

Congenital Posteromedial Bowing of Right Tibia and Fibula: A Case Report

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ABSTRACT

Congenital Posteromedial Bowing of Tibia (CPMBT) is a rare congenital deformity in which there is posterior and medial bowing of tibia present since birth commonly at the junction of upper 2/3rd and lower 1/3rd shaft. It is characterized by spontaneous partial correction by remodeling and resulting into limb length discrepancy by skeletal maturity, often requiring limb lengthening. It may be associated with similar deformity in fibula, calcaneovalgus at ankle, ankle movement restriction and rarely weak plantar flexors. The case report herein describes a case presenting at 2 years of age managed by corrective osteotomy. At 2 years follow up, limb length discrepancy is remaining, which requires further evaluation and management keeping in view growth potential in the child. The case is reported in view of its rarity and complicated long-term management.

Keywords: Congenital, Posteromedial, Bowing, Tibia

INTRODUCTION

Congenital angular deformities of the leg may have the apex of deformity either anterior or posterior. In both these, tibia is also angulated medially or laterally. Anterior angulation is more common and likely to develop pseudarthrosis. It is commonly associated with neurofibromatosis. Congenital Posteromedial Bowing of tibia (CPMBT) and fibula is likely to improve partly with growth. In these cases, a limb-length discrepancy (LLD), ranging from a few mm to a few cm is likely by maturity. Yearly examination is essential to detect LLD which may need properly timed epiphysiodesis or limb lengthening procedures [1]. About 200 cases of CPMBT have been reported till date [2]. Described one case and reviewed the literature of bowing in tibia [3]. Reported six cases of CPMBT and noted resolution of deformity in 5 of these with plaster treatment alone [4]. Stressed the role of pre-natal USG in the diagnosis of CPMBT after 20 weeks of gestation. Herein, a case of congenital posteromedial bowing of tibia & fibula is reported due to its rarity and difficulties in complete management.

CASE REPORT

A 2 years old girl was brought by her parents with the chief complaints of deformity in her right leg since birth and difficulty in walking. Examination showed posteromedial angular deformity in her right leg at the junction of upper 2/3rd and lower 1/3rd. Hip, knee and ankle movements were normal except terminal restriction of plantarflexion at the right ankle. The limb length was short by 4 cm. The child did not have

any café au lait (coffee color) spots on the body or any swelling indicating neurofibromatosis. No other systemic or skeletal abnormality was detected. X-ray showed posteromedial angulation of both tibia & fibula with slight sclerosis at the site of angulation, but the medullary canal of bones was patent. There was no obvious deformity in femur (Figure 1).

A diagnosis of congenital posteromedial bowing of right tibia & fibula was made. Differential diagnosis considered was early Pseudarthrosis of tibia and fibula. Above knee cast with corrective molding at the deformity site was applied twice, each time for 6 weeks. As there was no clinical improvement after the casts, corrective osteotomy of tibia and fibula was done at the apex of deformity and resected bone used as graft. Stabilization of tibial osteotomy was done using two Titanium elastic nails inserted from upper tibial metaphysis downwards. At 3 months callus was seen only posteriorly (Figure 2). At 6 months the osteotomy had united well (Figure 2). Titanium nails were removed one-year post surgery. The child started using the limb normally for all

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Figure 1. X ray shows medial bowing of right tibia and fibula with shortening.

routine activities 6 months post- surgery. At 24 months the right lower limb is short by 1.5 cm, the right foot is relatively small and joint movements are normal (**Figure 3**). The child is advised 1cm. shoe raise in sole. As the child is likely to develop further limb length discrepancy, proper yearly clinical and radiological evaluation are planned to rectify the LLD, keeping in mind overall limb length and growth potential. There may be need of epiphysiodesis of the opposite limb bones during growing period or limb lengthening procedures using distraction osteogenesis principle after skeletal maturity.

