Comparison of Clinical, Radiological, and Functional Outcome Between the Suprapatellar and Infr- patellar Techniques of Tibial Nailing in Indian Population: A Prospective, Randomized Controlled Trial

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Purpose: Tibial shaft fractures are common injuries seen particularly because of high velocity trauma. Suprapatellar and Infrapatellar approach are 2 approaches used to perform intramedullary nailing of tibial fractures. Considerable debate exists over which of these is the optimal approach for nailing of tibial shaft fractures. The aim of this study was to compare the clinical, radiological, and functional outcomes and intraoperative fluoroscopy time, total blood loss, and operative time between suprapatellar and Infrapatellar insertion techniques in the treatment of extra-articular tibial shaft fractures.

Methods: After Institutional Ethics Committee approval, patients aged 18-45 years who presented to our Level I trauma center with AO/OTA type 42 fractures were randomized into suprapatellar (SP) and infrapatellar (IP) groups after taking informed consent. Operative time, intraoperative blood loss, and radiation exposure were recorded. Severity of knee pain by visual analog scale score and knee range of motion were documented at 2 weeks, 6 weeks, 3 months, and 6 months of follow-up. Functional outcomes were measured using Knee Society Score, Lysholm Knee Score, and KOOS-PF (Knee injury and Osteoarthritis Outcome score for patellofemoral pain and osteoarthritis), and radiological union assessed with radiographs done at 6 weeks, 3 months, and 6 months postoperatively.

Results: 60 patients were enrolled in our study; 30 patients underwent nailing by suprapatellar approach and 30 by infrapatellar approach. A statistically significant difference (P = 0.003) was noted in the operative time, which was found to be shorter in the SP group compared to the IP group. The SP group had a significantly lower mean intraoperative blood loss compared to the IP group (P = 0.027). There was no difference between the 2 groups in terms of knee pain or knee range of motion. The mean functional scores were higher in the SP group at all time points of follow-up compared to the IP group, although this difference was not statistically significant.

Conclusion: Suprapatellar nailing of tibial shaft fractures may help to reduce operative time and intraoperative blood loss with similar intraoperative radiation exposure, clinical, and functional outcomes compared to infrapatellar nailing.