Habib and Chaudhary
Annals of Pediatric Surgery (2022) 18:68
https://doi.org/10.1186/s43159-022-00209-9

Annals of Pediatric Surgery

CASE REPORTS Open Access

Parasitic limb excision in a neonate: a rare occurrence

Murad Habib* and Muhammad Amjad Chaudhary

Abstract

Background: Parasitic limb is a rare congenital anomaly. Its incidence is less than 1 in 1 million live births. It refers to the type of conjoined twin in which tissues of an incompletely formed twin (parasite) are attached to and dependent upon a fully developed twin. Since it is a rare anomaly, all the cases should be reported.

Case presentation: This study reports a 3-day-old neonate admitted to the Children's Hospital Emergency. Her initial complaints were an extra limb arising from her lower back. She was born as a result of cousin marriage and was not diagnosed antenatally. The limb was attached to the lower lumbar region (L4, L5, S1). The limb was hypoplastic, and the baby was unable to hold it against the gravity but she cried when it was pinched suggesting pain sensations. Preoperative diagnostic workup was done, and parasitic limb was excised.

Conclusion: Every child with parasitic limb is a surgical dilemma. Thus, a multi-disciplinary approach and a carefully planned surgery with meticulous dissection can result in complete excision of a parasitic limb without any complications.

Keywords: Parasitic limb, Neonate, Surgery

Background

Congenital accessory limb is a rare but known anomaly [1]. The etiology described is multifactorial. But known causes might include perinatal drugs, abuse, medication, or injury. These deformities might as well occur alone or in conjunction with other anomalies [2, 3]. The authors have postulated many hypotheses mainly based on hedgehog pathway which undertakes the complex process in formation of accessory limb [3].

Polymelia is a condition in which an adjunct limb is formed in addition to the normal limbs on various locations of the body depending upon the type of genetic defect in a developing embryo [4]. When the accessory limb is present on the back, in association with the spinal cord (lumbosacral region), it is referred to as Notomelia. Polymelia is an exceedingly infrequent genetic abnormality with only a scarce number of reported cases in many years. In this case report, we present a similar literature review of a neonate who was born with a hypoplastic limb attached to her lumbosacral region.

Case presentation

A 3-day-old neonate was presented to the Children's Hospital Emergency. Her initial complaints were an extra limb arising from her lower back as seen in Fig. 1. She was born as a result of cousin marriage, after 9 months of pregnancy via spontaneous vaginal delivery and was not diagnosed antenatally. The mother was 30 years old and had two babies prior to this one who were perfectly healthy. Her weight at the time was 4.5kg (with the limb attached). We could identify the knee and foot with the toes attached. The limb was hypoplastic and had no power of its own, and the baby was unable to hold it against the gravity but she cried when it was pinched describing pain sensations. There were no genital abnormalities. Radiograph showed hemimelia, only a single-bone formation in both the limbs which could not be

*Correspondence: muradhabib007@gmail.com

Department of Paediatric Surgery, The Children's Hospital, Pakistan Institute of Medical Sciences, Islamabad, Pakistan

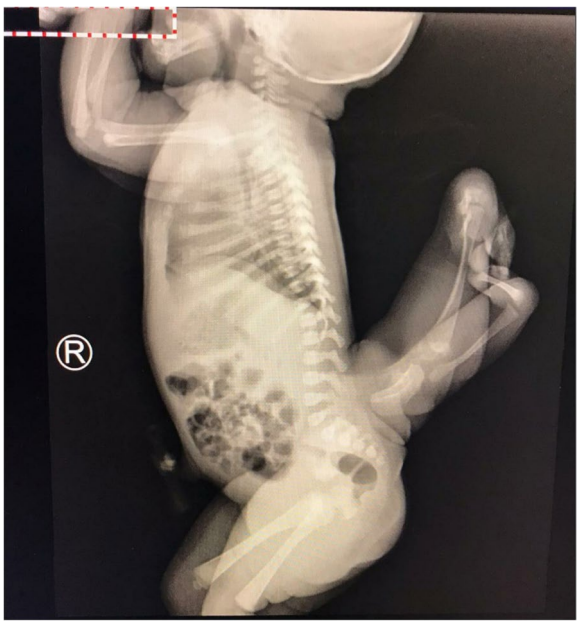

Fig. 1 Extra limb arising from lumbosacral region

seen arising from the vertebral column. The patient was shifted to operation theater as seen in Fig. 2a. A circumferential incision was made (Fig. 2b), communication was dislodged (Fig. 2c), and parasitic limb excision was done (Fig. 2d).

Discussion

The first-reported case of an accessory limb was in 1975, a baby born with three limbs [5], followed by literature of some with other congenital anomalies and neurological defects [6]. The basic etiology of accessory limb formation lies in problem with limb bud generation resulting in formation of parasitic limb. Due to the multiple limb presence, congenital accessory limb can be diagnosed as a remnant of a parasitic twin [7]. Limb formation and growth is a complicated process of embryonal development requiring the genetic regulation events to happen at the exact time and with the predetermined accurate genes [8]. According to a report, the alternation in a gene known as "Bovine NHLRC2" is related to the occurrence of abnormalities like Notomelia [7, 8]. This gene is the gene that is also associated with the development of polymelia. Findings in animal models have explained a great deal about these functions and have improved our understanding of malformations [8].

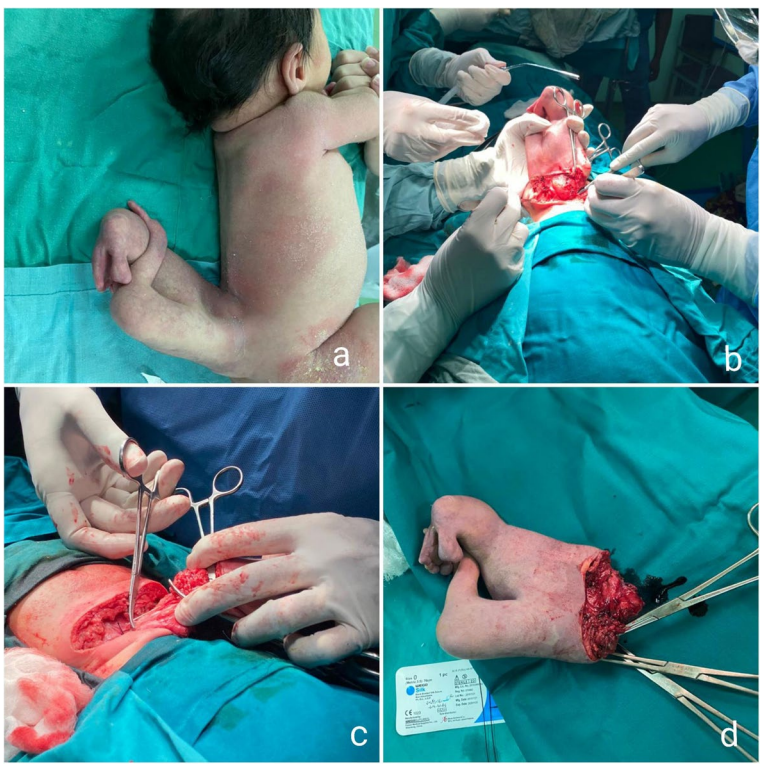

Fig. 2 **a** Parasitic limb can be seen. **b** Incision made around the parasitic limb. **c** Dissection of the limb being done. **d** Parasitic limb after complete excision

With the advancement in the field of technology, numerous imaging techniques are present that can detect the presence of these genetic defects even before birth and their surgical removal is made easier by assessing their development in utero. In the case of Notomelia [9], the surgical intervention can be quite complex because the accessory appendage in this instance is attached to the spinal cord, which means there is the involvement of a neurological component rather than a simple surgical leg removal process [10]. Therefore, a very careful surgery performed by adept pediatric surgeons is needed to get rid of accessory appendage.

Conclusion

Every child with parasitic limb is a surgical dilemma. Thus, a multi-disciplinary approach and a carefully planned surgery with meticulous dissection can result in complete excision of a parasitic limb without any complications.

Acknowledgments
None

Authors' contributions
Concept of the study: Murad habib, Muhammad Amjad Chaudhary. Acquisition of the data: Murad Habib. Interpretation of the data: Murad Habib. Intellectual content: Murad Habib. Supervision: Muhammad Amjad Chaudhary. Both authors read and approved the final manuscript.

Funding
The author received no financial support for this article.

Availability of data and materials
All data can be made available upon request.

Declarations

Ethics approval and consent to participate
This study was reviewed and approved by the ethical review board committee of Pakistan Institute of Medical Sciences. A written and informed consent was acquired from the guardian regarding names and evidence used in this publication. And he had no objections whatsoever.

Consent for publication
A written and informed consent was acquired for publication.

Competing interests
The authors declare that they have no competing interests.

Received: 4 March 2022 Accepted: 2 August 2022
Published online: 19 September 2022

References

1. Park K-B, Kim Y-M, Park J-Y, Chung M-L, Jung Y-J, Nam S-H. An accessory limb with an imperforate anus. Ann Surg Treat Res. 2014;87(4):213–6.
2. Sharma L, Singh R, Bhargava J, Sharma V. Accessory limbs with spinal lesions. Pediatr Surg Int. 1991;6(3):227–9.
3. Tickle C, Towers M. Sonic hedgehog signaling in limb development. Front Cell Dev Biol. 2017;5:14.
4. Verma S, Khanna M, Tripathi V, Yadav N. Occurrence of polymelia in a female child. J Clin Imaging Sci. 2013;3:18.
5. Evans J, Vitez M, Czeizel A. Congenital abnormalities associated with limb deficiency defects: a population study based on cases from the Hungarian Congenital Malformation Registry (1975–1984). Am J Med Genet. 1994;49(1):52–66.
6. Vatankhah S, Jalilvand M, Sarkhosh S, Azarmi M, Mohseni M. Prevalence of congenital anomalies in Iran: a review article. Iran J Public Health. 2017;46(6):733–43.
7. Zhao L, Li M, Sun X, Ma Z, Guo G, Huang Y. Congenital lumbosacral limb duplication: a case report. J Orthop Surg. 2006;14(2):187–91.
8. Montalvo N, Redrobán L, Espín VH. Incomplete duplication of a lower extremity (polymelia): a case report. J Med Case Rep. 2014;8(1):1–3.
9. Kelani A, Moumouni H, Issa A, Younsaa H, Fokou H, Sani R, et al. Notomelia and related neural tube defects in a baby born in Niger: case report and literature review. Childs Nerv Syst. 2017;33(3):529–34.
10. Sahlu A, Mesfin B, Tirsit A, Debebe T, Wester K. Parasitic twin—a supernumerary limb associated with spinal malformations. A case report. Acta Neurochir. 2016;158(3):611–4.

Publisher's Note