World Journal of Advanced Research and Reviews
eISSN: 2581-9615 CODEN (USA): WJARAI
Cross Ref DOI: 10.30574/wjarr
Journal homepage: https://wjarr.com/

(CASE REPORT)

Check for updates

Diastematomyelia and foot deformity: A case report and literature review

Chaimaa Iziki *, Sara Skalli, Loubna essouayni, Souad Amounas, Ikrame Zaanik and Samia Karkouri

Department of Physical Medicine and Rehabilitation, Ibn Sina University Hospital, Faculty of Medicine and Pharmacy of Rabat, Mohammed V University, Rabat, Morocco.

World Journal of Advanced Research and Reviews, 2025, 27(03), 113-116

Publication history: Received on 25 July 2025; revised on 29 August 2025; accepted on 02 September 2025

Article DOI: https://doi.org/10.30574/wjarr.2025.27.3.3121

Abstract

Background: Diastematomyelia is a rare form of spinal dysraphism characterized by a longitudinal split of the spinal cord into two hemicords, typically separated by a fibrous or cartilaginous septum. Although it may remain asymptomatic, it can present with orthopedic abnormalities, particularly foot deformities. Early recognition is important to prevent irreversible neurological sequelae.

Case presentation: We report the case of an 8-year-old patient with a left varus pes cavus and muscle atrophy. Neurological examination showed preserved motor and sensory function. MRI revealed a type I diastematomyelia with low-lying cord and vertebral anomalies. Given the absence of neurological deficits, conservative management was adopted, consisting of orthotics and rehabilitation and periodic clinical follow-up.

Conclusion: This case underscores the importance of considering underlying spinal malformations in children presenting with foot deformities, even in the absence of overt neurological impairment. MRI is the gold standard for diagnosis, and for identifying associated anomalies or risk factors for future deterioration. Long-term surveillance is essential, as neurological deterioration may develop insidiously during growth.

Keywords: Diastematomyelia; Spinal Dysraphism; Spinal Cord Malformation; Foot Deformity; Pediatric Orthopedics

1. Introduction

Diastematomyelia is an uncommon form of spinal dysraphism characterized by a longitudinal division of the vertebral canal, resulting in the formation of two symmetrical hemicords. This congenital defect most commonly involves the lumbar spine or thoracolumbar region. It is often associated with other deformities, particularly foot abnormalities.

Through this case report and literature review, we aim to raise awareness of this rare entity and highlight the importance of tailored therapeutic strategies.

2. Case presentation

We describe the case of an 8-year-old patient with foot deformity referred to the Physical and Rehabilitation Medicine Department of Ibn Sina University Hospital, Rabat. All identifying details have been removed in accordance with ethical considerations.

* Corresponding author: Chaimaa Iziki

Perinatal history revealed a monitored post-term pregnancy. Orthopedic examination demonstrated a left-sided varus pes cavus (figure 1) and ligamentous laxity of the foot joints. Neurological assessment acknowledged ipsilateral calf muscle atrophy, absence of the plantar cutaneous reflex, while motor strength and sensation remained intact.

Electrophysiological studies revealed no evidence of peripheral neuropathy or radiculopathy. However, the lumbar Magnetic Resonance Imaging (MRI) showed hypoplasia of the vertebral laminae at L4, L5 and S1, with a low attached cord and type I Diastematomyelia (figures 2 and 3).

Given the absence of significant functional impairment, surgical intervention was not recommended. The patient received orthotic devices, including adapted orthopedic footwear, targeted strengthening exercises for the left lower limb, and regular clinical monitoring to detect neurological progression.

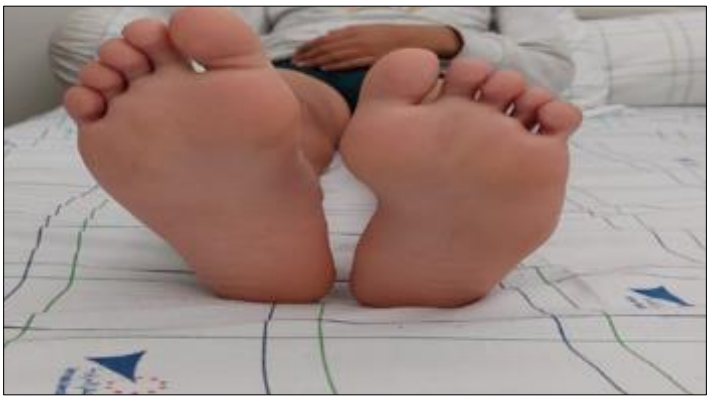

Figure 1 Deformity of the left foot

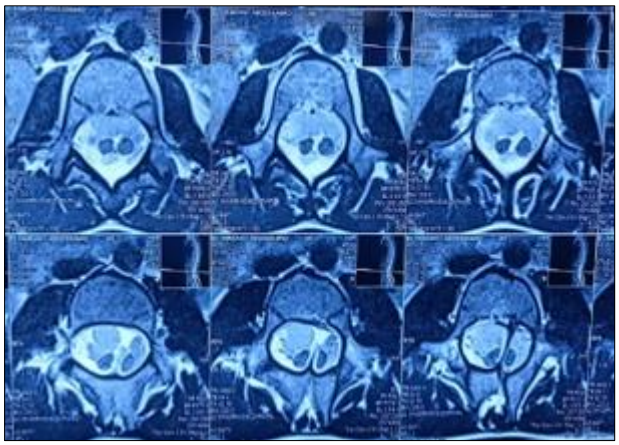

Figure 2 Spinal MRI in axial T2-weighted sequences: cartilaginous septum separating the two hemicords

