

ORIGINAL RESEARCH

Case series on surgical management of mid one-third clavicle fracture with plate osteosynthesis

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ABSTRACT

Background: Clavicle fracture is a common traumatic injury around the shoulder girdle due to its subcutaneous position. Recent studies have shown a higher rate of nonunion and shoulder dysfunction in subgroups of patients with clavicle fractures.

Aim: The purpose of the study was to prospectively analyse the functional outcome of mid-third displaced clavicular fractures treated by open reduction and internal fixation with plate osteosynthesis. To study the outcome of displaced middle-third clavicular fracture treated by plate osteosynthesis.

Methods: This was a prospective comparative on-randomized study was conducted in Government District Head Quarters Hospital Suryapet with a follow-up ranging from August 2021 to December 2021 (6 months). Nineteen cases of middle third displaced (Robinson type 2b1 and 2b2) clavicular fractures are treated with plate osteosynthesis. We used a reconstruction plate, a locking compression plate, and a 1/3rd tubular plate for study.

Results: The mean time to union was 9.5 weeks. At the latest follow-up, the entire patients returned to the pre-injury activity level. One case had a superficial infection which was treated with intravenous antibiotics. There is no difference between the reconstruction group and the locking compression plate group in terms of functional outcome and union rate. We also noticed that road traffic accident and direct injury to the shoulder causes Robinson type 2b1 (12) fractures.

Conclusions: Open reduction and rigid internal fixation of displaced midshaft clavicular fracture have resulted in a good fracture union rate and excellent functional outcome.

Keywords: Clavicular fracture, Locking compression plate, Plate osteosynthesis

INTRODUCTION

Clavicle fractures, which account for approximately 2.6% of total body fractures. Conventionally, most acute displaced midshaft clavicles fractures are treated nonoperatively with the expectations of a high probability of fracture union, good functional outcomes and a high level of patient satisfaction. [1,3] However, the outcomes of nonoperative treatment are not as favorable as once thought, and the trend to surgically treat these fractures has grown. The clavicle is the bony link from the thorax to the shoulder girdle and contributes to movements at the shoulder girdle. A clavicle fracture is a common traumatic injury around the shoulder girdle due to its subcutaneous position. It is caused by either low-energy or high-

energy impact.[1] The traditional view that most of the clavicular fractures heal with good functional outcomes following non operative treatment is no longer valid. Recent studies have shown a higher rate of nonunion and shoulder dysfunction in subgroups of patients with clavicle fractures. [5-7] Because of this, these fractures should therefore be considered as a spectrum of injuries with various functional outcomes, each requiring cautious assessment and individualized care. Fracture of the clavicle is common, accounting for 5 to 12% of all fractures.[2] About 80 to 85% of these fractures are in the middle third of the bone, where the typical compressive forces applied to the shoulder and the narrow cross-section of the bone combines and result in bony failure. Displaced mid shaft clavicle fractures are common and are generally treated non-operatively. [8,9]

AIM & OBJECTIVE

To evaluate the functional outcome of midshaft clavicular fracture in adults managed with ORIF with superior reconstruction plating.

MATERIALS AND METHODS

INCLUSION CRITERIA

- Patients in age group of 15-45 years.
- Patients with no medical comorbidities.
- Displaced mid 1/3rd clavicle fracture

EXCLUSION CRITERIA

- Compound fractures
- Non-union.
- Pathological fractures.
- Medical comorbidities

METHODOLOGY

- Patients fulfilling the inclusion criteria are included in the surgery.
- All the patients underwent fracture fixation through ORIF with superior reconstruction plating.
- Post operatively patient was immobilised in arm sling.
- Patients were started on pendulum exercises followed by passive and active assisted exercises.
- Shoulder strengthening exercises
- Function outcome assessed at end of 6 months, using murey-constant score.

