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Anxiety and depression levels of patients undergoing external dacryocystorhinostomy for tear duct obstruction

Gözyaşı kanalı tıkanıklığı nedeniyle eksternal dakriyosistorinostomi yapılan hastaların anksiyete ve depresyon düzeyleri

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Abstract

Background: The purpose of this study was to evaluate the impact of treatment on psychological well-being by looking at changes in anxiety and depression levels in patients receiving treatment for tear duct obstruction.

Materials and Methods: Forty patients who had been diagnosed with tear duct obstruction and receiving dacryocystorhinostomy (DSR) were included in our prospective cohort study. The Beck Anxiety and Depression Inventory, two standardized psychometric measures, were used to measure the individuals' levels of anxiety and depression both before and after DSR treatment.

Results: The study comprised 40 patients in total, 16 (40%) of whom were male and 24 (60%) of whom were female. The number of patients in the "minimal anxiety" class climbed to 37 (92.5%) after DSR, compared to 22 (55%) patients in the class prior to DSR, based on the patients' anxiety levels. There was a significant change ($p<0.001$) in the median Beck anxiety scores before and after DSR. The median was 0 after it was 6.5 previously. There was a significant change ($p<0.001$) between the median Beck depression ratings before and after DSR. The median after was 13, compared to the prior median of 14. The results indicate that the scores for anxiety and depression decreased in a way that was statistically significant.

Conclusion: In summary, this study represented a significant advancement in our understanding of the anxiety and sadness experienced by patients having DSR for tear duct obstruction. The study's noteworthy reduction in the levels of depression and anxiety implies that DSR might be beneficial for psychological as well as physical health.

Keywords: Dacryocystorhinostomy, Anxiety, Depression

ÖZ

Amaç: Bu çalışmanın amacı, gözyaşı kanalı tıkanıklığı nedeniyle tedavi gören hastalarda anksiyete ve depresyon düzeylerindeki değişikliklere bakarak tedavinin psikolojik iyi oluş üzerindeki etkisini değerlendirmektir.

Gereç ve Yöntem: Prospektif kohort çalışmamıza gözyaşı kanalı tıkanıklığı tanısı konan ve dakriyosistorinostomi (DSR) uygulanan 40 hasta dahil edildi. DSR tedavisi öncesinde ve sonrasında bireylerin anksiyete ve depresyon düzeylerini ölçmek için iki standardize psikometrik ölçüm olan Beck Anksiyete ve Depresyon Envanteri kullanıldı.

Bulgular: Çalışmaya 16'sı (%40) erkek ve 24'ü (%60) kadın olmak üzere toplam 40 hasta dahil edilmiştir. Hastaların anksiyete düzeylerine göre DSR öncesinde "minimal anksiyete" sınıfında yer alan 22 (%55) hasta varken, DSR sonrasında bu sayı 37'ye (%92,5) yükselmiştir. DSR öncesi ve sonrası Beck anksiyete skorlarının medyanında anlamlı bir değişiklik ($p<0.001$) olmuştur. Daha önce 6,5 olan medyan 0'a düşmüştür. DSR öncesi ve sonrası ortanca Beck depresyon puanları arasında anlamlı bir değişiklik ($p<0,001$) vardı. Önceki medyan 14 iken, DSR sonrası medyan 13 olmuştur.

Sonuç: Özetle, bu çalışma gözyaşı kanalı tıkanıklığı nedeniyle DSR uygulanan hastaların yaşadığı kaygı ve üzüntüyü anlamamızda önemli bir ilerlemeyi temsil etmektedir. Çalışmanın depresyon ve anksiyete düzeylerinde kayda değer bir azalma sağlaması, DSR'nin fiziksel sağlık için olduğu kadar psikolojik sağlık için de faydalı olabileceğine işaret etmektedir.

Anahtar Kelimeler: Dakriyosistorinostomi, Anksiyete, Depresyon

Highlights

- Investigates the association between anxiety and depression and external DSR surgery for tear duct obstruction.
- Findings can inform patient counseling and perioperative management for DSR by understanding the emotional well-being of patients undergoing this procedure.

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Introduction

The state of one's eyes greatly affects their quality of life. In addition to resulting in vision loss, eye illnesses and disorders can also have psychological repercussions. The anxiety and depression levels of patients receiving treatment for tear duct obstruction (DSR - Dacryocystorhinostomy) will be the main topic of this essay. DSR is a surgical technique used to rectify tear flow, and research has demonstrated how positively this treatment affects psychological outcomes (1, 2).

