

Pattern And Management Of Hand Injuries In Ibadan, Nigeria: A Five Year Review

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Abstract

Hand injuries rarely result in death but they cause untold loss to the injured, his family, his employers and his fellow citizen. The main objective when treating hand injuries is to retain as much function as possible through well managed primary care. Looking through the unit records, many patients have been managed for different types of hand injuries by the division of Plastic and Reconstructive Surgery, University College Hospital, Ibadan. A review of these cases between the period of June 1996 to June 2001 showed a total number of 154 cases managed out of which only 53 cases had enough information for review. 82% of these patients are males with majority in the 2nd and 3rd decades of life.

Despite the active management of these patients, most of them still developed one form of complication or the other. Management of hand injury is a teamwork. If we must improve on the outcome of treatment, the team must also involve the nurses, physiotherapist, the patients, their relatives, the hospital administrators with the hand surgeon.

Keywords: Hand Injury, Pattern, Management.

Introduction

The main objective when treating hand injuries is to retain as much function as possible through well managed primary care¹. This involves the repair of all damaged tissues and replacing them in the anatomic position. Early mobilization and physiotherapy is an essential component of management so as to avoid stiffness and contracture of the joint¹¹. A careful history and assessment, which demands a thorough knowledge of hand anatomy, will give an indication of the structures damaged. Ibadan is located in the south-west zone of Nigeria and in it is the country's first Teaching Hospital, the University College Hospital, Ibadan. The hospital has a well established Plastic and Reconstructive surgery unit which has been in existence for over three decades. The unit manages cases of hand injuries that present to or are referred to the hospital. Looking through the unit records, many patients have been managed for different types of hand injuries. This study is conducted to assess the pattern of these injuries and re-

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appraise the treatment modalities we have been adopting with the aim of improving on the outcome of our treatment.

Materials and Methods

It was a retrospective study, patients records were retrieved from the hospital's record department. A pro forma was designed to obtain the biodata of the patients managed in the unit between the period of June 1996 to June 2001. These included the name initials of the patient, hospital number, age, sex, occupation, aetiology of injuries, site of injuries, type of injury, structures involved in injuries, time interval between injury and presentation, the treatment given and resulting complication. The results were analysed using Epi-info 6.03 computer software.

Results

A total number of 154 cases were managed during this period but we were only able to retrieve 64 case notes out of which 53 cases had enough information for review. Twenty-seven (51%) patients were in the 2nd and 3rd decades of life. The age range was between 1 year (minimum) to 72 years (maximum) with a mean age of 30.7(16.).

Table 1: Age and Sex

Age		Sex	
Age Range	Freq	Male	Female
0-9	4	3	1
10-19	7	6	1
20-289	16	14	2
30-39	11	9	2
40-49	8	6	2
50-59	2	2	-
60-69	4	3	1
70-79	1	-	1
Total	53	43	10

Mean Age: 30.698 Std Dev=16.014

This is shown in table 1. 43 (81.1%) of these patients were males while 10 (18.9%) were females with a male to female ratio of 4.5:1 as shown in table 1. Grinding machine and road traffic accidents were the most common causes of these injuries as shown in table 3. The right hand was more commonly involved in the injuries, while the

middle finger was most commonly affected followed the thumb as shown in table 4.

The most common type of injury recorded from this study was laceration, which was closely followed by avulsion injury. Patients also suffered varying degree of amputations as shown in table 5. Most patients presented within the first 13 hours of sustaining the injuries. 32 of the patient had one form of surgical procedure or the other which ranges from surgical debridement, suturing of

Table 2: Occupation

Occupation	Freq	Percent	Cum
None	10	18.9	18.95
Student	11	20.8	39.6
Teaching	1	1.9	41.5
Mechanical/Electrician	3	5.7	47.2
Tailoring	2	3.8	50.9
Trading	10	18.9	69.8
Farming	2	3.8	73.6
Carpentry	3	5.7	79.2
	11	20.7	100
Total	53	100.0	

Table 3: Aetiology

Aetiology	Freq	Percent	Cum
Gun short	7	13.2	13.2
Matchet cut	3	5.7	18.9
Bottle cut	2	3.8	22.6
Stick or Nail puncture	-	-	-
Grinding machine	12	22.6	45.3
Implement injury	3	5.7	50.9
Animal bites	3	5.7	56.6
RTA	12	22.6	79.2
Not specified	11	20.8	100
Total	53	100.0	

Table 4: Finger Affected

Finger	Freq	Percent	Cum
Thumb	13	25.5	24.5
Index finger	7	13.2	37.7
Middle finger	22	41.5	79.2
Ring finger	4	7.5	86.7
Little finger	7	13.2	100
Total	53	100.0	

wounds, skin grafting, use of local and regional flaps, tenorrhaphy and nerve repair, fixation of fractures to amputations. Out of these, 5 had local flap cover of their defects, 3 had cross finger flap, 2 had groin flap while 4 patients had skin grafting done to cover their defects.

