

Traumatic upper extremity injuries: Analysis of correlation of mangled extremity severity score and disabilities of the arm, shoulder and hand score

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ABSTRACT

BACKGROUND: The Mangled Extremity Severity Score is a decision-making tool for limb amputation after trauma. The Disabilities of the Arm, Shoulder and Hand questionnaire was developed to quantify posttraumatic functional deficits of the upper extremity. This study aims to determine the correlation between these two assessments.

METHODS: In this study, a retrospective review of all patients with upper extremity injuries who had been treated with vascular reconstruction at two centres between 2005 and 2014 was performed. The respective Mangled Extremity Severity Score was calculated for each participant. Patients were recalled for follow-up examination and assessment of the Disabilities of the Arm, Shoulder and Hand Score.

RESULTS: In this study, 14 patients met the inclusion criteria. The mean total Mangled Extremity Severity Score was 5.9 and the mean total Disabilities of the Arm, Shoulder and Hand Score was 30 points. There was no statistically significant correlation between these assessments (Spearman's rank correlation coefficient: 0.49, $p=0.075$).

CONCLUSION: The Disabilities of the Arm, Shoulder and Hand Score did not correlate significantly with the Mangled Extremity Severity Score.

Keywords: Amputation; mangled extremity; upper extremity trauma; vascular trauma.

INTRODUCTION

Mangled upper extremities represent challenging injuries demanding rapid diagnostics and intervention to reach limb salvage with satisfactory functional results. Experience gained from combat settings in recent decades has highly improved the management of these devastating injuries, with a reported

decrease of amputation rates from 72% to fewer than 10%.

^[1] Furthermore, mangled extremities often occur in patients with multiple severe injuries, often involving the head, chest and abdomen, requiring coordinated care and sometimes surgical interventions from multiple teams. Although early management of mangled limbs is critical to maximise the chances of successful extremity salvage and optimise the functional

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outcome, treatment of other life-threatening injuries take priority, following the established Advanced Trauma Life Support protocol. In these cases, definitive treatment of the limb injuries may be performed in a delayed fashion. The indications for limb amputation and the optimal timing of definitive surgical intervention remain controversial, and review of larger series of patients would be valuable.^[2,3]

Johansen et al.^[4] described the Mangled Extremity Severity Score as an objective prediction tool for limb salvage. This assessment was primarily designed for severe lower extremity traumas and later expanded for upper extremity injuries.^[3] Since then, it has been utilised by various authors for both upper and lower limbs.^[1,2,5,6] For postoperative evaluation, the Disabilities of the Arm, Shoulder and Hand questionnaire,^[7] postulated by the American Academy of Orthopedic Surgeons, forms a convenient tool for self-assessment of upper extremity disability and symptoms. It can detect even small functional deficits after upper limb injuries. However, to our knowledge, the correlation between the Mangled Extremity Severity Score scoring system and the Disabilities of the Arm, Shoulder and Hand Score has not been examined in the current literature.

This study aims to assess whether or not the Mangled Extremity Severity Score can accurately predict the postoperative function of the mangled limb using the Disabilities of the Arm, Shoulder and Hand Score as an objective assessment tool. The second goal in this study was to evaluate if the defined Mangled Extremity Severity Score threshold for amputation (≥ 7 points) was applicable in our patient group.

MATERIALS AND METHODS

Data Collection

Retrospective data analysis included all patients with upper extremity traumas who had been treated surgically, including vascular reconstruction at our level-I trauma centre and an affiliated level-III trauma centre between January 2005 and December 2014.

Only patients with non-iatrogenic vascular injuries limited to vessels proximal to the wrist joint were included in our analysis. Patients with traumatic or primary amputation were excluded from this study. This study was approved by the local ethics committee (EC number: 1298/2015). Collected data included gender, age, injury pattern (blunt or penetrating), concomitant injuries (upper extremity fractures, nerve or muscular lesions), as well as surgical interventions. Further, the Mangled Extremity Severity Score was calculated for each patient using data collected from the medical records. All included eligible patients were then contacted and were requested to complete the Disabilities of the Arm, Shoulder and Hand Score (see supplementary material). Informed consent was signed by all participants who agreed to contribute

to this study. Regarding this Disabilities of the Arm, Shoulder and Hand Score, the standard version (total Disabilities of the Arm, Shoulder and Hand Score) consists of 30 questions and ranges from 0 to 100 points. Further, two optional modules (Sports/Performing Arts Module & Work Module) each, including four questions, can be assessed. Generally, higher values represent worse outcomes.

