195 Hand Injuries in 12 Days: The Outcomes of the Feast of Sacrifice

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Received: June 28, 2015
Revised: August 11, 2015
Accepted: November 1, 2015

DEAR EDITOR

The feast of sacrifice is a muslim tradition, celebrated by the muslims all around the world. Every year during the month of pilgrimage to Mecca (Hajj), the feast of sacrifice is celebrated. One specific part of this feast is to sacrifice animals such as sheep and cattle in the first three days of the feast. Most of the sacrifices were performed in the streets by non-professionals without proper security precautions.[1] Cutting tools such as knives, cleavers and meat grinders are common tools both for sacrificing animals and processing the animal meat afterwards. As a result of mentioned reasons, plenty of accidental injuries occur during the feast of sacrifice. Hand injuries constitute the majority of these injuries. The aim of this study was to determine the rate of injuries in the first three days of the feast of sacrifice.

A total of 195 hand injuries occured in the first three days of the feast of sacrifice in four consecutive years (2011-2014) were enrolled. Patients who needed surgical intervention were included. The patients who were treated wtih primary skin suture and nonsacrifice related injuries and those who had multiple traumas with hand injuries were also excluded from the study. Patients were evaluated for age, gender, injury type, injury location and cause.

There were 169 male and 26 female patients. The average age was 38.1 (3–84) years. The average age of female patients (35.6 years) was slightly younger than the male patients (38.5 years). Three types of tools were responsible for all injuries. The most common tool was knife (171 injuries) followed by cleaver (19) and the third one was the meat grinder (5). Ninety seven patients attended the ER in the first day of the feast, 58 patients attended the second day and 40 patients attended the third day.

A total of 215 anatomical structures were injured, while 146 (67%) were between metacarpophalangeal (MCP) joint and finger tip, 22% were between wrist and MCP joint and 24 injuries 11% were in the forearm. The extensor tendons were the most commonly injured structures (47%). Flexor tendon injuries with or without neurovascular bundle damage were the second most commonly injuries (18%), followed by distal phalangeal amputations (18%) and phalangeal fractures (16%). Extensor tendons were also the most commonly injuried structrures in the hand (zone V and VI) with 39 out of 44 injuries (89%). There were 5 palmar injuries and only one metacarpal fracture. In the forearm, flexor side injuries were dominant. Twenty one injuries out of 24 were located in the flexor side in the forearm. There were only 3 injuries in the dorsal side.

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A total of 114 extensor tendon injuries were observed in our study. Extensor tendon injuries were the most common injury type among all hand injuries. Sixty eight of 114 extensor tendon injuries were between MCP joint and finger tip (zones I-VI). Extensor pollicis longus (EPL) was the most commonly injured tendon. EPL and the second extensor of the left hand were injured more often compared to other extensor tendons. Thirty nine extensor tendon injuries were between the wrist and the MCP joint (zone V and VI). The extensor tendon of the 3rd finger was the most commonly injured tendon in dorsal hand injuries. Eighty four of the extensor tendon injuries were left sided (73%) whereas, 30 of them were right sided. All extensor tendon injuries occured as a result of knife cuts. The only exception was a second metacarpal fracture combined with extensor tendon injury due to cleaver cut. For all extensor tendon injuries, primary tendon repair was performed. No tendon graft or tendon protheses were needed.

There were 55 flexor side injuries, while 28 (50%) were located between MCP joint and finger tip (Zone I and II). The second finger Flexor digitorum profundus (FDP) with unilateral neurovascular bundle injury was the most frequent injury type (19 injuries). Nineteen flexor side injuries were in the forearm. Radial artery was the most commonly injured structure in the forearm. Similar to extensor tendon injuries, the knife was the most common tool (30 injuries). Eighteen patients attended ER due to cleaver and 5 patients due to the meat grinder cuts. For all tendon injuries, primary tendon repair was performed, no tendon graft or tendon prothesis were needed. Vascular anastomosis and neural coaptations were performed under microscopic magnification with 8/0 or 9/0 sutures.

