

### **Infrapatellar Versus Suprapatellar Nailing for Fractures of the Tibia (INSURT Study): 24-Month Follow-up**

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**Purpose:** The INSURT study was a multicentered randomized controlled trial comparing patients treated with infrapatellar tibial nailing to suprapatellar nailing. The purpose of this study was to report the 24-month objective and subjective outcomes regarding postoperative knee pain after tibial nailing.

**Methods:** Patients were randomized (OTA type 42 and 43A fractures) to receive infrapatellar or suprapatellar nailing and assessed at 6 weeks, 4,6,12, and 24 months postoperatively. The primary outcome was the visual analog scale (VAS) after kneeling; secondary outcomes included the patient-blinded Aberdeen Kneeling (AKT) and Aberdeen Standing (AST) weight distribution tests, Lysholm, Photographic Knee Pain Map (PKPM), EuroQol 5 Dimensions (EQ-5D), knee range of motion (ROM), and Work Productivity and Activity Impairment Questionnaire (WPAI). The study was powered to detect a 16-point difference in the primary outcome.

**Results:** 245 patients were included in the final analysis; 128 patients were randomized to suprapatellar nailing and 117 patients to infrapatellar nailing. There was no difference in VAS kneeling scores between the groups at 24 months postoperatively. The AKT demonstrated the ability to bear significantly more weight through the operative knee after suprapatellar nailing at 24 months, with suprapatellar patients able to bear 10% more body weight through the operative knee ( $P = 0.001$ ). There was persistent quadriceps pain after suprapatellar nailing. There was no difference in EQ-5D, Lysholm, or WPAI.

**Conclusion:** The primary outcome did not demonstrate a difference in subjective pain between suprapatellar and infrapatellar nailing. However, the patient-blinded weight distribution test demonstrated that after infrapatellar nailing, patients cannot bear full body weight through the knee even at 24 months postoperatively. Secondary patient-reported outcome measures did not demonstrate differences between treatments. Suprapatellar nailing may cause less pain when kneeling compared to infrapatellar nailing up to 2 years after surgery.