Statistical Analysis

All calculations were performed using the Statistical Package for Social Sciences (SPSS) 21.0 (SPSS Inc., Chicago, USA). Continuous variables were presented as mean and standard deviation (SD), median, minimum and maximum, categorical data as frequencies and percentages. Since the data for the Mangled Extremity Severity Score and the Disabilities of the Arm, Shoulder and Hand Score did not reveal standard distribution, Spearman's rank correlation coefficient was used for analysis. A p-value below 0.05 was considered statistically significant.

RESULTS

From January 2005 to December 2014, 14,981 open or endovascular interventions were performed at our level-I trauma centre by the Division of Vascular Surgery. During this time interval, six patients sustained traumatic upper extremity amputation. Patient search through the digital hospital archiving systems identified 39 patients who had sustained upper extremity traumas, including vascular injuries and subsequent reconstruction. The respective records were assessed for accuracy and completeness. Among all patients included, fourteen signed informed consent for participation in this study and underwent follow-up examination in 2015 for calculation of their Disabilities of the Arm, Shoulder and Hand Score. Among these, thirteen patients had been treated at the level-I centre and one patient had undergone surgery at the level-III trauma centre. Regarding the rest of 25 patients who were not included in this study, seven had died before this study, three patients rejected participation, eleven patients did not respond to the written invitation, two patients were lost in follow-up, and two patients had no available contact information.

The mean follow-up time was 70.1 months (SD 35.8; range: 17–124). The sample consisted of solely male participants, with a mean age of 34.4 years (SD 15.8; range 16–67) at the time of trauma. Nine cases (64%) affected right and five (36%) left extremities, whereas nine injuries concerned the dominant and five traumas the non-dominant side.

Regarding the anatomic location of vascular injuries, the brachial artery was found to be the most commonly affected vessel (nine cases/64%), followed by the subclavian artery (three cases/21%). In one case, only the radial artery was involved, and in one case both the radial and ulnar arteries

Table 1. Details of the respective injury and treatment characteristics, the patient sequence is chronological

Patient	Location of fracture(s)	Dislocation	Bony and joint intervention	Injured artery	Vascular reconstruction	Injured veins	Intervention 2 nd injured vessel	Injured nerve(s)	Neural reconstruction	Injured muscles/tendons	Muscular reconstruction
1	Clavicle	No	Clavicle plating	Subclavian artery	Venous patch plasty	None	N.A.	Median & inferior trunks of the brachial plexus	End-to-side-anastomosis	None	N.A.
2	None	No	N.A.	Brachial artery	Direct arterial suture	Median cubital vein	Ligation	None	N.A.	None	N.A.
3	None	Yes	Closed reduction	Brachial artery	Venous bypass	None	N.A.	None	N.A.	None	N.A.
4	None	No	N.A.	Radial artery	Direct arterial suture	Cephalic vein	Direct suture	Median & ulnar nerves	Suture	Yes	Yes
5	None	No	N.A.	Radial & ulnar arteries	Venous bypass	None	Venous bypass	Median & ulnar nerves & superficial branch of the radial nerve	Suture	Yes	Yes
6	None	Yes	Closed reduction	Brachial artery	Venous bypass	None	N.A.	Median nerve	None	None	N.A.
7	Scapula	No	Clavicle plating (for approach)	Subclavian artery	Direct arterial suture	None	N.A.	Brachial plexus	None	None	N.A.
8	Clavicle, scapula, humeral shaft	No	Clavicle plating, external upper arm fixator	Subclavian artery	Venous bypass	None	N.A.	Brachial plexus	None	None	N.A.
9	Distal humerus	No	External fixator	Brachial artery	Venous bypass	Medial brachial vein	Venous bypass	None	N.A.	None	N.A.
10	None	Yes	Closed reduction	Brachial artery	Direct arterial suture	None	N.A.	None	N.A.	None	N.A.
11	None	No	N.A.	Brachial artery	Venous patch plasty	None	N.A.	Radial nerve	None	Yes	Yes
12	None	Yes	External fixator	Brachial artery	Balloon dilatation	Cubital vein	Direct suture	None	N.A.	Yes	Yes
13	None	No	N.A.	Brachial artery	Venous bypass	Cubital vein	Direct suture	Radial & median nerves	Suture	Yes	Yes
14	None	No	N.A.	Brachial artery	Venous bypass	None	N.A.	Median nerve & anterior interosseous nerves	Nervous interposition	Yes	Yes

