Original Research Paper

Volume-9 | Issue-7 | July - 2019 | PRINT ISSN No. 2249 - 555X

Orthopedics

CROSS SECTIONAL OBSERVATIONAL STUDY OF CLAVICULAR FRACTURE TREATED CONSERVATIVELY

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ABSTRACT **Clavicular fractures are common fracture** which can be observed in all age group. Clavicular observed can be treated in conservative approach or in operative approach. Current study was conducted in tertiary care hospital with the aim to study outcome of clavicular fracture in conservative approach. Demography of patients, type of fracture, shortening of bone, outcome of fraction in the terms of union and non union were studied. It was observed that conservative treatment in closed clavicular fracture gives good outcome, although bone shortening was observed and middle shaft was the most common fracture site observed

KEYWORDS : Clavicle fractures, Conservative treatment, Closed fracture

Clavicle fractures are common accounting for 5 to 10% of all fractures (Bajuri et al., 2011). It represents 2-5 % of all fractures in adults and 10-15% in children. It is a common shoulder injury making upto 44-66 % of all shoulder injuries (Paladini et al., 2012). Most fractures were reported to occur in the middle third of the clavicle which accounted for 76 to 80% of clavicle fractures in a study (Bajuri et al., 2011). Fractures in the most lateral portion of the clavicle principally occur after falls onto the tip of the shoulder, with an injury mechanism similar to that of acromioclavicular joint dislocations. Literature review suggest that their shoulder strength and motion are reduced compared to their pre-injury condition and to their contralateral shoulder. In certain situations, the patients were unable to perform the same activities they performed before their injuries. All these problems result from nonunion, malunion and shortening of the clavicle.

Earlier, Neer (1960) have reported 3 nonunions out of 2,235 fractures treated with the closed method. In another study, Rowe and Corr (1968) reported 4 nonunions out of 566 fractures that were treated with the closed method. The main aim of this study was to determine the functional outcomes of clavicle fractures in conservativaly treated patients and to estimate the fracture patterns, fracture location, fracture comminution, shortening and fracture union on shoulder function in a tertiary hospital in Maharashtra.

METHODOLOGY:

The present study was conducted in orthopedic out-patient department (OPD) and emergency department in the tertiary care hospital, Government Medical College, Akola. The duration of study was four months from 1st September to 31St December 2018. Totally 43 patients of closed clavicular fractures were registered. Out of them 39 gave consent and 3 patients were lost to follow up. Hence, the effective size of the study was 36. Follow up was done for 6-8 weeks.

INCLUSION CRITERIA:

- All patients with clavicular fracture and within three days from the day of fracture were considered for study
- Only closed fracture were included
- Clavicular fracture patients with indication of conservative treatment.
- New patients of clavicular fractures
- Simple fracture were included in study, without any other fracture and are well oriented

Patients who gave consent for study were included.

Paper based pre-tested semi structured questionnaire were used for data collection. All the collected data were entered in excel sheet and appropriate statistical tests were applied.

RESULTS:

In 4 months about 36 patients were studied according to inclusion criteria, their analysis are as follows

Table 1: Distribution of study subjects according to age and sex

	Male (%)	Female (%)	Total (%)
Less than 20 years	05 (13.9)	04 (11.1)	09 (25)
20 to 40 years	09 (25)	05 (13.9)	14 (38.9)
>40 years	06 (16.7)	07 (19.4)	13 (36.1)
Total	20 (55.6)	16 (44.4)	36 (100)

In the present study, out of total 36 patients 55.6% were male and the remaining 44.4 % were females. Among males 20-40 years age group was most common (25%) and in female >40 years age group was most common in clavicular factures.

Table 2: Distribution of clavicular fracture according to site

Site of fracture	Numbers of study subjects
Sternal part (Type-II)	07 (19.4)
Middle part (Type-I)	21 (58.3)
Acromial part (Type-III)	08 (22.2)

From the table no 2 in the current study it was observed that type-I was 58.3% followed by type-III (22.2%) and Type-II (19.4%) of clavicular fracture.

Table 3: Type of clavicular fracture

Type of fracture	Numbers (%)
Comminution	07 (19.4)
Oblique/spiral	16 (44.4)
Transverse	13 (36.1)

From the table no 3, It was observed that oblique or spiral fracture was most common type of fracture with 44.4% in the study subjects, although transverse fracture were also on the higher side with 36.1% followed by comminution fracture (19.4%).

Table 4: Clavicle fracture shortening from AP view of X-ray

Shortening	Numbers (%)
No shortening or less than 10mm	25 (69.4)
Shortening and more than 10 mm	11(30.6)

In the study it was seen from table 4 that after conservative treatment there were no or very minimal shortening of fracture in 69.4% cases whereas shortening was observed in 30.6% cases.

Table 5: Outcome of conservative treatment

Outcome	Numbers (%)
Good Union	23 (63.9)
Malunion	11 (30.6)
No Union	02 (05.5)

After conservative treatment in clavicular fracture 63.9% of the patients showed good result, 30.6 % showed malunion and 5.5% cases showed no union after 6-8 weeks of fracture.

DISCUSSION:

Mostly clavicle fractures usually unite uneventfully with treatment, although it can be associated with difficult early and late complications. Fractures in the middle third of the clavicle represent >70% of all clavicular fractures. However, in the current study it was observed to be around 60%. Clavicle fractures are mostly treated conservatively without any surgical process. Surgical treatments may be associated with higher complication rates. Usually significant displacement, fracture comminution and skin tenting that threatens the skin's integrity and fails to respond to closed reduction may require surgical interventions.

Kru¨ ger–Franke et al. (2001) showed that 41 patients with lateral clavicle fractures showed very good outcomes when treated with the K-wire stabilization with cerclage and AO-plate osteosynthesis. An 8-year follow-up revealed good or very good outcomes in 97% of these subjects. Surgical treatment was recommended for unstable distal clavicular fractures, and several different surgical methods, including extraarticular or transarticular K-wire fixation, coracoclavicular screw fixation, tension band wiring and clavicular plate fixation were suggested (Bajuri et al., 2011). However, in our study, conservative treatment showed good outcome in 64 % patients with clavicular fracture. In a recent review of 14 studies, Lenza et al.,(2019), reported with low-quality evidence that surgical treatment has no additional benefits in terms of function, pain and quality of life compared with conservative treatment.

It was reported that shaft fractures occur frequently in young adults, while medial and lateral end fractures are more common in older age groups (Khashif Khan et al. 2009).

Our study showed that shortening more than 10nm was observed in 31% cases. Earlier studies by Goss and Constant et al. (1993), reported shortening of more than 15 mm associated with shoulder discomfort and dysfunction. Non-operative treatment of midshaft clavicular fractures was considered the gold standard of care. This recommendation is based on the analysis of 2000 patients with a very low nonunion rate of 0.13%, reported by Neer in 1960 and Rowe's publication from 1968 with an observed nonunion rate of 0.8% in 566 midshaft clavicular fractures.

CONCLUSION:

The present study was conducted in a small setup of tertiary care hospital. It was observed in this study that conservative treatment gives good outcome in closed clavicular fracture although shortening of bone was observed in some cases. It was observed that older aged females have more clavicular fracture. Middle shaft fractures were most commonly observed in this study and oblique or spiral fractures were the major type of fracture observed.

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