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Clinical and functional results in the surgical treatment of osteochondral lesions of the talus: A comparative study between the matrix-induced autologous chondrogenesis (AMIC) technique isolated and associated with bone marrow aspiration (BMA)

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Introduction: Osteochondral lesions of the talus (OCL) remain a therapeutic challenge, with no consensus on the ideal surgical strategy. Matrix-induced autologous chondrogenesis (AMIC), which uses a collagen membrane, aims to stimulate cartilage regeneration and has shown promise. Bone marrow aspiration (BMA) has been used as an adjuvant to enhance osteochondral repair by offering progenitor cells and growth factors. However, comparative evidence on the clinical impact of this association is still limited. The aim of this study was to compare the clinical and functional outcomes of AMIC alone versus AMIC + BMA.

Methods: A retrospective multicenter study comparing two groups: AMIC alone (n = 39) and AMIC + BMA (n = 39). The outcomes evaluated included AOFAS, VAS, rate and time of return to activities, and the presence of residual limitations in physical activities and daily living. Lesion characteristics (area, depth, quadrant, and presence of subchondral cyst) were analyzed, as well as associated procedures, use of bone graft, and surgical approach (open or arthroscopic).

Results: Improvement in AOFAS and VAS scores was significantly greater in the AMIC + BMA group ($p < 0.001$). However, the rate and time of return to activities were similar between groups ($p = 0.076$ and $p = 0.301$). A higher frequency of postoperative residual limitations for physical activities and daily living was observed in the AMIC + BMA group ($p = 0.006$).

Conclusion: Both techniques promoted significant clinical improvement in the treatment of talar OCL. The AMIC + BMA association was related to greater functional gain and greater pain reduction when analyzed by score variation. However, there was no difference in return to activities, and the AMIC + BMA group had a higher frequency of residual functional limitations, suggesting that any potential biological benefit should be interpreted with caution.

Keywords: Talus; Chondrogenesis; Treatment outcome.

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