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Diabetic foot resulting from post-earthquake care deficiencies

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ABSTRACT

Aims: After natural disasters such as earthquakes, which affect many people, there can be an increase in flare-ups of chronic diseases because of the chaos, destruction, and insufficient resources resulting from the disaster. The aim of this study was to evaluate cases of diabetic foot that developed due to lack of care after an earthquake in Türkiye.

Methods: This descriptive research was conducted in the diabetic foot clinic of a training and research hospital between March and September 2023. Socio-demographic and diabetic foot-related data were recorded. In addition, in-depth face-to-face interviews were conducted individually with each patient using semi-structured questions based on qualitative descriptive methods. Diabetes education given during the wound healing process was also evaluated.

Results: The study included nine diabetic foot patients (mean age: 58.11±12.05 years, all male), with a mean diabetes duration of 17.33±8.7 years. Three main themes emerged from the analysis results. There are challenges related to diabetic foot care in the earthquake region. Firstly, with or without awareness, diabetic foot ulcers can develop because of the difficult living conditions. Secondly, diabetic foot patients injured in the earthquake experience problems accessing interventions and care from healthcare teams in the region. Lastly, there is a lack of information on the prevention, protection, care, and treatment of diabetic foot in earthquake victims.

Conclusions: The findings of this study demonstrated that after an earthquake, diabetic patients were late to notice foot ulcers, experienced delays in accessing healthcare personnel and services, and needed information and guidance about diabetic foot.

Introduction

Among the most recent disasters this century, 2 earthquakes occurred consecutively in Türkiye on 6 February 2023, almost completely destroying 11 large cities. More than 50,000 lives were lost and more than 100,000 people were injured in earthquakes with magnitudes of 7.7 and 7.8 on the Richter scale, in the town of Pazarcık in Kahramanmaraş province at the epicentre of the quake (1). Although the negative effects of earthquakes are directly related to the severity of the quake,

insufficient precautions and efforts to reduce these effects are influenced by factors such as the proximity of residential areas to the epicenter, the number of vulnerable groups (children, the elderly, the disabled) in densely populated communities, and other disasters that can be triggered by the earthquake (2).

In addition to causing mass deaths and injuries, earthquakes prevent the effective control, treatment, and care of chronic diseases of survivors (3). The chaotic conditions, severe stress, insufficient resources, and destruction resulting from the



disaster cause disease flare-ups, especially in individuals with a chronic disease. This can then cause an increase in disability and mortality rates (4).

Previous studies have reported that the patients most often affected are those with diabetes, heart disease, hypertension, stroke, and chronic lung diseases (5). In the period after an earthquake, damage to healthcare centres, disruptions to transport networks, and negative environmental conditions result in restrictions to medical supplies for patients with chronic diseases and disrupt access to healthcare and a healthy, balanced diet. Just as for other chronic diseases, this leads to glycemic dysregulation in diabetic patients (6-10).

Diabetes is a disease that requires lifelong adherence to medical treatment and healthy nutrition (9). In the weeks following an earthquake, the diabetes adherence process is negatively affected for reasons such as lack of shelter, staying warm, stress, and participating in search and rescue operations. The inability to provide suitable conditions after an earthquake, reduced hygiene facilities, and failure to meet short-term needs could be preparatory factors for the formation of diabetic foot. Psychological stress also has negative effects on diabetes control (11). In previous literature, being under severe stress has been associated with increased glycosylated hemoglobin A1c (HbA1c) and poor glycemic control in the early period after an earthquake (12). The deaths of family members in the earthquake, material losses, and the fear of experiencing another earthquake can cause prolonged psychological stress (9,13). In a study by Inui et al. (14), of the effect of the Kobe (Japan) earthquake on stress and glycemic control, it was reported that HbA1c levels reached a peak in the 3rd and 4th months after the earthquake, and there was a relationship between life-threatening stress and worsening metabolic control in diabetic patients. In addition, the development of diabetes complications is caused by reasons such as dietary changes, missed medications, poor glycemic control, and disruptions to healthcare services (15). Of the acute complications after an earthquake, diabetic foot infections are one of the most important complications that increase hospitalisation rates in diabetes (16). The presence of these restrictions can be a significant determinant of the development of diabetic foot.