N.A.: Means not applicable.

were injured (Table 1). Seventy-one percent among all injuries were blunt and 29% penetrating. Techniques for vascular reconstruction involved venous interposition or bypass (seven patients/50%), arterial suture (three patients/21%), venous patch plasty (two patients/14%) as well as thrombectomy (one patient/7%) and arteriotomy with balloon dilatation (one patient/7%). All of these were conducted by a vascular surgeon or by an experienced trauma surgeon with the assistance of a vascular surgeon. Concomitant trauma to more than one vessel occurred in five cases (36%). Regarding associated bone injuries, two patients (14%) sustained at least one closed fracture, and another two (14%) suffered from at least one open fracture. Among these injuries, two clavicle fractures required primary open reduction and internal fixation (ORIF); one supracondylar humeral fracture necessitated primary external fixation and secondary ORIF, one humeral shaft fracture was treated via external fixation and finally, two scapular fractures were managed conservatively. Additionally, four patients suffered dislocation of the elbow, among which one required external fixation, while the rest of the patients were treated with an elbow splint (Table 1). Furthermore, nine patients (64%) were diagnosed with associated nerve injury, out of which five underwent surgical intervention. Six patients (43%) sustained extensive soft tissue injuries involving muscle and/or tendon, which were all treated operatively (Table 1).

No major limb amputation was performed in our patient cohort. Five fasciotomies, either prophylactic (4 cases) or due to manifestation of compartment syndrome symptoms (1 patient), were performed.

The mean Mangled Extremity Severity Score was 5.9 (SD 2.4; range: 2–11). Regarding the Disabilities of the Arm, Shoulder and Hand Score, the mean score was 30 points (SD 29.6) with a range from 0 to 94.2 (Table 2). Spearman's rank correlation coefficient revealed no statistically significant correlation between the total Mangled Extremity Severity Score and the total Disabilities of the Arm, Shoulder and Hand Score (Spearman's rank correlation coefficient: 0.49, $p=0.075$) (Table 3).

Seven cases (50%) had prolonged ischemia time (>6 hours between injury and successful revascularization). For this subset of patients, the mean Mangled Extremity Severity Score was 6.9, and the Disabilities of the Arm, Shoulder and Hand Score was 43.7 points (SD 35.5; range 0–94.2). Spearman's rank correlation coefficient was 0.86, which was statistically significant ($p=0.013$). Additionally, patients with concomitant nerve injury were found to have significantly higher Disabilities of the Arm, Shoulder and Hand Scores in comparison to the group without nerve injury (43.1 vs. 6.5 points, $p=0.02$).

Assessment of the Sports/Performing Arts Module of the Disabilities of the Arm, Shoulder and Hand Score identified twelve patients out of fourteen that had resumed arts or sports after recovering from their injuries. The mean Disabilities of the Arm, Shoulder and Hand Score in this subgroup of patients was 39.1 (SD 38.2; range: 0–100). When the Disabilities of the Arm, Shoulder and Hand Scores were compared to the respective Mangled Extremity Severity Score, a statistically significant correlation was observed with a correlation coefficient of 0.74 ($p=0.006$) (Table 3).

