Original Research

A comparative study of K-wire fixation and clavicular hook plate fixation for unstable fractures of distal clavicle

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ABSTRACT

Background: Five to ten percent of all fractures are clavicle fractures. The majority affect men under the age of 25, but they also affect men over the age of 55 and women over the age of 75 more frequently. The present study was conducted to compare K-wire fixation and clavicular hook plate fixation for unstable fractures of distal clavicle.

Materials & Methods: 50 fractures of the distal clavicle patients of both genderswere divided into 2 groups of 25 each. Group I patients were treated with K-wire fixation and group II with clavicular hook plate fixation. L'Insalata et al.'s self-administered questionnaires were used to measure shoulder symptoms. Constant-Murley score and complications were noted.

Results: Group I had 14 males and 11 females and group II had 12 males and 13 females. The side affected was right in 13 and l1 and left in 12 and 14 patients. The mode of trauma was RTA in 16 and 14, fall in 7 and 8, and sports injury in 2 and 3 patients in group I and II respectively. Associated injuries were present in 5 and 4 and absent in 20 and 19. Complications found were infection in 1 and 3 and loss of reduction 2 in group I and 5 in in group I and group II respectively. The mean L' Insalata score in group I patients was 88 and in group II was 91, constant score was 86 in group I and 90 in group II. The difference was significant (P< 0.05).

Conclusion: It was discovered that clavicular hook plate treatment of distal clavicular fractures was superior to K-wire fixing.

Key words: K-wire fixation, Clavicularhookplate, clavicular fractures

Introduction

Five to ten percent of all fractures are clavicle fractures. The majority affect men under the age of 25, but they also affect men over the age of 55 and women over the age of 75 more frequently.[1]By dividing the clavicle into thirds, the Allman classification is commonly used to characterize the anatomic site of the fracture. The center third of the clavicle is affected by group I (midshaft) fractures, the lateral (distal) third by group II fractures, and the medial (proximal) third by group III fractures.[2]About 75 to 80 percent of all clavicle fractures are midshaft fractures, which usually affect younger people. Roughly 15 to 25 percent of clavicle fractures are distal third fractures.[3] Less than 5% of fractures are medial third fractures, which are the least prevalent.A hooked plate with an extension under the acromion has been developed because unstable distal clavicle fractures (Neer 2) are usually accepted as an indication for surgical treatment.[4] Several methods have been proposed, with the most common being trans- or extra-articular K-wire fixation, but this carries a considerable risk of complications, especially migration of the pin and loss of reduction. Plate fixation is insecure because the distal fragment is typically small and the metaphyseal bone soft.[5]The present study was conducted to compare K-wire fixation and clavicular hook plate fixation for unstable fractures of distal clavicle.

Materials & Methods

The present study was conducted in department of Orthopaedics, Vardhman Institute Of Medical Sciences PawapuriNalanda from January 2021 to December 2021.

This study comprised of 50 fractures of the distal clavicle patients of both genders. All were informed

regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 25 each. Group I patients were treated with K-wire fixation and group II with clavicular hook plate fixation. L'Insalata et al.'s self-administered questionnaires were used to measure shoulder symptoms. We assessed shoulder function using the Constant-Murley score method. Every modality's complications were evaluated and noted. Results thus obtained were subjected to statistical analysis. P value <0.05 was considered significant.

Results

Table: I Patient distribution

Groups	Group I	Group II
Method	K-wire fixation	Clavicular hook plate fixation
M:F	14:11	12:13

