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Investigation of personality type and physical activity level in physiotherapy and rehabilitation department students

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ABSTRACT

Aims: The aim of this study is to examine the relationship between personality types and physical activity levels among undergraduate students in the department of physiotherapy and rehabilitation.

Methods: The participants' physical activity levels were assessed using the short form of the International Physical Activity Questionnaire (IPAQ). To evaluate the participants' personality traits, the Eysenck Personality Questionnaire-Revised/Short Scale was used. The relationship between individuals' personality traits and physical activity levels was determined using Spearman's rank correlation analysis.

Results: The study included 180 undergraduate students from the department of physiotherapy and rehabilitation. The results revealed a strong correlation between severe metabolic equivalent (MET) ($r: 0.246, p: 0.001$), moderate MET ($r: 0.196, p: 0.009$) and total MET ($r: 0.202, p: 0.007$) with psychoticism. Additionally, a strong correlation was observed between extraversion and walking MET ($r: 0.180, p: 0.017$) as well as total MET ($r: 0.196, p: 0.009$).

Conclusion: Students with personality traits of psychoticism and extraversion tend to be physically more active. This study shows that physical-activity levels may be predicted by personality traits on Turkish physiotherapy and rehabilitation students.

Keywords: Physical activity, personality tests, undergraduate students

INTRODUCTION

Physical activity is defined as voluntary movements produced by skeletal muscles that result in increased energy expenditure. It is known to play a crucial role both in the prevention of diseases and in the treatment of illnesses. Physical activity has positive effects not only on individuals' physical health but also on their mental well-being.^{1,2} It has been reported that physical activity reduces the risk of cardiovascular diseases, lowers the risk of developing diabetes, decreases the risk of cancers such as colon and breast cancer, helps in the maintenance and improvement of the musculoskeletal system, and is beneficial in the prevention and treatment of psychological issues such as depression, stress, and anxiety.³⁻⁷

Personality is the unique manifestation of factors that influence an individual's feelings, thoughts, and behaviors. Constantly shaped by internal and external stimuli, personality encompasses an individual's biological,

psychological, hereditary, and acquired abilities, motivations, emotions, desires, habits, and overall behaviours. In summary, the development of personality is influenced by both an individual's genetic traits and the environment in which they are situated.⁸ Since the emergence of the concept of personality, many scales have been developed to assess it. One of the most commonly used scales is the revised Eysenck personality questionnaire - short form. This scale consists of 24 items and 4 subscales. These subscales are extraversion, neuroticism, psychoticism, and lie. The lie subscale serves as a control scale for testing the validity of the entire questionnaire.^{9,10} Extraversion represents outgoing and social individuals who enjoy interacting with others and spending time with them. Neuroticism describes individuals who are tense, anxious, depressive, overly emotional, and lacking in self-confidence. Psychoticism refers to individuals who are distant and cold towards others, aggressive, and have a weak ability to empathize.⁹

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Personality types are significant factors influencing individuals' choices in physical activities.¹¹ The literature includes a substantial number of studies examining the relationship between personality types and physical activity levels.^{12,13} However, to the best of our knowledge, there are no studies in the literature examining how personality structures affect physical activity levels in students enrolled in programs where the importance of physical activity is frequently emphasized, such as physiotherapy and rehabilitation. The aim of this study is to compare the physical activity levels of physiotherapy and rehabilitation students with different personality types.

METHODS

This prospective study included 180 voluntary students enrolled in the physiotherapy and rehabilitation program. The necessary permission for the study was obtained from Gazi University Ethics Committee (Date: 10.05.2022, Decision No: 2022-772). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. Students who had difficulty understanding the questionnaire, had known chronic illnesses, were on continuous medication, had physical disabilities, or had visual and auditory impairments were excluded from the study.

Participants' physical activity levels were assessed using the International Physical Activity Questionnaire (IPAQ) short form. The surveys were prepared using Google forms, and the relevant link was sent to all the students. The questionnaire consists of 4 separate sections and a total of 7 questions.¹⁴ This questionnaire is used to determine the amount of vigorous physical activity, moderate physical activity, walking, and time spent sedentary over the past seven days. The level of physical activity is assessed using the metabolic equivalent (MET) method. The questionnaire provides separate MET values for vigorous physical activity, moderate physical activity, and walking, and is also used to calculate the total MET value.¹⁵

To measure participants' personality traits, the revised/short form of the Eysenck personality questionnaire was used. Based on the results of this scale, individuals are classified into 4 distinct personality types.¹⁶ These personality types are extraversion, neuroticism, psychoticism, and lie. The Turkish validity and reliability study for this questionnaire has been conducted.¹⁰

Statistical Analysis

Statistical analysis was performed by using the IBM Statistics SPSS v21.0. (IBM Corp. Armonk. NY. USA). The variables were determined by the measurement (histograms. Kolmogorov-Smirnov test). Categorical variables were expressed as a percentage. The statistical significance level was $p < 0.05$. A spearman correlation coefficient was performed to determine the relationship between personality traits and physical activity levels. Bonferroni correction was performed to minimize the risk of increased type 1 error due to multiple correlations and the corrected significance level was set at $p < 0.001$.¹⁷ The correlation coefficient was classified as negligible (0-0.10), weak (0.10-0.39), moderate (0.40-0.69), strong (0.70-0.89), and very strong (0.90-1.00).¹⁸

RESULTS

The average age of the students included in the study was 21.82 ± 3.06 years. The average height and weight of the participants were 167.25 ± 8.46 cm and 62.99 ± 12.77 kg, respectively. Among the participating physiotherapy and rehabilitation students, 15.6% were in the 1st year, 22.8% were in the 2nd year, 28.3% were in the 3rd year, and 33.3% were in the 4th year.

The relationship between participants' physical activity levels and personality types is shown in Table.

Table. Personality traits and the level of physical activity (IPAQ-short form) among Turkish pyhsical therapy and rehabilitation students

IPAQ-short form domains	Extraversion (n=180)	Neuroticism (n=180)	Psychoticism (n=180)
IPAQ vigorous	r: 0.113 p: 0.132	r: -0.076 p: 0.308	r: 0.246** p: 0.001
IPAQ moderate	r: 0.028 p: 0.708	r: -0.099 p: 0.184	r: 0.196** p: 0.009
IPAQ walking	r: 0.180* p: 0.017	r: -0.018 p: 0.809	r: -0.017 p: 0.820
IPAQ total	r: 0.196** p: 0.009	r: -0.047 p: 0.540	r: 0.202** p: 0.007

IPAQ: International Physical Activity Questionnaire, r: Spearman's correlation coefficient; p, significance, *: Correlation is significant at the 0.005 level. **: Correlation is significant at the 0,001 level

The study found a strong correlation between psychoticism and both IPAQ vigorous, IPAQ moderate, and IPAQ total. Additionally, a strong correlation was observed between extraversion and both walking MET and total MET. No relationship was found between neuroticism and physical activity level.

