ORIGINAL RESEARCH

Elastic stable intramedullary nailing versus non-operative treatment of displaced midshaft clavicular fractures

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ABSTRACT

Background: Upper extremity fractures, or clavicle fractures, make about 2% to 5% of all adult fractures and account for 35% to 44% of shoulder girdle fractures, making them one of the most frequent broken bones encountered in emergency rooms. The present study was conducted to compare elastic stable intramedullary nailing versus non-operative treatment of displaced midshaft clavicular fractures.

Materials & Methods: 50 patients of displaced midshaft clavicular fractures of both genders were divided into 2 groups pf 25 each. Group I were treated with operative treatment with Titanium Elastic Nailing System (TENS). and group II underwent conservative treatment. Parameters such as mode of injury, side, type of fracture, and functional outcome was compared in both groups.

Results: Themode of injury was RTAin 18 and 17, fall in 5 and 7 and assault in 2 and 1 in group I and II respectively. Side was right in 20and 22 and left in 15 and 13 respectively. Type of fracture was 15.2.A.3 in 16 and 12, 15.2.A.2 in 8 and 10 and 15.2.A.1 in 1 and 3 respectively. The difference was significant ($P< 0.05$). Functional outcome in group I and group II found to be excellent in 23 and 15, good in 2 and 6 and fair in 1 and 4 respectively. The difference was significant ($P< 0.05$).

Conclusion: TENS found to be effective in terms of better functional outcome as compared to conservative treatment of midshaft clavicle fracture.

Keywords: clavicle, fractures, TENS

INTRODUCTION

Upper extremity fractures, or clavicle fractures, make about 2% to 5% of all adult fractures and account for 35% to 44% of shoulder girdle fractures, making them one of the most frequent broken bones encountered in emergency rooms.[1] The most frequent cause of fracture is direct trauma to the clavicle, which can occur from contact sports or from motorcycle and bicycle accidents.[2] Males are more likely than females to be impacted, and individuals under the age of thirty are most likely to suffer clavicle fractures. A bimodal peak is noted in older patients because of straightforward falls from a moderate height or falls from bed, despite the fact that 88.2% of all clavicle fractures happen in younger persons.[3]

Nonoperative treatment of most clavicular fractures results in uneventful healing without major complications.[4]In the past, the resulting bony prominences were thought to be better than an unattractive scar from internal fixation and open reduction (ORIF). The recommendations for treatment were derived from two sizable series that demonstrated non-union rates of less than 1% in fractures treated conservatively as opposed to over 4% in fractures treated surgically.[5]These findings proved that conservative treatment of clavicular fractures led to good union rates and function, which were superior to those following operative therapy. However, following conservative therapy, union rates, functional recovery, and the morbidity of malunion have all been called into question by recent investigations.[6]The present study was conducted to compare elastic stable intramedullary nailing versus

nonoperative treatment of displaced midshaft clavicular fractures.

MATERIALS & METHODS

The present study was conducted on50 patients of displaced midshaft clavicular fractures of both genders. All were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. They were divided into 2 groups pf 25 each. Group I were treated with operative treatment with Titanium Elastic Nailing System (TENS). and group II underwent conservative treatment. Parameters such as mode of injury, time lapsed between injury & treatment (in days), side, type of fracture, and functional outcome was compared in both groups.Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table: I Assessment of parameters

Parameters	Variables	Group I	Group II	P value
Mode of injury	RTA	18	17	0.92
	Fall	5	7	
	Assault	2	1	
Side	Right	20	22	0.81
	Left	15	13	
type of fracture	15.2.A.3	16	12	0.05
	15.2.A.2	8	10	
	15.2.A.1	1	3	

