ORIGINAL PROF-1491

CLAVICLE FRACTURES;
INCIDENCE A TWO YEARS STUDY

LT. COL. IRFAN ZAFAR HAIDER
F.C.P.S
Consultant Surgeon
C.M.H, Lahore

LT. COL. TAHIR AHMAD KHAN
F.C.P.S, F.R.C.S
Consultant Surgeon
C.M.H, Lahore

Article Citation:
Haider IZ, Khan TA. Clavicle fractures; Incidence a two years study. Professional Med J Jun 2010; 17(2):325-327.

ABSTRACT... Objective: To emphasize upon the frequency of fractures of clavicle due to indirect blunt trauma caused by road traffic accidents and falls from heights and their sequalae. **Design:** Observational descriptive study. **Place and Duration of Study:** Combined Military Hospital Bannu during a period of two years from June 2003 to May 2005. **Patients and Methods:** Patients included in the study were the trauma patients brought to Combined Military Hospital Bannu during a civil –military conflict in tribal areas of North and South Waziristan . Patients had sustained multiple injuries mostly due to road traffic accidents in hilly terrain , falls from heights and combat scuffles. Out of these trauma victims, 746 patients fractures of the clavicle were grouped, analyzed, treated with standard treatment methods and patients were followed up for the varying periods of time. **Results:** Out of 746 patients treated at our hospital, 84 were having fracture of clavicle(10.8%). 53 patients (63.1%) with clavicle fracture had fracture involving middle third of the clavicle , 20 patients (23.8%)had fracture of lateral third, and 11patients (13.1%) had fractures involving medial third of the clavicle. **Conclusion:** Clavicle is a bone which is at risk of fracture in cases of indirect blunt trauma because the first human reaction in any violence or assault is to protect oneself by using the upper limbs. Its peculiar development and anatomical shape makes it vulnerable to fracture in most physical insults. However , it usually unites by conservative methods and even considerable non-union does not significantly affect function.

Key words: Clavicle , Fractures, Blunt trauma.

INTRODUCTION

Clavicle is a bone provided by nature to anchor the upper limb to the proximal trunk[1]. It keeps the shoulder braced back and at the same time downwards by the virtue of its specific shape[2]. This is the only long bone of the body placed horizontally and its sigmoid shape facilitates the transmission of the neck structures to the chest and vice versa underneath its beautiful curves[3]. It also gives a natural shape to the human beings at the upper chest[4].

Clavicle usually comes under strenuous stress during acts of physical violence or indirect blunt trauma when the whole weight of the body is to be borne by it through supporting effort of the falling individual (as clavicle transmits the weight in order to save the body as well as arm)[5]. It compromises upon its own and gives way to get fractured at some part of its own length --- the innocent and sacrificing clavicle! An account of the statistics of the fractures of clavicle is given in this article followed by a brief review of literature.

MATERIAL AND METHODS

This descriptive study was conducted in the department of surgery, Combined Military Hospital Bannu, from June 2003 to May 2005. A total of 746 fractures cases were studied which presented during this period. Mode of fracture included road traffic accidents, gun-shot and bullet injuries, mine blasts, rocket & missile injuries and injuries caused by fall of the individuals from heights.

The patients included both the military personnel deployed in the mountainous ranges and hilly terrains of

Article received on: 11/03/2009
Accepted for Publication: 21/10/2009
Received after proof reading: 12/04/2010
Correspondence Address:
Lt. Col. Irfan Zafar Haider
Department of Surgery
CMH, Lahore

the area as well as the civilian population residing in the vicinity. Patients of all age groups (male and female) were included in the study.

Of the 746 cases the fracture clavicle was seen in 84 pts (10.8%). Among the 84 cases of fracture of the clavicle, the subjects were divided into three groups on the basis of site of fracture and each group treated on its own merits. All the cases were followed up for a period ranging from 6-24 months but none for the less than 06 months.

RESULTS

A total of 84 patients of fracture of clavicle were included in the study. They constituted 10.8% of all the cases of fractures encountered in the given period of comprising upon 2 years. Out of 84 cases, 42 cases (50.1%) involved right side and 39 cases (46.4%) occurred on the left side while 03 (3.57%) cases involved fractures on both sides.

33 cases (39.2) of all the fractures were due to fall from heights, 44 cases (52.4%) due to traffic accidents, while 7 cases (8.3%) were due to gunshot wounds (Table-I).

Table-I. Cause of injury (n=84).

Cause of injury	No. Of cases	%age
Road Traffic Accident	33	39.2%
Fall from Heights	44	52.4%
Gunshot Wounds	7	8.3%

11 (13.1%) of the fractures were open and compound while 73 (86.9%) were simple and closed. Twenty three (27.4%) fractures were comminuted (Table-II). 53 fractures involved middle one-third of clavicle (63.1%), 20 fractures involved lateral one-third (23.8%), while 11 cases occurred in medial one-third of clavicle (13.1%)(Table-III). 38 (42.25%) of these fractures were displaced while 46 (54.75%) were undisplaced.

Table-II. Type of injury (n=84).

Type of Fracture	No. Of cases	%age
Compound Fracture	11	13.1%
Simple Fracture	73	86.9%
Comminuted Fracture	23	27.4%

Table-III. Sites of fractures (n=84).

Site Involved	No. Of cases	%age
Middle third	53	63.1%
Lateral third	20	23.8%
Medial third	11	13.1%

Treatment carried out was mainly conservative namely broad arm sling, bracing back by figure of eight bandage for a period of three weeks. Three cases required operative treatment. Bone plating was carried in two cases because of gross displacement and these involved lateral one-third of clavicle. One patient required bone grafting and plating as there was symptomatic non-union. Treatment modalities used are summarized in Table-IV.

Table-IV. Treatment modalities used (n=84).

Type of Treatment	No. of cases	%age
Broad arm sling	49	58.3%
Figure if eight bandage	32	38.1%
Bone plating	02	2.4%
Bone graft & internal fixation	01	1.2%

Malunion occurred 21 cases (25.0%) and non-union in 3 cases (3.57%). Fortunately there was hardly any functional disability in the malunited cases whereas one of the non united case was symptomatic who required bone grafting and internal fixation.

DISCUSSION

Clavicle fracture is a common injury and it accounts for 5-10% of all the fractures[6]. Males are more commonly effected than females (2.5:1). In males the most affected age group is under 20 years[7]. The fracture is usually due to sporting injuries or road traffic accidents. In females the elderly population is commonly affected often due to simple fall[8]. The fracture can also occur due to direct trauma or falls on out-stretched hand[9]. Majority of these are closed fractures[10]. Middle one-third is most commonly fractured part and fractured fragments are usually overlapping. Fracture of lateral one-third may result in superior displacement of bone if the coraco-clavicular

ligament is involved. Fracture of medial one-third of clavicle is uncommon[11].

Vast majority of these fractures are treated conservatively with limb rested in broad arm sling[12]. Mobilization can be commenced as the comfort allows. Attempts at reduction including bracing back the shoulders with figure of eight bandage is rarely necessary. Malunion is common but is not usually a functional problem[13]. Non-union may occur in up to 5% of fractures and is more common after mechanisms involving high energy transfer.

Open reduction and plate fixation is rarely required and may be indicated for open fractures with associated neurovascular injuries or fractures of lateral end of clavicle with significant displacement of fracture fragments. Internal fixation and bone grafting is indicated for symptomatic non-union[14].

CONCLUSION

Fracture of clavicle is a common injury. Conservative treatment is usually satisfactory to manage such cases. Operative treatment is rarely indicated. Malunion, although not very common, seldom leads to any significant functional disability.

REFERENCES

1. Russell R. C. G, Williams N. S, Bulstrode C. J. K (Eds). **Short practice of surgery (20th Edn).** Arnold, London 2000: 349.
2. Ronald McRae. **Practical fracture treatment.** Churchill Livingstone (2nd Edn) 1992:82.
3. Kochhar T, Jayadev C, Smith J et al. **Delayed presentation of Subclavian venous thrombosis following undisplaced clavicular fractures.** World J Emerg. Surg. 2008 Jul 22; 3:25.
4. Huang JI, Toogood P, Chen MR, Wilber JH, Cooperman DR. **Clavicular anatomy and the applicability of precontoured plates.** J Bone Joint Surg Am. 2007 Oct; 89(10):2260-5.
5. Read JA, Bell P. **Clavicular stress fracture in a cricket fast bowler.** J Med Case Reports. 2008 Sep 19; 2:306.
6. Kim W, Mckee MD. **Management of acute clavicle ractures.** Orthop Clin North Am. 2008 Oct; 39(4): 491-505.
7. Oussedik S. **Injuries to the clavicle and acromio-clavicular joint.** Br J Hosp Med (Lond). 2007 Apr;68(4): M68-70.
8. Kotelnicki JJ, Bote HO, Mitts KG. **The management of clavicle fractures.** JAAPA. 2006 Sep; 19(9):50, 53-4,56.
9. Pecci M, Kreher JB. **Clavicle fractures.** Am Fam Physician. 2008 Jan 1; 77(1):65-70.
10. Sobol J, Kordel K, Kołowski J, Kis-Wojciechowska M et al. **Morphology and diagnostics of mechanisms of chest bone fractures and their use in analyzing forensic medicine results. Arch Med Sadowej Kryminol.** Polish. 2007 Jul-Sep;57(3):302-7.
11. Throckmorton T, Kuhn JE. **Fractures of the medial end of clavicle.** J Shoulder Elbow Surg. 2007 Jan-Feb; 16(1):49 -54.
12. Canadian Orthopaedic Trauma Society. **Nonoperative treatment compared with plate fixation of displaced midshaft clavicular fractures. A multicenter, randomized clinical trial.** J Bone Joint Surg Am. 2007 Jan; 89(1):1-10.
13. Andermahr J, Jubel A, Elsner A et al. **Malunion of clavicle causes significant glenoid malposition: a quantitative anatomic investigation.** Surg Radiol Anat. 2006 Oct; 28(5):447-56.
14. **Longstanding clavicular nonunions with poor bone stock.** J Trauma.2008 Feb; 64(2):439-41.