The problem known as a plugged tear duct stops tears from draining normally. Patients may have discomfort, wetness, edema, and an increased risk of infection in their eyes as a result of this. DSR is a surgical procedure that is utilized to clear this obstruction and provide symptom relief for patients (2–5).

Physical health issues are frequently linked to depression and anxiety. These psychiatric disorders may be more common in people with eye illnesses, particularly those that are persistent. Additionally, social isolation and a lower quality of life are two characteristics that may be brought on by eye disorders and increase the likelihood of anxiety and depression (1, 2, 5, 6). This study looked into how individuals receiving DSR for tear duct obstruction changed in terms of their feelings of anxiety and depression.

Materials and Methods

The ophthalmology department gave standardized psychometric measures (the Beck Anxiety Inventory and Beck Depression Inventory) to patients who were scheduled for DSR in order to quantify their anxiety and depression both before and after the procedure. A period before and after DSR was established, with a minimum of one week and a maximum of one month. Excluded patients were those with patients diagnosed with any psychiatric disease or using psychiatric medication, those whose data on the scales used were inconsistent or missing, and those who declined to participate in the study without providing written informed consent. Evaluations of the disparities between the classes and the scale scores were also used to make classifications. Before beginning the study, ethical approval was acquired from the clinical research ethics committee of Adana City Training and Research Hospital (Meeting number: 126, Date: 11.05.2023, Decision no: 2553). and was implemented in accordance with the rules of the Declaration of Helsinki.

Informed consent was obtained from all patients.

The Beck Anxiety Inventory (BAI) is a scale of evaluation created by Beck and associates that is used to ascertain how frequently a person experiences anxiety symptoms (7). It is a 21-item Likert-type scale with a score range of 0 to 3. There are four categories for anxiety: minimum (0–7 points), mild (8–15 points), moderate (16–25 points), and severe (26–63 points). Ulusoy et al. conducted a validity and reliability assessment in Turkey, and they discovered that the internal consistency coefficient was 0.93 (8).

The Beck Depression Inventory (BDI) was created by Beck and colleagues. This depression rating scale consists of 21 questions in total, with each response's ratings between 0 and 3 added together to form the total (8). The scale is rated as minimal depression between 0 and 9, mild mood disturbance between 10 and 16, moderate depression between 17 and 29, and severe depression between 30 and 63, in accordance with the relevant score ranges. Hisli conducted a study on the validity and reliability of the scale in Turkey, and the results showed that the internal consistency coefficient was 0.74 (10).

Statistical Analysis

Data analysis was done using IBM SPSS V23. The Kolmogorov-Smirnov test was used to determine if the data conformed to a normal distribution. When comparing data from paired groups that did not have a normal distribution, the Wilcoxon test was employed. The chi-square test was employed to compare patients who were categorized based on the scales. The findings of the analysis were displayed as mean ± standard deviation, median (minimum - maximum) for quantitative variables, and frequency (%) for categorical variables. A significance threshold of $p<0.05$ was used.

Results

The study included 40 patients in all, 16 (40%) males and 24 (60%) females. 45.03 ± 17.92 years was the mean age, and 46.5 (18-88) was the median. Table 1 displays frequency data along with descriptive information.

Based on the patients' anxiety scores, the "minimal anxiety" class comprised 22 (55%) individuals prior to DSR administration; however, after DSR, the number of individuals in this class rose to 37 (92.5%). With regard to the patient classification based on their depression scores, the proportion of individuals in the "minimal depression" class rose from 12 (30%) to 14 (35%) following the use of DSR. When the values for the anxiety and depression classifications were compared before and after the DSR, a statistically significant association was discovered (p values 0.008, <0.001, respectively) (Table 2). Figure 1 displays the number changes of the anxiety and depression score classes.

Table 1. Descriptive statistics

	Frequency (n)	Percentage (%)
Gender		
Male	16	40
Female	24	60
Marital Status		
Married	27	67.5
Single	13	32.5
Education Status		
Illiterate	5	12.5
Primary education	12	30
Secondary education	3	7.5
High School	8	20
University and above	12	30

Table 2. Comparing the scale values based on their categories before and after the DSR

	Before DSR n (%)	After DSR n (%)	p*
Beck Anxiety Classification			
Minimal anxiety (0-7 points)	22 (55)	37 (92.5)	
Mild anxiety (8-15 points)	8 (20)	3 (7.5)	**0.008**
Moderate anxiety (16-25 points)	10 (25)	0 (0)	
Severe anxiety (26-63 points)	0 (0)	0 (0)	
Beck Depression Classification			
Minimal depression (0-9 points)	12 (30)	14 (35)	
Mild depression (10-16 points)	14 (35)	17 (42.5)	**<0.001**
Moderate depression (17-29 points)	12 (30)	8 (20)	
Severe depression (30-63 points)	2 (5)	1 (2.5)	

