in this study was defined as VAS≥29.

Treatment and Follow-up

Treatment method: Patients diagnosed with anal fissure first received pharmacological treatment. Topical cream containing 0.02 grams of diltiazem hydrochloride per 1 gram of cream and ointment containing 5% lidocaine were prescribed. Patients were advised to use paracetamol to reduce pain and control inflammation. A high-fibre diet and lactose and liquid glucose-based stool softeners were recommended for stool softening. Selective serotonin re-uptake inhibitors were given in the treatment of anxiety and depression.

Surgical treatment was planned for patients unable to comply with or failing to respond to pharmacological treatment. Lateral internal sphincterotomy surgery was performed on suitable patients. The aim of the surgical treatment was to relieve pain and heal the fissure by lowering sphincter pressure.

During the therapeutic process; the patients were followed up for three months using pharmacological methods. Patients who were unable to adhere to drug therapy or whose response was insufficient subsequently underwent surgery.

Statistical Analysis

The study data were summarized using descriptive statistics (percentage and mean ± standard deviation). Differences between the groups were analyzed using the Mann-Whitney U test and chi-square test. The relationship between psychiatric symptoms and pain severity was evaluated using Spearman's correlation analysis. p values <0.05 were regarded as significant for all analyses.

RESULTS

Demographic Data

One hundred five patients and 99 healthy controls were included in the study. Women represented 65.7% of the patient group and 64.6% of the control group, gender distributions being similar in the two groups (p>0.05). The participants' ages ranged between 18 and 59, with mean ages of 30.50±9.11 years in the patient group and 30.51±9.86 in the control group. The difference was not statistically significant (p>0.05). Depression was determined in 59 members of the patient group and anxiety in 39, compared to 24 and 30 members, respectively, of the control group (Table 1).

Table 1. Comparison of demographic characteristics, depression and anxiety rates, and HAD-D and HAD-A scores between patient and control groups

Category	Patient Group	Control Group	p
Number of Participants	105.00	99.00	
Female (%)	65.7	64.6	
Average Age (Years)	30.50±9.11	30.51±9.86	
Number of Depression Cases	59.00	24.00	
Number of Anxiety Cases	39.00	30.00	
HAD-D Score	8.63±3.97	6.84±3.33	p<0.01*
HAD-A Score	8.76±4.24	7.92±3.61	p=0.129*
HAD-A Risk Rate (%)	37.14	15.15	p<0.05**
HAD-D Risk Rate (%)	56.19	12.12	p<0.01**
Anxiety Score <40 Years	9.31±4.12		
Depression Score >40 Years	9.28±3.97		

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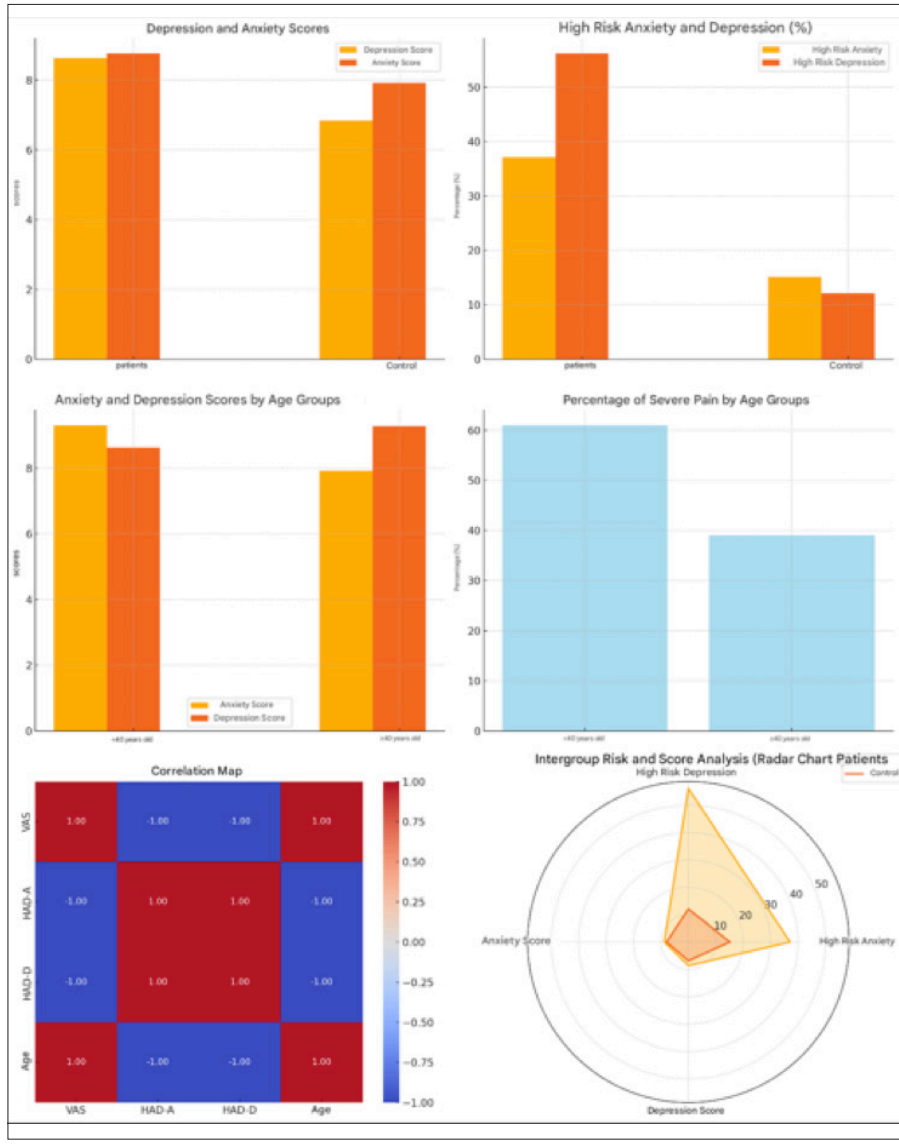

