Current Regenerative Medicine Approach for Joint Cartilage Lessions

Assoc. Prof. Safa Gürsoy
Ankara Yildirim Beyazit University. School of Medicine
Dept. of Orthopaedics and Traumatology,
Dept. of Musculoskeletal Regenerative Medicine

Abstract

In the 21st century, orthopedic surgeons put more effort in individuals with musculoskeletal problems to participate in society and maintain their physical and mental activities. Nowadays, in all medical fields regenerative medicine is the new hope for tissue damage regeneration or total organ replacements. Moreover, one of the most important applications of regenerative medicine in the field of orthopedics is the biological treatment of cartilage injury.

High prevalence of cartilage injury in the population is not only a clinical and economic burden, but also an important problem for health system and life quality. Epidemiologically, it has been shown that 61 percent of the 1000 arthroscopies have similar cartilage lesions. Cartilage has a poor intrinsic capacity for repair because of its avascular nature. The treatment of focal articular cartilage lesions remains a challenging clinical problem. Untreated lesions can predispose affected joints to pain and dysfunction. An early stage treatment of joint cartilage lesion is critical for relief of the symptoms, regaining of the joint function and avoids the progress of the osteoarthritis.

The treatment options for these lesions continue to evolve and expand. The lesion size, lesion location, patient demand and treatment history should be considered when selecting a surgical approach. The best results among all the surgical and medical treatments are belong to engineered regenerative tissue scaffolds, because all the other current treatments can cause many complications such as donor site morbidity, fibrocartilage formation, joint stiffness, arthrofibrosis, and infection. Cell-based therapies have shown some superiority over conventional treatment options such as microfracture and mosaicplasty, especially for large defects.

This presentation serves to review the current regenerative medicine approach for joint cartilage lesions, and a comparison of its pros and cons with the other conventional cartilage treatment procedures.