Para-Patellar Plate Fixation For Comminuted Fractures

Authors: Benjamin J Maxson, DO and Chad A Weber, DO

Affiliation: Grandview Medical Center, Dayton, OH

Introduction: Patella fractures have been treated operatively for well over 100 years. Early on, it was recognized that nonoperative management of displaced patella fractures leads to poor outcomes. The theory of tension band fixation to allow for mechanical compression at the superficial surface of the patella, resulting in compression at the articular surface is a well known and well proven technique. The actual method of fixation has evolved through much iteration, with improvements over time, although kirschner wire and anterior tension banding still functions well for simple transverse fracture patterns.

Methods: Comminuted patella fractures are more of a challenge, and tension band wiring often does not provide stable fixation for all fracture fragments. Recent biomechanical and cadaveric studies have shown the possible benefits of plate fixation for patella fractures, but little is published regarding outcomes of plate fixation for comminuted patella fractures. Low profile locked plate and screw fixation, in conjunction with other methods of fixation, or as primary fixation, is a viable option for comminuted patella fractures in which other methods of fixation would fail to capture all fracture fragments or provide stable fixation.

Case Report: We present the case of an 88 year old male who sustained a right transverse patella fracture with lateral comminution. Prior to the injury he was an independent community ambulator who enjoyed recreational activities including golfing. He was treated with modified anterior tension band wiring through longitudinal cannulated screws, with para-patellar plate and screw fixation to address his lateral comminution. At 3 months postoperatively, the patient was ambulating without assistance, and at 6 months follow up the patient had regained full range of motion, and x-rays demonstrated appropriate articular alignment with no loss of fixation. The patient had no complaints of hardware irritation or pain from the plate construct used. He resumed his pre-injury activities, including ambulation without assistance, and recreation activities including golfing. At final follow up, the patient continued to enjoy all of his pre-injury activities, with no residual disability.

Discussion: Para-patellar locked plate fixation is a viable option for comminuted patella fractures, when tension band fixation is inadequate for stable fixation. Plates allow for fixation of multiple fragments which otherwise would not be adequately reduced or stabilized. The low profile of newer systems allow for fixation which does not cause an increase in hardware irritation. The increased rigidity and stability of the construct leads to earlier range of motion post-operatively, and less dependence on soft tissue fixation.

References:
