Posteromedial Bowing of the Tibia: A Rare Anomaly

Maria João Palha[1], Cristina Miranda[2], Joana Saldanha[1], Graça Oliveira[1]

Port J Pediatr 2020;51:278-9
DOI: https://doi.org/10.25754/pjp.2020.19696

A male newborn presented with right lower limb anomaly and calcaneovalgus deformity of the foot at birth (Fig. 1), adequate somatometry, and no other anomalies. He was the first child of healthy parents, born by vaginal delivery after an uneventful gestation of 39 weeks with normal prenatal ultrasounds. The postnatal X-ray (Fig. 2) and ultrasound both confirmed the posterior angulation of the tibia and fibula without a bone fracture, diagnosing a posteromedial tibial and fibula bowing. The newborn was referred to orthopedics; only observation was recommended. At 6 months, gross motor development was adequate, the deformity attenuated (Fig. 3) but the right lower limb was already 1 cm shorter.

Posteromedial tibial and fibula bowing is a congenital condition in which there is a posterior and medial angulation of both bones. Other findings may include a smaller foot with a calcaneovalgus position, limited plantar flexion, and underdeveloped calf muscles.[1,2] It is usually unilateral and more often involves the middle and distal thirds.[3] One study found a left predominance.[3] Bilateral deformities are commonly associated with skeletal dysplasia.[4] The exact incidence is unknown. It is usually detected after birth, although cases with prenatal diagnosis have been reported.[3] Etiology seems to be related to mechanical (abnormal fetal position or the restriction of growth due to soft tissue contractures or amnion rupture) or congenital (impaired function of the distal physis) factors.[4] The main differential diagnosis concerns the anteromedial deformity of the tibia that is associated with the congenital pseudarthrosis of the tibia and fibular hemimelia.[4,5]

The long-term outcome is variable. Spontaneous improvement usually occurs during the first four years (highest rate during the first 12 months).[2] Therefore, careful follow-up has been the preferred course of action.[1] However, more than 50% (especially larger discrepancies or bigger angulations) end up requiring surgery.[1,4,5] The most common sequel is a leg-length discrepancy (approximately 3-4 cm, up to 7 cm).[4]

Figure 1. Bowing of the inferior right limb.

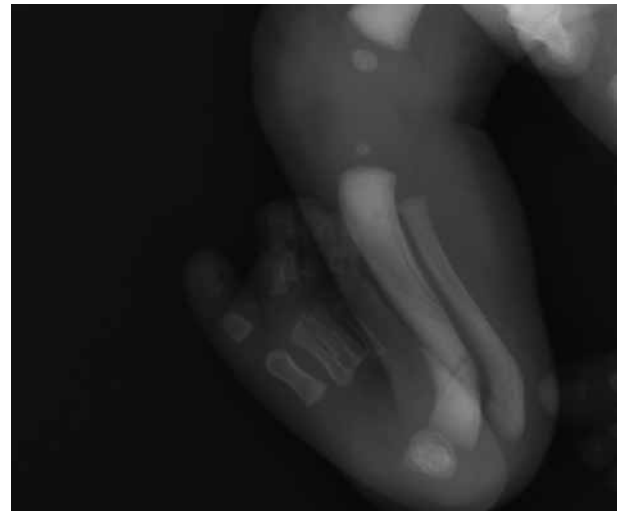

Figure 2. X-ray showing tibia and fibula bowing.

1. Department of Pediatrics, Hospital de Santa Maria, Centro Hospitalar Universitário de Lisboa Norte, Lisboa, Portugal
2. Unidade de Saúde Familiar Mactamã, Agrupamento de Centros de Saúde de Sintra, Sintra, Portugal
Corresponding Author
Maria João Palha
https://orcid.org/0000-0002-3354-4149
mariajoaopalha@gmail.com
Department of Pediatrics, Hospital de Santa Maria, Rua Prof. Egas Moniz, 1649-028, Lisboa, Portugal
Received: 17/03/2020 | Accepted: 04/05/20XX | Published: 02/10/2020

Figure 3. Inferior right limb at the age of 6 months.

Keywords: Fibula/abnormalities; Infant, Newborn; Leg Length Inequality/diagnosis; Lower Extremity Deformities, Congenital/diagnostic imaging; Tibia/abnormalities

WHAT THIS REPORT ADDS

- Unilateral posteromedial bowing of the tibia is a rare congenital anomaly usually diagnosed after birth.
- Other findings may include a smaller foot with a calcaneovalgus position on the same side.
- A spontaneous improvement but incomplete correction usually occurs.
- Leg-length discrepancy is a common sequel that can be noted by the age of 6 months.
- At least half of the patients end up requiring surgery.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

Funding Sources

There were no external funding sources for the realization of this paper.

Provenance and peer review

Not commissioned; externally peer reviewed

Consent for publication

Consent for publication was obtained.

Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

References

1. Shah HH, Doddabasappa SN, Joseph B. Congenital posteromedial bowing of the tibia: A retrospective analysis of growth abnormalities in the leg. J Pediatr Orthop B 2009;18:120-8. doi: 10.1097/BPB.0b013e328329dc86.
2. Kaufman SD, Fagg JA, Jones S, Bell MJ, Saleh M, Fernandes JA. Limb lengthening in congenital posteromedial bow of the tibia. Strategies Trauma Limb Reconstr 2012;7:147-53. doi: 10.1007/s11751-012-0145.
3. Zollinger PE, Wessels MW, Wladimiroff JW, Diepstraten AF. Prenatal ultrasonographic diagnosis of posteromedial bowing of the leg: Two case reports. Ultrasound Obstet Gynecol 2000;15:150-3. doi: 10.1046/j.1469-0705.2000.00048.
4. Wright J, Hill RA, Eastwood DM, Hashemi-Nejad A, Calder P, Tennant S. Posteromedial bowing of the tibia: A benign condition or a case for limb reconstruction? J Child Orthop 2018;12:187-96. doi: 10.1302/1863-2548.12.170211.
5. Napiontek M, Shadi M. Congenital posteromedial bowing of the tibia and fibula: Treatment option by multilevel osteotomy. J Pediatr Orthop B 2014;23:130-134. doi: 10.1097/BPB.0000000000000024.