DISCUSSION

In this study, we aimed to examine the relationship between personality types and physical activity levels among students actively enrolled in the department of physiotherapy and rehabilitation. The results revealed a correlation between severe MET and moderate MET with psychoticism, between walking MET and extraversion, and between total MET with both extraversion and psychoticism.

The results of our study showed a strong positive correlation between extraversion and IPAQ walking as well as IPAQ total. A systematic review and meta-analysis examining the effects of personality determinants on physical activity found that extraversion positively affects physical activity levels, while neuroticism has a negative impact.^{11,19} The study conducted by Gacek and colleagues on Polish and Spanish physical education students also found a positive correlation between extraversion and physical activity levels.²⁰ The results of these studies are consistent with our findings.

Although psychoticism is an important trait in Eysenck's three-factor model of personality, it has not been as extensively studied.²¹ Many studies have found no relationship between psychoticism and physical activity.^{22,23} However, our study found a strong positive correlation between psychoticism and IPAQ vigorous, IPAQ moderate, and IPAQ total. In our study, it is surprising that there is a strong relationship between psychoticism and physical activity. This may be due to physiotherapy and rehabilitation students receiving education about the importance of physical activity.²⁴

A meta-analysis examining the relationship between personality types and physical activity levels indicated a negative relationship between neuroticism and physical activity levels, although this effect is small.²¹ In a meta-analysis examining 21 studies on the relationship between neuroticism and physical activity, a correlation coefficient of -0.11 was calculated. Our study found no relationship between neuroticism and physical activity level. This discrepancy may be due to differences in the country and culture of the participants.²¹

Limitations

It is difficult to predict students' physical activities solely based on their personality types. Factors such as students' work status, living conditions, stress level, self-esteem and social support affect their physical activity levels.^{12,25} The absence of these considerations in this study is a limitation. Future studies should take these variables into account. Additionally, the absence of a control group in the study is a limitation.

CONCLUSION

There may be a strong correlation between personality type and physical activity level among undergraduate students in the physiotherapy and rehabilitation program.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of the Gazi University Ethics Committee (Date: 10.05.2022, Decision No: 2022-772).

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.




Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Traumatic spinal cord injuries due to falls from trees in a tertiary rehabilitation center: a retrospective analysis of causes and outcomes

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ABSTRACT

Aims: Falls from heights are a major cause of spinal cord injury. In developing countries such as Türkiye, where fruit picking from trees is an important part of the agricultural economy, falls from trees are common. This study aims to comprehensively analyze the causes and consequences of spinal cord injuries due to falls from trees.

Methods: This retrospective study reviewed cases of spinal cord injury resulting from falls from trees, treated at a tertiary rehabilitation center between March 2020 and November 2023. Data encompassed demographics (age, gender, occupation, education), spinal injury specifics (level, severity), additional injuries, tree fall details (type of tree, height of fall, cause of fall, safety precautions), and treatment details (surgery need, hospital stay duration). The patients who fell from trees were divided into two groups: those who fell from walnut trees and those who fell from other trees, and statistical analyses were performed accordingly.

Results: Among the 49 patients falling from trees, the mean age was 52.3±13.4 years, with 73.5% being male, 32 patients (65.3%) had graduated from primary or secondary school. No safety precautions were taken by any participants. Paraplegia (87.8%) and complete spinal cord injuries (57.1%) were common. Additional injuries occurred in 61.2% of cases. In terms of fall causes, the most common was branch breakage (57.1%), while walnut trees accounted for 44.9% of falls. There was a significant difference in education levels between the group that fell from walnut trees and the group that fell from other trees ($p: 0.028$). Falls from walnut trees resulted in higher fall heights, complete injury rates, and longer hospital stays ($p:0.003$, $p:0.047$, $p: 0.010$).

Conclusion: This study found that spinal cord injuries from falls often lead to additional injuries, with none of the patients taking safety precautions. This study found that walnut trees were the most common cause of spinal cord injury from falling trees. This study highlights the need for improved safety precautions and educational interventions.

Keywords: Fall from height, spinal cord injury, walnut tree

INTRODUCTION

Spinal cord injury (SCI) is a significant health issue that results in physical, social, and psychological challenges, as well as a loss of neurological function. Traumatic SCI accounts for approximately 5% of all trauma cases.¹ Traumatic SCI is a major cause of morbidity and mortality and leads to a reduction in the productive population because it is more common in young patients. In addition, the prolonged and costly treatment of traumatic SCI places a significant financial burden on healthcare systems.² The most common type of traumatic SCI is falling (40.9% worldwide, 39% in Türkiye).^{3,4}

As mechanization is not widespread in underdeveloped or developing countries, falls are common among people

who travel to trees to collect produce. This rate is lower in developed countries where harvesting is mechanized. The use of safety equipment when collecting products from trees reduces the complications caused by falling from trees.⁵ Injuries to the spine, extremities, head, and spinal cord are frequently observed as a result of falls from trees. Walnut trees are an important part of the Turkish economy. As falls from walnut trees are common in Türkiye, studies have been conducted to investigate the demographic characteristics of patients who have fallen from these trees.^{6,7} Falls are common due to the slippery structure of the walnut tree, its height, the fragility of the branches, and the dense presence of walnuts

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at the ends of the branches.^{5,7} As falls are preventable causes of death and disability, public health strategies should be developed, and groups at risk should be identified. The severity of such injuries depends on the age of the patient, the cause of the fall, the height of the fall and the structure of the ground on which the patient falls.⁵

In our country, spinal cord injuries resulting from falls from trees are common and carry significant economic repercussions, including both lost productivity and healthcare costs. This study aims to analyze the characteristics of patients who have sustained spinal cord injuries due to falls from trees, as well as the causes and consequences of such falls.

METHODS

This retrospective study included 49 patients with SCI due to falls from trees who were treated to the physical therapy and rehabilitation department between March 2020 and November 2023 using the database of Ankara Bilkent City Hospital-Physical Therapy and Rehabilitation Hospital in Turkiye. All procedures performed in this study were in accordance with the Declaration of Helsinki. This study was approved by the Ethics Committee of Ankara Bilkent City Hospital (Date: 12.07.2023, Decision No: E2-23-4500).