Table 2. Schedule of Mangled Extremity Severity Score (MESS) and Disabilities of the Arm, Shoulder and Hand Score (DASH) details for each patient

Patient	Skeletal and soft tissue injury	Limb ischemia	Shock	Age	Total MESS	DASH Score	DASH Work Module	DASH Sports/Performing Arts Module
1	2	4*	0	0	6	62.5	0	75
2	1	0	0	1	2	6.7	0	0
3	2	2	0	2	6	0.8	N.A.	0
4	1	3	2	2	8	20.8	N.A.	56.3
5	1	2	1	0	4	39.2	0	0
6	2	2*	1	0	5	6.7	0	43.8
7	2	6*	2	1	11	94.2	N.A.	75
8	2	6*	2	0	10	75	43.8	100
9	4	2*	0	0	6	24.2	0	81.3
10	2	2*	0	1	5	0	0	0
11	2	2	0	1	5	27.5	31.3	N.A.
12	2	1	0	0	3	0.8	0	0
13	1	4*	0	0	5	43.3	25	N.A.
14	4	2	0	1	7	18.3	56.3	37.5

*Means duplication of points due to ischemia >6 hours; N.A.: Means not applicable. The patient sequence is chronological and equal to Table 1.

Table 3. Correlation between Mangled Extremity Severity Score (MESS) and Disabilities of the Arm, Shoulder and Hand Score (DASH)

	n	Mean MESS (95% CI)	Mean DASH (95% CI)	Spearman's rank correlation coefficient	p
Total scores	14	5.9 (4.5–7.4)	30 (12.9–47.1)	0.49	0.075
Cases with prolonged ischemia time	7	6.9 (4.5–9.2)	43.7 (10.9–76.5)	0.86	0.013
Cases with applicable Sports/Performing Arts DASH	12	6.1 (4.4–7.8)	39.1 (14.8–63.3)	0.74	0.0006
Cases with applicable Work DASH	11	5.3 (3.9–6.7)	14.2 (0.02–28.4)	0.58	0.063

The Disabilities of the Arm, Shoulder and Hand Score Work Module was used to assess the ability of patients to maintain their occupation and could be analysed for eleven patients. Two patients were disabled, either to partial or full capacity, and were unable to work, and one had retired by the time this study was conducted. The mean Disabilities of the Arm, Shoulder and Hand Score value in the subset of patients that returned to work was 14.2 (SD 20.2; range: 0–56.3) and did not correlate significantly with the respective Mangled Extremity Severity Score analysis (correlation coefficient: 0.57; $p=0.063$) (Table 3).

A total of four cases had a Mangled Extremity Severity Score of at least seven points (Table 2). Patient number 14 had a total Mangled Extremity Severity Score of 7 points. His postoperative Disabilities of the Arm, Shoulder and Hand Score was 18.3 points and the patient remained employed at the same position as before his injury. Patient number 4 had a Mangled Extremity Severity Score of 8. His postoperative total Disabilities of the Arm, Shoulder and Hand Score was 20.8 points, while the Sports Module Disabilities of the Arm, Shoulder and Hand Score was 56.3 points. The patient became disabled, whereby he had been partially employed before the trauma. Patient number 8 sustained significant brachial plexus injury, leading to combined sensorimotor deficits. His Mangled Extremity Severity Score was 10 points and his postoperative total Disabilities of the Arm, Shoulder and Hand Score was 75. Despite the dysfunction of the upper extremity, the patient showed very good compensation and was even able to switch his desk job with an assignment to a construction site. Patient number 7 had a Mangled Extremity Severity Score of 11. He had sustained a burst fracture of the 12th thoracic vertebra, leading to spinal canal stenosis and paraplegia, and a complete avulsion of the brachial plexus resulting in motor dysfunction of the upper extremity. His total Disabilities of the Arm, Shoulder and Hand Score and the Disabilities of the Arm, Shoulder and Hand Score Sports Module scores were 94.2 and 75 points respectively, and he was permanently disabled due to his injuries.

