

Is arthroscopic assisted fixation gold standard in treatment of eminentia fractures of tibia?

Binnet M.S.¹, Basarir K.², Armangil M.², Acar B.²

¹Ankara University, Orthopedics and Traumatology, Ankara, Turkey,

²Ankara University, Ankara, Turkey

Objectives: Tibial eminence fractures are more common in younger ages and considered to be childhood equivalents of ACL tear. The fractures are originally classified by Meyers and McKeeever according to degree of displacement into three types and later comminuted fractures were added as type IV. Their recommendation for treatment was conservative treatment for nondisplaced fractures and open reduction and internal fixation for displaced fractures. There are various methods of internal fixation including Kirschner wires, metal screws or suture materials. Open reduction cause some morbidity, which was decreased by recent arthroscopic methods. Realizing the potential effect of age and fixation method on clinical results we have conducted a retrospective review of patient outcomes.

Methods: Patients who sustained type II or type III fractures of the tibial eminence and were treated with arthroscopic fixation from 1992 through 2006 were included in the study. All surgeries were performed by single surgeon. Data obtained included patient demographics, mechanism of injury, radiological findings, surgical findings surgical technique and complications. At the latest follow up physical examination findings, stability tests and Lysholm knee scores were reviewed. Two additional (anteromedial superior and anterolateral inferior) portals were used for temporary and definitive stabilization of the fracture. Preliminary fixation with K-wires was followed by definitive fixation with either sutures or screws. Suture fixation was performed as described by Berg and Matthews. In screw fixation K-wires used for temporary fixation were used as guides for cannulated screws.

Results: A total of 47 patients met the inclusion criteria. There were 19 type II and 28 type III fractures. The mean age was 22.8 years. Suture was the preferred fixation method in 20 and screw was in 27 cases. Radiological bone incorporation was observed in all patients with an average of 6.7 weeks. The average follow up period was 55.6 months. The overall complication rate was 31% including 6 knee effusions, tenderness over the fixation post for 5 cases, residual instability and vascular insufficiency in one patient. The average loss of motion was 8.7 degrees in flexion and 5 degrees in extension. The median Lysholm knee score was 95. However none of the patients had symptoms of instability, five cases had positive Lachmann and seven had positive KT-1000 test.

Conclusion: In order to avoid morbidity of open reduction and advantages of treating accompanying injuries simultaneously arthroscopic modes of reduction and fixation was used for all patients in our series. The fixation method had no significant effect on stability and clinical outcome at the time of latest follow-up in our series. After the development of sufficient arthroscopic techniques for stable fixation, postoperative rehabilitation changed from cast immobilization to allowing early aggressive rehabilitation. It could be said that displaced tibial eminence fractures can be treated successfully either with screws or sutures with similar results by using arthroscopic methods independent of age. Suture fixation may be preferred because of lack of hardware removal which causes increased rates of reoperation in internal fixation group. Finally we agreed that the arthroscopic management of eminentia fractures should be standard method of treatment, considering its advantages to open reduction.