Assessments

The records of patients admitted to the spinal cord injury rehabilitation service of a tertiary rehabilitation center were retrospectively reviewed. The demographic characteristics of the patients, including age, sex, occupation, and education level were recorded. The level and severity of neurological injury, determined according to the International Standards for neurological classification of spinal cord injury (ISNCSCI) (2019) published by the American Spinal Injury Association (ASIA), were recorded.⁸ The characteristics of the fall were documented, including the date of the fall, type of tree, fall height (measured in meters), the reason for the fall (e.g., branch breakage, loss of balance, or slipping), and whether safety precautions were taken prior to the fall. Data on the admission method to the emergency department following the fall, the time taken for emergency admission, additional injuries, and the need for surgical intervention were collected. The duration of hospitalization in the postoperative ward and intensive care units were recorded. Data were obtained from patient notes and supplemented by contacting patients via phone calls to gather any missing information.

Statistical Analysis

All the data were analyzed using the SPSS 25.0 package in a computer environment. Variables are summarized as the frequency “n”, percentage “%”, arithmetic mean “mean”, standard deviation “SD”, median, and 1st quartile-3rd quartile (Q1-Q3). Categorical data were compared by Pearson’s Chi-square test or Fisher’s exact test. The Shapiro-Wilk test was used to evaluate the conformity of continuous data to a normal distribution. Independent two-sample t tests were used to determine the differences between independent groups in the analysis of continuous variables with a normal distribution, and the Mann-Whitney U test was used in the analysis of independent paired groups of continuous

variables without a normal distribution. In this study, $p < 0.05$ was considered to indicate statistical significance. Effect size values are given as Cramer’s V coefficient for the chi-square test, rank biserial correlation for the Mann-Whitney U test, and Cohen’s d for the student’s t test.

RESULTS

This study included 49 patients with spinal cord injuries caused by falls from trees. Among the patients, 26.5% (n: 13) were female, 73.5% (n: 36) were male, and the mean age was 52.3 ± 13.4 years. The most common characteristics of SCI were paraplegia (87.8%, n: 43) and complete injury (57.1%, n: 28). None of the patients were found to have taken safety precautions before climbing the tree. All patients underwent spine surgery. All patients were taken to hospital by ambulance after their falls. The most common cause of falls was branch breakage (57.1%, n: 28). A total of 61.2% (n: 30) of the patients had additional injuries, and the most common site of injury was the lung (18.4%, n: 9). The descriptive characteristics of the patients are shown in Table 1.

Age (years)		52.3±13.45
Gender	Female	13 (26.5%)
	Male	36 (73.5%)
Occupation	Officer	4 (8.2%)
	Laborer	15 (30.6%)
	Academician	1 (2.0%)
	Farmer	6 (12.2%)
	Not working	14 (28.6%)
	Pensioner	9 (18.4%)
Level of education	Primary-secondary school	32 (65.3%)
	High school-university	17 (34.7%)
SCI characteristics	Tetraplegia	6 (12.2%)
	Paraplegia	43 (87.8%)
	Incomplete	21 (42.9%)
Cause of fall	Complete	28 (57.1%)
	Branch breakage	28 (57.1%)
	Dizziness, loss of balance	12 (24.5%)
Time to emergency department (min)	Foot slip	9 (18.4%)
		53.4 (20.0-150.0)
Additional injury	Yes	30 (61.2%)
	No	19 (38.8%)
Sites of injury	Head	3 (6.1%)
	Lung	9 (18.4%)
	Rib	2 (4.1%)
	Extremities	4 (8.2%)
	Lung+limb	2 (4.1%)
	Lung+cot	4 (8.2%)
	Hip	5 (10.2%)
	Hip+head	1 (2.0%)

The data are presented as the n (%), mean±SD or median (Q1-Q3), SD: Standard deviation

In this study, walnut trees were found to be the most common etiological cause of SCI due to falls from trees (n: 22, 44.9%),

followed by apple trees (n: 5, 10.2%) and plum trees (n: 4, 8.2%) (Figure). For this reason, the analyses were divided into 2 groups: group 1 (falls from walnut trees) and group 2 (falls from other trees).

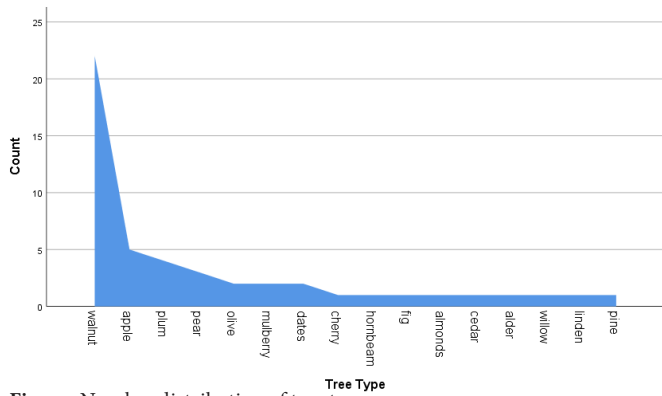


Figure. Number distribution of tree types

There were 5 females and 17 males in group 1 and 8 females and 19 males in group 2. There was no statistically significant difference between the groups in terms of sex (p: 0.580). The percentage of primary and secondary school graduates in group 1 (81.9%) was significantly greater than that in group 2 (51.9%) (p: 0.028, effect size: 0.313). The rate of complete injury in group 1 (72.7%) was significantly greater than that in group 2 (44.4%) (p: 0.047, effect size: 0.284). There was no statistically significant difference in the level of neurological injury between the groups (p: 0.077, effect size: 0.289). The proportion of those who fell from trees in the summer-autumn season was significantly greater in group 1 (100%) than in group 2 (77.8%) (p: 0.027, effect size: 0.337). The fall height of 5.5 (4-7) m was significantly greater in group 1 than in group 2 with 3 (3-5) m (p: 0.003, effect size: 0.483). There was no significant difference in the cause of the fall between the groups (p:0.360, effect size:0.130). There was no statistically significant difference in additional injuries

between the groups (p:0.136, effect size:0.213). The length of hospital stay was 30 (13-90) days in group 1 and 14 (7-20) days in group 2, with a statistically significant difference between the groups (p: 0.01, effect size: 0.428) (Table 2).