RESULTS



Fig 1: Cases

In the present study 19 cases were included. Among them 13 were males and 6 were females. In ur study male were predominant. (Fig 1 &3)

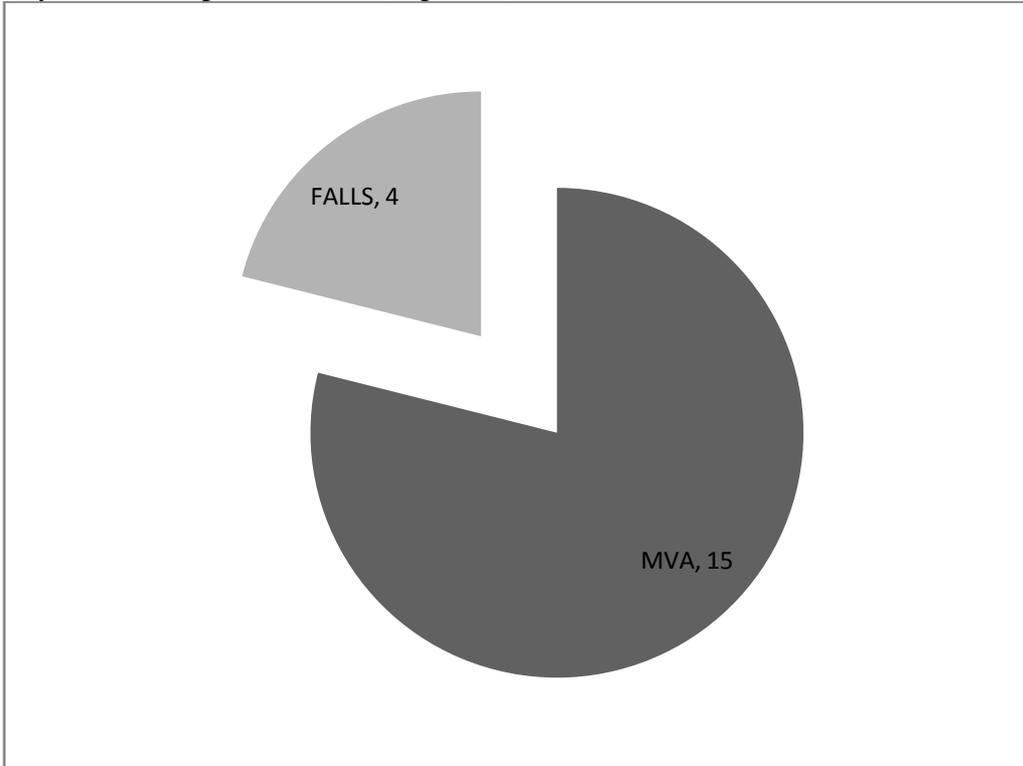


Fig 2: Causes

IN the present study major fracture occurred by MVA (15) followed by falls (4)