DISCUSSION

In our patient group, the correlation between the Mangled Extremity Severity Score (mean 5.9 points) and Disabilities of the Arm, Shoulder and Hand Score (mean 30 points) not

reveal statistically significant results ($p=0.075$). This was also observed for the eleven patients with completed Disabilities of the Arm, Shoulder and Hand Score Work Module ($p=0.063$). For the seven patients with ischemia time exceeding 6 hours, the Mangled Extremity Severity Score (mean 6.85 points) and the Disabilities of the Arm, Shoulder and Hand Score (mean 43.7 points) correlated significantly ($p=0.013$). Regarding the twelve patients who completed the Disabilities of the Arm, Shoulder and Hand Score Sports/Performing Arts Module, the two scoring systems strongly correlated and the results were statistically significant ($p=0.0006$), with a mean Mangled Extremity Severity Score of 6.1 and a mean Disabilities of the Arm, Shoulder and Hand Score of 39.1. To our knowledge, this is the first study that correlates these two assessment tools; thus, no direct comparison with literature is possible.

Töpel et al.^[8] evaluated the outcomes of 33 patients who had undergone arterial reconstruction for major upper extremity vascular injuries. Similar to our study, iatrogenic and injuries distal to the wrist joint were excluded. In Töpel's study, 73% of all traumas involved arteries of the forearm, while in our patient population, the brachial artery was the most commonly injured vessel, which reflects the increased severity of injuries captured in our cohort. The authors compared the patients' functional outcomes based on physical exams (e.g., range of wrist and finger motion) to the respective Disabilities of the Arm, Shoulder and Hand Scores and found a strong correlation between these two assessments. Patients showing severe functional deficits had a significantly higher Disabilities of the Arm, Shoulder and Hand Score (35.8 points) in comparison to participants with minor or no deficits (11.8 points). In our study, despite the involvement of more proximal vessels, the mean post-traumatic Disabilities of the Arm, Shoulder and Hand Score was lower, with an average of 30 points. However, in the subgroup of patients with prolonged ischemia time, a higher mean Disabilities of the Arm, Shoulder and Hand Score was observed (43.7 points). Töpel et al.^[8] demonstrated a higher rate of functional deficits (56%) in patients with concomitant nerve injuries (27 patients/81%). In our study, the three patients who had sustained injuries of the brachial plexus also had the worst functional outcomes and the highest Disabilities of the Arm, Shoulder and Hand Scores (62.5, 75 and 94.2 points respectively).

Joshi et al.^[9] performed a retrospective review using the Disabilities of the Arm, Shoulder and Hand Score as the mean outcome assessment tool for 17 patients who had sustained blunt or penetrating upper extremity traumas with associated major arterial injuries. Comparable to our results, their patients were predominantly males and underwent reconstruction with vein grafts in the majority of cases. Furthermore, the most commonly affected vessel proved to be the brachial artery in 65% of cases, which was almost the same for our cohort (64%). Their limb salvage rate of 94%, which was also comparable to our patient series (100%). Higher, though not statistically significant, Disabilities of the Arm, Shoulder and Hand Scores were observed in the subgroup of patients who had suffered blunt trauma with a mean score of 61.8 points compared to patients with penetrating injuries, with a mean score of 22.8 points. The authors suggested that higher Disabilities of the Arm, Shoulder and Hand Scores in the blunt trauma group were the result of concomitant nerve and orthopaedic injuries, often associated with a crash or other types of blunt trauma. Interestingly, in our study, the means of the total Disabilities of the Arm, Shoulder and Hand Score between these two subgroups demonstrated minor differences (blunt: 31 ± 32.4 points; penetrating: 27.5 ± 14.7 points). Concomitant nerve injury was present in 64% (9/14) of our patients, which is relatively high in comparison to Klocker's^[10] results with 43% (38/89).

Frech et al.^[11] conducted a retrospective review of prospectively collected data, assessing the results of the Disabilities of the Arm, Shoulder and Hand Score of 65 patients who had sustained arterial reconstruction due to upper extremity injuries. Patients with associated nerve traumas scored significantly higher (mean of 40.3 points) in comparison to the group without nerve injuries (mean of 0.8 points). These findings were confirmed by our results (43.1 vs. 6.5 points, $p=0.02$). However, the authors of this study did not find worse clinical outcomes in patients with brachial plexus injuries in comparison to the subgroup with peripheral neural traumas, even though patients with such lesions showed the highest Disabilities of the Arm, Shoulder and Hand Scores in our study.