There was no statistically significant difference between the severity of neurological injury and the height of the fall [(p: 0.089, effect size: 0.426) (p: 0.25, effect size: 0.187)]. There was no statistically significant difference between the severity of neurological injury and the cause of the fall [(p: 0.688, effect size: 0.213) (p: 0.615, effect size: 0.110)]. The proportion of high school and university graduates was 70.6% in the incomplete injuries group and 29.4% in the complete injuries group, with a statistically significant difference between the groups (p: 0.004, effect size: 0.408) (Table 3).

DISCUSSION

This is the first study in Türkiye to analyze the characteristics of patients with SCI with a tree fall etiology. In this study revealed that the patients were mostly middle-aged and male, and the most common SCI characteristics were paraplegia and complete injury. None of the patients took safety precautions before climbing a tree. Additional injuries (most commonly to the lungs) were observed in 61.2% of the patients. The most common type of tree in terms of etiology was walnut, and the most common cause of fall was branch breakage. In the group that fell from walnut trees, the fall height, complete injury rate, and length of hospital stay were longer compared to the group that fell from other trees. It was also found that the educational level of those who fell from walnut trees was lower.

The incidence of SCI due to falls has been gradually increasing in the United States of America over the past 40 years. Data obtained from the National Spinal Cord Injury Database indicate that the percentage of spinal cord injuries

Table 2. Relationships between tree type and sex, education level, level of neurological injury, severity of injury, season, height of fall, and presence of additional injury

	Tree type		p	Effect size	
	Group 1 (Walnut tree) n: 22	Group 2 (Other trees) n: 27			
Age ^a , mean±SD	52.5±15.1	52.2±12.2	0.940	0.020	
Gender ^b	Female	5 (22.7%)	8 (29.6%)	0.580	0.078
	Male	17 (77.3%)	19 (70.4%)		
Level of education ^b	Primary-secondary school	18 (81.8%)	14 (51.9%)	0.028	0.313
	High school-university	4 (18.2%)	13 (48.1%)		
Neurological injury level ^c	Tetraplegia	5 (22.7%)	1 (3.7%)	0.077	0.289
	Paraplegia	17 (77.3%)	26 (26%)		
Injury severity ^b	Complete	16 (72.7%)	12 (44.4%)	0.047	0.284
	Incomplete	6 (27.3%)	15 (55.6%)		
Season ^c	Winter/spring	0 (0%)	6 (22.2%)	0.027	0.337
	Summer/autumn	22 (100%)	21 (77.8%)		
Fall height (m) ^d , median (Q1-Q3)	5.5 (4-7)	3 (3-5)	0.003	0.483	
Cause of fall	Branch breakage	11 (50%)	17 (63%)	0.360	0.130
	Dizziness-foot slip	11 (50%)	10 (37%)		
Additional injury ^b	Yes	16 (72.7%)	14 (51.9%)	0.136	0.213
	No	6 (27.3%)	13 (48.1%)		
Length of hospitalization ^d (day) median (Q1-Q3)	30 (13-90)	14 (7-20)	0.010	0.428	

^aStudent's t test, ^bPearson's Chi-square test, ^cFisher's exact test, ^dMann-Whitney U test, The data are presented as the n (%), mean±SD or median (Q1-Q3), SD: Standard deviation

Table 3. Relationships between neurological injury and the severity of injury and between fall characteristics and education level

		Neurological injury level			Injury severity				
		Paraplegia	Tetraplegia	p	Effect size	Complete	Incomplete	p	Effect size
Fall height (m)		4 (3-5)	6.5 (4-7)	0.089 ^a	0.426	4.5 (3-6.5)	3 (3-5)	0.250 ^a	0.187
Cause of fall	Branch breakage	24 (85.7%)	4 (14.3%)	0.688 ^b	0.213	16 (57.1%)	12 (42.9%)	0.615 ^c	0.110
	Dizziness-foot slip	19 (90.5%)	2 (9.5%)			12 (57.1%)	9 (42.9%)		
Level of education	Primary-secondary school	28 (87.5%)	4 (12.5%)	1 ^b	0.011	23 (71.9%)	9 (28.1%)	0.004 ^c	0.408
	High school-university	15 (88.2%)	2 (11.8%)			5 (29.4%)	12 (70.6%)		

^aMann-Whitney U test, ^bFisher's exact test, ^cPearson's chi-square test, The data are presented as the n (%), mean±SD or median (Q1-Q3), SD: Standard deviation

(SCI) related to falls was 17% in 1970 and increased to 31% between 2010 and 2013, among all causes of SCI.⁹ Falls from trees are common in countries where agriculture is a major source of income. In a study by Nabi et al.¹⁰ in Kashmir of 120 patients who fell from a walnut tree, neurological deficit was reported in 20% of patients, and complete paraplegia was reported in 7% of patients. In a study by Ersoy et al.⁶ in Turkiye, 44.4% of 54 patients who fell from a walnut tree had a spinal fracture, and 18.5% had a neurological deficit. In our study, paraplegia was observed in 87.8% and complete injury in 57.1% of patients with SCI caused by falling from a tree.

A study by Chen et al.¹¹ reported that fall-related SCI was more common in patients over the age of 45. Javadi et al.¹² reported that patients who fell from a walnut tree were most often young men. In our study, SCI due to falls was most frequently observed in middle-aged men (mean age 52.3 years). These findings suggest that the differences in age groups and genders among studies may indicate the need for research and health policies to be shaped according to these demographic characteristics.

Walnut trees play an important role in Turkish agriculture.⁶ In 2017, 210 thousand tonnes of walnuts were produced in Turkiye. Turkiye accounts for 5.2% of the world's walnut production.¹³ In Turkiye, walnut harvesting is performed by climbing trees, as mechanization is not widespread.⁶ Walnut trees are tall (15-30 meters), and the walnuts are at the end of the branches and are at risk of falling due to their slippery surface. When the walnut fruit ripens and falls from the tree, it causes product loss due to damage to the shell. For this reason, farmers prefer quick, economical but risky methods for climbing trees and collecting walnuts. The high selling price of walnuts also encourages pickers to take this risk. In walnut harvesting, the structure of the tree, unpruned branches, carelessness of the pickers, and lack of safety precautions increase the frequency of falls, especially from walnut trees.⁵ In this study, the group that fell from walnut trees showed higher fall heights, complete injury rates, and longer hospital stays compared to the group that fell from other trees. These findings reveal that risks associated with the physical characteristics of walnut trees and harvesting methods have a significant impact.

