Management of Upper Extremity Injuries

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Abstract

Injuries of the upper extremities represents a most frequents problems in ED. This wound must be treated actively and effectively while optimal anatomical repair and functional recovery must be take in consideration because they may have significant consequences for the individual life. The surgical treatment of upper limb wounds depends on several factors such as the type and extent of injury, the nature of the wound, the interval between injury and treatment, and of course the age of the patient.

Materials and Methods: in these study we represent 127 patients affected by different traumatic injury to the upper leg. Their characteristics were 99 of them (78 %) were male and 28 female (22 %) with an average age of 34 years. In all the patients principal injuries involved the upper limb, whereas 19 patients (15 %) had an additional injury. All the patients was successfully treated by promptly surgical intervention and repair

Results: overall 127 patients were included in the study. Most of them had hand injury (87), 27 forearm injury and 13 of them injury of the arm.
The most common etiological factor was axidental trauma with the sharp objects, then road traffic accidents, and penetrating and stab wound injuries. Concomitant orthopedic injuries were registered in 8 patients (6.3 %). Fingers salvage rate was about 95%.

Conclusion: effective wound treatment and management is of particular importance in treating patients with open palm wounds. Functional recovery was achieved in almost all the patients included in this study

Key words: upper extremity, injuries, emergency department

Open wound ofequent the upper extremities , with loss of skin and others subcutaneous structures represents a frequent problem in general surgery and traumatology. The initial step in management of patients with injury of the upper limb requires an accurate history and examination of the wound including a careful evaluation of sensation, perfusion and function distal to the wound.

In patients with suspicion for fracture or dislocation X-rays examination of the injured limb must be done. Although most of the wounds can be treated under local anesthesia in cases with damage of the underlying structures like bones or tendons regional block or general anesthesia is preferred.