Therefore, the aim of this study was to investigate the reasons for the development of diabetic foot in patients who presented at a tertiary-level diabetic foot centre and were diagnosed with diabetic foot at risk of or with the recommendation of below-the-knee amputation due to care deficiencies after the earthquake in which they were injured, through qualitative examination of access to healthcare, and the diabetic foot care and treatment conditions, and the quantitative examination of nursing care and education after discharge.

Methods

Study design and participants

This research was conducted in a diabetic foot clinic of a training and research hospital between March and September 2023. This study was designed as descriptive research using both qualitative and quantitative methods. When considering the nature of life experiences after the earthquake, qualitative methodology was used. The study population comprised patients who presented at a tertiary-level diabetic foot centre and were diagnosed with diabetic foot.

The study sample consisted of nine patients diagnosed with diabetic foot who were injured during the earthquake and were either recommended for or at risk of below-the-knee amputation due to deficiencies in post-earthquake care. All were transferred to our center, located 595 km from Kahramanmaraş, the epicenter of the earthquake, after the disaster. Individuals who did not speak Turkish, were under 18 years old, or were unwilling to participate were excluded from the study.

The study protocol was in accordance with the ethical principles of the Declaration of Helsinki and was approved by the University of Health Sciences Türkiye, Gülhane Scientific Research Ethics Committee (decision no.: 2023-284).

Data collection

The data were collected from patients hospitalised for treatment at a tertiary-level diabetic foot centre within 7 months after the earthquake. The participants were informed about the study and all provided written informed consent. After explaining the purpose of the study, the patients were questioned about socio-demographic characteristics. A record was also made of the diabetic history of the patients and information about the diabetic foot characteristics at the time of presentation, treatment, and care approaches. In-depth face-to-face interviews were then held separately with each patient using semi-structured questions. Care was taken to ensure that the interview rooms were quiet to allow uninterrupted discussion. The questions used in the research were prepared based on qualitative descriptive methods (17).

Descriptive, open-ended questions about the diabetic foot and coping methods were asked in respect of "diabetic foot wounds due to deficiencies in care after the earthquake, which were not earthquake injuries". The open-ended questions included, "How did the wound on your foot form?", "What did you do when you first noticed the wound on your foot?", "What kind of care method did you follow for the wound on your foot?", "Have you had difficulties related to the dressing?", "What did you do to cope with the difficulties you experienced with the dressing and care?". Each interview lasted approximately 30-40 minutes. In this study, data saturation was reached after 9 face-to-face interviews.

While the patients were hospitalised and receiving care, they also received diabetic foot education. The diabetic foot education was prepared with reference to the “Diagnosis, Treatment, and Prevention of Diabetic Foot Wounds and Infection: National Consensus Report” (18), and was evaluated during outpatient visits for wound care and follow-up in an average 3-month period following discharge. The education was organized under the headings of glycemic regulation, foot care, off loading, exercise, nutrition, and wound care.

Statistical Analysis

Quantitative parameters were analyzed using SPSS Statistics for Windows, version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were stated as the mean±standard deviation values for numerical variables and as number (n) and percentage (%) for categorical variables. In the analysis of the responses given by the patients using interview forms, the inductive method and content analysis were used. The data analysis was performed based on the content analysis explained by Graneheim and Lundman (19).

The qualitative research data obtained in the study were analyzed in four stages: First, the transcribed data were confirmed. The interview notes were written in full, and the transcripts were reviewed several times by the researchers to obtain a general understanding. In the second stage, researchers attempted to find the conceptual meaning of the statements given by the patients. Coding was then performed according to the concepts found within the aim and conceptual framework of the study. In the third stage, significant units were considered in an abstract way, and labelled with codes. The codes were categorised through comparisons of similarities and differences. From the starting point of the codes, themes were identified that could be gathered under certain categories at a general level. When forming the themes, attention was paid to whether or not a significant whole was formed or not, and similar concepts were gathered under the same theme. Finally, in the fourth stage, the data were organized according to the codes and themes, and definitions were formulated. At this stage, quotes were taken from the statements which best emphasized the opinions of the patients without any commentary or opinions from the researchers. To confirm the data, comments from colleagues, and handwriting analyses of the participants were used. The findings were given to specialists in two subjects for examination, and when the same result was reached and reported, consistency and reliability of the data were confirmed. Repeatability of the study was ensured through detailed explanations of the data. The emerging themes, along with descriptive patient information and data on the diabetic foot status, were interpreted and discussed by the researchers.

