

Research Article
Orthopaedics

BRAIDED, DOUBLE STRANDED SS WIRE TENSION BAND WIRING FOR PATELLA FRACTURES

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Abstract:

Purpose of study: Various surgical methods of treatment have been described in literature for displaced patella fracture. Though open reduction and tension band wiring is most commonly performed other fixation methods procedures like cancellous screws, external fixation, encirclage, fibre wire etc. have been described. to date there are no studies to show the efficacy of using braided , double stranded SS wire for patella fractures. We used braided double stranded SS wire tension band wiring for displaced patella factures and found good union rates and low complication rates.

Material and Methods: Twelve cases of displaced two part fractures have been included in the study between Jan 2015 to December 2016. All the cases were operated by the same surgical team. Routine preoperative clinic radiological examination was done. Cases included in the study underwent open reduction of patella fractures by standard anterior approach. No 20 SS wire is braided with the help of drill. After open reduction tension band wiring with braided stainless steel (SS) wire was done. Postoperatively patients were followed at 6 wks ,3 months and 6 months.

Conclusion: Tension band wiring with a braided double strand SS wire results in more stable and rigid fixation. Because of early mobilization the fracture union is early and better knee range of movements. Incidence of complications like implant failure, knee stiffness and refracture are less

compared to classical tension band wiring with single stranded SS wires.

Key words: Braided, SS wire, tension band wiring, patella fractures

Introduction

Patella is a largest sesamoid bone in the body which is located in the extensor mechanism of the knee. Patella fracture is one of the common fracture accounting for approximately 1% of all skeletal injuries.¹ Surgical intervention is required for restoration of extensor mechanism and articular congruity. Various surgical methods of treatment have been described in literature. Though open reduction and tension band wiring is most commonly performed other fixation methods procedures like cancellous screws, external fixation, encirclage, fibre wire etc. have been described. We used braided double stranded SS wire tension band wiring for displaced patella fractures and found good union rates and low complication rates.

Materials and Methods

Twelve cases of displaced two part fractures have been included in the study between Jan 2015 to December 2016. All the cases were operated by the same surgical team. Routine preoperative clinic radiological examination was done. Cases included in the study underwent open reduction of patella fractures by standard anterior approach. No 20 SS wire is braided with the help of drill. After open reduction tension band wiring with braided stainless steel (SS) wire was done. Postoperatively patients were followed at 6 wks, 3 months and 6 months.

Results

All the 12 patients included in the study were available for follow up. Eight patients were male and four were female. Average age of the patient is 43 years. Most common cause of injury is RTA in 10 of cases and self-fall in two cases. All the cases were

transverse displaced or minimally comminuted fractures. Average weeks for fracture union was 10 weeks (range 8-14). Average knee range of flexion at 6 months follow up was 130 (range 120-140). Two patients had hardware prominence but didnt require implant removal.

Demography

Average age	43 yrs (range24-55)
Sex	Male:8 Female :4
Type	Open: 2 Closed :10
Fracture pattern	Transverse: 9 Comminuted:3
Mechanism of injury	RTA:10 Self-fall :2
Average time for union	10 wks (range 8-14)
Average knee ROM at 6 months	130 degrees (110-140)

Discussion

The goal of surgical management is restoration of functional extensor mechanism, articular congruity and painless full knee motion. Therefore, the operative method chosen should ensure anatomical and rigid fixation so that knee can be mobilized at the earliest. Tension band wiring is most commonly used for internal fixation of patella fractures where stateless steel wire is looped in a figure of eight pattern around two Kirschner wires. To best of our knowledge only single strand of SS wire is used with two k wires. Our study used braided, double strand of SS wire for tension band wiring. Use of braided SS wire resulted in a more stable and rigid construct. These patients can be mobilized at the earliest on postoperative day 1. The fracture union rate was early at an average of 10 wks and had better knee range of movements at six months (average 130). All the fractures went on to heal without any need for secondary procedures. There was no

implant failure whereas two patients complained of prominent hardware not amounting to implant removal.

Hence if we compare our results to literature existing on treatment of patella fractures, braided double stranded SS wire fixation gives better results with early union and low complications. Limitations of our study is small sample size and no randomization.

Conclusion

Tension band wiring with a braided double strand SS wire results in more stable and rigid fixation. Because of early mobilization the fracture union is early and better knee range of movements. Incidence of complications like implant failure, knee stiffness and refracture are less compared to classical tension band wiring with single stranded SS wires.



Immediate post op lat view



Preparation of braided SS wire

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