

THE HIDDEN INJURY – POSTERIOR MALLEOLUS FRACTURES IN COMBINATION WITH TIBIAL DIAPHYSEAL FRACTURES

Andris Džeriņš¹, Agita Zariņa², Pēteris Studers¹

¹Joint Laboratory of Traumatology and Orthopaedics, Rīga Stradiņš University;
Hospital of Traumatology and Orthopaedics

²Rīga Stradiņš University

Objectives. To determine the frequency of diagnosed and unrecognized posterior malleolus fractures in patients with tibial diaphyseal fractures and their impact on further treatment outcomes.

Materials and Methods. 115 patients with diaphyseal tibial fractures hospitalized in a single medical center from year 2020 to 2021 were included in the retrospective study. Patient demographic data, trauma mechanism, posterior malleolus fracture frequency, size, displacement, treatment methods, radiographic signs of fracture consolidation, and ankle joint osteoarthritis were analyzed by using the Impax-Orthopaedic-Tools 3.0.2.3 and IBM SPSS 23 program.

Results. The most common trauma mechanism was a twisting injury and falling from one's height (67%). Accompanying posterior malleolus fractures were present in 39% of all cases. While patients with posterior malleolus involvement had 93% spiral diaphyseal tibial fractures, the difference between patients without posterior malleolus fractures was not significant ($p = 0.091$). Diaphyseal fractures localized in the distal third of tibia were significantly more prevalent in the posterior malleolus group (83% vs 100%, $p = 0.026$). While fibular fractures were present in all posterior malleolus patients, the difference was not significant ($p = 0.076$). CT scan of the lower leg was done in 12% of all cases, increasing the count of diagnosed posterior malleolus fractures by 4%. In seven cases the posterior malleolus fracture was detected only in postoperative radiographs, one of these patients had the fracture additionally fixated with screws. Posterior malleolus was surgically fixated in 73% of cases. Signs of ankle joint osteoarthritis (stage 1) after one year were significantly more common in the posterior malleolus group ($p = 0.039$).

Conclusions. A patient with a rotational injury sustaining a spiral distal third tibia fracture with a fibula fracture has an increased risk of posterior malleolus fracture. Ankle joint CT scan should be indicated in such cases. By identifying concomitant posterior malleolus fractures, the surgeon can develop an adequate treatment plan to achieve a satisfactory outcome.