

**CASE REPORT**

## Lenthening of Tibia in CPT by Ilizarov's Method

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**Abstarct**

A case of Congenital Pseudarthrosis of Tibia (CPT) with 24 centimetres shortening in a young boy of eighteen years treated by Ilizarov's method is presented. No features of neurofibromatosis like café-au-lait spots or skin nodules were seen. Excision of Pseudarthrosis site, deformity correction and the lengthening was done by Ilizarov's apparatus, through upper tibial metaphysis. The follow up of two years showed sound union. It gives credence to Ilizarov's as being one of the best methods for treatment of CPT and large shortening.

**Key Words**

Congenital Pseudarthrosis Tibia, Llizarov's, Limb Lengthening

**Introduction**

Congenital pseudarthrosis of tibia poses to be one of the most difficult problems in paediatrics orthopaedics surgery (1). It is characterized by anterolateral deformity of the tibia and shortening of the limb. Its etiology remains unclear (2). Features of generalized neurofibromatosis may be present in 40-80% of such cases. The tibial ends are usually atrophic and thin. The abnormal tissue in the interface is highly cellular; fibromatosis like and extends into the medullary canal (3,4). Treatment remains challenging. The goal is to obtain and maintain union while minimizing deformity. The basic biologic considerations with surgical intervention include resection of the pseudarthrosis and bridging of the defect with stable fixation (2). The surgical procedures mostly used for treatment are intramedullary nailing associated with bone grafting, vascularised fibular graft and the Ilizarov external circular fixator. Even when union is achieved, the residual deformities -length discrepancy, angular tibial deformities, ankle mortise valgus and fibular non-union in the affected limb often result in significant disability (1). The past two decades have witnessed more experience having been gained with the Ilizarov. This provides a comprehensive approach to all aspects of CPT problem, allowing the surgeon to simultaneously address the problems of union as well as those of deformity, length discrepancy, joint function, anklevalgus and weight bearing (5).

**Case Report**

An eighteen-year-old boy had CPT with shortening of about 24 centimetres (*Fig.1*). The site of Pseudarthrosis was very near the ankle joint (*Fig.2*).The foot was found facing medially. It was short, under developed and almost flail. It was felt that even if it united he would need ankle arthrodesis. He did not show any evidence of generalized neurofibromatosis like café-au-lait spots or the skin nodules. The site of pseudarthrosis was excised liberally to freshen the bone ends. (The tissue was sent for histopathology.) After excising a piece from the hypertrophic fibula, the foot could be brought back into normal alignment with respect to tibia. To maintain this position, a two-mm. K wire was put through the calcaneus and through the ankle into the medullary canal of proximal fragment of the tibia. The upper end of the wire was up to the site of the corticotomy and the lower end was bent at 90 degrees so as to prevent its migration into the regenerate during distraction. This was also to facilitate its removal later after the regenerate consolidated. A suitable assembly of the Ilizarov's apparatus was applied and corticotomy was done through the upper tibial metaphysis (*Fig.3*). For lengthening which was done by the standard method (6). An indigenous anti-equinus device (7) was used to prevent the development of equinus deformity. This orthosis also allowed full weight bearing by equalizing the limb length.

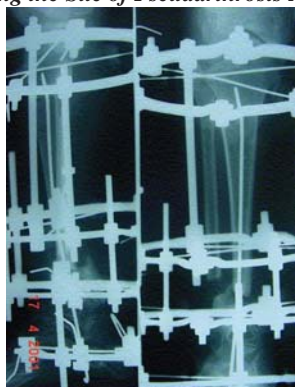
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Histopathology report did not reveal any evidence of neurofibromatosis. The fracture united. The apparatus was removed after eleven months. But the bones of the foot showed marked osteoporosis that later got corrected with weight bearing and active use of the limb. (Fig. 4). The follow up x-rays after two yrs shows arthrodesed ankle and differentiation of the regenerate into medulla and the cortex (Fig-5)



**Fig 1&2.** Pre-operative Photo of Patient Showing Shortening of 24 cms. Each block is of one inch. Pre-Operative X-ray Showing the Site of Pseudarthrosis Near Ankle Joint



**Fig 3.** Post operative X-Ray Showing Application of Ilizarov's Apparatus and Corticotomy of Tibia.

### Discussion

Some workers have reported the incidence of features of neurofibromatosis associated with CPT to be 40% - 80% (3,4). In this case no features of neurofibromatosis were present. Histopathology of the excised specimen in the present case, also, did not show any features of neurofibromatosis. May be, osteofibromatous tissue found at the site of pseudarthrosis is representing neurofibromatosis. We resected the hamartomatous, fibrous tissue and sclerotic bone at the site of pseudarthrosis before obtaining contact and causing compression at the bone ends. Kulkarni (8) and Ilizarov (9) recommend the same procedure. This case reported very late at the age of eighteen years and still we were



**Fig 4 & 5.** Photograph Taken After Two Years Showing Equalization of Limb Length. Follow up X-rays Taken at Two Year Showing Site of Pseudarthrosis, Arthrodesed.

able to achieve union and correct limb length discrepancy of 24 centimetres. It is contrast to other workers(8,9) who felt that it was better to treat such cases early so that the small amount of shortening would be easily manageable. Still others felt that with such a great shortening it was better to amputate and fit prosthesis(6). But this did not coerce us into doing amputation as we felt that being old and intelligent, he would comply with the instructions in a better way which he did and the result is before us. Similar good results were obtained by other authors (1,5,10) who also used Ilizarov's method to treat CPT.

### Conclusion

Thus it is concluded that Ilizarov's method is one of the best methods to treat CPT with large LLD.

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