DISCUSSION

CPMBT is a rare deformity affecting bones of the leg. The tibia and fibula bones are bent backwards and towards the other leg, when seen from side and front. Foot may have calcaneovalgus deformity and may touch the shin of tibia. Deformity is associated with shortening which may increase as the child grows. The angulation normally undergoes incomplete correction within the first four years of life, but length discrepancy increases causing up to 3-7 cm. of shortening by skeletal maturity [1]. It is considered as a benign condition in comparison to pseudarthrosis tibia which is associated with anterior angulation of tibia [5]. In their series of 38 cases with a mean follow up of 78 months, noted that the maximum correction occurred in the first year of life and remodeling continued slowly till 4 years of age [6]. In



Figure 2. Post-operative x rays at 3 & 6 months showing unifying osteotomy fixed with titanium elastic nails.

their study on 20 children, noted the most severe posterior bow of 70 degrees and medial bow of 64 degrees. According to them physeal realignment and diaphyseal remodeling contribute for resolution of deformities. Wedging of the distal tibial epiphysis with valgus inclination and fibular hypoplasia has been noted in some children with CPMBT [7]. Also described shortening associated with CPMBT, initial calcaneovalgus deformity and decreased ankle range of movement. Occasionally plantar flexors of ankle may be weak causing limp [8]. Its etiology is not clear but transient constriction by an amniotic band has been thought as a possibility. Initial treatment is with cast or splint. Osteotomy for correction of remaining deformity is useful for acute correction of the deformity. Gradual correction with external fixator, contralateral proximal tibial epiphysiodesis, ipsilateral limb lengthening, physeal manipulation of the distal tibia to correct ankle valgus, tendon transfer to augment plantar flexors may be needed respectively in cases of complicated CPMBT to correct bowing, shortening, valgus ankle and power of plantar flexors [8].

The reported case presented at 2 years of age, which was already past the age of the maximum spontaneous correction. Cast for 3 months did not show any obvious improvement, hence corrective osteotomy was done achieving full correction of deformity. Union went on relatively slow, but the child was free of any plaster support at 6 months. 24 months follow up shows 1.5 cm shortening in limb length, thus indicating shortening in tibia which seems increasing despite correction of angulation. Absolute Limb Length Discrepancy increases throughout growth with a mean of 14.3% discrepancy in tibial length. 53% of CPMBT cases may need limb lengthening surgery due to shortening up to 40% of normal length [5,6]. Multilevel osteotomy has also been used to correct CPMBT of both tibia and fibula [9]. The present case has been advised regular follow up for clinical & radiological assessment and further treatment in form of proximal tibial epiphysiodesis of normal limb and managing tibial shortening initially by shoe raise and later by limb lengthening with external fixator. Follow up is to be continued till skeletal maturity.

CONFLICT OF INTERESTS

None.

REFERENCES

1. Kelly DM (2016) Congenital anomaly of the lower extremity. Campbell's Operative Orthopedics, 13th edition, 2 Elsevier 1053.
2. French SM, Crampton SA, Brandreth DL (1987) Posteromedial bowing of the tibia and fibula: A literature review and case presentation. J Foot Surg 26(1): 60-65.
3. Yadav SS, Thomas S (1980) Congenital posteromedial bowing of the tibia. Acta Orthop Scand 51(2): 311-313.
4. Zollinger PE, Wessels MW, Wladimiroff JW, Diepstraten AF (2000) Prenatal ultrasonographic diagnosis of posteromedial bowing of the leg: Two case reports. Ultrasound Obstet Gynecol 15(2): 150-153.
5. Wright J, Hill RA, Tennant S (2018) Posteromedial bowing of the tibia: A benign condition or a case for limb reconstruction? J Child Orthop 12(2): 187-196.
6. Hitesh HS, Daddabasappa SN, Joseph B (2009) Congenital Posteromedial Bowing of the Tibia: A retrospective analysis of Growth Abnormalities in the leg. J Pediatr Ortho B 18(3) 120-128.
7. Pappas AM (1984) Congenital Posteromedial bowing of the tibia and fibula. J Pediatr Orthop 4(5): 525-531.
8. Joseph B, Shah H, Siddesh ND (2016) Congenital Posteromedial bowing of the tibia. Pediatr Lower Limb Deform 495-502.
9. Napiontek M, Shadi M (2014) Congenital posteromedial bowing of the tibia and fibula: Treatment option by multilevel osteotomy. J Pediatr Orthop B 23(2): 130-134.