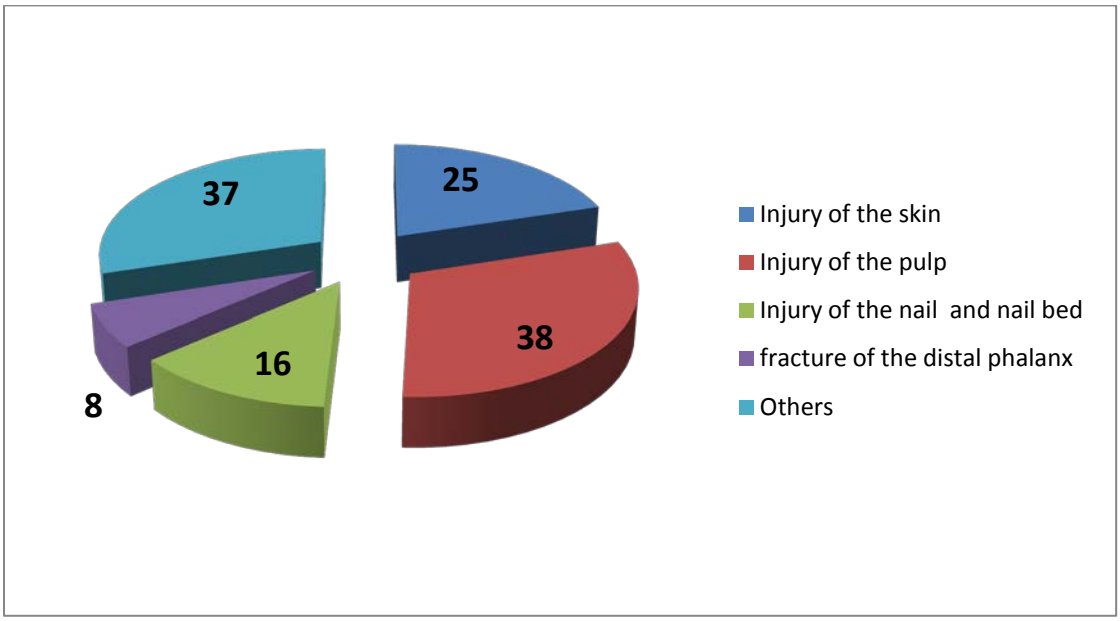
Materials and Methods

Iin a period between January 2016- 2017 in the ED of the Clinical Hospital in Tetove we treated 127 patients with various traumatic injuries of the upper limb. Their characteristics were 99 of them (78 %) were male and 28 female (22 %) with an average age of 34 years. In all patients principal injuries involved the upper limb. After primary evaluation of the injured extremity the wounds were successfully treated by promptly surgical intervention and repair. In principle uncomplicated wound without exposure of underlying tendons, nerves, or bones, after cleansing and debridement were treated with skin closure. In cases of severely contaminated wounds which requires cleaning every day (in order to create a clean wound) reconstruction was delayed up to one week.

In cases of severely injured limb the first steps was adequate debridement followed by skeletal stabilization and reconstruction of tendons in cases when they are damaged, followed after that by soft tissue coverage because that is technically easier in the early stages.

Results

During January 2016-2017 we have treated 127 patients with different traumatic injury to the upper extremity. In 87 patients treated in Clinical Hospital of Tetove – Department of Emergency and Surgery the main complaint was isolated injuries of the fingers.
Depending on the structures involved during the trauma we have classify them into injury of the skin present in 25 patients (or 28.7 %), skin injury associated with injury of the pulp in 38 patients (or 43.7 %), injury of the nail with damage of nail bed in 16patients (18,4 %) and the fracture of the distal phalanx in eight patients (9.2 %).



In patients with skin injury associated with damage to a small part of the pulp, after primary good cleansing of the wounds and daily wound care they were thoroughly healed within one to two weeks.

Lacerations of the nail bed matrix is registered in 16 patients. In all this cases the nail is removed completely and after that the nail bed is meticulously repaired.
Even in these cases wounds were cleansed every day through irrigation with normal saline and disinfectants (betadine 10 %) . In general the wounds were recovered in a time interval from ten days to two weeks

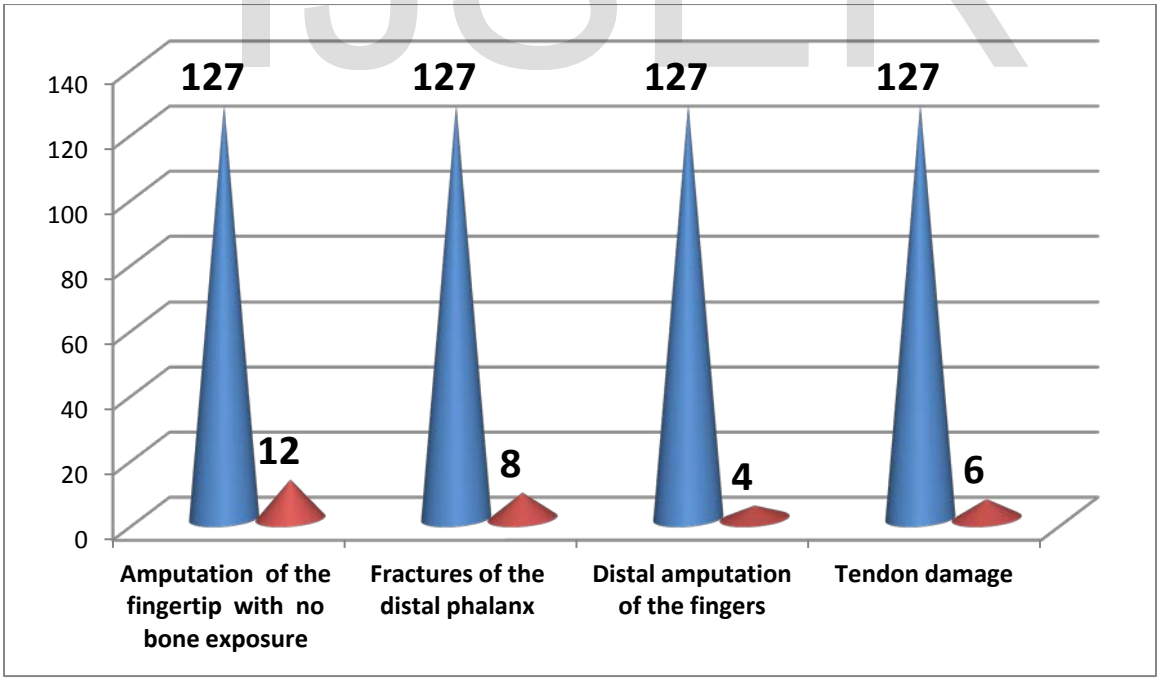
Fractures of the distal phalanx present in eight patients were stabilized in order to prevent subsequent injury to the overlying structures and nail matrix as well as to minimize the possibility of late nail deformity.

