

Il trattamento delle lesioni cartilaginee nello sportivo

ARTICULAR CARTILAGE SURGERY IN THE KNEE: AN OVERVIEW ON THE FUTURE

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Articular cartilage is an avascular structure and therefore has a limited intrinsic healing capacity. Characterization of the biology of articular cartilage is necessary for accurate treatment of these injuries. Optimizing survival and recovery of the stressed chondrocyte is current focus of basic science research. The clinical evaluation has undergone tremendous improvement in the past decade, especially in medical imaging, biomechanical evaluation, and functional analysis. New technologies, such as Optical Coherence Tomography are introduced to the field and in the future may aid in diagnosis of articular cartilage injuries.

Current surgical approaches are focused on limiting the disease process, rather than healing the disease origin and therefore remain a therapeutical enigma. Most techniques rely on some kind of cell therapy, either by stimulating marrow, or by transplanting grafts. Most promising seem functional tissue engineering approaches combining gene therapy, cell therapy, and mechanical factors. The combination of the three columns as well as interdisciplinary collaboration between molecular biologist, material scientists, biomechanical engineers, and orthopaedic surgeons is crucial for the future success of these technologies.

Future trends in the treatment of articular cartilage defects will be based on improved understanding of chondrocyte biology, sophisticated and early diagnosis of articular cartilage injury and functional tissue engineering. Chondrocyte resuscitation following mechanical injury may assist in preventing proteoglycan loss leading to structural breakdown. For larger and symptomatic defects, reconstruction with tissue engineering technology will be needed. These new technologies must be capable of generating articular cartilage that is both histomorphological and biomechanical similar to normal articular cartilage. New imaging methods permitting for nondestructive assessment of the articular cartilage micro-architecture and metabolic capacity will assist in early diagnosis of injured articular cartilage. These new technologies can then be used for controlled and randomized follow up evaluations of cartilage treatment modalities.
