Comparative Analysis of Tibial Plateau Fractures: Ilizarov Fixator Versus Posteromedial Lobenhoffer Approach

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Purpose: Our objective was to compare clinical and functional outcomes between Ilizarov circular external fixation and open reduction and internal fixation (ORIF) using the direct posteromedial Lobenhoffer approach.

Methods: In total, 88 patients with tibial plateau fractures were prospectively enrolled. Based on fracture morphology, 39 patients with isolated posteromedial/posterocentral fragments underwent ORIF via the Lobenhoffer approach; 49 patients were managed with Ilizarov external fixation. Key parameters assessed included surgical time, intraoperative blood loss, hospital length of stay, complication rates, radiographic fracture healing time, postoperative pain visual analog scale (VAS), range of motion (ROM), and functional outcomes by the _____ Hospital for Special Surgery (HSS), Knee Society Score (KSS), and Knee Injury and Osteoarthritis Outcome Score (KOOS) at 6 and 12 months.

Results: The Lobenhoffer approach group demonstrated significantly shorter mean surgical times ($p<0.05$) and more blood loss compared to the Ilizarov group. Direct visualization facilitated superior anatomic reduction of posterior fragments. Consequently, patients treated with the Lobenhoffer approach exhibited significantly improved early postoperative knee ROM ($p<0.01$) and superior functional outcomes at both 6 and 12 months (higher HSS, KSS, and KOOS scores; $p<0.05$). Pain reduction (VAS) was also significantly faster in the Lobenhoffer group. Complication rates were slightly higher in the Lobenhoffer cohort (primarily superficial wound issues versus Ilizarov pin-tract infections). Final union times were comparable.

Conclusion: The posteromedial Lobenhoffer approach offers substantial advantages for tibial plateau fractures with isolated posteromedial/posterocentral involvement, including reduced surgical time and enhanced fracture reduction, accelerated restoration of knee mobility, and superior early-to-medium term functional outcomes compared to Ilizarov fixation. Limitations and Recommendations: The Lobenhoffer approach is strongly recommended as the primary surgical strategy for managing these specific complex posterior fracture patterns. Its effectiveness in achieving direct reduction and stable fixation translates to improved patient recovery and function. Further multicenter, prospective studies with longer-term follow up are warranted to confirm durability and osteoarthritis progression.