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Guiding full cartilage regeneration using an innovative biphasic natural scaffold in preclinical and minimally invasive clinical studies

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Cartilage, unlike bone, does not possess autogenous repair capability and has very limited ability to heal. It has been confirmed that cartilage injuries in the knee joint, if left untreated lead to more serious degenerative joint conditions (arthritis) and affect the activities of daily living with severe pain and dysfunction (disability). Cartiheal (Israel) recently CE marked the first in class acellular implant, Agili-C™, designed for joint resurfacing with simultaneous regeneration of hyaline cartilage and subchondral bone. The off-the-shelf implant, applied in a single stage procedure is composed of aragonite with hyaluronic acid functionalization at the cartilage phase. A long term (6 and 12 months) evaluation of the safety and efficacy in a 20 adult goats has been conducted following immediate load bearing: In the Agili-C™ group, the defects were healed and filled with a hyaline cartilage as confirmed by the marked presence of collagen type II and proteoglycans and absence of collagen type I. The subchondral plate and tidemark were reconstructed, whereas a poor repair was observed in the sham-operated group. Two clinical trials involving 148 patients showed over 24 months, a significant improvement of the primary endpoint KOOS score (pain, symptoms, quality of life) with a low rate of adverse events. Second look arthroscopies and MRI confirmed a high level of resurfacing.

Biography

Antoine Alves is a Senior Pathologist and Medical Research Manager at NAMSA Lyon, France. He has more than 15 years of experience at NAMSA providing interpretation of tissue/implant interaction according to international standards under GLP conditions. Development of new histopathology procedures for adequate evaluation of medical devices and advanced therapies is one of his lines of research. He has published many papers and book chapters.

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