Amputation of the fingertip with no bone exposure was registered. in 12 patients (9.4 %). In all this patients healing is done by secondary intention with daily cleansing and dressing.

We did the same procedure in for patients (4.7 %) with distal amputation of the fingers respectively after good cleansing of the wound the amputated part was loosely sutured. In two patients the amputated part survived successfully, while in two other cases she was completely necrotized. In these two patients after meticulous debridement of the wound recovery was done by second intention.

In 15 patients with partially avulsed fingertip which was attached by a pedicle we have loosely suture the avulsed part back in place. The wound was cleaned carefully every day while the parenteral administration of antibiotics has continued for a week. Except in for cases where the amputated part was completely necrotized, all other wounds were fully recovered

In six cases the wound has been associated with tendon damage. In for patients extensor tendon has been cut whereas in two other patients (because of deep cut on the palm side of fingers) flexor tendons are damaged. After the primary tendon repair soft tissue coverage of the injured tendons was done. Treatment of these wounds has been the same (through meticulous cleaning) while serious complications have not been recorded in any patient.



In 24 cases with contaminated wounds we left them open for later closure or allowed to heal by secondary intention. After that wound are dressed with moist gauze and daily cleaning is undertake.

Antibiotic therapy is started immediately whereas initially the most used antibiotics were the second and third generations of cephalosporins, ampicillin and clyndamycin, and after that treatment continued according to the microbiological results and antibiogram. Antitetanous prophylaxis was applied in all of the patients with open wound.

Discusion

According to our experience results that the open wounds of fingers and palm are among the most common problems in ED. In most other studies the upper extremity injuries represent highest percentage of all injuries in ED. According to the study of Larsen[1] and Meerding[2] from Netherlands the upper extremity injuries accounted for about 20% of all injuries registered in ED.
Our results are similar with the results referred in most of the studies by the American College of Surgeons[4,5].
In this study as in many other studies results that the injuries of the upper extremities are age-related with the lesion of tendons and fractures present often among adults whereas the open wounds with contusion are most frequently among the young people[5,9].
After primary evaluation of injured extremity wounds should be washed with a betadine and copious amount of normal saline, and after that covered with sterile gauze until the definitive debridement and treatment is undertaken in the operating room[6].
For successful healing of contaminated wounds, should be removed all devitalised tissue and foreign materials with the intence to minimize the bacterial contamination. Risk of infection is proportional to the wound size. The depth of laceration is another risk factor for wound infection[7].
After the definitive treatment all the patients must be followed up until suture removal, or approximately at an average period of two weeks postoperatively.
In the patients with limb injury associated with bone fracture skeletal stabilization is very important not only for the prevention of soft tissue damage, but because it provides wound healing and protect against infection[8].
All the studies show that in cases of contaminated wounds they should be left open for later closure or allowed to heal by secondary intention. During this time the wound should be carefully cleaned and administrations of appropriate antibiotics must be started[10].

Conclusion

The injuries of the upper extremity are among the most frequent hospital admissions in the ED. The young people remain the highest risk group due to this injuries. Wounds of the hands require meticulous debridement and cleansing of the wound followed by early coverage and sometimes by application of antibiotics. Functional recovery of the hand after injury is highly dependent by the experience of the surgeons.

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