



## **Congenital Pseudarthrosis of Tibia: Periosteal+Bone Grafting, Ilizarov Fixation, and Tibial+Fibular IM Nailing**

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**Objective:** Congenital pseudarthrosis of the tibia (CPT) is resistant to standard treatment, and refractures are common. Hamartoma cells form a tight sheath around the periosteal vessels causing obliteration of periosteal vessels, bone atrophy, and nonunion. Our protocol for CPT combines periosteal hamartoma resection, periosteal and bone grafting, Ilizarov fixation, and intramedullary (IM) nailing of tibia and fibula.

**Methods:** Retrospective chart review was performed of 23 patients with CPT who were treated at 2 centers between 1996 and 2005. Average age was 5 years.

**Results:** Union was achieved in all patients. Average duration of external fixation was 6 months (range, 3–12 months); average amount of lengthening was 4 cm (range, 0–7 cm). Average follow-up was 4 years (range, 1–12 years). At 1 center, 8 of 12 patients developed refracture. Two patients were treated with casting and bisphosphonates, 2 patients were treated with frame reapplication without regrafting, 1 patient was treated with fibular transport and bisphosphonates, and 1 patient was treated with frame reapplication with grafting. Two of the 8 patients refractured twice. One was treated with nail exchange and frame reapplication for the first refracture and bone grafting and frame reapplication for the second refracture. The other patient was treated with casting for the first refracture and frame reapplication and then prophylactic IM nailing 3 weeks after frame removal. Union was achieved in all patients with refractures. Seven complications occurred during treatment that required surgical intervention.

**Conclusion:** Combining periosteal and bone grafting, Ilizarov fixation, and IM nailing is an effective treatment. IM nailing decreases the severity of subsequent fracture.