Figure 1. Differences between patient and control groups and relationships between psychiatric conditions and pain severity. The Hospital Anxiety and Depression Scale (HAD) was employed, with anxiety (HAD-A) and depression (HAD-D) cut-off scores set at ≥10 and ≥7, respectively. Pain severity was assessed using the Visual Analog Scale (VAS), with severe pain defined as VAS≥29. The figure highlights the effects of age and gender on psychiatric symptoms and pain perception. It was found that anxiety and depression scores were higher in women compared to men; anxiety was more pronounced in individuals under 40, while depression was more significant in those over 40. A significance level of $p<0.05$ was accepted in statistical analyses.

Psychiatric Symptoms

HADS-D scores were significantly higher in the patient group than in the control group (8.63±3.97 vs. 6.84±3.33, respectively; $p<0.01$). Although HADS-A anxiety scores were also higher in the patient group, the difference was not statistically significant (8.76±4.24 vs 7.92±3.61, respectively; $p=0.129$). Women registered significantly higher depression and anxiety scores than men (anxiety $p=0.03$, depression $p=0.01$) (Table 1).

Patients at Risk of Psychiatric Disorders

Individuals with HADS-A scores ≥11 were regarded as high-risk. These represented 37.14% of the patient group and 15.15% of the control group, the difference being statistically significant ($p<0.05$). Individuals with HADS-D scores ≥8 have a high risk of depression, such scores being observed in 56.19% of the patient group and 12.12% of the control group ($p<0.01$) (Fig. 1).

The Relationship between Pain and Psychiatric State

A positive correlation was determined between VAS scores and HADS-D and HADS-A ($r=0.68$, $p<0.001$), and high rates of depression and anxiety were observed in individuals with severe pain (VAS≥29). This reduced adher-

ence to treatment and slowed the healing process.

Severe pain was observed in 61% of patients aged under 40 and in 39% of those over 40, but there was no significant difference in pain severity between the two groups ($p>0.05$). These finding suggest that in addition to age, pain perception is also affected by factors such as individual variations and lifestyle (Fig. 1).

Age and the Psychological Effect

Analysis revealed variations in anxiety and depression scores in the different age groups. Anxiety scores were higher in patients under 40, with a mean value of 9.31±4.12, while depression scores were higher in those aged over 40, at 9.28±3.97. In addition, severe pain was observed in 61% of patients under 40, compared to 39% of those over 40. However, no statistically significant difference in pain severity was determined between the two groups ($p>0.05$).

The Psychological Effects of Surgical Treatment

Analysis showed that 88.2% of the patients diagnosed with anal fissure did not adhere to pharmacological therapies, but that this decreased to 32.1% with the application psychiatric therapies. A significant decrease was observed in anxiety and pain scores following surgical treatment ($p<0.01$), although the decline in depression was not statistically significant ($p>0.01$).

DISCUSSION

This study examined the relationship between anxiety, depression, and pain severity in patients with anal fissure, and these parameters were all higher than in the control group. Analysis showed a risk of major depressive disorder in 56.19% of patients, compared to 12.12% of the control group. HADS-D score elevation may have laid the foundation for depression by adversely affecting quality of life via constant pain.[1,3,4] This shows that anal fissure is not solely a physical condition, but also gives rise to significant psychological effects. Although HADS-A scores were higher in the patient group, this finding was not statistically significant. This means that anxiety may not be capable of being directly linked to anal fissure. However, pain and other physical symptoms may have an indirect impact on anxiety by exacerbating psychological effects. The study findings reveal that anal fissure requires a holistic approach involving both physical and psychological effects. It is therefore of great importance that patients' mental health should be evaluated in addition physical symptoms during the treatment process.

