

## COMBINED ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION WITH HIGH TIBIAL OSTEOTOMY USING PATIENT SPECIFIC INSTRUMENTATION

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**Introduction:** Medial opening wedge high tibial osteotomy (HTO) is widely performed for tibial malalignment and medial compartment osteoarthritis, especially for young and active adults. Combined HTO and anterior cruciate ligament (ACL) reconstruction is often recommended in symptomatic anterior instability and varus angulated knees. However, a single-stage procedure is technically demanding and may be associated with a high rate of intra-operative complications. To achieved accurate precise intraoperative execution, we performed the single-stage surgery using 3D Computed Tomography (CT) scan-based patient-specific instrumentation (PSI).

**Discussion:** 36-year-old tour guide presented with pain and instability of right knee since alleged sports injury 5 years ago.. On physical examination, there was right genu varus with fixed flexion of 5 to 10 degree. He was able to flex right knee till 135 degrees with crepitus. There was tenderness over the medial joint line, anterior drawer test and Lachman's test showed grade 2 laxity. Radiographs showed medial joint space narrowing, hip-knee-ankle angle of 4 degrees varus and a posterior tibial slope angle of 18 degrees. (Figure 1). Magnetic resonance imaging was performed and showed complete ACL tear with posterior horn medial meniscus tear. Due to the varus malalignment, increased posterior tibial slope with complete ACL tear, deformity correction surgery with medial opening HTO and ACL reconstruction (with ipsilateral hamstring autograft) was performed at the same setting under PSI guidance (Figure 2). Surgery was uneventful and patient was discharged well.

**Conclusion:** Changes in the mechanical axis should be considered in all cases of knee instability with early unicompartmental osteoarthritis. Single-stage HTO correction for both coronal and sagittal alignment and ACL reconstruction has a promising result. With the intervention of PSI, the advantages of PSI guide offer precise surgery and good clinical outcomes.