The Mangled Extremity Severity Score was popularised by Johansen et al.^[4] in 1990 as a simple and objective rating scale, determining the need for lower extremity amputation after significant vascular trauma.^[12,13] Four different variables were included: skeletal and soft tissue injury, limb ischemia, shock, as well as patient age.^[4] The score was designed in a civilian setting based on a retrospective analysis of 25 patients who had sustained mangled lower extremities and on a prospective study of an additional 26 trauma patients with devastating vascular lower extremity injuries.^[4,14] During the retrospective analysis, the patients with salvaged extremities had a mean Mangled Extremity Severity Score of 4.9, whereas the amputation group had a mean of 9.1, which was significantly higher. These findings were confirmed by their prospective

trial, and the authors concluded that a value of seven or more points predicted amputation with 100% accuracy.^[4,15] Up to now, the Mangled Extremity Severity Score has been applied to upper extremity injuries and has been evaluated for both upper and lower limbs.^[1,2,5,6]

The use of the Mangled Extremity Severity Score and the cut-off point of ≥ 7 points as an indicator for amputation remain controversial. Ege et al.^[16] stated the Mangled Extremity Severity Score not to be predictive in combat-related upper extremity and lower extremity trauma, including open fractures. Similarly, Sheean et al.^[17] demonstrated that a Mangled Extremity Severity Score of at least seven points has a positive predictive value of 50% only in patients with lower extremity traumas in the military setting and recommended against its use. On the contrary, Sharma et al.^[12] suggested that a Mangled Extremity Severity Score ≥ 7 positively predicts the need for amputation in 100% of patients after examining 50 patients with mangled lower extremities. However, they found the score lacking prediction of successful extremity salvage and functional outcomes since many of the patients with a Mangled Extremity Severity Score < 7 required delayed amputation. Prichayudh and colleagues^[6] postulated that the decision for or against limb amputation should rather be based on individual clinical signs since they were able to avoid amputation in 12 out of 19 patients with limb threatening-upper extremity traumas with a Mangled Extremity Severity Score of at least 7. In Fochtmann et al.'s^[18] evaluation of 93 third-degree open tibia shaft fractures, the Mangled Extremity Severity Score proved to be significantly higher in the subgroup requiring amputation. However, the authors concluded that the threshold of 7 points should be reassessed and possibly revised. In a follow-up study, Yeh et al.^[19] suggested the additional use of the injury severity score (ISS) in cases of Mangled Extremity Severity Score between 7 and 9 points. If the ISS exceeds 18 points, amputation should be considered and if it is less than 18 points, salvage of the extremity should be attempted, with approximately 60% success rates based on the authors' experience.

In our study, none of the critically injured extremities underwent amputation, even though four patients had a Mangled Extremity Severity Score of at least seven points. Patients with borderline Mangled Extremity Severity Score of 7 or 8 points achieved satisfactory long-term results based on their postoperative total Disabilities of the Arm, Shoulder and Hand Scores (18.3 and 20.8, respectively). Regarding the highest Mangled Extremity Severity Score scores (10 and 11 points), both patients had sustained a complete rupture of the brachial plexus leading to motor and sensory dysfunction of the injured extremity. One patient had become incapable of working; however, he had also sustained paraplegia due to a burst fracture of the 12th thoracic vertebra, so it is difficult to draw conclusions regarding the actual cause of his disability. Regarding the threshold of 7 Mangled Extremity Severity Score points for amputation, 50% of our patients

with Mangled Extremity Severity Score of 7 or higher had satisfactory functional outcomes and the other half had a sensorimotor deficit of the upper extremity as a result of their direct brachial plexus lesions.

Concerning the limitations of our study, this study was a retrospective review with the inherent bias of this type of study. Also, our study sample was small and it concerned exclusively civilian traumas. Therefore, our results can only be compared to studies that have included patients with similar injury mechanisms. Furthermore, follow-up time was variable, ranging from 17 to 124 months (mean 70.1 months; SD 35.8).

