2023 Congress Abstracts: Knee Osteotomy

Category: Knee - Osteotomy

Mid-Term Patient-Reported Outcome was Inferior in Postoperative Opening Edge High Tibial Osteotomy Patients with Medial Meniscus Posterior Root Tear

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Summary:
From a retrospective study including 83 opening wedge high tibial osteotomies, preoperative medial meniscus posterior root tear on MRI was 36.3%, which increased medial meniscus extrusion and was correlated with reducing mid-term postoperative patient-reported outcomes.

Data:
Objectives: Treatment strategy for meniscal lesion in opening wedge high tibial osteotomy (OW-HTO) for unicompartamental knee osteoarthritis has not been established in clinical practice. Among various meniscus injury patterns, medial meniscus posterior root tear (MMPRT) has attracted attention recently, being one of the definitive risk factors for progression of knee osteoarthritis via excessive contact pressure onto the medial femorotibial joint. At this time, the influence of untreated MMPRT in OW-HTO on the clinical outcomes, evaluated by patient-reported outcome measurement scales (PROMs), is not fully revealed. The purpose of this study was to investigate the relationship between presence of MMPRT and postoperative PROMs in OW-HTO patients from a retrospective cohort study. Methods: A total of 83 knees that underwent OW-HTO, and were followed up a minimal of 2 years, were enrolled. As postoperative PROMs, the knee injury and osteoarthritis outcome scales (KOOS) subscales: pain, symptom, activity of daily life (ADL), sports, and quality of life (QOL), at follow up period was 6.6 months after HTO. The KOOS subscales of the MMPRT group were lower than those of the MMPRT-intact group (p = 0.001), and QOL (p = 0.002) at the final follow-up. Conclusions: Preoperative MMPRT was correlated with remarkable reducing of mid-term postoperative PROMs evaluated by KOOS in the patients who underwent OW-HTO. Because of the high incidence and the impact of MMPRT on postoperative outcomes, combined treatment for repair of MMPRT with OW-HTO should be considered to improve postoperative PROMs.

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High Tibial Osteotomy Reduces Symptoms and Synovial Inflammation in Knee Osteoarthritis by Changing Macrophage Polarization to Pro-healing Phenotype

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Summary:
Correction of lower-limb alignment with HTO attenuated symptoms and synovial inflammation via changing biological intra-articular microenvironment of osteoarthritis (OA) knees accompanying synovial macrophage polarization from M1 to M2 phenotype.

Data:
Background: In recent years, accumulating evidence suggests that synovial inflammation is associated with knee symptoms and progressive OA. Although biomechanical findings have shown that HTO decreases medial compartment loading, whether inflammation and biological microenvironment are altered by optimizing knee alignment remains unclear. Both biological and biomechanical improvements would be ideal to achieve the “remission” of progressive knee OA. Objective: This study aimed to determine whether alignment correction by high tibial osteotomy (HTO) can change the biological intra-articular microenvironment of osteoarthritis (OA) knees. Methods: Consecutive patients who underwent medial open-wedge HTO between June 2018 and May 2020 for isolated medial compartment knee OA with varus malalignment were prospectively included. Synovial tissues (STs) and fluids (SFs) were collected from the osteoarthritic knees during initial HTO and plate removal surgeries. Changes in gene expression in STs were investigated using microarray and real-time polymerase chain reaction (PCR). Synovial tissues were also evaluated histologically using synovitis scores and immunofluorescence staining to determine macrophage polarization. Cytokines and chemokines in SFs were analyzed using enzyme-linked immunosorbent assays (ELISA). The mechanism of macrophage polarization was investigated in primary human macrophages from peripheral blood mononuclear cells stimulated with cartilage fragments and SFs. We also evaluated Spearman correlations between knee injury and osteoarthritis outcome scores (KOOS) and macrophage-related gene expression. Results: Thirty-one patients (19 females, 12 males) with mean age of 61.1 ± 7.5 years were included. Plates were removed 13.2 ± 2.2 months after HTO. Microarray analysis of the three patients identified 477 differentially expressed genes (DEGs) between the samples obtained during HTO and plate removal, and revealed the M1-macrophage-related CCL3, IL1B,