

## Mid To Long-Term Results of Closed-Wedge High Tibial Osteotomy Using Rigid Stepped Plate

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### Summary:

Lateral closed-wedge osteotomy using the Rigid stepped plate demonstrated reliable mid to long-term results with 7-year survival rates of 90.8 %. Functional outcome improved significantly even after 5 years. The lateral closing-wedge HTO using Rigid stepped plate could be a good option for medial compartment OA patients.

### Abstract:

High tibial osteotomy (HTO) using internal plate fixation is a well-established treatment option for the management of medial compartment osteoarthritis (OA) in young and active patients. Lateral closing-wedge HTO (CWHTO) has historically been the method of choice since the bony apposition at the osteotomy site with compression allowed excellent bone healing and early rehabilitation. The purpose of this study was to evaluate survivorship and functional outcome of closed-wedge high tibial osteotomy using rigid stepped plate after minimum 5 years follow-up. We prospectively followed a cohort of 138 cases who have undergone CWHTO with Rigid stepped plate. The mean age was 50.1 years and BMI was 25.0 kg/m<sup>2</sup>. The average follow up period were 84.2 months with minimum 5 years. Radiologic assessment was done using hip-knee-ankle (HKA) mechanical axis in standing whole leg radiograph. Clinical assessment was done using WOMAC (Western Ontario and McMaster Universities) scores, the Knee Society (KSS) and Hospital for Special Surgery (HSS) scores, Tegner score, Lysholm score and the subjective score of the International Knee Documentation Committee (IKDC). Paired t-test was used for comparison and survival curve was shown as a Kaplan-Meier curve. Conversion to TKA was defined as the failure of CWHTO. Preoperative mechanical HKA axis angle was varus 8.3° (SD 3.7). Postoperative mechanical HKA axis angle was valgus 3.1° (SD 2.6) as intended. All clinical scores were statistically improved postoperatively (p<0.05). Preoperative KSS and KSFS scores were 64.6 (SD 19.1) and 60.2 (SD 25.1) respectively, and postoperative scores were 90.7 (SD: 10.5) and 86.1 (SD 15.4). Preoperative and postoperative HSS scores were 75.1 (SD 12.3) and 90.6 (SD 7.1). Preoperative and postoperative WOMAC scores were 35.2 (SD 11.8) and 15.0 (SD 9.1). Preoperative and postoperative Tegner scores were 2.1 (SD 1.2) and 3.6 (SD 1.4). Preoperative and postoperative Lysholm scores were 58.4 (SD 19.5) and 82.1 (SD 14.8). The survival rate using Kaplan-Meier curve was 90.8% at 7 years follow-up. There was no non-union case of tibia and fibula osteotomy site. Lateral closed-wedge osteotomy using the Rigid stepped plate demonstrated reliable mid to long-term results with 7-year survival rates of 90.8 %. Functional outcome improved significantly even after 5 years. The lateral closing-wedge HTO using Rigid stepped plate could be a good option for medial compartment OA patients.