

Surgical Outcome of Congenital Pseudarthrosis of The Tibia in A Tertiary Hospital: Retrospective Study

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INTRODUCTION:

Congenital pseudarthrosis of the tibia (CPT) is rare and challenging to treat. The main issue with CPT is non-union, and refracture. The aim of this study was to evaluate the surgical outcome of congenital pseudarthrosis of the tibia in children operated in our centre.

METHODS:

Twelve children (13 CPT) were reviewed retrospectively between 1996 and 2019. The surgical outcome in terms of primary bone union, refracture rate, and success rate were studied. The long-term outcome, among those who reached skeletal maturity, was further evaluated for Johnston grading, residual limb deformity and limb length discrepancy (LLD).

RESULTS:

The choice of index surgery at our centre was intramedullary rod insertion and casting after resection of the dysplastic site. Certain cases with bone defects were treated with a combination of Ilizarov external fixation (Ilizarov EF) with or without an intramedullary rodding (IM rodding). The average follow-up was 14.5 years (3.1-24.0 years). The mean age of index surgery was 3.2 years (1.3-6.6 years). The primary union occurred in 5 out of 13 (38.5%) CPT after an average of 9.2 months. Seven (53.8%) CPT were skeletally matured at the last follow-up; all had bone union at a mean age of 12.6 years (7.5-17.4 years), after an average of 3 surgical attempts. Four out of 7 (57.1%) were Johnston Grade I, and 3 (42.9%) were Johnston Grade II. Four (57.1%) CPT had residual tibial valgus with a mean angle of 19.6° (11.4-30.7°), while two (28.6%) CPT had tibial varus with a mean of 9.2° (7.3-11.0°); four (57.1%) had tibial procurvatum

with a mean of 18.0° (14.0-21.1°), while one (14.3%) had recurvatum of 6.5°. The average limb length discrepancy (LLD) was 3.9 cm (2-10 cm).

Table 1: Index surgery, union, refracture and success rate

Surgery	Primary union		Refracture		Success rate
	n	%	n	%	%
IM rodding	9	69.2	2	22.2	11.1
IM rod with Ilizarov EF	2	15.4	1	50	50
Ilizarov EF	2	15.4	2	100	50
Total/Mean	13	100	5	38.5	23.1

DISCUSSIONS:

The management of CPT remains a challenging problem in children. The pseudarthrosis appears to be resistant to union, especially in younger age group [1]. Even though union has taken place, refracture is still a high possibility. Intramedullary rodding method had the lowest primary union rate at 22.2%.

CONCLUSION:

Intramedullary rodding is ineffective for producing a bony union. However, its internal splinting effect plays a role in reducing the chance of refracture. It also allowed the child to ambulate with an orthosis. Combination with more stable construct e.g., Ilizarov external fixator improve the chance of union, especially if done nearer to skeletal maturity. Residual deformity and shortening can be an ongoing challenge once the bone unites.

REFERENCES:

1. Grill F et. al. Journal of Pediatric Orthopaedics, Part B 2000; 9:75-89.