Results

The study included nine diabetic foot patients (mean age: 58.11±12.05 years, all male), with a mean diabetes duration of 17.33±8.7 years. The mean time to epithelialization of the diabetic foot in the long-term follow-up of the patients was 103.67±32.61 days. The characteristics of the study participants are shown in Table 1.

As a result of the analysis of qualitative data, three main themes were established:

1. The awareness of ulcers on the foot of diabetic individuals in the earthquake region

Hospitals in Kahramanmaraş, which was the epicentre of the earthquakes, tried to provide healthcare services in field hospitals, family health centres, tent cities, and mobile healthcare teams. After the earthquake, some patients and the injured were treated as far as possible, and attempts were made to normalize their conditions.

After experiencing these major earthquakes, those affected first rushed to save themselves and their families and to help other people. Although the person was a diabetic patient, no attention was given to their foot health or care. Thus, the development of diabetic foot wounds was inevitable.

In earthquake victims who were diagnosed with type II diabetes mellitus, diabetic foot ulcers developed, either noticed or unnoticed, because of the difficult living conditions. The statements of patients who experienced this are given below:

“I rushed outside after the earthquake. It was cold and raining. My children suggested that we take our shoes from home. There was a piece of glass inside my shoe, and I walked around for 4-5 days on this piece of glass. The glass had gotten into my shoe from broken windows at the time of the earthquake. I didn’t take my shoes off for four days. When I noticed the wound, I went to the hospital four days after the earthquake” (Patient 1).

“The wound on my foot developed within two days. The weather was cold, with snow and rain falling, and we didn’t have enough clothes. We were outside. We were trying to rescue people from under the rubble. When my wife took my socks off, she noticed that there were blisters on both sides of my foot” (Patient 2).

“After the earthquake, my foot was in a shoe and a sock the entire time for 10 days. There was nowhere to change the medical dressing for 10 days. You could not go into your home, the hospitals were not working, and everywhere was destroyed, completely razed to the ground (Figures 1, 2)” (Patient 3).

2. Problems of access to healthcare personnel for individuals with diabetic foot

Many diabetic patients were living on the streets, in vehicles, or in containers after the earthquake, and could not control their blood sugar because of the difficult living conditions. Diabetic

Table 1. Demographic and clinical data of patients with diabetic foot linked to post-earthquake care deficiencies (n=9)

Demographic and clinical characteristics	
Age (years), mean \pm SD	58.11 \pm 12.05
Gender, n (%)	
Male	9 (100.0)
Marital status, n (%)	
Married	8 (88.9)
Single	1 (11.1)
Educational level, n (%)	
Primary school (5 years)	5 (55.6)
Middle school (3 years)	3 (33.3)
University and above (4 years and above)	1 (11.1)
Diabetes mellitus duration (years since diagnosis), mean \pm SD	17.33 \pm 8.7
Employment status, n (%)	
Employed	2 (22.2)
Unemployed/retired	7 (77.8)
Living condition, n (%)	
Alone	1 (11.1)
With family	8 (88.9)
City of living, n (%)	
Gaziantep	1 (11.1)
Hatay	3 (33.3)
Kahramanmaraş	5 (55.6)
Diabetes mellitus type, n (%)	
Type 1	1 (11.1)
Type 2	8 (88.9)
Diabetes mellitus treatment, n (%)	
OAD	1 (11.1)
Insulin	3 (33.3)
OAD+insulin	5 (55.6)
Diabetes mellitus family history, n (%)	
Yes	8 (88.9)
No	1 (11.1)
Other chronic diseases, n (%)	
Yes	7 (77.8)
No	2 (22.2)
Allergy, n (%)	
Yes	3 (33.3)
No	6 (66.7)
WAGNER grade, n (%)	
W 2	3 (33.3)
W 3	4 (44.4)
W 4	2 (22.2)
PEDIS grade, n (%)	
P 2	7 (77.8)
P 3	2 (22.2)