Table 5: Type of Injury

Injury type	Freq	Percent	Cum
Abrasion	5	9.4	9.4
Laceration	18	33.9	43.3
Avulsion	14	26.4	69.7
Partial amputation	4	7.5	77.2
Amputation	12	22.6	100.0
Total	53	100.0	

Table 6: Structures injured

Structures	Freq	Percent	Cum
Skin/subcutaneous tissue	17	32.1	32.1
Tendon injuries	18	34.0	66.0
Nerve injury	6	11.3	77.4
Fracture	8	15.18	92.5
Dislocation	3	5.7	98.1
Associated injuries	1	1.9	100.0
Total	53	100.0	

Table 7: Treatment

Treatment	Freq	Percent	Cum
Surgery (As presented under discussion)	32	17.4	17.4
Antibiotic	47	25.5	42.9
Tetanus	48	26.1	69.0
Splinting	36	19.6	88.6
Physiotherapy	21	11.4	100.0
Total	53	100.0	

Table 8: Complication

Complication	Freq	Percent	Cum
Scars	3	7.9	7.9
Joint stiffness	19	50.0	57.9
Limitations of the range of movement	16	42.1	100
Total	53	100.0	

Most patients were treated with antibiotics and tetanus prophylaxis as shown in table 7. Table 8 showed various complications that resulted from the management.

Discussion

Hand injuries rarely result in death but they cause untold loss to the injured, his family, his employers and his fellow citizen. The objective is to restore as much function as possible¹. The results from this study showed more males sustaining hand injuries with the peak incidence in

the 2nd and 3rd decades of life. The commonest cause of hand injury recorded was injuries from grinding machine followed by road traffic accident. Thus the very active population of male in that age group are at risk and get exposed to these aetiological factors in their pursuit of livelihood for their families. Most patients were right handed thus explaining the reason why the right hand was most commonly injured. Injuries were mainly located in the middle and thumb fingers, followed by the index finger and these findings were similar to that of Adeyemi Doro².

More than 60% of hand injuries presenting at our accident and emergency department required surgical intervention, using local or general anaesthesia which agrees with the work of Robert¹. In the management of hand injuries, following establishing the structures that have been injured, the examiner must decide what immediate steps he should take towards restoration of full function³. In our unit, we routinely debrided all the devitalized tissue and when there is associated skin loss, cover was usually obtained using a skin graft when the recipient site was fully vascularized. However, where vital structures had been exposed bared and graft cover could not be relied upon, we always utilize flap cover. We make use of local flaps^{4,5}, such as single V-Y flap or atasoy flap.

In some of the patients, regional flaps^{6,7} such as cross finger and dorsal metacarpal flap were used. The cross finger flaps provided soft tissue coverage for the palmar aspect of the adjacent finger or thumb with a full thickness skin graft required for the donor site and where the defects were large, we had utilized distant flaps^{8,9} such as groin flaps. All fractures were reduced and immobilized¹⁰. Early mobilization and postoperative physiotherapy is essential to avoid stiffness and joint contractures¹¹. We make use of Kirshner wires inserted percutaneously or following open reduction. Sometimes interosseous wires were used and when this was done, we commenced early mobilization.

The tendons are intimately associated with skeletal structures of the hand, so that any scar tissue formation substantially reduces hand motion^{12,13,14}. Even brief periods of immobilization can produce stiffness as a result of formation of adhesion. Despite the many technical advances to improve the quality of the surgical technique, including intra-operative magnification, materials for suturing or bonding nerve ends, and devices for monitoring during surgery, the reconstruction of nerve injuries remain one of the final frontiers in the repair of musculo skeletal system^{16,17}. We always made attempt to repair tendons and nerves injuries primarily, this was to ensure speedy return of function. However, in most cases it wasn't possible for some social, logistic and financial reasons. Many techniques for suturing tendons have been described but we used the modified Kessler's technique with prolene sutures of 3-0 or 4-0 strength. For some of our patients we applied Kleinert traction to commence early exercise after flexor tendon repair.

In patients with amputations, the aim was to produce a non-tender, padded stump. We always made effort to preserve as much length as possible. None of the patients that were treated had re-vascularization of incomplete amputation or replantation of totally severed parts. There was a case of complete amputation of the hand in a child. The hand was unfortunately discarded prior to presentation and the patient was brought to the hospital for the purpose of refashioning the stump. This case prompted the need to educate our colleagues and other health workers on the availability of facilities and human resources for cases of replantation of totally severed parts. The notice also educates the attending casualty officer on how to preserve the amputated part while awaiting the arrival of the team. Almost all our patients had antibiotics cover and tetanus prophylaxis.

Even though the time interval between the period of the injury and presentation to the hospital was within the first 20 hours for most patients, many still developed complications. 19 patients out of the 28 patients with complications developed joint stiffness while a total of 16 patients developed varying types of limitation of the range of movement. This could be explained in part by the long interval of period between the time of presentation and time of treatment. Even when everything is set to take the patient to the theatre, patients may be financially handicapped. Sometimes it takes about 48-72 hours for some of them to get a radiological investigations done.

Another major problem is getting a theatre space for our patient. We have to contest the space with other specialties in the main operating theatre. Most times, hand injuries are not considered to be a very serious emergency, thus giving preference for conditions like acute abdomen, head injuries to mention but a few. These delays tend to prevent immediate reconstruction and mobilization of injured hands thereby increasing the morbidity. We suggest that the minor operating theatre in the emergency unit of our hospital be improved upon to take some of these cases, so that we don't have to get to the main theatre before operating. We also seek prompt and early involvement of the physiotherapy unit. Management of hand injury is a teamwork. If we must improve on the outcome of treatment, the team must also include in addition to the hand Surgeon, Nurses, Physiotherapists and occupational therapist, the patients, their relatives and the administrators. Machine operators must be properly educated on various safety devices while passengers in the vehicles are educated on how to position their hands in a moving vehicle.

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