IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 5 Ver. 2 (May. 2018), PP 01-03
www.iosrjournals.org

Functional Evaluation of Elastic Intramedullary Nailing For Mid Shaft Clavicle Fractures.

Dr.C.Balaji Ms Ortho[1]
1(Department Of Orthopaedics And Traumatology/Thanjavur Medical College/ Dr.MGR University,India)

Abstract:
Background:*Elastic, stable intramedullary nailing(ESIN) with titanium nails is a promising minimally invasive treatment for displaced mid clavicular fractures, whichmay be an alternative to plate fixation (ORIF) or even non operative treatment. We describe the surgical technique and outcome in 10 patients.*
Patients And Method*: We treated 10 patients between 25 yrs to 50yrs who had displaced midclavicular fractures with titanium elastic nails and observed for a period of 14 months. Nail was inserted through a 1.5cm incision over the medial aspect of clavicle, 2cm away from the sternoclavicular joint. In all the patients we reduced the fracture with a 1.5cm-2cm over the fracture site.*
Results And Complications: *Significant union was reported approximately at the end of 6weeks. There was no cases of non-union. Malunion was reported in two cases. Misplaced nail was observed in two of the cases and revision nailing was done in one of the cases. Skin irritation at the medial entry point was observed in three of the patients. All the patients were followed twice weekly until 3 months and implant exit was done in six of the patients.*
Keywords: *Clavicle nailing, ESIN,TENS clavicle.*

Date of Submission: 17-04-2018 Date of acceptance: 05-05-2018

I. Introduction:

Elastic stable intramedullary nailing (ESIN) with titanium nails is a promising minimally treatment for displaced midclavicular fractures, which may be an alternative to plate fixation (ORIF) or even nonoperative treatment. Regarding displaced midshaft clavicle fractures[1], a high rate of sequalae has been reported (NOWAK et al. 2005).We describe the surgical technique and outcome in 10 patients. Elastic stable intramedullary nailing is an increasingly popular alternative for the internal fixation of displaced midclavicular fractures. Titanium Elastic nails are also used for the management of diaphyseal fractures of long bones in children.

II. Materials And Method:

We treated 10 patients between 25 yrs to 50yrs who had displaced mid clavicular fractures with titanium elastic nails and observed for a period of 2years. Inclusion criterias are displaced midshaft fractures of more than shaft width, shortening over 2cm, angulation of over 30°, open fractures, or threat of skin perforations at fracture site(fig:1a).

Patient is placed in the supine /"beach chair" position. At the sternal end of the clavicle, a skin incision of 2 cm is made parallel to the clavicle. The anterior cortex is opened with an awl about 1.5 cm lateral to the sterno clavicular joint. A TEN (average diameter 1.5 mm) is inserted and advanced to the fracture site under
c arm guidance. Subsequently, the fracture is reduced in a closed manner. If closed reduction is not possible, a 1-2 cm skin incision (mini open technique) at the level of the fracture site is made for open or semi-open fracture reduction. Reduction is maintained provisionally with a small reduction forceps.The nail is subsequently advanced across the fracture into the lateral fragment with gentle rotational movements.Care must be taken that the implant is not advanced too laterally in order to avoid penetration into the acromio clavicular joint. The medial end of the nail is cut and the overlying skin is sutured (fig:1b,c).

Fig: 1a

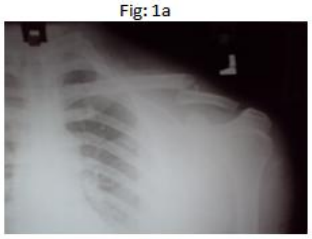


Fig: 1b

Fig: 1c

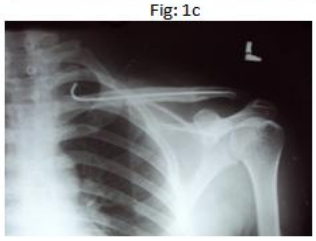
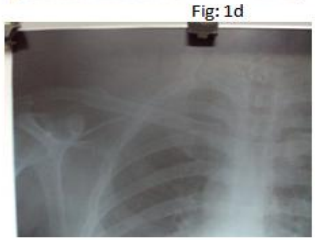


Fig: 1d



Case illustration with fig:1a showing the preoperative x ray of the patient, fig:1b immediate post operative x ray of the patient, fig:1c 3 months follow up x ray showing evidence of fracture healing, fig:1d x ray after implant removal
After surgery, early physical therapy with a limitation of abduction of 90° is commenced for the first 3 to 4 weeks(fig:2a,b,c,d).

Fig: 2a

Fig: 2b

Fig: 2c

Fig: 2d

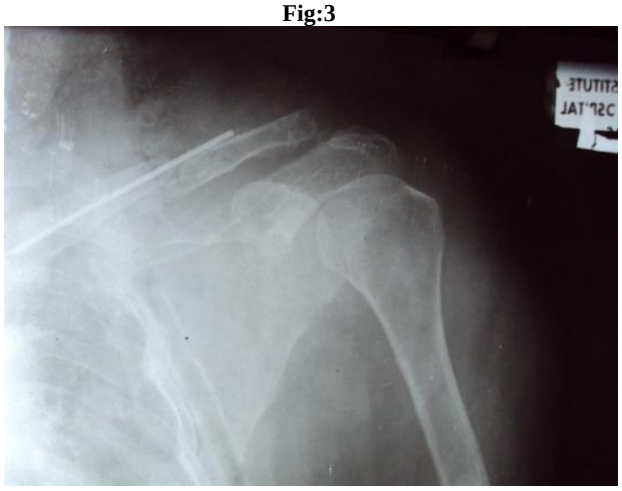
Case illustration with fig:2a showing the preoperative x ray of the patient, fig:2b immediate post operative x ray of the patient, fig:2c 3 months follow up x ray showing evidence of fracture healing,fig:2d clinical photograph of the patient at 3 months follow up

Implant removal is recommended after radiographic fracture consolidation,(fig:1d) after 12 weeks at the earliest and not later than 12 months. The implant can be removed easily with strong extraction forceps, under local or general anaesthesiadepending on the patient's desire.

