Results: The post operative femorotibial angle was 165 degree. We evaluated the articular cartilage of the lateral compartment, because medial compartment was already worn out. The cartilage was divided into two layers; low GAG content superficial layer and high GAG content deep layer. On the other hand, only high GAG content area was observed in the control. Arthroscopic findings revealed ICRS grading of medial compartment to be grade II and III, which were observed in MRI in the same way according to the operation. and recovered to the pre op level at 6 months after the operation.

Conclusions: dGEMRIC had the potential to evaluate the extracellular matrix after high tibial osteotomy using delayed gadolinium enhanced MRI imaging of cartilage (dGEMRIC) and to detect biochemical response of articular cartilage due to alignment change after the surgery.

Methods: Fifty year old male patient who had HTO due to secondary osteoarthritis was examined using 1.5T MRI. Before the operation, femorotibial angle was 186 degree. Gadolinium was injected two hours prior to MRI and appropriate walking was ordered. T1 value which represents GAG content was calculated and color image of articular cartilage layer according to GAG concentration was made. Opposite side of the knee was evaluated as a control. ICRS grading of the articular cartilage was performed arthroscopically at the time of opening wedge HTO using TomoFix system.

Results: Patients with knee pain fulfilling the ACR criteria showed more severe synovial fluid effusion (OR 6.2, 95% CI 2.02 to 19.1), cartilage lesions in the medial area (OR 2.4, 95% CI 1.2 to 5) and higher mean number of osteophytes (OR 2.3, 95% CI 1.1 to 4.5). The association between single criteria and MRI features was more difficult to establish. Nonetheless, crepitus at joint movement was associated with synovial fluid effusion (p = 0.02); bone enlargement was more frequent in patients with lesions of the posterior cruciate ligament (p = 0.002), extrusion of the medial meniscus (p = 0.004) and osteophytes in the medial tibia (p = 0.04).

Conclusions: The ACR clinical criteria identify patients showing the most important features of OA. The good agreement between clinical ACR criteria and OA pathology depicted by MRI supports the adoption of these criteria in the clinical and research settings.