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The impact of weight on arthroscopic osteochondral talar reconstruction

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Aim: Aim of this study is to assess the functional and radiological outcomes after AT-AMIC® (arthroscopic talus autologous-matrix induced chondrogenesis) in two weight groups: Patients with BMI <25 (healthy weight group–HG) and with BMI ≥25 (overweight group-OG).

Methods: 37 patients were evaluated. All patients were treated with AT-AMIC® repair for osteochondral talar lesion. Magnetic Resonance Imaging (MRI), Computed-Tomography (CT), Visual Analgoue Scale (VAS) for pain, American Orthopaedic Foot and Ankle Society (AOFAS) score and Short-Form Health Survey (SF-12) were performed preoperatively (T0) and at 6 (T1), 12 (T2), and 24 (T3) months postoperatively.

Results: HG was composed of 21 patients (BMI: 21.90±1.94), while OG consisted of 16 patients (BMI of 27.41±1.98). In both groups, we found a significant difference for clinical and radiological parameters with ANOVA for repeated measures through four time points ($p<0.001$). In HG, AOFAS increased at every follow-up ($p<0.05$), VAS improved significantly between T0 and T1 ($p<0.0001$) and between T1 and T2 ($p=0.0196$). In OG, AOFAS improved only between T2 and T3 ($p=0.0104$), while VAS improved significantly between T0 and T1 ($p<0.0001$) and between T2 and T3 ($p=0.0272$). In HG, the size of the lesion decreased significantly between T1 and T2 ($p<0.05$) and between T2 and T3 ($p<0.05$) both with CT and MRI, instead, in OG the size of the lesion in CT improved significantly only between T1 and T2 ($p=0.007$), while MRI showed a significant reduction of the lesion at each follow-up ($p<0.05$). In OG, we found a significant difference comparing CT and MRI at each follow-up; in HG, this difference was found only between T0 and T1 ($p<0.0001$) and T1 and T2 ($p=0.0492$). Finally, OG presented a significant bigger size lesion measured with MRI at T0 ($p=0.033$).

Conclusions: Osteocondral talar lesions in fatter patients were characterized by a bigger preoperative size, but no clinical differences were found between the two groups. AT-AMIC® can be considered as a safe and reliable procedure regardless of weight with a significant improvement also in quality of life.

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Therapeutic role of gingiva derived mesenchymal stem cells in autoimmune diseases

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Rheumatoid arthritis (RA) is a chronic symmetrical autoimmune disease characterized by synovial inflammation that affects primarily the small diarthrodial joints. None of the current treatments can cure the disease. Mesenchymal stem cells have been shown in maintaining immune homeostasis and preventing autoimmunity, and may be a potential therapeutic approach for RA. Recently, we observed that gingiva derived mesenchymal stem cells (GMSCs) also have the capacity to inhibit immune responses and control the development and severity of collagen-induced arthritis (CIA) in mice that is dependent on CD39/CD73 signal pathway and partially on the induction of CD4+CD39+FoxP3+T regulatory cells. Moreover, GMSCs dramatically and directly inhibited NF-κB and RANKL-mediated osteoclast formation, as well as bone erosion in CIA. To evaluate their clinical translational value, we have developed a humanized animal model, xeno-GVHD, to demonstrate that the infusion of GMSC can markedly inhibit human PBMCs-initiated xenogenic graft-versus-host-disease (GVHD) and this effect requests the CD39/CD73 and IDO signals. More importantly, the effect of GMSCs is significantly better than bone marrow-derived mesenchymal stem cells (BMSCs). Taken together, the manipulation of GMSCs could provide a promising approach for curing autoimmune diseases, such as rheumatoid arthritis and xenograft-versus-host-disease.

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