Cartilage Repair -Past, Present and Future

Mitsuo Ochi*

Abstract

Several surgical approaches to repair cartilage defects have been reported such as reattachment of a detached osteochondral fragment to the lesion, microfracture, mosaicplasty and ACI. We treated eight cartilage defects with meniscal transplantation from 1990 to 1995. Then we started to perform transplantation of tissue-engineered cartilage made ex vivo for the treatment of osteochondral defects of the joints (110 cases) as a second generation of chondrocyte transplantation from 1996. Sixty knees who had received transplantation of tissue-engineered cartilage for cartilage defects were followed up for at least 5 years. Although the clinical results were satisfactory, we need the surgical approaches to treat large cartilage defects with less invasive technique.

One of the less invasive surgical procedures to treat large cartilage defects is microfarcture or drilling. However, these techniques under arthroscopy are not sufficient to repair cartilage defects with hyaline cartilage. I think that there are two weak points such as insufficient number of mesenchymal stem cells and early overloading on the treated area. I would like to show our novel approaches using an external magnetic field to deliver precisely injected cells with magnetic beads to an articular defect and articulated distraction device for reducing the load.