

KEY PROCEDURES

INTRAMEDULLARY NAIL FIXATION OF TIBIAL SHAFT FRACTURES

Suprapatellar Approach

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Published outcomes of this procedure can be found at: *J Orthop Traumatol.* 2017 Mar; 18(1):69-76, *J Orthop Trauma.* 1999 Nov;13(8):550-3, and *J Orthop Trauma.* 2014;28(5):263-9.

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Abstract

Intramedullary nailing is the most popular and widely used method for treating tibial shaft fractures. Intramedullary nailing involves minimal surgical dissection, allowing preservation of blood supply by not disrupting the soft tissue around the fracture. The procedure is performed with the following steps: (1) the patient is positioned supine on the radiolucent operating table with a bump under the ipsilateral hip; (2) a 4 to 6-cm longitudinal incision is made 2 to 4 cm directly proximal to the superior pole of the patella; (3) the quadriceps tendon is sharply incised at its midline and split longitudinally; (4) a cannula device with a blunt trocar and protective sleeve is inserted into the knee joint between the articular surface of the patella and the trochlea of the distal part of the femur, after which a second pin can be inserted through the cannula device and into the distal part of the femur to stabilize the cannula and keep it from backing out; (5) a 3.2-mm guide pin is inserted and placed resting at the junction of the articular surface and the anterior cortex of the tibia at the appropriate starting point in line with the intramedullary canal; (6) the guide pin is advanced 8 to 10 cm into the proximal part of the tibia, the inner centering sleeve is removed, and the cannulated entry drill is passed over the pin through the outer protective sleeve and used to ream down to the metadiaphyseal level of the proximal part of the tibia; (7) the fracture is reduced; (8) a ball-tipped guidewire is centrally passed across the fracture down to the level of the distal tibial physal scar; (9) incremental reaming is performed, and the appropriate-size tibial nail is inserted down the tibial canal; (10) the appropriate nail position is confirmed radiographically, and distal interlocking screws are placed with a freehand technique, after which the proximal aiming arm is attached to the insertion handle and interlocking screws are drilled, measured, and placed into the proximal part of the tibia as well; and (11) all incisions as well as the quadriceps tendon are closed. Intramedullary nail fixation is a safe and effective method for treating tibial shaft fractures, and with appropriate surgical technique good outcomes and reproducible results can be expected. This soft-tissue-sparing method of

Disclosure: The authors indicated that no external funding was received for any aspect of this work. The **Disclosure of Potential Conflicts of Interest** forms are provided with the online version of the article (<http://links.lww.com/JBSEST/A223>).

fracture fixation achieves biomechanical stabilization of the fracture using a load-sharing device that allows for earlier postoperative ambulation.

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