Table 1. Continued

Wound care and treatment methods, n (%)	
Surgical debridement and intralesional epidermal growth factor (i-EGF)	2 (22.2)
Enzymatic debridement	4 (44.4)
Minor amputation	1 (11.1)
Minor amputation and i-EGF	2 (22.2)
Mean time from the wound formation to presentation at hospital (days), mean \pm SD	14.22 \pm 12.46
Epithelialisation duration, mean \pm SD	103.67 \pm 32.61
SD: Standard deviation, OAD: Oral antidiabetic, i-EGF: Intralesional epidermal growth factor	

control was negatively affected in the acute period because of problems seeking shelter, discontinuation of treatment, because drugs were lost, and psychological stress. Earthquake victims who were diabetic patients needed interventions and care from regional healthcare teams due to wounds developing on their feet, but confusion and chaos caused problems in accessing healthcare services. The statements of the patients in this context are given below:

"For 1 week to 10 days, I didn't take my shoes off, and I could not care for my feet. The wound became inflamed, and then became bigger. After 10 days, I noticed the wound when I took my socks off. There were no dressing materials. There were a few staff working in the hospital. They were changing dressings outside because the hospital was about to be overwhelmed" (Patient 4).

"You couldn't go into your home, and the hospital wasn't operational, so I couldn't change the dressing. I had no means of going to the hospital. I couldn't receive any dressing or care for my foot. I had to wait there for 10 days. When I came here after 10 days, treatment and care were started" (Patient 5).

"The time from the wound's formation to hospital admission was 20 days. I couldn't come. There was a wound on my foot and blisters on my toes. I stayed out in the cold with only slippers on my feet. I couldn't protect my foot. When I first noticed it, I burst the blisters with a needle to let out the water; then the skin on my foot ruptured, and the wound got bigger. I wrapped gauze around it. I couldn't clean the wound. For 20 days, I washed the wound on my foot with water, wiped it, and then wrapped it in gauze. There was no cloth, so I cut up a sock to make a pad, then wrapped it around the pad. There were no materials" (Patient 6).

3. Information needs of earthquake victims with diabetic foot

Diabetes is a chronic disease that can affect the individual in many aspects and therefore, there is a great deal of information that patients must learn and apply. However, the current study participants had a tendency to neglect foot care recommendations. In addition, the experience of the earthquake



Figure 1. Diabetic foot patient post-earthquake and treatment process



Figure 2. Foot protective care and epithelialization

by diabetic patients created more difficult conditions associated with the development of diabetic foot. Another reason for the greater exposure to diabetic foot development was the patients' lack of knowledge about the prevention, protection, care, and treatment. The statements of the patients in this context are given below:

"I applied no dressing for 6 days. The wounds were getting bigger, and up to that time I applied no dressing. I didn't know

that there would be a wound like that, so I didn't apply a dressing. Subsequently, they sent me here, saying that I needed an operation. There were things falling all over, and due to the earthquake, I struck my ankle somewhere when I was running" (Patient 2).

"I couldn't tend to my foot during the earthquake conditions. We came here, and my wife did it. It was painful for a week and I couldn't touch it. We got dressing materials from the pharmacy and my wife applied the dressing. The first days were difficult, but we came to the hyperbaric unit for treatment. A family friend said that I had diabetes and that I should come here and I could be treated with ozone therapy. I have had no education about regulating blood sugar" (Patient 7).

"I kept warm in the open air with the heat of the stove; one night I slept in a tent. When I got up in the morning, I saw that my feet were blistered" (Patient 5).

"On the day of the earthquake, I burned my foot. There was a fire outside, and everybody was gathered around it. When I was sitting, I stretched out my feet in sandals to the fire, and my wife realized, but I didn't notice that I had burned my foot. Blisters had formed in the shape of balloons. I didn't do anything. I thought that if I burst the blister, there would be a wound, and it would be worse, so I did nothing. I put my sock on over it, I did nothing to care for my foot. At that time, I was just experiencing turmoil about life" (Patient 8).

"My children said to take our shoes from home. There was some glass inside my shoe and I walked around for 4-5 days on this piece of glass. The glass had gone into my shoe from broken

windows at the time of the earthquake. I didn't take my shoes off for 4 days. I wore my shoes without socks" (Patient 9).

"I burned my foot in the fire outside. I stretched out my feet to the fire, and they burned" (Patient 10).

The data related to the hospitalisation of the patients who developed diabetic foot, including glycemic regulation, foot care,

exercise, protection from weight-bearing, nutrition education, and post-discharge applications is shown in Table 2. The effects of the education given to the patients on HbA1c measurements 3 months later are presented in Table 3.

Discussion

This study demonstrated that diabetic foot ulcers can develop in earthquake victims due to challenging living conditions, limited healthcare access, and insufficient knowledge about prevention and care.

The destruction of ecological balance and social order, high loss of life, and lack of water, energy sources, and transport services in living areas are said to constitute a disaster. Disasters cause destruction that exceeds the capacity of local people to cope. The destruction may cause social order to deteriorate to such an extent that external assistance is required. Patients with long-term chronic diseases and diabetic patients, even if not injured at the time of the earthquake, constitute a high-risk group after an earthquake because of the high risk of morbidity and mortality due to "deaths associated with the interruption from healthcare services". Healthcare personnel providing service in the region and those planning healthcare services are responsible for the triage of patients to appropriate centres at risk of morbidity and mortality due to diabetic foot. Therefore, there is a need for the education and training of healthcare personnel in disaster conditions (4,20).

Due to the interruption of healthcare services for patients transferred to or presenting at our centre, the rescue plans after an earthquake include triage to centres that are far from the affected area, where they can receive first-line treatment before the risk to life and limb loss develops. When the triage of these patients is delayed, the resulting limb loss and risk of mortality require high-cost treatments.

Based on the findings the qualitative interview data of this study, three main themes were discussed. Although all the patients in the study were long-term diabetic patients, it was

Table 2. Data on education provided during hospitalization and applications after discharge in diabetic foot patients linked to post-earthquake care deficiencies (n=9)

Glycemic regulation	n (%)
Fasting and post-prandial glycemia monitoring	
Yes	6 (66.7)
No	3 (33.3)
Glycemic measurement <180 mg/dL	
Yes	6 (66.7)
No	3 (33.3)
Regular use of antidiabetic drugs	
Yes	6 (66.7)
No	3 (33.3)
Regular physician check-ups	
Yes	6 (66.7)
No	3 (33.3)
Foot care	
Daily washing	
Yes	8 (88.9)
No	1 (11.1)
Moisturising	
Yes	6 (66.7)
No	3 (33.3)
Weekly foot checks	
Yes	5 (55.6)
No	4 (44.4)
Selecting suitable socks	
Yes	6 (66.7)
No	3 (33.3)
Exercise and prevention from weight-bearing	
Exercise management in bed	
Yes	6 (66.7)
No	3 (33.3)
Adherence to off loading	
Yes	6 (66.7)
No	3 (33.3)
Nutrition	
Protein-rich diet	
Yes	8 (88.9)
No	1 (11.1)
Daily fluid intake	
Yes	8 (88.9)
No	1 (11.1)
Prevention from high glycemic index foods	
Yes	5 (55.6)
No	4 (44.4)

Table 3. HbA1c levels at admission and three months after education

Patient number	Admission (%)	3-months (%)
1.	10.6	7.7
2.	11.8	8.6
3.	11.0	10.0
4.	9.3	6.2
5.	9.7	7.8
6.	9.2	7.0
7.	7.2	6.2
8.	9.1	8.0
9.	8.9	7.5
HbA1c: Glycated hemoglobin		

understood that they lacked information in respect of exposure to the development of diabetic foot, problems experienced in accessing healthcare services, protection of diabetic foot, and preventative care because of the many negative factors following an earthquake. Therefore, importance must be given to the development of appropriate and specific interventions for diabetic patients in extraordinary circumstances, the protection of diabetic foot in an earthquake, the elimination of knowledge deficiencies on the subjects of treatment and care if diabetic foot develops, and the management of diabetic foot in tertiary-level centres. There is also a need to increase the knowledge and awareness of nurses, in particular, on managing diabetic foot patients who are at risk of limb loss.

Previous studies have shown that disasters worsen diseases such as diabetes and its complications (16). HbA1c values are important in the evaluation of diabetes compliance and glycemic control (21). Following the Kumamoto earthquake, the HbA1c values of 557 diabetic patients increased in the 3rd-4th months after the earthquake, and this was reported to be associated with a lack of antidiabetic drugs, insufficient availability of food, destruction, and patients being unable to manage their condition independently. Anxiety and stress can also lead to a deterioration in glycemic control (22). After the North Osaka earthquake in 2018, HbA1c levels in diabetic patients were determined to be significantly higher compared to the years before the earthquake, and the rate of deterioration in HbA1c was higher in the regions where the earthquake occurred (6,22). This can increase the predisposition to diabetic foot. High HbA1c levels have also been reported to increase Wagner/PEDIS grades in diabetic foot, worsen disease severity, and contribute to tissue loss (23). When there are such conditions, the ongoing problems of shelter in the days and weeks after an earthquake, psychological stress, the need to keep warm, and participation in search and rescue efforts negatively affect diabetes adherence. This occurs due to issues such as not paying attention to foot care, insufficient food availability, and lack of antidiabetic drugs, and these factors can strongly contribute to the development of diabetic foot.

