KEY PROCEDURES

SURGICAL REDUCTION AND FIXATION OF TIBIAL SPINE FRACTURES IN CHILDREN: MULTIPLE FIXATION STRATEGIES

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Abstract

A tibial spine fracture is an osseous avulsion of the anterior cruciate ligament (ACL) from its attachment on the intercondylar tibial eminence. Most commonly affecting the immature skeletal systems of children between 8 and 14 years old, tibial spine fractures are frequently regarded as the pediatric equivalent to adult midsubstance ACL injuries. While all nondisplaced and selected partially displaced fractures can be treated nonoperatively, surgical fixation is most frequently used for completely displaced tibial spine fractures. The goals of surgery include osseous union, restoration of knee stability, return to function, treatment of associated injuries, and restoration of the range of motion. Current evidence has demonstrated equivalent outcomes for open and arthroscopic reduction strategies, as well as for screw-based and suture-based fixation techniques. The surgeon should be prepared to offer a multitude of fixation techniques based on intraoperative findings that will provide stable anatomic reduction, including, for instance, the use of suture-based fixation in comminuted fragments. This video article demonstrates an arthroscopic procedure to repair a tibial spine fracture, including 3 methods of fixation, in the following major steps: (1) preoperative planning, (2) patient positioning and surgical exposure, (3) evacuation of the hemarthrosis, (4) diagnostic arthroscopy, (5) preparation of the fracture fragment, (6) reduction of the fracture fragment, (7) fixation option 1: screw fixation, (8) fixation option 2: suture anchor, (9) fixation option 3: suture, and (10) dynamic assessment of stability and closure. Excellent functional outcomes using this procedure have been documented and, with appropriate postoperative care that includes range-of-motion exercises beginning as early as 1 to 2 weeks postoperatively, patients are expected to recover function and to resume a normal activity level. Complications, including nonunion, malunion, and arthrofibrosis, can be reduced when patients with completely displaced tibial spine fractures are treated with surgical management.

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