

ORIGINAL ARTICLE

Assessment of patients of clavicle fractures

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ABSTRACT:

Background: The clavicle is the only bone that connects the shoulder girdle with the trunk. Its function lies in the precise positioning and abduction of the arm. The present study was conducted to assessed patients of clavicle fracture. **Materials & Methods:** 106 patients of clavicle fracture of both genders were enrolled and parameters such as etiology, Allman classification and reason for fracture were determined. **Results:** Out of 106 patients, males were 64 and females were 42. Group I fracture was seen in 50, group II in 34 and group III in 22. Left side was involved in 45 and right side in 60 cases. Reason for fracture was road traffic accident in 65, violence in 25 and fall in 16. The difference was significant ($P < 0.05$). **Conclusion:** The most common reason for clavicle fracture was road traffic accidents. There was male predominance in our study.

Key words: Clavicle, fracture, road traffic accidents

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INTRODUCTION

The clavicle is the only bone that connects the shoulder girdle with the trunk. Its function lies in the precise positioning and abduction of the arm.¹ The entire length of the clavicle lies directly below the skin.² Frequent injury to the mid third reflects the anatomy, position and specific construction of the clavicle. Clavicle fractures are common, representing 2.6%- 5% of all fractures and 44%-66% of all fractures about the shoulder.³ They are among the more frequent injuries seen in the emergency room, primary care setting, and orthopedic surgery office. Although their frequency alone justifies a familiarity with basic evaluation and treatment, recent changes in attitude toward management also warrant a review of this common injury. Males are affected approximately twice as often as females. Females show higher prevalence in the sixth decade of life as a result of osteoporosis.⁴ Although unilateral clavicle fractures are commonly encountered, bilateral clavicle fractures have been reported extremely rarely in the literature. The incidence of bilateral involvement is less than 0.5% of all the clavicle fractures. Conservative

management has been the preferred treatment modality for most of the clavicle fractures because of the high complication rates reported after surgical treatment. But there are evidences in the literature that suggest a high risk for nonunion or shoulder dysfunction after non-operative treatment in bilateral clavicle fractures.⁵ The present study was conducted to assessed patients of clavicle fracture.

MATERIALS & METHODS

The present study was conducted on 106 patients of clavicle fracture of both genders. All patients were informed regarding the study and written consent was obtained.

Demographic profile such as name, age, gender etc. was recorded. A thorough clinical examination was performed in all patients. Patients were subjected to extraoral radiographs and CT scan. Allman classification such as group I-middle 1/3, group II-lateral 1/3 (acromial) and group III-medial 1/3 (sternal) was determined. Results were tabulated and subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 106		
Gender	Males	Females
Number	64	42

Table I shows that out of 106 patients, males were 64 and females were 42.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Allman Classification	Group I	50	0.04

	Group II	34	
	Group III	22	
Side	Left	45	0.05
	Right	60	
Reason	RSA	65	0.01
	Violence	25	
	Fall	16	

Table II shows that group I fracture was seen in 50, group II in 34 and group III in 22. Left side was involved in 45 and right side in 60 cases. Reason for fracture was road traffic accident in 65, violence in 25 and fall in 16. The difference was significant ($P < 0.05$).

DISCUSSION

Clavicle means "key" and is the diminutive of clavis in Latin. Clavicle fractures are very common injuries in adults (2-5%) and children (10-15%) and represent the 44-66% of all shoulder fractures.¹ Clavicle fractures are common injuries in all age groups.⁶ They account for 2% to 5% of all the fractures with the incidence in children being >10%. Its prevalence of fracture is highest among the young population. The mechanism of sustaining bilateral clavicle fractures is different from that of a unilateral clavicle fracture.⁷ They are often caused by a compressive force across both shoulder girdles, direct blows to both shoulder girdles or an indirect blow such as a fall onto the shoulder. Bilateral clavicle fractures are usually associated with high-energy trauma and therefore are associated with other concomitant injuries.⁸

The clavicle is the first bone in the human body to begin intramembranous ossification directly from mesenchyme during the fifth week of fetal life.⁹ The clavicle has both a medial and lateral epiphysis. It has S-shaped double curve. This contouring allows the clavicle to serve as a strut for the upper extremity, while also protecting and allowing the passage of the axillary vessels and brachial plexus medially. The growth plates of the medial and lateral clavicular epiphyses do not fuse until the age of 25 years.¹⁰ The human clavicle is S-shaped, medially compact but becoming thinner and flatter to form an oval cross section towards the mid third. This means that the forces of oscillation and resistance are low, especially in the horizontal plane, which explains frequent injuries due to the impact of axial force. For a long time a fall onto the outstretched arm was propagated as the most frequent cause of injury.¹¹ The present study assessed patients of clavicle fracture.

We found that out of 106 patients, males were 64 and females were 42. Yan et al¹² postulated that functional improvement after fracture union plateaus and the clinical outcome after treatment varies at different time points. This meta-analysis will focus on the synthesis comparison of outcomes at early, short-term results (3 months), intermediate-term (6 to 12 months) and long-term (>24 months) clinical outcomes. Of the 3094 patients of mean age 36.7 years in the 31 selected studies, surgical intervention was associated with improved DASH score, CMS, time to union and risk ratio of bone-related complications including bone non-union, malunion and implant failure.

Subgroup analysis based on time period after treatment showed that surgical intervention was far superior in terms of improved DASH score at the intermediate-term results and long term results and CMS. Surgical outcome is independent of fixation with plates or intra-medullary nails.

We observed that group I fracture was seen in 50, group II in 34 and group III in 22. Left side was involved in 45 and right side in 60 cases. Reason for fracture was road traffic accident in 65, violence in 25 and fall in 16. Eskola et al¹³ found that out of 60 clavicle fractures, 48 (80%) were seen in males and 12 (20%) were seen in females. Fractures were seen in middle 1/3rd (60%), middle (20%), lateral 1/3rd (11.6%) and compound (8.4%). Maximum cases were involving middle third of clavicle and least cases were seen involving compound fractures (8.4%). 24 (40%) cases were seen in right side and 36 (60%) cases were seen in left side. The difference was not significant. 36 cases were due to road traffic accident, 21 cases were of fall and 15 cases occurred due to work place injury.

Lenza et al¹⁴ assessed the effects (benefits and harms) of surgical versus conservative interventions for treating middle third clavicle fractures. Four studies compared plate fixation with wearing a sling and four studies compared intramedullary fixation with wearing either a sling or a figure-of-eight bandage. Almost all trials had design features that carry a high risk of bias, thus limiting the strength of their findings. Low-quality evidence from seven trials (429 participants) showed that, compared with conservative treatment, surgical treatment of acute middle third clavicle fractures may not result in a significant improvement in upper arm function at one year of more follow-up. This corresponds to an absolute mean improvement of 3.2 points in favour of surgery (0.4 points worse to 7 points improvement) on the 100-point Constant score; this is neither clinically nor statistically significant. Low-quality evidence from seven trials (437 participants) indicates a marginal difference in the incidence of treatment failure between surgery (9/232, 3.9%) and conservative treatment (24/205, 11.7%). No significant difference between groups was noted in the pooled results for adverse events but separate analyses by type of adverse events showed that wound infection and/or dehiscence and secondary surgery due to hardware complications occurred only in the surgical group.

Skin and nerve problems were also more common after surgical treatment, although the difference between the two groups was not statistically significant. Conversely, stiffness or restriction of shoulder movement was more common after conservative treatment.

CONCLUSION

Authors found that most common reason for clavicle fracture was road traffic accidents. There was male predominance in our study.

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