III. Results And Complications:

Significant union was reported approximately at the end of 6weeks. Outcome analysis[5] was done using DASH SCORE. There was no cases of non-union. Malunion was reported in two cases. Misplaced nail was observed in one of the cases(fig:3) and

Fig:3



Post op x ray of the patient with misplaced nail insitu revision nailing was done . Skin irritation at the medial entry point was observed in three of the patients (table:1). All the patients were followed twice weekly until 3 months and implant exit was done after 12 weeks average.

Table: 1. Complications of elastic nailing in Mid shaft clavicle fractures.

Complications	Number	Comments
1.Infections, Hematoma	0	
2.Misplaced nail	1	Revision nail was done.
3.Malunion	2	No complaints.
4.Non union	0	
5.Skin irritation	3	Settled after implant exit.

IV. Discussion:

Traditionally, midclavicular fractures have been treated conservatively. ROWE and NEER in the sixties recommended non-operative treatment, because they observed a very small number of non-unions. Conservative treatment subsequently became the standard procedure for the management of non-displaced as well as for displaced mid clavicular fractures[4]. Also, more recent studies observed good functional and radiographical results after non-operative treatment. The indications for operative treatment were limited to (imminent) skin perforation and associated neurovascular lesions . The results regarding the outcome of conservative treatment of displaced midclavicular fractures nowadays, however, are seen in a more differentiated manner and they are controversially discussed. WICK *et al.* and ESKOLA *et al[6]*. observed high rates of non-union, shoulder pain and poor functional results when the fracture had healed with shortening of more than 2 cm. These findings were confirmed by LAZARIDES *et al.* and by HILL[8] . These studies favour operative treatment of displaced midclavicular fractures by describing high rates of good and excellent results. The standard procedure for osteo synthesis is plate fixation using small fragment DC or reconstruction plates . Although plate fixation provides adequate stability, ROWE *et al.* and BRONZ *et al[3]*. described complications like non-union, refracture or loosening of implants[2]. Similar complications have been described with intramedullary pinning . GRASSI *et al[7]*. experienced infections, non-union, refractures and hardware-related problems after operative treatment with 2.5 mmKirschner-wires . Minimally invasive ESIN was established as an alternative to plate fixation. JUBEL *et al.* showed that the correction of clavicular shortening is a prerequisite of good functional outcome. They did not observe non-union or poor postoperative outcome. In this study, intramedullary nailing provided early functional recovery in all patients. Patients today have high expectations of the functional outcome. They expect rapid and pain-free functional recovery following a fracture. In contrast to conservative treatment, minimally invasive techniques can fulfil these objectives with reduced risk of complications . As a result, the mean period of disability is short. Flexible intramedullary nailing, a minimally invasive technique for stabilization of displaced midshaft clavicle fractures, has minor risks and complications.

References:

[1]. ALLMAN F. L. Fractures and ligamentous injuries of the clavicle and its articulation. *J Bone Joint Surg*, 1967, 49-A : 774-784

[2]. BOSTMAN O., MANNINEN M., PIHLAJAMAKI H. Complications of plate fixation in fresh, displaced midclavicular fractures. *J Trauma*,1997, 43 : 778-783. *Elastic Intramedullary Nailing of Midclavicular Fractures* 431

[3]. BRONZ G., HEIM D., PUSTERLA C., HEIM U. Osteosynthesis of the clavicle. *Unfallheilkunde*, 1981, 84 : 319-325.

[4]. CANADIAN ORTHOPAEDIC TRAUMA SOCIETY. Non-operative treatment compared with plate fixation of displaced midshaftclavicular fractures. A multi-centre, randomised clinical trial. *J Bone Joint Surg Am*, 2007, 89 (1) : 1-10.

[5]. CONSTANT C. R. A clinical method of functional assessment of the shoulder.*ClinOrthop*, 1987, 214 : 160-164.

[6]. ESKOLA A., VAINIONPAA S., MYLLYNEN P., PATIALA H., ROKKANEN P.

[7]. The outcome of clavicular fracture in 89 patients.*Arch Orthop Trauma Surg*, 1986, 105 : 337-338.

[8]. GRASSI F. A., TAJANA M. S., D'ANGELO F. Management of midclavicular fractures : a comparison between non-operative treatment and open intramedullary fixation in 80 patients. *J Trauma*, 2001, 50 : 1096-1100.

[9]. HILL J. M., MCGUIRE M. H., CROSBY L. A. Closed treatment of displaced middle third fractures of the clavicle gives poor results. *J Bone Joint Surg Br*, 1997, 79 : 537-539.

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