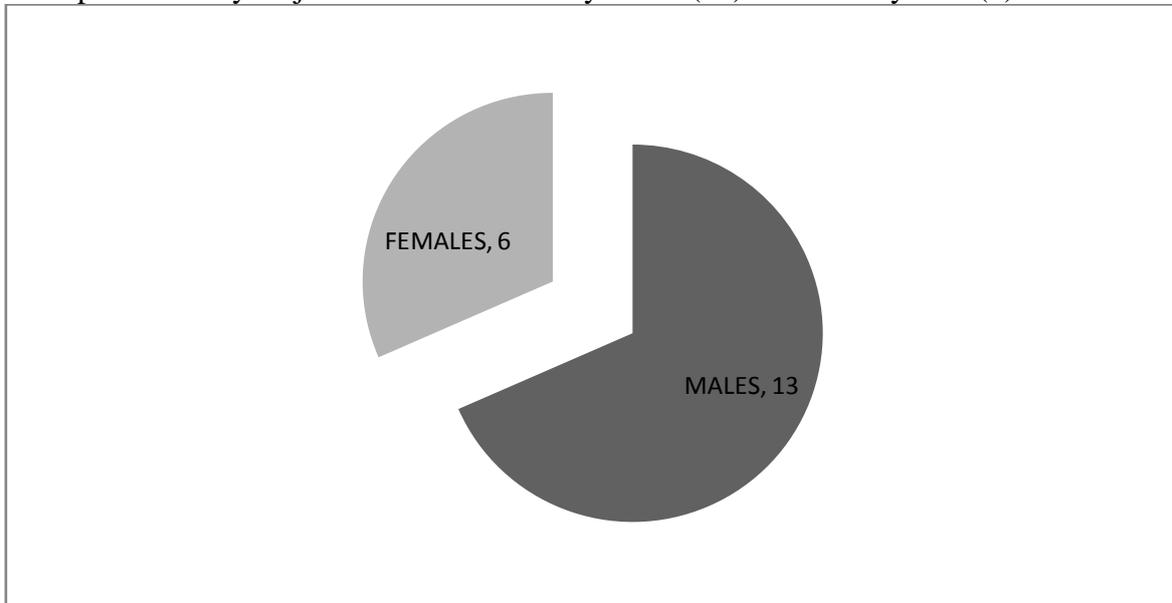


Fig 3: Gender Distribution

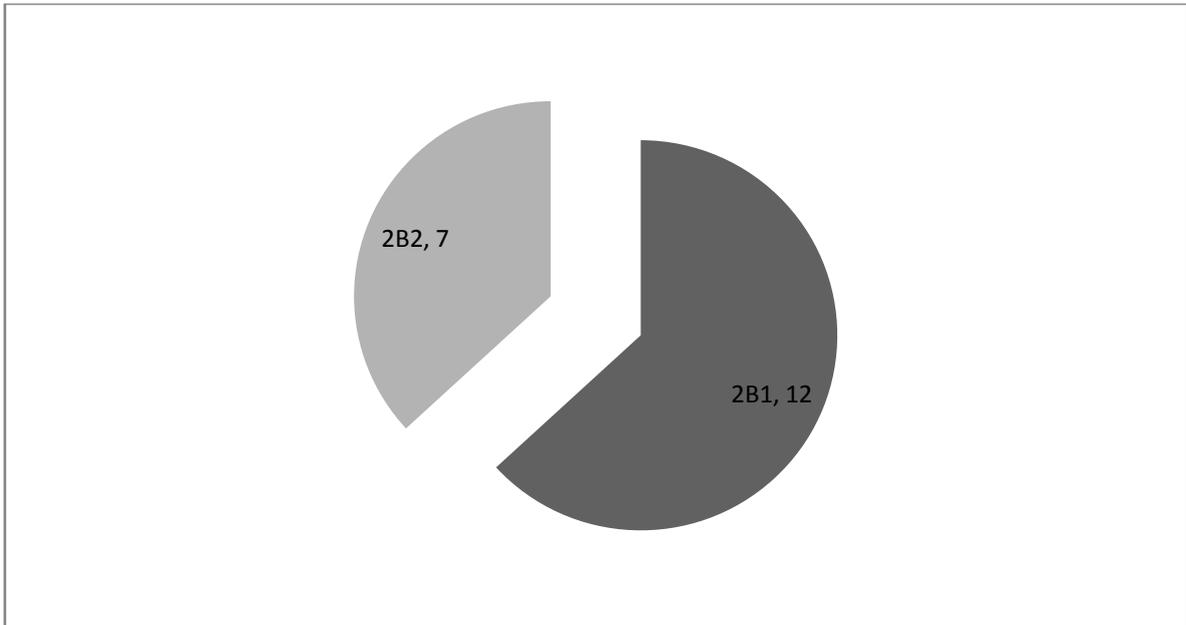


Fig 4: Fracture type

In the present study major type of fracture are 2b1 (12).