Significantly higher anxiety and depression scores observed in women compared to men show that psychiatric disorders may be more widespread in female gender.[5] This appears to indicate the involvement of psychological factors in the development of anal fissure and suggests that women may be at a greater risk in terms of the disease. The study findings emphasize the potential effects of gender on the pathophysiology and clinical course of anal fissure. It is therefore clinically important to consider gender-specific factors in the treatment of anal fissure and to adopt holistic approaches targeting patients' mental health as well as physical symptoms.

Low serotonin and dopamine levels associated with depression and anxiety are thought to be capable of leading to constipation, one of the principal causes of anal fissure, by reducing intestinal motility. This pathophysiological mechanism may explain the greater prevalence of depression and anxiety in patients with anal fissure.[4] and make treatment more difficult. These findings show that the relationship between anal fissure and psychiatric disorders is not only psychological, but is also based on physiological foundations. Evaluating neurotransmitter levels capable of affecting intestinal motility and associated psychiatric disorders may permit the development of a more comprehensive and effective approach in the treatment of anal fissure.

Depression can exacerbate the perception of pain by impairing the levels of neurotransmitters such as serotonin, dopamine, and norepinephrine.[5] In particular, a decrease in serotonin and dopamine levels can delay healing in anal fissure by adversely affecting pain management. The triggering of inflammatory processes by depression results in both a prolongation of the healing process and an increase in pain severity. A weak positive correlation was observed in the present study between VAS scores used to measure pain severity and HADS-A and HADS-D scores ($r=0.68$, $p<0.001$). Depression and anxiety scores were significantly higher in patients with severe pain, classified as VAS≥29 ($p<0.01$).[5] High depression and anxiety scores were determined in 63.6% of patients with severe pain, compared to 36.3% of those with mild pain. These findings show that chronic pain is a factor triggering psychiatric symptoms.[5,6] In order to optimize the healing process in the treatment of anal fissure, it is therefore of great importance to consider not only pain management, but also psychiatric conditions associated with pain.

Chronic pain is known to increase the release of stress hormones, particularly cortisol, by activating the hypothalamus-pituitary-adrenal (HPA) axis. This process reduces serotonin and dopamine levels in the brain via pro-inflammatory cytokines [such as interleukin-6 (IL-6) and tumour necrosis factor-alpha (TNF-α)] and C-reactive protein (CRP).[7] These neuroendocrine and inflammatory mechanisms can adversely affect patients' adherence to treatment and prolong the therapeutic process by facilitating the development of depression and anxiety.[3,7,8] These findings emphasize that, rather than being a purely physical symptom, chronic pain may also be a basic trigger of psychiatric disorders and therapeutic difficulties. Taking these mechanisms into account in treatment strategies is therefore of critical importance in terms of both physical and psychological recovery.

The observation of marked variations in psychological effects between age groups shows that age-specific needs also need to be considered in the treatment of anal fissure.

While higher anxiety levels in younger individuals may be associated with the experience of more intense concerns and uncertainties for the future, increased depression levels in the advanced age group may be attributable to persistent pain and physical limitations. The absence of a direct association between pain severity and age suggests that pain perception may be more related to factors such as individual variations, lifestyle, and health history. These findings show that the adoption of individualize therapeutic approaches for the young and advanced age groups can play an important role in improving patient satisfaction and optimizing the success of treatment.

Previous studies show that psychological disorders can adversely affect adherence to treatment and lead to a worsening of symptoms, particularly in patients with chronic pain.[7,9] A more severe perception of pain has been reported in patients with depression,[1,10] and such individuals have been observed to experience greater difficulty in the treatment process. Anxiety is thought to delay fissure healing by increasing anal sphincter tonus in expectation of pain during defecation.[1] His mechanism points to a negative cycle between anxiety and anal fissure. The effects of anxiety and depression on symptom severity and quality of life therefore need to be addressed in treatment strategies in addition to biochemical mechanisms.[4] Holistic approaches targeting patients' psychological states, rather than the management of pain and spasm alone, are therefore highly important in the treatment of anal fissure.[4] From that perspective, antidepressant drugs such as serotonin-noradrenalin reuptake inhibitors or selective serotonin reuptake inhibitors have been reported to be effective in both pain management and in the treatment of psychiatric symptoms.[3,5]

In the present study, 88.2% of patients diagnosed with depression and anxiety did not adhere to pharmacological therapies aimed at the treatment of anal fissure, although this decreased significantly to 32.1% with regular psychiatric treatment. A significant decrease was also observed in anxiety and pain scores following surgical treatment ($p<0.01$),[1] although the decrease in depression scores was not statistically significant ($p>0.01$). These findings emphasize that surgical treatment is effective in anxiety and pain management[1] but that additional psychiatric support is needed for the control of depression. Problems such as lack of adherence to treatment and inadequate pain control can be reduced through regular psychiatric support and personalized approaches.