A previous study reported that 47.2% of patients who fell from a walnut tree were farmers and laborers.⁵ In our study, the most common occupations among patients who fell from trees were laborers (30.6%, n=15) and individuals not working (28.6%, n=14). Additionally, 65.3% of the respondents completed primary or secondary school, while 34.7% completed high school or university. Furthermore, the rate of primary and secondary education completion was significantly higher in the group that fell from the

walnut tree compared to the other group, indicating that those who fell from walnut trees had lower education levels than those who fell from other trees. In this study, the rate of primary and secondary school graduates among patients with complete injuries was significantly higher compared to those with incomplete injuries. These findings suggest that lower education levels may be associated with more severe (complete) spinal cord injuries, potentially due to a lack of awareness or adherence to safety measures during high-risk activities such as walnut harvesting.

In a study by Azizi et al.,⁵ the average fall height from a walnut tree was 4 m, and the most common cause of falls was branch breakage. In our study, the fall height was significantly greater in the group that fell from a walnut tree (5.5 m) than in the other group (3 m). While the severity of falls is generally influenced by factors such as the age of the patient, the type of fall, the height of the fall, and the structure of the ground on which the fall occurred.⁵ Our study found no significant difference between the severity (paraplegia/tetraplegia) or degree (complete/incomplete) of neurological injury and the height of the fall. This may be attributed to the significant impact of other factors, such as the type of fall and ground structure.

In addition, the most common cause of falls in our study was branch breakage. We believe that this situation is the result of the thin and slippery surface of the branches of walnut trees. In one study, it was reported that pesticides from the leopard moth (*Zeuzera pyrina* L.) accumulated in walnut trees, causing the branches to form a superficially normal, thick but hollow branch. This situation shows that the branches of walnut trees cannot bear the weight of human beings and break easily.¹⁴

Tabish et al.¹⁵ highlighted that falling from walnut trees is an occupational disease and that safety precautions should be taken before climbing the tree. The fact that not all patients in our study took safety precautions before climbing the tree supports the importance of training in this area. As walnut trees are tall, the construction of 20-30 foot tree stands, the use of nonslip boots and the use of chest and abdominal protectors should be encouraged. Training should be provided in rural areas.

A previous study reported that 94.39% of walnut tree falls occurred in the summer/autumn season.⁵ Similarly, our study revealed that 100% of the walnut tree group and 77.8% of the other group fell during the summer/autumn season. These results indicate that safety measures should be prioritised during these peak harvest times to reduce the frequency of tree-related injuries.

A study by Yalçın et al.¹⁶ reported that the use of a trunk and branch shaker machine shortened the walnut harvesting time and increased the harvesting success. In addition, they reported that harvesting by climbing the tree caused damage to the branches and resulted in loss of the following year's crop. We believe that as mechanization increases in our country, spinal cord injuries due to falls from heights will decrease, and hospital costs will decrease accordingly.

The time to the emergency department (min) after a fall was reported to be a minimum of 25 minutes and a maximum of 24 hours in a study by Ersoy et al.⁶ and 5.8 hours in a study by Nabi et al.¹⁰ In the current study, this period was observed to be 20-150 minutes (Q1-Q3). This variation in time to the emergency department underscores the importance of timely medical intervention following falls, as delays can potentially impact treatment outcomes and recovery for SCI patients.

Azizi et al.¹⁷ studied 127 patients who fell from a walnut tree and reported that the most common injuries were to the trunk (chest, pelvis, abdomen) (25.9%), lower limbs (20.7%), spine (18.11%), head and face (13.3%), upper limbs (11.8%) and combined injuries (9%). In a study of 115 patients who fell from a walnut tree, Baba et al.¹⁸ reported that the most common additional injury was head trauma (29.4%), and the most common fractures were in the thoracolumbar region (16.5%). In a study by Taçyıldız et al.,¹⁹ SCI was observed in 35.1% of 98 patients who fell from a tree. It was reported that 5.1% of these patients had paraplegia, 27.7% had lung injury, 24.4% had fractures (scapula, tibia, clavicle, pelvis, radius, humerus, calcaneus, fibula, phalanx), and 21.1% had rib fractures. In a study by Ersoy et al.⁶ of 54 patients who fell from a walnut tree, the most common injuries were vertebral fractures (44.4%), extremity fractures (41.7%), head and neck injuries (25.9%), and thorax injuries (20.4%), and more than one additional injury was reported in 24% of patients.⁶ In our study, 61.2% of the 49 patients with SCI due to falling from a tree had additional injuries. The most common additional injuries were lung (18.4%), hip (10.2%), extremity (8.2%), head (6.1%), rib (4.1%) and combined injuries (14.3%). These findings underscore the prevalence of additional injuries associated with falls from trees and reinforce the need for comprehensive assessment and management strategies for patients with spinal cord injuries.

A study by Azizi et al.¹⁷ reported that the average hospital stay for patients who fell from a walnut tree was between 1 and 22 days. In our study, we found that the duration of hospitalization in the post-operative ward and intensive care units of those who fell from walnut trees was significantly longer (30 days) than that of the other group (14 days). These findings suggest that falls from walnut trees are associated with more severe injuries, leading to extended hospital stays compared to falls from other types of trees.

Limitations

The limitation of our study is that height and weight were not determined. In future studies, height and weight ratios can be determined in the rehabilitation center and their effect on fall-related complications can be investigated. Only patients from a specific area were evaluated, not all patients who fell from trees were evaluated, and the process of patients returning to work was not evaluated.

CONCLUSION

Additional injuries are common in SCI due to falling from a tree. The fact that none of the patients took safety precautions suggests that training on this subject should be provided. In addition, the walnut tree was the tree type with the highest number of falls from trees. Those who fell from walnut trees had a higher rate of complete spinal cord injuries and length of hospitalization, which may indicate a significant impact on health outcomes.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of Ethics Committee of Ankara Bilkent City Hospital (Date: 12.07.2023, Decision No: E2-23-4500).

Informed Consent

Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Percutaneous repair of achilles tendon ruptures: short-term results of 41 patients

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ABSTRACT

Aims: Despite the current popularity of surgical treatment of Achilles tendon ruptures, there is no clear consensus about which technique should be applied. The aim of this study is to evaluate the short- to mid-term results of acute achilles tendon ruptures treated with the percutaneous method and to discuss these results in light of the literature.

