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# Closing Wedge Varus Tibial Osteotomies for Lateral Osteoarthritis: Surgical Technique and Long Term Results

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**Summary**:
This study presents the surgical technique, the functional and radiological outcomes of closing wedge varus high tibial osteotomies for lateral osteoarthritis

**Abstract**:
INTRODUCTION
Surgical treatment of painful lateral osteoarthritis for young and high demanding patients still remains controversial. Lateral osteoarthritis may be associated to valgus deformity. Osteotomy can be performed either on the femur and the tibia.
The aim of our study was to report the long term results of closing wedge High Tibial Varus Osteotomy (HTVO) and to analyse the complication and revision rate of such procedure.

MATERIAL & METHODS
A consecutive series of 31 HTVO in 30 patients was performed between 1997 and 2011. Inclusion criteria were symptomatic osteoarthritis of the lateral compartment of the knee and a minimum of 36 months of follow-up. A closing wedge procedure is described.

Survivorship analysis was performed using the revision to total knee arthroplasty as the end-point. Clinical outcomes using the Knee Society Score, Activity level using the UCLA score and radiographic analysis of alignment and ostearthritis according to Ahlbäck classification were assessed preoperatively and at the final follow up. Complications and subsequent knee surgeries were also recorded since the index procedure.

RESULTS
31 HTVO in 30 patients were performed for primary osteoarthritis and were reviewed at mean 12 years of follow-up (range: 3.1 years – 16.6 years). Varying degrees of lateral meniscectomies were performed in 23 patients (24 knees) before the index procedure.
At the time of index procedure, the mean age was 56 (range 38.8-67.1) years. The cumulative survival rate of the HTVO was 96% (95% CI 0.92 to 1.00) at 5 years, 87% (95% CI 0.80 to 0.94) at 10 years, and 60% (95% CI 0.47 to 0.74) at 15 years.

At final follow-up, 13 patients could not be included for clinical evaluation: one refused, 9 patients underwent knee replacements and 3 were lost to follow up. The mean Knee Society objective score improved from 53.4 (range, 14-80) to 72.1 (range, 43-95) (p=0.001). The mean Knee Society function score improved from 78.8 (range, 30-100) to 91.7 (range, 70-100) (p=0.02). The mean UCLA score improved from 6 (range: 4-9) to 8 (range: 4-9) (p<0.001).The mean mechanical tibiofemoral angle changed from 184° (range: 178°-188°) to 178° (range: 170-186) postoperatively (p<0.001). No significant radiographic changes according to Ahlback classification were recorded between the preoperative and the final assessment.

Hardware removal was performed in 6 patients. No major complications such as infection, thromboembolic events, intra-articular fractures, neurovascular complications, stiffness, and delayed or non-union were recorded in the study.

CONCLUSION
Closing wedge HTVO for lateral osteoarthritis provides good long term functional and clinical results with a low complication and revision rate.

Level of evidence IV.