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Association of medial talar chondral lesions with deltoid ligament ruptures in ankle fractures: a multicenter study of 100 cases

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Introduction: Deltoid ligament ruptures are common in the context of ankle fractures and may be managed either conservatively or surgically, there is currently no clear consensus regarding the optimal treatment approach. This study aimed to determine the incidence of medial talar chondral lesions (MTCL) in ankle fractures with deltoid ligament (DL) rupture and to evaluate their relationship with fracture characteristics. The authors hypothesized that a high incidence of MTCL would support the indication for open DL repair.

Methods: This was a retrospective, multicenter, cross-sectional study that included 100 consecutive adult patients with ankle fractures and DL rupture who underwent surgical treatment between 2020 and 2022. All patients underwent a standardized anteromedial ankle arthrotomy with open DL repair. MTCL were identified intraoperatively, measured, classified according to Hintermann et al., and treated when necessary. Fractures were classified using the AO system, and associated injuries (posterior malleolar fracture, syndesmotic injury, tibiotalar dislocation) were recorded. Statistical analysis was performed using chi-square tests, with $p < 0.05$ considered significant.

Results: MTCL were identified in 43% of patients. Lesions ranged from superficial cartilage damage to full-thickness defects, with 30% of MTCL involving subchondral bone exposure. Intra-articular loose bodies were found in 13% of the total cohort and in 30% of patients with MTCL. A significant association was observed between MTCL and posterior malleolar fractures ($p = 0.04$). No significant correlations were found between MTCL and AO fracture classification, syndesmotic injury, or tibiotalar dislocation. Severe MTCL (Hintermann type 4) showed no significant association with fracture characteristics.

Conclusion: There is a high incidence of MTCL in ankle fractures associated with DL rupture. Posterior malleolar involvement appears to increase the risk of MTCL. Open DL repair via anteromedial arthrotomy allows identification and treatment of relevant intra-articular pathology and may provide additional justification for DL repair during ankle fracture fixation, particularly when posterior malleolar fractures are present.

Keywords: Incidence; Ligaments; Rupture; Ankle fractures.

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