Meniscus Regeneration - An Option For Meniscus Deficiency

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The meniscus plays important roles in the knee joint, including force transmission, shock absorption, and provision of joint stability. Importantly, meniscal tears are the most common injury of the knee regardless of age, and loss of the meniscus is recognized to predispose the knee joint to degenerative changes, inevitably leading to osteoarthritis, as the meniscus has limited healing potential due to limited blood supply. However, meniscal tears have been mostly treated by partial meniscectomy because spontaneous healing is not expected, although it should be important to preserve meniscus. Therefore, a new therapeutic method for meniscal repair or regeneration will be urgently necessary. Recently, tissue engineering approaches that involve the use of biomaterial scaffolds have been tested as potential regenerative therapies in this field. Some of them are already at the stage of preclinical studies, as well as clinical trials. Therefore, the application of these new techniques to meniscal injuries could be expected in the near future. In this presentation, the latest preclinical animal studies using large animals and clinical trials with high clinical relevance will be focused on, and thus this will facilitate an understanding of the latest trends in meniscal repair and contribute to the future application of such clinical therapies in patients with meniscal injuries.