

Comparison of Long vs. Short Leg Casts for Distal Third Tibial Shaft Fractures in Children

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Background/Purpose: Long leg casts (LLC) with delayed weight-bearing is an established treatment for pediatric tibial shaft fractures including fractures involving the distal third. There is a paucity of literature assessing the use of SLC for tibial shaft fractures. The purpose of this study was to determine if SLC and early weight-bearing was as effective as LLC with delayed weight-bearing for the treatment of pediatric distal third tibial shaft fractures.

Methods: A retrospective review was conducted on consecutive distal third tibial shaft fractures treated at a tertiary pediatric hospital from 2015 to 2018. Exclusion criteria included midshaft and proximal fractures of the tibia, distal fractures that violated the tibial physis or plafond, and pathologic fractures. We compared primary outcomes of time to weight-bearing, time to union, and final angulation between LLC and SLC groups.

Results: Eighty-five patients aged 5 to 17 years (mean age 9.2 ± 3.2 years) met inclusion criteria, including 50 LLC and 35 SLC patients. Fracture type ($p=0.14$), presence of associated fibula fracture ($p=0.49$), open fracture ($p=0.46$), and injury mechanism ($p=0.18$) were similar between the two groups. Time to weight-bearing for SLC (3.3 ± 0.6 weeks) was shorter compared to LLC (6.4 ± 0.7 weeks, $p < 0.0001$). Overall, fractures treated with SLC had a shorter time to union (7.4 ± 0.9 weeks) compared to LLC (9.0 ± 0.9 weeks, $p=0.026$) without differences in final angulation ($p=0.54$). There was a higher percentage of cast complications in the LLC treatment group (12%) compared to SLC (6%).

Conclusion: SLC with early weight-bearing demonstrated earlier time to weight-bearing and shorter time to fracture union when compared to LLC. Surgeons should consider SLC and early weight-bearing for the treatment of distal third tibial shaft fractures in children.

The Mission of the AAP Section on Orthopedics is to foster the health of children through the AAP by mentorship, education, advocacy, and research. The AAP Section on Orthopedics has also collaborated with POSNA in joint leadership meetings creating shared strategic plans. Through these shared visions and collaborations our organizations have collectively partnered with the 50,000 pediatricians within the AAP to advocate for injured and ill children throughout the world.