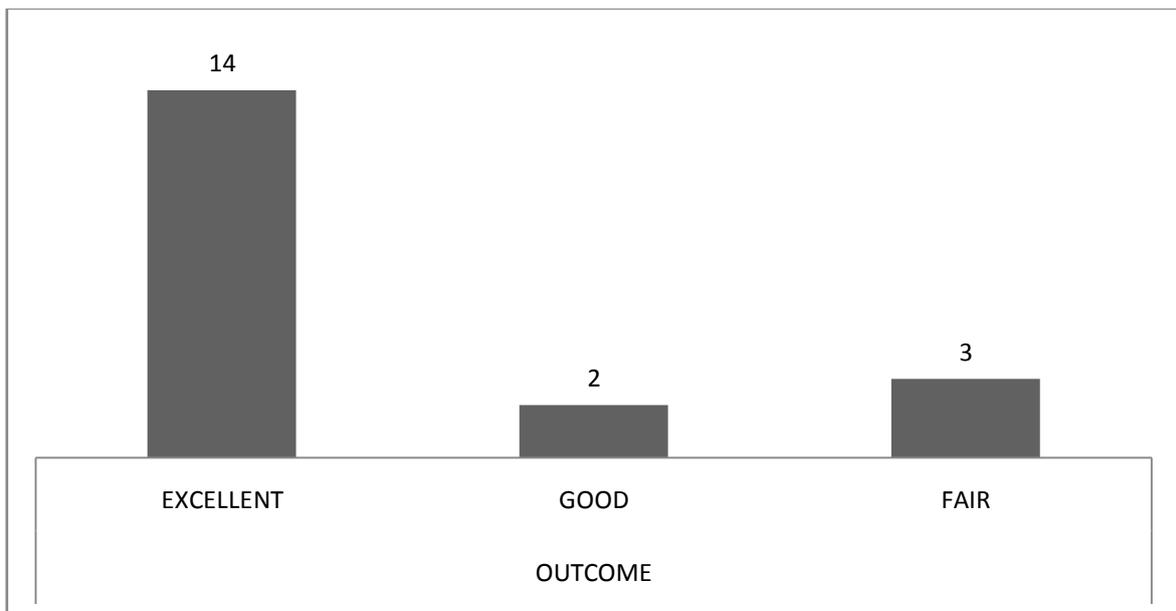


Fig 5: Functional Outcome

In the present study, excellent outcome observed in 14 patients after follow up.

DISCUSSION

The patients treated with early, rigid fixation of their clavicle fractures shared a high post-operative constant score, early pain resolution early return to activity, and high patient satisfaction rating. Plating has the advantage of maintaining the length, especially in comminuted fractures. There is little chance for hardware breakdown and migration. Clavicle nailing is an option for mid-third clavicle fractures.[9] Intramedullary nailing is difficult in the clavicle because of the anatomical shape. Nailing has the advantages of less soft tissue dissection and periosteal disruption hardware migration.[10,11] In our study the clavicle fracture are more common in males than females. There were 13 male and 6 female patients. This is comparable with other studies by [11]. Rowe where out of 34 patients 32 were male

and two were females.[11] In a study by Jupiter et al out of 20 patients 16 were males and 4 were females. From this, we can conclude that it is more common for inactive individuals.[12] In our study right side clavicle is commonly involved than the left side. This is also comparable with the study by Khan et al where out of 34 cases 28 were on the right side and 6 were left side. From this, we can conclude that the dominant hand involves usually. In our study, the average age group was 27.5 years. This again indicates clavicle fracture is more common in active, working-age group. In our study road traffic accident was the most common cause for clavicle fractures. We assessed the functional outcome using a constant score. We got excellent results in all patients except one in which we used 1/3rd tubular plate. The patient came after 6 months for evaluation of pain, fracture found to be mal united after implant breakage. The patient was not willing for implant removal. He was treated with analgesics.

CONCLUSION

The traditional method of managing middle third clavicular fracture conservatively gives poor functional results. Plate fixation provides better stabilization, pain relief, facilitates early mobilization and return to pre injury activities. Reconstruction plates can be contoured according to the need Owing to the subcutaneous anatomy of clavicle, superior implantation of implant might cause hardware prominence especially in lean individuals demanding subsequent removal.

LIMITATION OF THE STUDY

- Short term study
- Low sample size
- No comparison group

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CONFLICT OF INTEREST

None

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