Methods: In this study, 41 patients who were operated on percutaneously with the diagnosis of acute Achilles tendon rupture between 2016 and 2019, whose treatment was completed, and who had a follow-up period of at least 1 year were included. At the patients' final follow-up visits, the range of motion of the ankle joint, time to return to work and sports, and complications were evaluated. For functional evaluations, the scoring system of the American Orthopaedic Foot & Ankle Society (AOFAS) for the ankle joint was used.

Results: The mean age of the patients was 29.3 (18-50) years and the mean follow-up duration was 23 (12-38) months. The mean dorsiflexion angle was 32.27° (20-45°) and the mean plantar flexion angle was 34.58° (20-45°). The time to return to work was 14.2 (8-21) weeks, while time to return to sports was 30.4 (17-49) weeks. The mean AOFAS score of the patients was 91.63 (74-100). The complications included infection in 2 (4.8%) patients, wound necrosis in 1 (2.4%) patient, re-rupture in 1 (2.4%) patient, and sural nerve neuropraxia in 1 (2.4%) patient.

Conclusion: The findings of this study suggest that percutaneous repair is an effective method in the treatment of acute Achilles tendon ruptures, like other surgical methods that offer good functional results with low complication rates.

Keywords: Achilles tendon, tendon rupture, percutaneous repair

INTRODUCTION

The achilles tendon is the primary plantar flexor of the ankle and is considered the strongest tendon in the entire body.¹ Acute achilles tendon rupture (ATR) is a common injury that can cause severe functional impairments.² Although there is still no consensus on the best method for treating ATR, surgical treatment is recently favoured in the literature. Surgical treatment of ATR has been advocated due to advantages such as early functional recovery with restoration of the continuity of the ruptured tendon, regaining its normal tension. It has been reported that surgical treatment can reduce the risk of re-rupture compared to conservative treatment, but it also increases the risk of skin and soft tissue problems.³ Many surgical techniques have been developed to reduce soft tissue complications, provide stronger biomechanical fixation with early recovery, and shorten the time from injury to normal activity.⁴⁻⁷ Percutaneous suturing, first described by Ma and Griffith,⁸ combines the advantages of conservative and surgical treatment options by allowing the use of functional postoperative care.⁸⁻¹⁷ However,

percutaneous repair has been criticised for providing only 50% of the initial strength of open repair, having a higher risk of sural nerve injury (13% to 60%) compared to open surgery, and having a high rate of re-rupture (2.6% to 16.7%).^{3,6,9,13,17-20} The aim of this study was to evaluate the short-term results of patients with acute ATR who underwent percutaneous repair and to discuss those results in light of the literature.

METHODS

Before starting the study, approval and informed consent were obtained from the Ankara Bilkent City Hospital Ethics Committee (Date: 25.09.2024, Decision No: TABED 1-24-602). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. This study retrospectively evaluated 47 patients diagnosed with acute ATR between 2016 and 2019, who were treated with the percutaneous method, completed their treatment, and had at least 1 year of follow-up. All

surgeries were performed by the same surgeon. Patients aged 18-50 years who presented within the first 2 weeks after trauma were included in the study. Patients with open ATR, avulsion fractures, fractures around the ankle, neurological problems, or metabolic diseases affecting the tendon structure were excluded. A total of 41 patients who satisfied these criteria were included in the study. The diagnosis of rupture was made based on a positive Thompson test, palpation of a gap on the Achilles tendon, and tenderness of the achilles tendon. Superficial tissue ultrasonography was performed for all patients to support the diagnosis. At the patients' final follow-up appointments, ankle joint range of motion, time to return to work and sports, and complications were evaluated. For functional evaluation, the scoring system of the American Orthopaedic Foot & Ankle Society (AOFAS) for the ankle joint was used.

Surgical Technique

All surgeries were performed without a tourniquet in the prone position under spinal anaesthesia. All patients were given 1 g of cefazolin prophylaxis 30 min before surgery. Four small incisions were made proximal and distal to the tendon rupture site. The subcutaneous tissue was freed with the help of a clamp. A straight needle and polydioxanone (PDS) suture were passed percutaneously across the proximal end of the tendon from the proximal incisions, and the same procedure was applied for the distal end using a different PDS suture (Figure). The sutures on both ends were brought together at the same incision site and tied with the foot in plantar flexion. The incisions were closed with 3-0 polypropylene sutures and a short-leg cast was applied in 30° plantar flexion. The same rehabilitation protocol was applied for all patients postoperatively. After 2 weeks of short-leg casting, an adjustable ankle orthosis was applied. The dorsiflexion range was gradually increased by 10° each week. After 8 weeks, joint movements were allowed and ankle-strengthening exercises were started.



Figure. Schematic representation of percutaneous repair of achilles tendon ruptures

RESULTS

The mean age of the patients was 29.3 (18-50) years and the mean follow-up duration was 23 (12-38) months. The demographic data of the patients are summarised in Table 1. Considering injury mechanisms, sports injuries were most common, accounting for 32 cases (78%). The mean dorsiflexion angle of the patients was 32.27° (20-45°) and the mean plantar flexion angle was 34.58° (20-45°). The mean time to return to work was 14.2 (8-21) weeks and the mean return to sports was 30.4 (17-49) weeks. The mean AOFAS score of the patients was 91.63 (74-100) (Table 2). Complications included wound infection in 2 patients

(4.8%), wound necrosis in 1 patient (2.4%), re-rupture in 1 patient (2.4%), and sural nerve neuropraxia in 1 patient (2.4%). Wound infections were treated with antibiotics and debridement. Wound necrosis was treated with debridement and primary repair. The patient with a re-rupture underwent revision surgery using the turndown flap technique.

