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In vitro study on a tissue engineered osteochondral composite
G.M. Peretti1, M.S. Buragas3, C. Domeneghini1, G. Fraschini2, A. Di Giancamillo3, C. Domenechini3, G. Fraschini3; 1Orthopaedic Department, Hospital San Raffaele, Milan, Italy, 2Biomechanics Unit, University of Milan, Milan, Italy, 3Department Of Veterinary Sciences And Technologies For Food Safety, Faculty of Veterinary Medicine, University of Milan, Milan, Italy

Purpose: The purpose of this work is to create an in vitro model of engineered osteochondral composite by combining a cylinder of calcium phosphate and cartilage tissue produced by isolated swine articular chondrocytes seeded onto fibrin glue.

Methods and Materials: Swine articular chondrocytes were enzymatically isolated and seeded onto fibrin glue. Immediately after gel polymerization, the fibrin glue was placed in contact with the cylinders of calcium phosphatescaffold. The osteochondral composites were left in standard culture conditions and retrieved after 1 and 5 weeks. At the end of the experimental times, the samples were macroscopically analyzed and processed for histological, immunohistochemical, biochemical and biomechanical evaluation.

Results: Preliminary data showed a macroscopically integrity of the osteochondral samples. Histology showed cartilage like tissue retaining cell nuclei within the fibrin glue scaffold. Moreover, GAGs seemed to penetrate microscopically into the scaffold, determining an interface area of microscopic integration between the porous of the scaffold and the cellular fibrin glue. Biochemical analysis confirmed the presence of vital cells, dipped into the GAG matrix. Immunohistochemical analysis demonstrated the presence of type II collagen fibers.

Conclusions: The results of this study demonstrate that isolated chondrocytes, seeded onto fibrin glue, produce a cartilage-like matrix that integrates with a cylinder of calcium phosphate. Moreover, we noticed a microscopic penetration of the newly synthesized GAGs inside the structure of the calcium phosphate, confirming the importance of an in nitro maturation of the engineered tissue. This tissue engineered osteochondral composite could represent a valuable model for further in vivo studies on the repair of osteochondral lesions.

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Soaking versus moist storage of autologous patellar tendon before implantation for anterior cruciate ligament reconstruction: a biomechanical study
J.B. O'Donnell1, M.R. Rogell2, B.G. Parks2; 1Orthopaedics, Union Memorial Hospital, Baltimore, Maryland, United States of America, 2Orthopaedics, Union Memorial Hospital, Baltimore, MD, United States of America

Purpose: The effect of different intraoperative storage methods on the bone-patellar tendon-bone graft for ACL reconstruction is not known. We observed tendon weight and pull-through force with two intraoperative graft storage methods.

Methods and Materials: Patellar tendons were harvested from eight matched pairs of cadaveric knees. The central 10 mm of the patellar tendon was excised to create standard grafts. For each pair, one graft was randomly assigned to be stored immersed in normal saline and the other was stored in moist gauze. Weight and bone tunnel pull-through force were compared between 0 and 5, 0 and 20, and 5 and 20 minutes. Statistical significance was set at p < 0.05.

Results: Graft weight in the soaked group at 0, 5, and 20 minutes was 3.5 g, 5.6 g, and 5.8 g, respectively. Weight at 0 versus 5, 0 versus 20, and 5 versus 20 minutes was significantly different in the soaked group (p < 0.01) but not in the gauze group. Pull-through force in both groups was significantly different at 0 versus 5, 0 versus 20, and 5 versus 20 minutes. The percentage increase in weight and pull-through force of the soaked grafts was significantly higher than the increase in the grafts stored in moist gauze at all intervals measured (p = 0.001).

Conclusions: This cadaver study suggests that intraoperative storage of grafts in moist gauze leads to less swelling and weight gain as compared with soaking in saline.