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Exposure area of the posterolateral approach to the distal region of the tibia

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ABSTRACT

Introduction: The posterolateral approach was first described by Gatellier and Chastang in 1924 for assessing fragments of the posterior malleolar bone in ankle fractures. The correct posterior exposure of the distal tibia also makes it possible to treat osteochondritis dissecans of the talus, to excise benign tumors and to perform arthrodesis of the posterior facet of the subtalar joint. The objective of our study was to assess the exposure area of the posterior region of the distal tibia in the posterolateral approach and to determine its safety.

Methods: The study was conducted on the fresh cadaver of a 54-year-old man without scars at the site. With the body positioned in dorsal decubitus, we marked the reference points. A 12-cm longitudinal incision was made halfway between the lateral malleolus and the Achilles tendon, extending distally along the posterior border of the fibula toward the fifth metatarsal. The sural nerve follows its course at a constant distance, on average 2.5cm, posterior to the fibula. After the incision of the peroneal retinaculum sheath was made, the tendons were exposed and moved to the anterior. In the medial region, we moved the Achilles tendon and exposed the flexor hallucis longus tendon, moving it medially and exposing the posterior region of the tibia and syndesmosis. Using a digital caliper (Mitutoyu Kawasaki, Japan), we measured the exposed area. We respected a 40-mm safety area where the fibular artery arises from the bifurcation of the tibial-fibular trunk. We chose not to perform fibular osteotomy or a longitudinal section of the flexor hallucis longus tendon.

Results: A 30.44-mm segment was exposed in the transverse plane of the distal tibial region that begins at the posterior distal tibiofibular syndesmosis.

Conclusion: The posterolateral approach provides excellent exposure of the distal region of the tibia with great safety. The tibial nerve and the posterior tibial artery are safe after the flexor hallucis longus tendon is moved, and the sural nerve is contained in the region proximal to the approach. The exposed area stretches to the region near the medial malleolus, and the flexor retinaculum prevents a more medial approach. We conclude that the posterolateral approach is safe even for more medial lesions restricted to the flexor retinaculum.

Keywords: Posterolateral approach; Region of the distal tibia.