Abbreviations: *Chi-square test

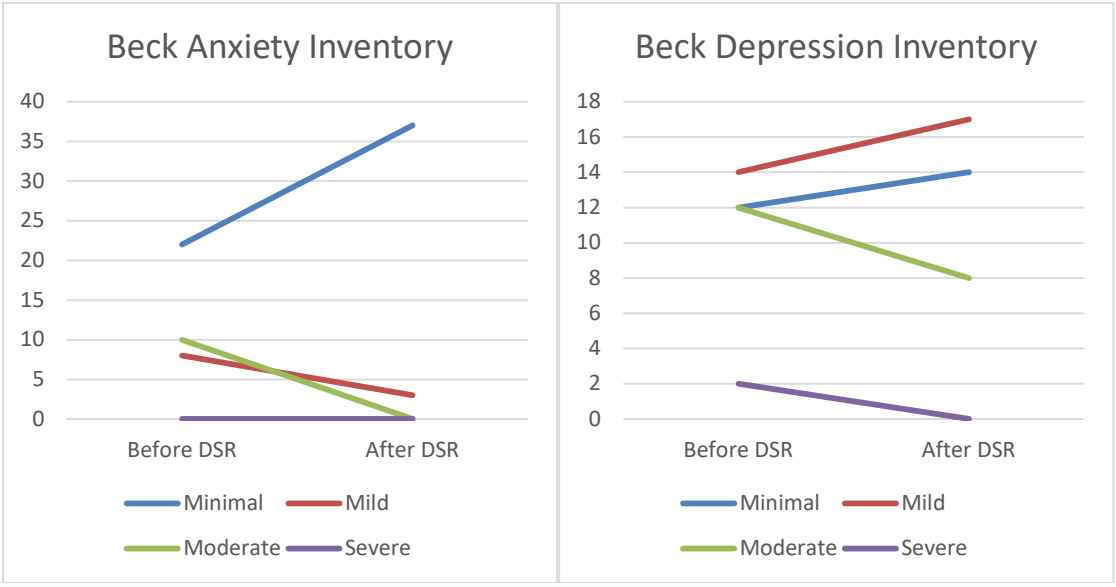

Figure 1. Before and after the DSR treatment, the curves of the scale score groups

There was a significant change ($p<0.001$) in the median Beck anxiety scores before and after DSR. The median was 0 after it was 6.5 previously. There was a significant change ($p<0.001$) between the median Beck depression ratings before and after DSR. Table 3 shows that the median after was 13, compared to the prior median of 14. The results indicate that the scores for anxiety and depression decreased in a way that was statistically significant.

Table 3. Scale-based comparison of results prior to and following DSR

	Mean ± SD	Mean (Min-Max)	Test Statistic	p*
Beck Anxiety score Before DSR	8.95 ± 7.48	6.5 (0 - 24)	-4.940	**<0.001**
Beck Anxiety score After DSR	1.60 ± 2.53	0 (0 - 9)		
Beck Depression score Before DSR	14.08 ± 8.97	14 (0 - 40)	-3.958	**<0.001**
Beck Depression score After DSR	12.40 ± 8.27	13 (0- 40)		

Abbreviations: *Wilcoxon test

Discussion

This study assessed the anxiety and depression levels of individuals undergoing DSR for blocked tear duct both prior to and after the procedure. According to the study, patients who had DSR had a considerable reduction in their symptoms of anxiety and depression. These results imply that psychological issues like anxiety and depression may be exacerbated by or caused by DSR.

The congestion caused by the blocked tear duct may lead to symptoms such as watering, redness and stinging in the eye. These symptoms may negatively affect the quality of life of patients and lead to psychological problems (1-3). The findings of the study suggest that DSR may be beneficial for psychological problems caused by blocked tear duct. DSR reduces ocular symptoms by relieving the congestion caused by blocked tear duct. This improves the quality of life of patients and helps to reduce psychological problems.