Table 1. Demographic data

Age (years)	29.3 (18-50)
Follow-up period (months)	23 (12-38)
Mechanism of injury	
Sports injury	32 (78%)
Work accident	7 (17%)
Traffic accident	2 (4.8%)
Side	
Right	21 (51.2%)
Left	20 (58.8%)
Sex	
Male	36 (87.8%)
Female	5 (12.2%)

Table 2. Evaluation of functional status and complications

Dorsiflexion angle	32.27° (20-45°)
Plantar flexion angle	34.58° (20-45°)
Return to work (weeks)	14.2 (8-21)
Return to sports (weeks)	30.4 (17-49)
AOFAS score	91.63 (74-100)
Complications	
Wound infection	2 (4.8%)
Wound necrosis	1 (2.4%)
Re-rupture	1 (2.4%)
Sural nerve neuropraxia	1 (2.4%)
AOFAS: American Orthopaedic Foot & Ankle Society	

DISCUSSION

The treatment of ATR is still debated in the literature.^{21,22} When surgical repair is chosen, open or percutaneous techniques can be used. The open technique allows the evaluation of the ruptured tendon, approximation of the torn parts, and application of augmentative procedures to the tear site, but it is prone to complications such as wound necrosis and deep infections.^{3,23} To avoid these complications, various percutaneous techniques have been described. For our patients diagnosed with acute ATR, we apply the percutaneous repair technique. In the present study, 41 such patients were evaluated and complications were observed in 5 patients (12.2%). In a study by Akpınar et al.,²⁴ the complication rate for percutaneous repair was found to be 10%. Rouvillain et al.²⁵ reported 2 re-ruptures and 1 infection as complications among 60 patients who underwent percutaneous repair for ruptures of the achilles tendon. Thus, the complication rate observed in the present study was similar to previously reported findings. In a study by Ververidis et al.,²⁶ a re-rupture rate of 2.6% and deep vein thrombosis rate of 0.6% were found in patients who underwent

percutaneous repair for ATR, while Cretnik et al.²⁷ and Lim et al.,⁶ in comparative studies of open and percutaneous surgical treatments, reported re-rupture rates of 3.7% and 3%, respectively, for percutaneous procedures. In this study, the re-rupture rate was 2.4%, consistent with the literature. One of the disadvantages of percutaneous repair of ruptured achilles tendons is the frequent occurrence of sural nerve injury. In a meta-analysis by Yang et al.²⁸ that incorporated 12 studies, the risk of sural nerve injury was reported to be higher for percutaneous surgery, but this value was not statistically significant. Klein et al.¹⁹ reported a sural nerve injury rate of 13% with the percutaneous surgical technique. Rozis et al.²⁹ reported a sural nerve injury rate of 7.3% with percutaneous surgery. In the present study, sural nerve injury was detected in only 1 patient (2.4%). Another common complication in the surgical treatment of ATR is wound infection. Inglis et al. observed deep infections in 2 of the 44 patients (4.5%) they treated surgically.³⁰ Makulavičius et al.³¹ reported a wound infection rate of 2.3%. In the present study, the wound infection rate was 4.8%, similar to the literature.

Limitations

The retrospective nature of this study is one of its limitations. The absence of a control group is another limitation, although the specific aim of this study was to evaluate and compare percutaneous repairs with the results of percutaneous repair in the literature rather than with a control group.

CONCLUSION

This study has presented an evaluation of the effectiveness and safety of percutaneous repair for ATR. Percutaneous repair yielded high functional scores and low complication rates consistent with the literature. These findings suggest that percutaneous repair is an effective method for the treatment of ATR, offering low complication rates and good functional outcomes, similar to other surgical methods.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was carried out with the permission of the Ankara Bilkent City Hospital Ethics Committee (Date: 25.09.2024, Decision No: TABED 1-24-602).

Informed Consent

Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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Atypical Milroy's disease with predominant unilateral involvement: a case report

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ABSTRACT

Milroy's disease (MD), known as hereditary lymphedema type I, is a rare autosomal dominant primary lymphedema. It accounts for about twenty percent of all primary lymphedema. MD typically presents clinically with bilateral lower extremity lymphedema. Our case report describes a rare case of MD presenting with unilateral upper and lower extremity lymphedema in a patient admitted to our clinic. A 24-year-old woman who had been followed for lymphedema since the age of 8 was diagnosed with MD at our hospital by physical examination, venous Doppler ultrasound, whole-body lymphoscintigraphy, and molecular genetic testing. Partial improvement was observed with complete decongestive therapy, considered the gold standard treatment for lymphedema. Genetic counseling may be beneficial for the patient and family. Although MD is uncommon in the literature, many more studies are needed to identify carrier variants in the community.

Keywords: Milroy disease, hereditary lymphoedema type I, Fms-associated tyrosine kinase 4, lymphoscintigraphy, complete decongestive therapy

INTRODUCTION

Milroy's disease (MD), also known as hereditary lymphedema type I, first described by Milroy in 1892, is a primary lymphedema inherited in an autosomal dominant pattern.¹ It can manifest at birth or later in life. In the United States, primary lymphedema affects 1 in 10,000 individuals, accounting for approximately 20 percent of all primary lymphedema, with approximately 200 cases reported in the literature.²

The most common cause of MD is a mutation in the Fms-related tyrosine kinase 4 (FLT4) gene.³ The FLT4 gene plays a crucial role in producing a protein called vascular endothelial growth factor receptor 3 (VEGFR3), which is essential for the development of the lymphatic system. Lymphatic vessels with mutations in VEGFR3 are also referred to as congenital aplasia of lymphatic vessels.⁴ Problems in transporting lymphatic fluid cause lymphedema to accumulate in the tissues.

MD typically presents clinically with lymphedema of the bilateral lower extremities. In addition to lymphedema, it can lead to serious complications such as intestinal lymphangiectasia, cellulitis, cutaneous bacterial infections, and pleural effusion.⁵ Symptoms may vary within families, and some carriers may remain asymptomatic.⁶

Previous studies have shown that FLT4 mutations reduce lymphatic vessel density by approximately 51-61% in the lower

extremities and 26-33.6% in the upper extremities.⁷ Therefore, although rare, lymphedema can occur in both the upper and lower limbs.⁸ A multidisciplinary approach involving geneticists, physiatrists, neonatologists, dermatologists, and surgical teams is crucial to treating and following up these cases.

Our case will focus on the rare occurrence of MD presenting with unilateral lymphoedema of both the upper and lower extremities in a patient who presented to our clinic.

CASE

A 24-year-old female patient married and a housewife with a history of two miscarriages, had never had a full-term pregnancy. She had been under observation for lymphedema since the age of 8. Her aunt also had a history of lymphedema and recurrent abortion. The patient had been using oral contraceptives (OCs) for the past four years. She reported that her swelling and edema had increased further after starting the OCs and sought our advice and treatment options.

On examination, the patient had swelling, increased circumference, and fibrous bands in the right lower extremity, right upper extremity, and genital region. Hyperkeratotic papillomatous lesions were also observed in the right inguinal region and the flexor surface of the right elbow. (Figure).

The patient had no complaints of pain on palpation. Lymphedema was assessed by limb volume measurement with a volume difference of 1954 ml and a percentage difference of 81% for the lower extremities. For the upper extremities, the volume difference was 1116 ml, with a percentage difference of 57.6%.