The principal limitations of this study are that the sample was drawn from a single centre, and that levels of biochemical markers (such as serotonin and dopamine) were not measured. This restricts the generalizability of the results and prevents a more detailed examination of the biological mechanisms between pain, anxiety and depression. Larger and multi-centre samples in future research may contribute to a better understanding in this area by enhancing the accuracy of the findings. In addition, the inclusion of biochemical analyses is of crucial importance in terms of elucidating the underlying physiological foundations of the relationship between pain, anxiety, and depression. Long-term observation studies are also now needed to assess the effects of depression treatment on pain severity and the healing process. Such studies will permit a more comprehensive evaluation of the effectiveness of therapeutic strategies, thus allowing the development of individualized and holistic approaches.

Conclusion

It is of great importance for physical and psychological symptoms to be addressed simultaneously and with a holistic approach in the treatment of anal fissure. Surgical intervention is a particularly effective method in the management of pain and anxiety. However, a multidisciplinary approach needs to be adopted for the effective management of psychological states such as depression. We predict that such a comprehensive approach will enhance not only short-term symptom control, but also patient satisfaction and long-term healing rates. Integrated strategies targeting both physical and psychological needs therefore possess the potential to optimize success in the treatment of anal fissure.

Ethics Committee Approval

The study was approved by the Adiyaman University, Non-Interventional Clinical Research Ethics Committee (Date: 14.01.2025, Decision No: 20251-12).

Informed Consent

Retrospective study.

Peer-review

Externally peer-reviewed.

Authorship Contributions

Concept: Y.D., H.S.H., S.O., A.S.; Design: Y.D., H.S.H., S.O., A.S.; Supervision: Y.D., H.S.H., S.O., A.S.; Funding: Y.D., A.S.; Materials: Y.D., H.S.H., S.O.; Data collection &/or processing: Y.D., S.O., A.S..; Analysis and/or interpretation: H.S.H., S.O., A.S.; Literature search: Y.D., S.O., A.S..; Writing: Y.D., H.S.H.; Critical review: Y.D., H.S.H., S.O., A.S.

Conflict of Interest

None declared.

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Anal Fissürlü Hastalarda Ağrı, Anksiyete ve Depresyonun Etkisi: Cerrahi Tedavinin Psikolojik Sonuçlardaki Rolü

Amaç: Anal fissür tanısı almış hastalarda anksiyete ve depresyon düzeyleri arasındaki ilişkiyi, ağrı şiddetinin psikiyatrik bozukluklar üzerindeki etkilerini ve cerrahi tedavinin bu psikolojik etkiler üzerindeki rolünü kapsamlı bir şekilde değerlendirmektir.

Gereç ve Yöntem: Ocak 2022-Haziran 2024 tarihleri arasında anal fissür tanısı almış 105 hasta ve 99 sağlıklı kontrol grubu çalışmaya dahil edilmiştir. Psikiyatrik değerlendirme için Hastane Anksiyete ve Depresyon Ölçeği (HAD), ağrı şiddeti için ise Görsel Analog Skala (VAS) kullanılmıştır. Veriler, Mann-Whitney U testi, ki-kare testi ve Spearman korelasyon analizi ile analiz edilmiştir.

Bulgular: Hasta grubunda depresyon (HAD-D) puanı kontrol grubundan anlamlı derecede yüksek bulunmuştur ($p<0.01$). Anksiyete (HAD-A) puanları daha yüksek olmasına rağmen bu fark istatistiksel olarak anlamlı bulunmadı ($p=0.129$). Kadınlarda anksiyete ve depresyon puanları erkeklere göre anlamlı derecede daha yüksek tespit edilmiştir ($p<0.05$). VAS skorları ile depresyon ve anksiyete arasında güçlü pozitif bir korelasyon gözlenmedi ($r=0.68$, $p<0.001$). Cerrahi tedavi, ağrı ve anksiyete üzerinde anlamlı bir iyileşme sağlarken ($p<0.01$), depresyon yönetimi için ek müdahalelerin gerekliliği gözlenmiştir ($p>0.05$).

Sonuç: Anal fissür hastalarında depresyon ve anksiyete oranlarının yüksek olduğu ve ağrı şiddeti ile güçlü bir ilişki gösterdiği saptanmıştır. Cerrahi tedavi, özellikle ağrı ve anksiyete üzerindeki olumlu etkileriyle tedavi sürecinde önemli bir rol oynamaktadır. Bu bulgular, multidisipliner bir yaklaşımın gerekliliğini vurgulamaktadır.

Anahtar Sözcükler: Ağrı; anal fissür; anksiyete; cerrahi tedavi; depresyon.