Considering diabetic foot patients who are earthquake victims experience problems in accessing healthcare teams in the region, there is need to rethink the healthcare system's disaster approach and plan effective strategies that will provide access to medical and care services for patients in natural disasters (24). Statistics has shown an increase in hospital admissions of patients with at least one chronic disease during disasters. For example, during the Sichuan earthquake, patients with diabetes constituted the highest proportion, accounting for 24% of presentations at city hospitals (25). In unexpected disasters, preparation to provide care to a vulnerable population is extremely important. The time from the development of diabetic foot to presentation at our tertiary-level diabetic foot centre was a mean of two weeks for the patients in the current

study. Disruption in access to healthcare services can cause the development of diabetic foot and worsen prognosis.

Self-care management for diabetic patients is extremely important. In this way, patients with diabetes can continue a normal life. Nurses contribute to the self-care of diabetic patients through their roles as education and learning facilitators (26). Foot evaluation plays an important role in protecting against diabetic foot by teaching correct and regular foot care skills and forming these habits (27,28).

Unfortunately, many patients are not given adequate education about diabetes after being diagnosed. These deficiencies are partially due to inadequate education methodologies used by healthcare providers, and partially to a lack of standards and institutional education programs for patients (29).

From the statements of the current study participants, it was understood that they had not previously received any education about diabetes and did not have information about the development of diabetic foot. This demonstrates the need to establish guidelines for both patients and healthcare service providers with the aim not only of maintaining a normal life but also of meeting their needs in extraordinary disaster situations. As Türkiye is located in an earthquake zone, lessons about diabetes, and diabetic foot management in a period of disaster can be added to the diabetes school education. The role of nurses in diabetes disaster teams, who work in close collaboration with patients in the clinic environment, is of critical importance in addressing the needs related to diabetes and diabetic foot care (10). During normal periods, nurses should educate diabetic patients (30). Therapeutic patient education should be a comprehensive, planned, structured program, meeting clinical and psychological needs while taking the educational and cultural background of the individual into consideration. The healthcare professionals providing this education should check the information needs and whether the patient translates diabetic education into action (31).

It is recommended that wound healing and efforts to preserve the limb are undertaken by a multidisciplinary team. Nurses are indispensable components of this team. Evaluation of the data on practices after discharge and the education given during hospitalisation of patients who developed diabetic foot due to the earthquake shows that nursing education is expected to provide a positive contribution to the epithelialisation period and patient education.

This study was conducted with a small sample of diabetic foot patients in Türkiye, which may be a limitation in terms of generalizability. However, generalization is not the primary aim of qualitative research. Participants were selected through purposive sampling, which may introduce selection bias by favoring individuals with specific knowledge or experiences. In qualitative research, such bias is intentionally used to enrich theoretical

understanding and provide a detailed, accurate depiction of experiences. Despite the small sample size, it was considered sufficient to capture variation and maintain analytical depth.

Conclusion

This study demonstrated that diabetic foot ulcers can develop in earthquake victims due to challenging living conditions, limited healthcare access, and insufficient knowledge about prevention and care. In the training within the scope of disaster preparedness for nurses and healthcare personnel, the necessary information should be given about the care and management of individuals with diabetes after a disaster. In this way, diabetes and diabetic foot management can be successfully maintained in the event of a disaster.

Ethics

Ethics Committee Approval: The study was approved by the University of Health Sciences Türkiye, Gülhane Scientific Research Ethics Committee (decision no.: 2023-284).

Informed Consent: The participants were informed about the study and all provided written informed consent.

Footnotes

Authorship Contributions

Surgical and Medical Practices: S.A., Concept: S.A., Design: S.A., Ö.K., Data Collection or Processing: S.A., Analysis or Interpretation: S.A., Ö.K., K.B.Y., Literature Search: S.A., Ö.K., Writing: S.A., Ö.K.

Conflict of Interest: No conflict of interest was declared by the authors.

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