Figure. Hereditary lymphedema type 1; milroy disease

A: Anterior B: Posterior

Venous Doppler ultrasound of the lower extremities showed reflux at the saphenofemoral junction, whereas venous Doppler results of the upper extremities were normal.

Whole-body lymphoscintigraphy was performed and failed to visualise the right main, right pelvic, and right axillary lymph nodes. These findings were consistent with a grade IV lymphatic drainage disorder on lymphoscintigraphy.

Molecular genetic testing identified a mutation in the FLT4 gene located on chromosome 5q35. Based on these findings, a diagnosis of MD was established.

The patient underwent a 3-week treatment program that included skin care, manual lymphatic drainage, multilayer bandaging, diaphragmatic exercises, lymphedema exercises,

walking exercises (complete decongestive therapy), and a ketogenic diet for weight loss. In addition, the patient received recommendations from dermatology for papillomatous lesions and cardiovascular surgery for venous insufficiency. At the end of treatment, after measurement and fitting, compression garments were prescribed for the right upper and lower extremities. The volume difference in the lower extremities decreased to 1092 ml, with a percentage difference of 68%, after complete decongestive therapy. In the upper extremities, the volume difference decreased to 940 ml, with a percentage difference of 48.5% after complete decongestive therapy. Written informed consent for the publication of this case report was obtained from the patient.

DISCUSSION

Milroy's disease has often been confused with other forms of congenital lymphoedema. Milroy's disease should be considered if the lymphedema is congenital and localised to the lower limbs. Swelling is often "Woody" in nature and associated with secondary changes, deep wrinkles on the toes, small dysplastic ("ski jump") toenails, and papillomas. Prominent, broad, calibrated leg and foot veins are usually a good clue to the underlying diagnosis, as they are not seen in association with other causes of congenital lymphedema.⁹ In our case, the right main lymphatic vessel was occluded, and lymphedema of the upper and lower extremities was observed [International Society of Lymphology (ISL) stage 3].

The current treatment of lymphedema includes conservative therapies such as manual drainage, massage, compression garments, intermittent pneumatic compression, and dietary changes, but these are ineffective and incurable for some patients.¹⁰ For surgery, procedures such as lymphovenous shunts, lymph-lymphatic shunts, vascularised lymph node transfer, and liposuction can be invasive and expensive. Some patients may be reluctant to undergo surgery, and less invasive methods may be useful.^{11,12} In our patient, a significant decrease in the stage of lymphedema and regression in volume was observed with CDT treatment.

CONCLUSION

The management of lymphoedema in MD is mainly aimed at reducing swelling and circumference discrepancies and preventing infectious factors such as lymphangitis. Genetic analysis, venous Doppler ultrasound, and lymphoscintigraphy are important diagnostic tools.¹³ The gold standard treatment for lymphedema is complete decongestive therapy.¹⁴ Comprehensive decongestive therapy includes manual lymph drainage, multi-layer bandaging, compression garments, lymphedema exercises, and appropriate skin care. Genetic counseling may be particularly useful for the patient and family. Although MD is uncommon in the literature, many more studies are needed to identify carrier variants in the community.

ETHICAL DECLARATIONS

Informed Consent

The patient signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

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Treatment and management approaches in sternoclavicular joint dislocation

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Dear Editor,

Sternoclavicular joint (SCJ) dislocations are rare but significant injuries that, if not properly managed, can lead to severe complications. Given the joint's connection to both the upper extremity and thoracic structures, posterior dislocations, in particular, must be approached with caution due to their close proximity to vital structures such as major vessels, the trachea, and the esophagus. The literature indicates that posterior dislocations may result in tracheal, esophageal, and neurovascular injuries in 30% of cases, with mortality rates reported as high as 3-4%.¹

SCJ dislocations require different management approaches depending on the direction of the dislocation. Anterior dislocations are typically managed with closed reduction and conservative methods, whereas posterior dislocations often necessitate surgical intervention due to their proximity to critical structures. Posterior dislocations generally result from motor vehicle accidents, high-energy trauma, or sports injuries, and diagnosing them in the early stages can often be challenging. In such cases, prompt intervention has a direct impact on the patient's prognosis.²

There are various approaches in the literature regarding the choice of treatment methods. In the study by Oladeji et al.,³ it is emphasized that surgical stabilization is of great importance in the management of posterior SCJ dislocations. The study highlights that in cases where both the SCJ and acromioclavicular joint require stabilization following high-energy trauma, a surgical approach should be prioritized. This study also draws attention to the use of biological grafts in surgical interventions, which improve long-term success rates for joint stabilization.

In the diagnostic process, the use of appropriate imaging techniques plays a crucial role. Standard radiographs often fail to clearly depict such dislocations. The Serendipity radiograph emerges as an especially effective method in detecting posterior dislocations.⁴ However, computed tomography (CT) is preferred for the definitive diagnosis of these dislocations. CT provides a three-dimensional evaluation of the SCJ, clarifies the direction of the dislocation, and offers critical information that guides surgical intervention.⁵

Posterior SCJ dislocations that require surgical intervention call for a multidisciplinary approach. Ingoe et al.⁶ state that careful planning is necessary in the surgical management of posterior dislocations due to the risk of major vascular injuries. It is recommended that surgical interventions in such cases be performed by multidisciplinary teams. Posterior dislocations, particularly those related to mediastinal structures, should be managed with the collaboration of cardiothoracic surgeons and orthopedic specialists.

In clinical practice, various techniques are used for the surgical management of posterior dislocations. Studies in the literature report that reconstructions with grafts increase joint stabilization and positively affect long-term functional outcomes. Although cases where posterior dislocations are successfully treated with closed reduction are limited, this method is frequently preferred as the first line of intervention. In cases where closed reduction is unsuccessful, surgical intervention is recommended to achieve joint stabilization.⁷

During the treatment process, both surgical and conservative treatment options should be evaluated based on the type and severity of the dislocation. In particular, surgical intervention plays a critical role in reducing the risk of complications in posterior dislocations and improving the long-term prognosis of patients. Additionally, timely surgical intervention in cases where closed reduction fails is essential for ensuring patient safety.⁸

In conclusion; a multidisciplinary approach and the implementation of appropriate treatment methods in the management of SCJ dislocations are crucial for reducing complication rates and improving long-term functional outcomes. In the management of these rare dislocations, the correct timing of surgical interventions and careful execution of diagnostic processes directly influence patient outcomes.

ETHICAL DECLARATIONS

Referee Evaluation Process

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The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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