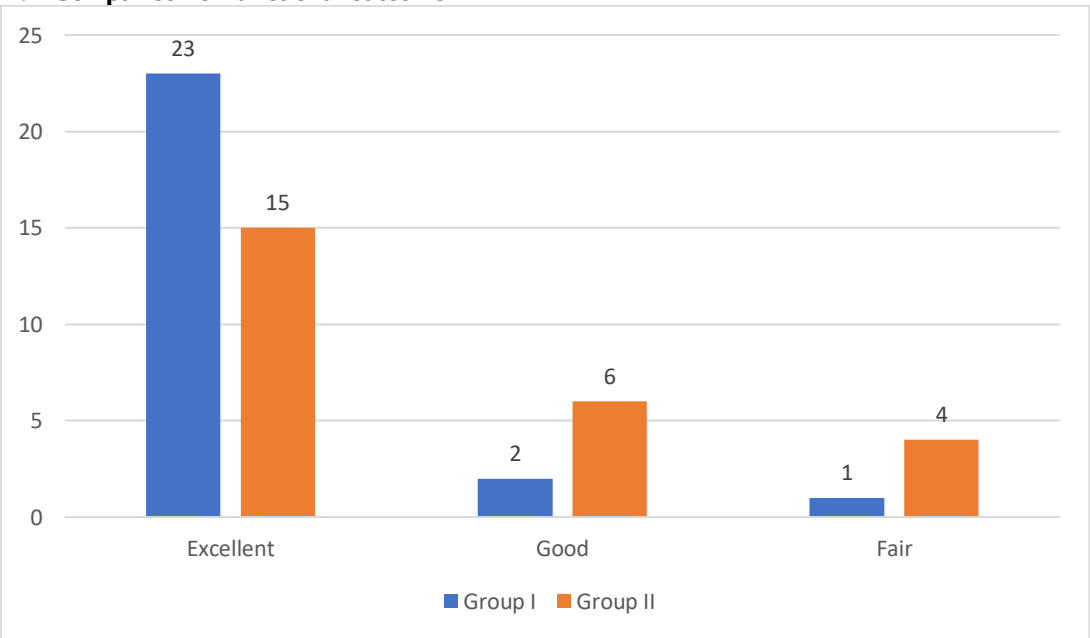
Table I shows that mode of injury was RTA in 18 and 17, fall in 5 and 7 and assault in 2 and 1 in group I and II respectively. Side was right in 20 and 22 and left in 15 and 13 respectively. Type of fracture was 15.2.A.3 in 16 and 12, 15.2.A.2 in 8 and 10 and 15.2.A.1 in 1 and 3 respectively. The difference was significant (P< 0.05).

Table: II Comparison of functional outcome

Functional outcome	Group I	Group II	P value
Excellent	23	15	0.01
Good	2	6	
Fair	1	4	

Table II, graph I shows that functional outcome in group I and group II found to be excellent in 23 and 15, good in 2 and 6 and fair in 1 and 4 respectively. The difference was significant (P< 0.05).

Graph: I Comparison of functional outcome



DISCUSSION

In the adult, undisplaced fractures are comparatively stable fractures. With greater violence there is wide separation of the bone ends. The proximal end under the pull of sternomastoid muscle is often elevated, the shoulder loses the prop like effect of the clavicle so

that it tends to sag downwards and forwards under the effect of gravity with greater displacement of the distal segment, there is eventual overriding and shortening.[7] While in children greenstick fractures are common at the junction between the middle and outer 1/3rd. Sometimes fractures may not be particularly obvious on radiograph, hence it is often useful in the children to have both the shoulders included for comparison.[8]The present study was conducted to compare elastic stable intramedullary nailing versus nonoperative treatment of displaced midshaft clavicular fractures.

We found that mode of injury was RTAin 18 and 17, fall in 5 and 7 and assault in 2 and 1 in group I and II respectively. Side was right in 20and 22 and left in 15 and 13 respectively. Type of fracture was 15.2.A.3 in 16 and 12, 15.2.A.2 in 8 and 10 and 15.2.A.1 in 1 and 3 respectively. Smekal V et al[9] studied elastic stable intramedullary nailing (ESIN) versus non operative treatment of displaced midshaft clavicular fractures" – in a randomized, controlled, clinical trial done on 60 patients between 18 and 65 years of age, at level one trauma center and concluded that elastic intramedullary nailing of a displaced midshaft clavicular fractures resulted in a lower rate of nonunion and delayed union, a faster return to daily activities, and a better functional outcome. Clavicular shortening was significantly lower, and overall satisfaction was higher in the operative groups.

We found that functional outcome in group I and group II found to be excellent in 23 and 15, good in 2 and 6 and fair in 1 and 4 respectively. Liu PC et al[10] in their study, on minimally invasive fixation of displaced midclavicular fractures with titanium elastic nails by concluded that minimally invasive fixation with Titanium Elastic Nail is a safe method and can be performed with minor complications. This method of fixation of displaced midclavicular fractures resulted in a good cosmetic appearance and satisfactory stabilization of displaced midclavicular fractures without comminution.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that TENS found to be effective in terms of better functional outcome as compared to conservative treatment of midshaft clavicle fracture.

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