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Original Research Paper

Orthopaedics

A COMPARATIVE STUDY OF THE COMPLICATIONS FACED IN DISPLACED MID SHAFT FRACTURE CLAVICLE TREATED CONSERVATIVELY AND BY OPEN REDUCTION AND INTERNAL FIXATION (ORIF) WITH PLATE

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ABSTRACT

Middle third fracture of the clavicle is one of the most common fractures of the body clavicle fractures account for approximately 4% of all fractures. It frequently results in short-term disability and pain, eventually causing longer-term deformity and disability if treated inadequately43. Fractures occur most commonly in the middle third of the bone (76-82%) and less often in the distal (12-21%) and medial (3-6%) thirds. Traditionally most of these fractures have been treated with benign neglect, slings, or figure-ofeight harnesses. Historically it was considered that, "All clavicle fractures do well with nonoperative treatment". Such treatment were 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.

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 complication and aims to find out which is a better treatment option.

KEYWORDS : Complications, Displaced Fracture, Clavicle, Open Reduction.

Introduction:

Middle third fracture of the clavicle is one of the most common fractures of the body. clavicle fractures account for approximately 4% of all fractures. It frequently results in short-term disability and pain, eventually causing longer-term deformity and disability if treated inadequately43. Fractures occur most commonly in the middle third of the bone (76-82%) and less often in the distal (12-21%) and medial (3-6%) thirds [1,2]. Traditionally most of these fractures have been treated with benign neglect, slings, or figure-ofeight harnesses. Historically it was considered that, "All clavicle fractures do well with nonoperative treatment". Such treatment were 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 [3]. "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 [2,4] in the 1960s when operative techniques were variable and not standardized or refined [2,4]. 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. Recent studies shows that displaced mid-third clavicular fractures in adults do poorly when treated non-operatively [4], have higher rate of nonunion and, even when they unite, often result in an unsightly cosmetic bump in the centre of clavicle, shoulder ptosis, shoulder discomfort, and patient dissatisfaction [5,6] . In a study conducted to analyze the results of conservative treatment by Hill et al [7] in 1997,Nordqvist et al[31] in 1998 and Robinsonet al [8] in 2004 found poor results following conservative treatment of displaced middle third clavicle fracture. Previously, malunion of the clavicle (which is typical with displaced fractures) was thought to be of radiographic interest only and required no treatment.

But now clavicular malunion is regarded as a distinct clinical entity with radiographic, orthopaedic, neurologic, and cosmetic features. Nowak et al. examined the late sequelae in 208 adult patients with clavicular fractures and found that, at ten years after the injury, ninety-six patients (46%) still had symptoms despite the fact that only fifteen (7%) had a nonunion[9]. When it involves a young patient any compromise in shoulder function due to malunion/nonunion of clavicular fracture severely hampers his employability. Patient today expect a rapid return to pain free function following a fracture. Many recent published articles document the success of open reduction and internal fixation for nonunion of displaced clavicle fractures with low complication rates. Most of these authors used plate fixation to treat these patients.

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 complication and aims to find out which is a better treatment option.

Aims and Objectives:

To study the incidence of post treatment complications 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:

It was a longitudinal observational study done on thirty four adult patients with displaced midthird clavicular fractures presented to our hospital between August 2015 to August 2017 were included for this study. 17 of them were treated with Open reduction and internal fixation with clavicular locking compression plate and screw and the rest 17 were treated conservatively with figure of eight clavicle brace and arm pouch/sling. Also the post treatment complications like non-union, implant breakage, infections were analysed.

Intergroup analysis between two groups was done by unpaired student t-test. Chi- square /fischer exact test has been used to find the significance of study parameters on categorical scale between two or more groups.

Results:

Table 1: Mode of Injury

Mode of Injury	No. of Middle third clavicle	%
1. Road traffic Accident	24	70.6
2. Fall from Height	10	29.4
Total	34	100

Table 2: Major Complications

MAJOR COMPLICATION	NONUNION	SURGICAL GROUP	1(5.8%)
		CONSERVATIVE GROUP	3(17.6%)
	IMPLANT BREAKAGE	SURGICAL GROUP	1(5.8%)
		CONSERVATIVE GROUP	0

Table 3: Minor Complications:

MINOR COMPLICATION	SKIN INFECTION	SURGICAL GROUP	1(5.8%)
		CONSERVATIVE GROUP	0

Discussion:

NONUNION In our study, one patient (5.8%) went for non-union amoung the operative group and 3 patients (17.6%) went for non-union amoung the conservative group. All these 4 patients underwent open reduction with clavicular plate and bone grafting for nonunion. In Bostman et al [10] study,no patients went for nonunion. In a study by Hill et al.[30] in non-operatively treated fracture clavicle non union rate reported was 15% . According to Poigenfurts J et al57 nonunion rate in patients underwent operative management was 2.2% .

IMPLANT BREAKAGE:

In our study one patient (5.8%) in the surgical group sustained a road traffic accident after surgery and presented with refracture and a broken implant. He underwent implant removal, replating and bonegrafting.

INFECTION:-

In our study ,one patient (5.8%) in operative group had superficial skin infection. It was treated with oral antibiotics for 5 days and it got cured. In bostman et al study [10],the infection rate was found to be 7.8%.

Conclusion:

The complications we faced were one case of non union in surgical group and three cases of non union in conservative group which were in par with the non-union rates in standard literatures. There was also one case of superficial skin infection in surgical group.

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