



**COMPARATIVE STUDY OF THE OUTCOME OF DISPLACED MID SHAFT FRACTURE CLAVICLE TREATED CONSERVATIVELY AND BY OPEN REDUCTION AND INTERNAL FIXATION(ORIF) WITH PLATE.**

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**ABSTRACT**

All clavicle fractures do well with nonoperative treatment. Such treatment was usually successful and till recently most of the available literature showed that more than 95% of clavicle fractures achieve union with acceptable cosmetic and functional results. "Operative treatment is not only meddlesome but can increase the nonunion rate significantly", much of this thinking came from the original work of Neer and Rowe et al in the 1960s when operative techniques were variable and not standardized or refined. Typically these early attempts at surgical intervention were complicated by utilization of smooth pin fixation with occasional catastrophic results from pin migration, infection, and nonunion. In our study we compared two accepted treatment modalities of fracture midthird clavicle called open reduction and plating with locking compression plate and conservative treatment with figure of eight clavicle brace in terms of functional outcome as measured by DASH score to find out which is a better treatment option.

**KEYWORDS** : Clavicle, Mid-Shaft, Functional Outcome, Internal Fixation.

**Introduction:**

The most commonly used system of classification of clavicular fractures is that of Allman. It is divided into 3 groups.1 Group I: Middle-third fractures, Group II: Lateral-third fractures, Group III: Medial- third fractures1.

A weak site is seen in the midclavicular region of clavicle, which accounts for most fractures occurring in this region. A lot of muscular and ligamentous forces act on the clavicle, and a knowledge of these differing forces is necessary to understand the nature of displacement of clavicle fractures and to conclude why certain fracture patterns are problematic if not reduced and surgically stabilized. Mid-clavicular fracture is one of the common injuries of the skeleton, representing 3% to 5% of all fractures and 45% of shoulder injuries. The annual incidence of midclavicular fracture is 64 per 100 000 population. Open clavicular fracture is an absolute rarity, found in only 0.1% to 1% of cases. The rate of midclavicular fractures is more than twice as high in men as in women.The peak incidence occurs in the third decade of life.2

Now more and more surgeons prefer to do surgery as the results of nonoperative are seen inferior both clinically and functionally3-7. Several studies analysed the safety and efficacy of primary open reduction and internal fixation for completely displaced midshaft clavicular fractures and have noted high union rate with a low complication rate. Majority of clavicle fractures are benign, but it can be associated life-threatening intra-thoracic injuries based on the location of fracture. Fracture of the clavicle is associated with delayed union or nonunion, brachial plexus injury , compression or laceration of the great vessels, trachea, or esophagus, injuries to the neurovascular bundle and the pleura or apex of lung, poor cosmetic appearance, pneumothorax and intrathoracic injury. This study aims to obtain a deeper understanding of results and problems associated with both conservative and surgical procedure (ORIF with Clavicular LCP) in treating fracture midthird clavicle and, to evaluate the functional outcome after each treatment.

**Aims and Objectives:**

To study the incidence of post treatment complications as per DASH score, on treatment with "open reduction and internal fixation with locking compression plate" and "conservative management with figure of eight clavicle brace" and arm pouch/sling application.

**Materials and Methods:**

1. Study design: longitudinal observational study
2. Study setting: Department of orthopaedics,azeezia medical

college hospital,meeyanoor

3. Study duration: August 2015 to August 2017(2 years)
4. Treatment period:6 months
5. Study population: all patients coming to Azeezia Medical college Hospital with displaced middle third fracture clavicle.in the age group 18 to 60 years
6. Inclusion criteria: Adult male and female patients in the age group 18 to 60 years who presented to our hospital with displaced middle third clavicle fracture (Robinson type 2B1) were included for this study after taking written consent from them.
7. Exclusion criteria: Age < 18 years and >60 years , Open fractures, Fracture in medial or lateral third of clavicle, Pathological fractures, Undisplaced fractures, Polytrauma patient, Established non union from a previous fracture, Any medical contraindication to surgery or general anaesthesia (heart diseases, renal failure or active chemotherapy)

All data were prepared using Microsoft excel 2010 version and was analysed with the software SPSS for Windows (Statistical Presentation System Software, SPSS Inc.) version 17.0. The statistical methods used were unpaired student t-test to do Intergroup analysis between two groups . Chi- square /fisher exact test was used to find the significance of study parameters on categorical scale between two or more groups.

**Results:**

**Table 1: Age Incidence**

Group	Mean Age (years)
Surgical group	34.89
conservative group	34.85
Total patients	34.87

**Table 2: Sex Distribution**

Sex	No. of Patients	%
Male	25	73.5
Female	14	26.5
Total	34	100

Table 3:Functional Outcome.

DASH SCORE	SURGICAL GROUP	TIME OF INJURY	MEAN SCORE	OUTCOME GRADE
		AT INJURY	90.76	POOR
		AT 6 WEEKS	22.65	EXCELLENT
		AT 3 MONTHS	20.23	EXCELLENT
		AT 6 MONTHS	7.93	EXCELLENT
	CONSERVATIVE GROUP	AT INJURY	89.18	POOR
		AT 6 WEEKS	48.25	GOOD
		AT 3 MONTHS	31.82	GOOD
		AT 6 MONTHS	15.24	EXCELLENT

**Discussion:**

The results of present study of patients with middle third clavicle fractures is compared with the results of standard literature. The commonly compared studies are Bostman et al<sup>3</sup> study which treated 103 patients with only middle third clavicle fractures, by early open reduction and internal fixation with plate and screws Cesare Faldini<sup>4</sup> et al study was also used to compare the results, where 100 patients with a clavicle midshaft fracture were treated by figure of eight clavicle brace.

**Age Incidence:** In our study, the average age of patients with fracture midthird clavicle was found to be 34.87 years. The youngest patient was of 19 years and the oldest one 58 years. The average age in surgical group was 34.89 years and in conservative group was 34.85 years. In Bostman et al<sup>3</sup> study patients average age was 33.4 years and the youngest patient age was 19 years and oldest patient age was 62 years. In Cesare Faldini<sup>4</sup> et al study, patients average age was found to be 32 years ranging from 18 to 67 years. In all these studies, it was found that fracture midthird clavicle occurs in patients who are young and active.

**Sex Incidence:** In our study, out of 34 patients, 25 were male (74%) and 14 were female (26%). In Bostman et al<sup>3</sup> study 76 Patients (73.79%) were males compared to 27 females Patients (26.21%). In Cesare Faldini<sup>4</sup> et al study, out of 100 patients 78 were males and 22 were females.

All these studies show a male predominance in fracture mid-third clavicle occurrence.

**Functional outcome:** The functional outcome was measured as per Disabilities Of The Arm, Shoulder And Hand (DASH) score at the time of injury, at 6 weeks, at 3 months and at 6 months. DASH Score at 6 weeks, 3 months and 6 months were significantly better in surgical group than conservative group. In a randomized control study<sup>13</sup> by Canadian orthopaedic trauma society, it was found that DASH Scores are significantly better in surgical group at 6 weeks, 12 and 24 weeks than conservative group. The main advantage of surgical treatment of mid-third fracture clavicle with plate is that it gives immediate pain relief, early shoulder movements, less chance of non-union and early return to work compared to conservative treatment.

**Conclusion:**

The patients functional outcome were measured using DASH score and it was found that patient treated surgically had significantly better DASH scores at 6 weeks, 3 months and 6 months compared to conservative group.

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