Lemaitre et al. (11) observed a similar drop in anxiety levels in patients following DSR, based on various means of reducing anxiety that occur prior to DSR. The study's conclusions also align with those of previous investigations. The prevalence and severity of anxiety and depression in people with dry eye were investigated by Wan et al. in a meta-analysis of 22 research involving about 3 million patients. The importance of ophthalmologists being aware of potential psychiatric comorbidities was underlined (12). Our study's results highlight the fact that applying DSR will lower anxiety and depressive symptoms. DSR has been demonstrated in the study by Luo et al. to improve quality of life in patients with acute dacryocystitis, reduce pain intensity, soothe negative emotions, and enhance postoperative self-care abilities (13).

The incidence of depression and anxiety disorders was found to be higher in patients with nasolacrimal duct obstruction than in the general population in a study by Guo et al. highlighting the significance of depression and anxiety screening and psychosocial support that can improve the quality of life and patients' compliance with medical appointments. According to the study, 13.1% of patients experienced mild-to-severe depression and 63.4% of patients had severe anxiety (5). There were no patients with severe anxiety in our study, and the proportion of patients with mild depression rose from 35% to 42.5% following DSR. This suggests that the number of people with depression may have decreased. Congruent with our research findings, a significant reviews article by Seo et al. demonstrated that numerous studies concluded that the treatment of DSR decreased anxiety and depression levels by raising quality of life (14). Our research has certain shortcomings. The study's sample was narrowly focused and limited. Larger sample sizes and multicenter investigations should thereby validate the results.

In this study, the pre- and post-operative anxiety and depression levels of patients undergoing DSR for ocular duct obstruction were assessed. The study's findings indicate that patients who had DSR had far lower levels of anxiety and depression. These findings imply that SCT may exacerbate pre-existing psychological issues or cause new ones to arise.

The IOL's congestion might result in symptoms such eye watering, redness, and stinging. Patients may experience psychological issues and a decline in their quality of life as a result of these symptoms (1-3). According to our research, DSR may help with the psychological issues brought on by blocked tear duct. By reducing the blockage brought on by blocked tear duct, DSR lessens ocular discomfort, enhancing patient quality of life and lowering psychological issues. In fact, this psychological improvement is likely to be due to improved scoring of more objective data, such as eye acuity and intraocular pressure, derived from scales or examination data, and should be kept in mind.

Lemaitre et al. conducted studies to lessen pre-existing anxiety prior to DSR. In this study, patients' anxiety levels decreased following DSR (11). These results concur with those of other research. Wan et al. discovered significant data about the frequency and severity of anxiety and depression in individuals with dry eye conditions using a meta-analysis of 22 studies involving 3 million patients (12). These studies provide evidence that DSR may lower anxiety and depressive symptoms. Furthermore, DSR may improve quality of life in patients with acute dacryocystitis, lessen pain intensity, lessen negative emotional reactions, and raise patients' satisfaction with nursing care, according to the study by Luo et al (13).

Furthermore, compared to the general population, patients with nasolacrimal duct obstruction had greater frequencies of depression and anxiety disorders, according to the Guo et al. study. According to this study, 13.1% of patients had mild-to-severe depression and 63.4% of patients had severe anxiety (5). However, our investigation did not reveal any patients with severe anxiety, and the percentage of patients with mild-to-

severe depression rose from 35% prior to DSR to 42.5% following DSR. As a result of the decrease in "moderate" and "severe" anxiety levels after surgical intervention; it is possible that an increase in "minimal" and "mild" anxiety levels may occur. These findings imply that depression scores might be declining. According to the paper by Seo et al., which is based on extensive reviews, there are several research that suggest DSR may raise anxiety and depressive symptoms by enhancing quality of life (14).

Study limitations

However, this study has some limitations. Our study did not examine the relationship between dry eyes, anxiety and depression. However, there are a limited number of studies suggesting that eye surgery can reduce anxiety and depression levels, thus limiting the number of articles discussed. The use of self-report scales (beck depression and anxiety scale) in the study is also one of the limitations. It would have been more appropriate to use more objective methods. Comparison of clinical objective data to confirm the decrease in anxiety and depression levels with improvement of tear obstruction symptoms will provide more reliable results. There was only one facility and a tiny sample size. Consequently, bigger sample sizes and multi-center investigations are required to validate the findings.

Conclusions

The study's findings suggest that the DSR process has the ability to lower anxiety and depressive symptoms. DSR helps patients experience a better quality of life by reducing eye discomfort by clearing the obstruction in the tear duct. Tear duct obstruction can cause symptoms like redness, stinging, and watery eyes. Patients may experience psychological issues and a decline in their quality of life as a result of these symptoms. The study's findings highlight the possibility that DSR can help with psychological issues brought on by tear duct constriction.

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