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## A comparative study of outcome of displaced mid shaft clavicle fracture managed by operative versus conservative treatment

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### Abstract

**Background:** With the increasing incidence of clavicle fractures due to road traffic accidents more emphasis is being given in the management of these fractures which brings about the debate of whether clavicle mid shaft fractures treated operatively yield better results compared to traditional conservative management. The incidence of clavicle fracture ranges from 36 to 64 per 100,000 people every year. The treatment over the years has been to manage midshaft fractures of the clavicle conservatively, however there has been a recent trend in the increase in the operative management of these fractures which may be done by either plate fixation or intramedullary nailing. There have been various papers published to compare the study between surgical and conservative management in the treatment of clavicle fractures. There has been no conclusion regarding the debate between conservative and operative management of these fractures so we decided to bring about a comparison study between patient-oriented outcome and complication rates following conservative treatment and those after operative treatment of displaced midshaft clavicular fractures.

**Objectives:** To compare the functional outcome and complication rates in patients following conservative management and those after operative treatment of displaced midshaft clavicular fractures.

**Materials and Methods:** The sample size included 50 patients with a displaced midshaft fracture of the clavicle who presented to Dr D.Y. Patil Hospital, Pimpri, Pune from Feb 2017 to Aug 2017 and who were treated either by conservative or operative methods of treatment and who were in regular follow up. The Disabilities of the Arm, Shoulder and Hand (DASH) and Constant scores was used for Functional assessment in these patients which was done at 1 month, 3 months and 6 months. Complications, if any in these patient were recorded.

**Results:** Better DASH and Constant scores along with better anatomic reduction were found in the group managed Operatively than in the group which was managed Conservatively.

**Conclusion:** Operative treatment resulted in early return to function and better anatomic reduction as compared to conservative treatment but at the cost of complications like infection and other implant related problems.

**Keywords:** Clavicle fractures, mid shaft fractures, operative treatment, conservative treatment

### Introduction

50 patients with a displaced midshaft fracture of the clavicle who were presented to Dr D.Y. Patil Hospital from Feb 2017 to Aug 2017 and either treated by conservative or operative methods of treatment and who were in regular follow are selected. Patients who were lost to follow-up after initial injury films and those whose radiographs were unavailable were excluded from the study. Functional assessment was done at 1 month, 3 months and 6 months with use of the Disabilities of the Arm, Shoulder and Hand (DASH) and Constant scores. Complications, if any will be recorded. In operative group, general anaesthesia was given for all patients. All procedures were performed by the orthopaedic consultant. The fracture was exposed through a standard curvilinear incision. Locking plate was applied to the superior surface of the bone in all cases of operative group. Shoulder arm pouch was given to all patients postoperatively. Elbow and wrist range of motion exercises were started on first postoperative day. Shoulder pendulum exercises are started on fifth postoperative day. In the non-operative group, the arm was immobilized in a clavicle figure of eight brace and a sling for 1 month and active mobilization above the horizontal was commenced after 1 month.

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**Inclusion Criteria**

Age more than 18 years  
All displaced middle third clavicle fractures

**Exclusion Criteria**

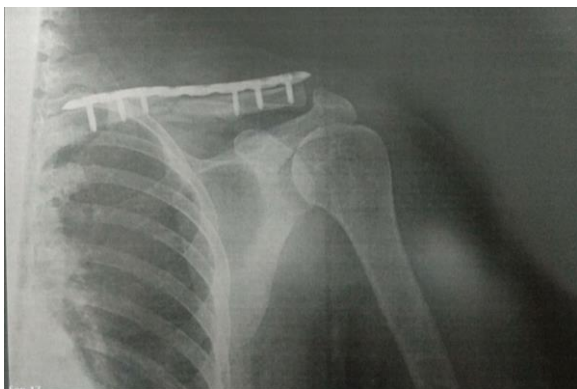
Pathological fractures

**Results**

Among 50 patients of midshaft displaced clavicle fractures, 25 patients were operated and 25 patients were managed conservatively. The mean age in both groups was comparable. Out of 25 patients treated surgically, 20 fractures united at an average of 14 weeks (Figures 1, 2). Three patients had delayed union, one patient had implant loosening with backout of screws (Figure 3) for which plate was removed and replating done. One patient had infection with plate exposed for which implant removed. The average time for fracture healing is better in operative group ( $16.2 \pm 0.6$  weeks) compared to nonoperative group ( $22.6 \pm 0.7$  weeks). Dash scores and Constant Scores were significantly better in the operative group. Constant Score was 93.56 in operative group and 82.65 in nonoperative group. There were 6 nonunions in nonoperative group. Patient satisfaction levels were more in operative group than in nonoperative group.



**Fig 1:** Pre Op X-ray



**Fig 2:** Immediate Post Operative X-ray



**Fig 3:** Loosening Of Screws for which replating was done

**Discussion**

Clavicle fractures are usually treated conservatively. The concept before was that surgical treatment of displaced midshaft clavicle fracture should be avoided because of the high rate of union with non-operative treatment, high rate of failure with operative treatment and high risk of complications due to the close proximity of the underlying neurovascular structures [11, 12]. However, the treatment of displaced midshaft clavicle fractures changed over the last few decades because of complications with conservative management like malunion, nonunion, persistent pain [13]. Surgical treatment by plate fixation has fewer nonunions and better functional outcome compared to conservative treatment [14]. Implant prominence is one of the well known complication of operative management in this fracture which can be reduced by precontouring of the plate [15]. In our study, it was observed that rate of complication was higher in surgically treated patients with minor complications which is comparable to the study done by Judd *et al* [16]. Delayed union was observed in three patients and one patient had implant loosening with backout of screws and one patient had infection with exposed plate for which plate removal was done. According to a study done by Witzel *et al*, 80% of surgically treated patients resumed athletic activity while only 55% of conservatively treated patients resumed athletic activity [17]. The rate of nonunion and malunion are higher in nonoperative group compared to operative group in our present study.

**Conclusion**

Operative treatment resulted in early return to function and better anatomical stability as compared to conservative treatment but at the cost of complications like infection and other implant related problems.

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