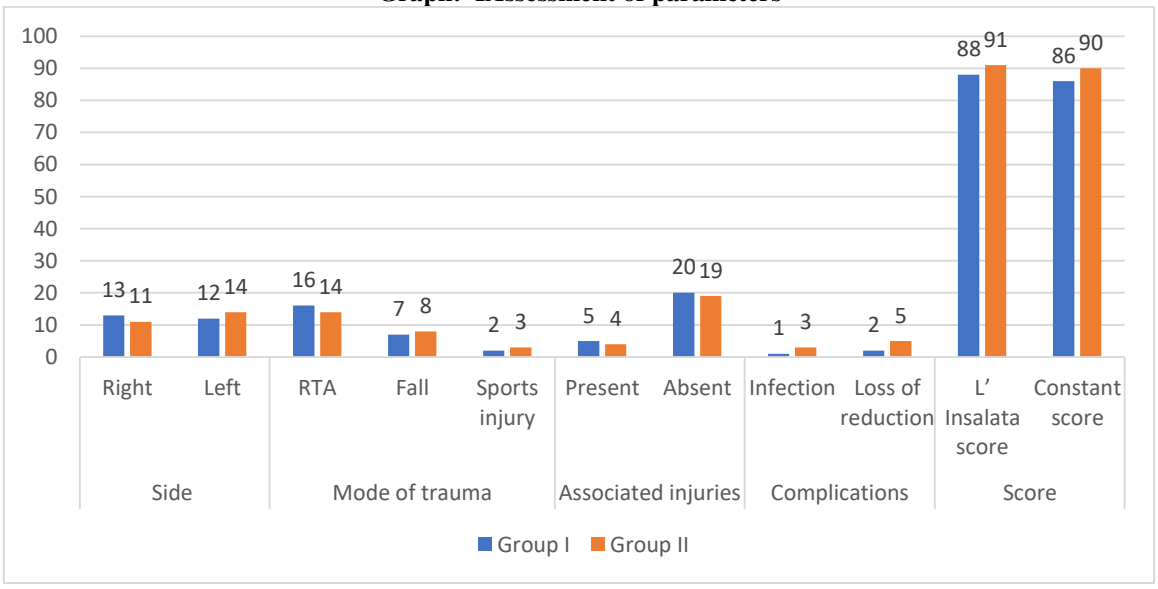
Table I shows that group I had 14 males and 11 females and group II had 12 males and 13 females.

Table: II Assessment of parameters

Parameters	Variables	Group I	Group II	P value
Side	Right	13	11	0.71
	Left	12	14	
Mode of trauma	RTA	16	14	0.82
	Fall	7	8	
	Sports injury	2	3	
Associated injuries	Present	5	4	0.64
	Absent	20	19	
Complications	Infection	1	3	0.05
	Loss of reduction	2	5	
Score	L'Insalata score	88	91	0.12
	Constant score	86	90	0.25

Table II, graph I shows thatside affected was right in 13 and 11 and left in 12 and 14 patients. The mode of trauma was RTA in 16 and 14, fall in 7 and 8, and sports injury in 2 and 3 patients in group I and II respectively. Associated injuries were present in 5 and 4 and absent in 20 and 19. Complications found were infectionin1 and 3and loss of reduction2 in group I and 5 in in group I and group II respectively. The mean L' Insalata score in group I patients was 88 and in group II was 91, constant scorewas 86 in group I and 90 in group II. The difference was significant (P< 0.05).

Graph: IAssessment of parameters



Discussion

Adults who fall often sustain distal clavicle fractures, which are severe injuries to the shoulder. Ten to thirty percent of all clavicle fractures are distal clavicle fractures.[6,7] Because it might be hard to identify minute changes in the fracture pattern that could point to fracture instability, managing distal clavicle fractures is frequently problematic. While unstable fracture patterns are frequently linked to a prolonged time to union and substantial non-union rates, stable fracture patterns typically heal without incident with nonsurgical care.[8]For some distal clavicle fracture patterns, primary surgical surgery has been advised due to concerns that nonsurgical treatment may result in non-union. The clinical significance of these non-unions has been questioned, nevertheless, given they are frequently asymptomatic. The numerous problems that have historically been documented after surgical fixation support the use of nonsurgical therapy.[9,10,11]The present study was conducted to compare K-wire fixation and clavicular hook plate fixation for unstable fractures of distal clavicle.

We found that group I had 14 males and 11 females and group II had 12 males and 13 females. Leu et al[12] assessed efficacy and advantages/disadvantages of this implant compared with the tension band wire technique in treating this fracture have not been determined.45 patientswere divided into two groups based on the treatment method. The clavicle HP group included 25 patients and the K-wire and tension band wire (KTBW) group included 20 patients. Radiographic examinations were taken to assess the adequacy of implant fixation and degree of bony union. Clinical results for pain, shoulder function and range of motion were evaluated using Constant–Murley scores.Two groups of patients were similar in terms of age, sex, injury mechanisms, time to surgery, and time of follow-up. The results showed that the HP group had a significantly higher union rate and lower occurrence of surgical complications ($p < 0.001$). However, 36% of patients in the HP group developed subacromial shoulder impingement syndrome before implant removal, and their functional scores were poorer than their nonimpinged counterparts.

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Conclusion

It was discovered that clavicular hook plate treatment of distal clavicular fractures was superior to K-wire fixing.

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