In conclusion, in patients with vascular trauma of the upper extremity, the Disabilities of the Arm, Shoulder and Hand Score Sports/Performing Arts Module correlate positively and significantly with the respective Mangled Extremity Severity Score. Furthermore, the Disabilities of the Arm, Shoulder and Hand Score correlated positively and significantly with the Mangled Extremity Severity Score in patients with prolonged ischemia time (>6 hours); therefore, we assume ischemia time to be more relevant than the other items of the Mangled Extremity Severity Score. The use of a Mangled Extremity Severity Score of 7 or more points as an indication for primary amputation is not justified, as half of our patients with a Mangled Extremity Severity Score ≥ 7 achieved satisfactory functional outcomes at long term follow-up. Thus, we recommend vascular reconstruction with any Mangled Extremity Severity Score as long as residual functionality seems reasonable. Early intervention and decreased ischemia time may increase the chances of limb salvage. Further studies, including more patients, should be conducted to verify our results and lead to firm conclusions regarding accurate predictors of poor outcomes, indicating amputation in patients suffering such injuries.

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ORIJİNAL ÇALIŞMA - ÖZET

Travmatik üst ekstremitte yaralanmaları: Ekstremitte hasarlanması şiddet skoru ve kol, omuz ve el sakatlıkları arasında korelasyon analizi**Dr. Gloria Maria Hohenberger,¹ Dr. Janos Cambiaso-Daniel,² Dr. Angelika Maria Schwarz,³ Dr. Stafanos Boukoulas,⁴ Dr. Franz Josef Seibert,¹ Dr. Peter Konstantiniuk,⁵ Dr. Tina Cohnert⁵**¹Graz Tıp Fakültesi Ortopedi ve Travma Cerrahisi Anabilim Dalı, Graz-Avusturya²Graz Tıp Fakültesi, Cerrahi Anabilim Dalı, Rekonstrüktif ve Estetik Cerrahi Bölümü, Graz-Avusturya³AUVA Travma Hastanesi Graz, Graz-Avusturya⁴Teksaş Üniversitesi Tıp Fakültesi, Plastik Cerrahi Anabilim Dalı, Galveston, Teksas-ABD⁵Graz Tıp Fakültesi, Cerrahi Anabilim Dalı, Damar Cerrahisi Bölümü, Graz-Avusturya

AMAÇ: Ekstremitte Hasarlanması Şiddet Skoru, travma sonrası ekstremitte amputasyonu için bir karar verme aracıdır. Üst ekstremitenin travma sonrası fonksiyonel eksikliklerini ölçmek için Kol, Omuz ve El Yetersizlikleri Anketi geliştirilmiştir. Bu çalışma bu iki değerlendirme arasındaki korelasyonu belirlemeyi amaçlamaktadır.

GEREÇ VE YÖNTEM: Bu çalışmada, 2005–2014 yılları arasında iki merkezde vasküler rekonstrüksiyon ile tedavi edilen üst ekstremitte yaralanması olan tüm hastalar geriye dönük olarak gözden geçirildi. Her katılımcı için ilgili Ekstremitte Hasarlanması Şiddet Skoru hesaplandı. Hastalar takip muayenesi ve Kol, Omuz ve El Skoru Yetersizliklerinin değerlendirilmesi için geri çağırıldı.

BULGULAR: Bu çalışmada 14 hasta dahil edilme kriterlerini karşılamıştır. Ortalama toplam Ekstremitte Hasarlanması Şiddet Skoru 5.9 ve Kol, Omuz ve El Yetersizlik Skoru 30 puan idi. Bu değerlendirmeler arasında istatistiksel olarak anlamlı bir ilişki yoktu (Spearman sıralaması korelasyon katsayısı: 0.49, p=0.075).

TARTIŞMA: Kol, Omuz ve El Yetersizlikleri Skoru Ekstremitte Harabiyeti Şiddet Skoruyla korelasyon göstermemiştir.

Anahtar sözcükler: Amputasyon; hasarlanmış ekstremitte; üst ekstremitte travması; vasküler travma.

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