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Analysis of functional outcome of shaft clavicle fractures managed conservatively

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Abstract

Aims and Objectives: To study the functional outcome of conservatively managed fractures of shaft clavicle. To study the functional outcome of conservatively managed fractures of shaft clavicle using Constant shoulder scoring.

Materials and Methods: An observational study was performed on patients treated in MGM Medical College and Hospital, Navi Mumbai, from April 2020 to October 2020. A total of 30 cases of shaft clavicle were treated conservatively with a figure of eight bandage and a sling. Their functional outcome was evaluated according to Constant shoulder scoring.

Results: The study sample included 21 males and 9 females. The mean age was 38.9 years, 37.2 years for females and 39.6 years for males. The fracture occurred on the clavicle of the dominant arm in 47.9% of the patients, 45.1% of the males and 55% of the females. The mean Constant Score was 77.9 (SD = 8.5; range = 50-90) and was lower in males (76.3, SD = 8.4) than in females (82.1, SD = 7.6; $t = 2.65$; $p = 0.004$).

Conclusion: While conservative treatment remains the gold standard for minimally displaced clavicle fractures, in cases with severe dislocation of the focus, surgery may be indicated, depending on the clinical-instrumental characteristics of the case.

Keywords: Shaft clavicle, shoulder scoring, Navi Mumbai

Introduction

Clavicle fractures are among the most common skeletal injuries accounting for 2-5% of all adult fractures with an incidence of 29-64 cases per 100^[1,2].

The most frequent mechanism of injury was a fall (39.6%), and coexisting injuries were found in 12.9% of patients^[3]. In 73% of cases, dislocation of the end of the clavicle occurs due to the actions of the sternocleidomastoid muscle, which displaces the medial fragment superiorly and posteriorly, and of the deltoid and great pectoral muscles, which shift the lateral fragment inferiorly and anteriorly. These shifts cause a malaligned fracture with a superimposition of the two fragments that results in the shortening of the bone segment^[4].

Historically, nonoperative 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 non-union 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^[5,6].

There is no controversy that undisplaced fractures and fractures with cortical alignment are successfully treated by conservative measures^[7]. The best treatment for fractures with a displacement and shortening of more than 2 cm is still controversially discussed in the literature^[8].

The main aim of this study was to determine the functional outcomes of clavicle fractures in non-surgically treated patients.

Materials and methods

A retrospective observational study was performed in MGM Medical College, Kamothe, using the data collected from April 2020 to October 2020. A total of 30 cases of shaft clavicle were treated conservatively with a figure of eight bandage and a sling. Their functional outcome was evaluated according to Constant shoulder scoring during this period.

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All patients were evaluated post bandage to satisfy inclusion and exclusion criteria.

Patient were followed up at 4 weeks, 8 weeks and 12 weeks post bandage and sling.

At follow-up visit Constant shoulder score was evaluated for these patients.

Inclusion Criteria

Age of the patient above 20 years.

They closed clavicle shaft fractures.

Exclusion Criteria

Age of the patient below 20 years.

Open fracture of the forearm.

Results

A retrospective observational study was performed in MGM Medical College, Kamothe, using the data collected from April 2020 to October 2020. A total of 30 cases of shaft clavicle were treated conservatively with a figure of eight bandage and a sling. Their functional outcome was evaluated according to Constant shoulder scoring during this period.

The study sample included 21 males and 9 females. The mean age was 38.9 years, 37.2 years for females and 39.6 years for males. The fracture occurred on the clavicle of the dominant arm in 47.9% of the patients, 45.1% of the males and 55% of the females.

The mean Constant Score was 77.9 (SD = 8.5; range = 50-90) and was lower in males (76.3, SD = 8.4) than in females (82.1, SD = 7.6; $t = 2.65$; $p = 0.004$).

Discussion

There is still no consensus in the literature as to whether conservative treatment of clavicle fractures is the optimal treatment in most cases^[9] or if surgical indications should be extended^[10]. Hillen *et al.* noted that there is still debate about which patients should be candidates for surgical bone synthesis but suggested that in cases involving severe dislocations, comminuted fractures, severe high energy trauma, involvement of the dominant limb, young subjects or sportsmen needing rapid, complete recovery and women and elderly patients, there is a high risk of failure after conservative treatment^[11].

However, our study has limitations. The study sample is relatively small, and there is no surgical control group. Because this was a retrospective study, no functional data about the pre-treatment Constant Score were available. This data could have been utilised to calculate the post-treatment improvement and better quantified each patient's functional outcome.

Conclusion

While conservative treatment remains the gold standard for minimally displaced clavicle fractures, in cases with severe dislocation of the focus, surgery may be indicated, depending on the clinical-instrumental characteristics of the case.

In our study, the mean Constant Score was 77.9 (SD = 8.5; range = 50-90) and was lower in males (76.3, SD = 8.4) than in females (82.1, SD = 7.6; $t = 2.65$; $p = 0.004$).

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