There were 26 patients attended ER with distal tip amputations. The second finger was the most commonly injured finger for finger amputations. The right side damage was more than left side in finger amputations. Stump repair was performed for 12 patients, whereas V-Y advancement flap was performed for 8 patients. Cross-finger flap was applied to 5 patients and a homodigital island flap for one patient. Twenty two patients attended ER due to phalangeal fractures, 17 had distal phalangeal fractures whereas 5 of them had middle phalangeal fractures. All of the fractures repaired with Kischner wires.

The second finger was the most commonly fractured finger. Cleaver was the most common tool responsible for finger fractures (18 patients). The meat grinder was the responsible tool for 4 patients. No female patients attended the ER with finger or metacarpal fracture. Two patients came to the ER with finger amputations in the middle phalangeal level. One patient had left hand, the second and third finger amputations due to cleaver and another with a left hand, the second finger amputation in middle phalangeal level. For all 3 fingers, finger replantations were performed.

Regarding to the islamic tradition, animal sacrifice takes place in the first day of the feast. In the second and the third days, most of the injuries occur due to meat process period. There were several publications in the literature demonstrating that first day of the feast has the highest number patients attending to emergencies.[2,3] Similar to previous publications, the first day had the highest number in our study as well.

The sacrifice is usually performed by men due to its traditional aspect. Women usually perform the slicing process. As a result of this, just like in previous publications in the literature, male gender was dominant in number for injuries. Our study releaved the similar results with 86% prevalence.[2,3] In our study, the cause of all injuries was cutting tools. It was observed that the most common tool causing injury was a knife (87.6%), followed by cleaver and meat grinder. This result was also similar to literature.[4]

Among all hand injuries, extensor tendon injuries were the most common injured tendons. A total of 114 extensor tendon injuries took place. Extensor pollicis longus was the most frequently injured extensor tendon in our study with 38 cases (33%). Third finger`s common extensor tendon was the second most injured tendon with 25 lacerations (21%). From MCP joint to tip, first finger was the most injured tendon whereas from wrist to MCP joint, third finger common extensor tendon was the most injured one. The first 3 finger`s extensor tendons injuries in total had 84% of all extensor injuries.

The flexor side injuries were evaluated; the most commonly injured finger was the second finger. From MCP joint to finger tip, 70% of all injuries took place in the second finger. Interestingly, 35% of all flexor side injuries was the second finger flexor tendon laceration combined with an unilateral neurovascular

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bundle laceration. Also, 16 out of 19 second finger injuries were left sided. Flexor side forearm injuries during the feast were significantly superficial. There was no deep flexor tendon laceration in forearm. There were 20 flexor side forearm injuries and most injured structure was flexor carpi radialis tendon (35%) followed by radial artery (35%). It was observed that extensor tendon and forearm flexor side injuries are superficial lacerations mostly damaged by knife.

There were 47 patients who attend to emergency for distal tip amputations and phalangeal fractures. The second finger was the most commonly damaged finger (41%) for direct high power impacts. A total of 194 of 214 injuries were located in fingers. The most commonly damaged finger was the second finger with 66 injuries (33%), followed by the first and the third fingers. The first three finger injuries were 71% of all injuries during the feast. In our study, left hand (64%) was significantly affected more than right hand (36%). This data was different from literature which demonstrated a similar rate between right and left side hand injuries.[5] We believe that understanding the patterns, reasons and consequences of sacrifice related hand injuries will help us to ensure the proper environment for sacrifice ritual and decrease future injuries.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

KEYWORDS
Tendon laceration; Feast of sacrifice; Hand; Injury: Amputation

Please cite this paper as:
Ersen B, Akin S, Saki MC, Tunali O, Aksu I, Kose M. 195 Hand Injuries in 12 Days: The Outcomes of the Feast of Sacrifice. World J Plast Surg 2015;5(2):187-189.

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