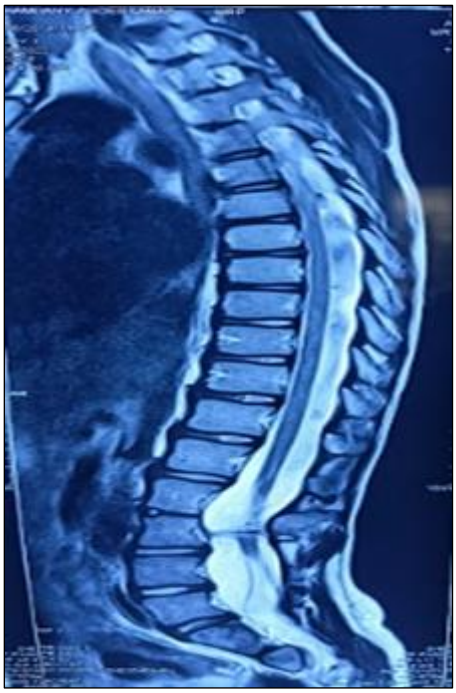

Figure 3 Sagittal T2 spinal MRI demonstrating the presence of dual hemicords

3. Discussion

Diastematomyelia can be classified into two types

- Type I: characterized by two hemicords, each enclosed within a separate dural sac, divided by a rigid midline osteocartilaginous septum.
- Type II involves two hemicords housed within a single dural tube, separated by a non-rigid fibrous septum or adhesions [1].

Our patient presented with Type I, involving a cartilaginous septum. Prenatal diagnosis can be made via fetal ultrasonography, generally between 22 and 24 weeks of gestation [2]. While the thoracolumbar region is most commonly affected [3], our case involved the lumbosacral region.

MRI and Computed Tomography (CT) are important for diagnosis and anatomical characterization, determining the extent and number of clefts, and localizing the conus medullaris and cauda equina roots in relation to the spinal cord. These imaging modalities also assist in identifying associated malformations, including scoliosis, myelomeningocele, syringomyelia, or neurenteric cysts, which are more clearly visualized through 3D reconstructions. Additionally, imaging is crucial for identifying potential complications such as intramedullary cavities, spinal cord tethering, or severe spinal deformities [4].

Neurological deterioration in diastematomyelia patients is often attributed to traction on a low-lying or tethered spinal cord [5]. Hence, long-term follow-up is mandatory, with regular assessment focusing on early indicators of severity such as limb hypotrophy, progressive foot deformity, or neurological bladder [6]. Surgical intervention may be warranted when neurological deficits appear in order to prevent progression of neurological complications during growth and potential scoliosis [7].

4. Conclusion

Foot deformities in children warrant thorough clinical examination, especially neurological assessment, to rule out underlying spinal malformations. Early detection and close monitoring are essential, as untreated cases may lead to irreversible neurological damage and significant complications.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare not having conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Jiblawi A, Chanbour H, Tayba A, Khayat H, Jiblawi K. MRI Characteristics of Split Cord Malformation. Cureus [Internet]. 27 sept 2021 [cited 2025 Aug 4]; Available from: https://www.cureus.com/articles/71991-mri-characteristics-of-split-cord-malformation

[2] Bekki H, Morishita Y, Kawano O, Shiba K, Iwamoto Y. Diastematomyelia: A Surgical Case with Long-Term Follow-Up. Asian Spine J. 2015;9(1):99.

[3] Mamo G, Batra R, Steinig J. A Case of Diastematomyelia Presenting With Minimal Neurologic Deficits in a Middle-Aged Patient. Cureus [Internet]. January 11, 2021 [cited 2025 Aug 4]; Available from: https://www.cureus.com/articles/48776-a-case-of-diastematomyelia-presenting-with-minimal-neurologic-deficits-in-a-middle-aged-patient.

[4] Cheng B, Li FT, Lin L. Diastematomyelia: A retrospective review of 138 patients. The Journal of Bone and Joint Surgery British volume. March 2012;94-B(3):365-72.

[5] Klimo P, Rao G, Brockmeyer D. Congenital Anomalies of the Cervical Spine. Neurosurgery Clinics of North America. July 2007;18(3):463-78.

[6] Zbair S, Adnane A, Chbani K, Salam S, Ouzidane L. A rare form of closed spinal dysraphism: diastematomyelia. Pan Afr Med J [Internet]. 2017 [cited 2025 Aug 4];28. Available from: http://www.panafrican-med-journal.com/content/article/28/317/full/

[7] Vissarionov SV, Krutelev NA, Snischuk VP, Alam M, Kravchenko AP, Zheng YP, et al. Diagnosis and treatment of diastematomyelia in children: a perspective cohort study. Spinal Cord Ser Cases. 19 Dec 2018;4(1):109.