

**Post-Operative CT Scan Findings and Functional Outcome in Patients Treated by Syndesmotaxis with an Ilizarov External Fixator for Tibial Plateau Fractures**

*Stamatios A. Papadakis, MD, PhD, MSc; Dimitris Pallis, MD, MSc;*

*Georgios Gourtzelidis, MD; Margarita-Machaela Ampadiotaki MD; Konstantinos Kateros, MD;*

*George Anastasios Macheras MD, PhD*

*KAT General Hospital of Attica, Kifissia, Greece*

**Purpose:** We evaluated postoperative CT scan findings and the clinical outcome of tibial plateau fractures treated by syndesmotaxis with an Ilizarov external fixator.

**Methods:** This was a prospective study spanning between March 2010 and September 2018 involving 45 patients with a mean age of 39.5 years. Inclusion criteria were tibial plateau fractures Schatzker II to VI, in patients aged over 18 years. All of the patients were treated by syndesmotaxis with the application of an Ilizarov external fixator, with knee-bridging and mini-open reduction. Pre- and postoperatively, the patients underwent a CT scan of the knee, and the postoperative functional outcome was assessed according to the American Knee Society Score (AKSS). Mean follow-up was 12 months. Statistical analysis was carried out using SPSS version 21.00 (IBM Corporation).

**Results:** According to postoperative CT scan and articular impaction, the patients were divided into three groups. Eleven patients had less than 2 mm of impaction, 27 had 2 to 4 mm, and 7 had >4 mm. Patients with an articular impaction less than 4 mm showed a 95% chance for an excellent AKSS, in contrast to those with a greater impaction who presented with poor AKSS results. Every additional 1 mm of articular impaction reduced the AKSS by 15 points, as proved by the very high value of R2 in statistical analysis. An up to 5° deviation of the mechanical axis compared to the other limb presented a positive correlation to a good clinical outcome without being related to AKSS.

**Conclusion:** Syndesmotaxis combined with an Ilizarov external fixator with knee-bridging and mini-open reduction provides adequate stabilization and restores the articular surface. CT scan of the knee is the sole most valuable imaging tool for preoperative planning no matter which classification system is used. Postoperative articular impaction is a useful prognostic tool for the final functional result.