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Surgical Neurology International

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Video Abstract

Combined Type 1 and 2 split cord malformations, kyphoscoliosis, tethered cord, and a lipoma

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Received : 02 June 2020
Accepted : 09 June 2020
Published : 27 June 2020

DOI:
10.25259/SNI_331_2020

Quick Response Code:

ABSTRACT

Background: Split cord malformations (SCMs) are uncommon congenital anomalies. They can be divided into Type 1 (bony septum and two separate dural sheaths) and Type 2 (fibrous septum and a single dural sheath).[1,2,4] Rarely, SCM can be associated with orthopedic anomalies (mostly seen in older children), such as scoliosis, followed by kyphosis, and/or both.[1-3] Conversely, patients with congenital scoliosis have 40% risk of congenital underlying neural deformities, with 16.3% attributed to SCM.[1,4] Those with thoracic or lumbosacral SCM may have congenital tethering lesions, predominantly consisting of intradural lipomas.[3,4] Surgery is optimally performed in two stages: first, removal of the spinal septum and untethering of the cord, and second, correction of the kyphosis, scoliosis, and/or both.[1-5]

Case Description: In this video, a 44-year-old female initially presented after having progressively developed kyphoscoliosis since childhood. Three months before presentation, she had developed increased left lower extremity pain with hypoesthesia followed 1 month later by the onset of the left lower extremity monoplegia (0/5). The computed tomography and magnetic resonance imaging studies revealed a SCM at the L3 level with bony and membranous septum, accompanied by an intradural lipoma, and tethered cord. She underwent a two-stage procedure; first, removal of the bony and membranous septum, resection of the intradural lipoma, and untethering of the cord; second, she had correction of the kyphoscoliosis. Postoperatively, although the pain and sensory deficits improved, the left lower extremity monoplegia remained.

Conclusion: SCM is a rare cause of spinal deformity. If left untreated, the associated neurological deficits may progress. Treatment should include a two-staged approach; first, the bony and membranous septum should be removed followed by lipoma resection and untethering the cord with adequate cord decompression, while second, a fusion may be performed to address attendant kyphoscoliosis.

Keywords: Intradural lipoma, Kyphoscoliosis, Split cord malformation, Tethered cord

[Video 1]-Available on:
www.surgicalneurologyint.com

Annotations[1-5]

After skin incision and paraspinal muscle dissection, a L3-L5 laminectomy was performed (01:10). This required careful dissection of the dura away from the bony septum. Drilling of the bony septum was initiated cranially and proceeded caudally, taking care to avoid injuring the surrounding nerve roots (01:19). It was critical to continue microdissection of the SCM away

from the bony septum, especially while drilling to avoid a dural tear, and a cord injury (01:35). Arachnoidal adhesions and webs were severed to free the cord and the nerve roots (01:57). The lipoma was initially removed using microscissors and microforceps; this untethering of the cord allowed for resection of the membranous septum after excision of the lipoma (02:00). At the end of this procedure, the dura was closed using closely approximated interrupted 4–0 silk sutures to achieve a watertight closure (02:41). For a more secure closure, adding a fibrin sealant and a microfibrillar collagen utilizing a "sandwich" technique further supports the watertight dural closure.

Declaration of patient consent

Patient's consent not required as patients identity is not disclosed or compromised.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Elarjani T, Khairy S, Alshaya W. Combined Type 1 and 2 split cord malformations, kyphoscoliosis, tethered cord, and a lipoma. Surg Neurol Int 2020;11:172.