

Case Report

## Retethering of sectioned fibrolipomatous filum terminale in an adult: case report and review of the literature

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### Abstract

**BACKGROUND CONTEXT:** Recurrent tethering of the spinal cord is a rare late complication after sectioning of a fibrolipomatous filum terminale that has only been reported in two pediatric cases.

**PURPOSE:** To report adult-onset recurrent tethering of the spinal cord after surgical sectioning of a fibrolipomatous filum terminale and review the literature in an attempt to identify similar cases.

**STUDY DESIGN/SETTING:** The study was designed to be a case report and literature review.

**METHODS:** A 21-year-old woman with a history of previous surgical repair for a tethered spinal cord secondary to a fibrolipomatous filum terminale presented with low back and right lower extremity pain, urinary frequency, and fecal incontinence. Progressive bladder and sphincter dysfunction was confirmed on urodynamic testing. Lumbar spine magnetic resonance imaging demonstrated a low-lying and dorsally positioned conus medullaris.

**RESULTS:** The patient underwent neurosurgical exploration of the previous site of sectioning with release of the proximal fatty filum stump from dorsal dural adhesions. Postoperatively, her pain resolved, and her bowel and bladder control improved.

**CONCLUSIONS:** Sectioning of both abnormal and apparently normal fila has become a relatively common procedure in pediatric neurosurgery. As more children with this surgical history mature and present for neurosurgical consultation as adults, retethering must be considered in the differential diagnosis. © 2010 Elsevier Inc. All rights reserved.

### Keywords:

Adult; Filum terminale; Recurrent tethered cord; Surgical repair

### Introduction

Sectioning of the filum terminale is indicated in patients who present clinically with tethered cord syndrome. This surgical procedure is generally considered benign, with low complication risk and excellent outcomes. Although recurrent tethering of a previously untethered spinal cord for repair of open and occult forms of spinal dysraphism frequently occurs [1], retethering of a sectioned filum terminale has only rarely been reported [2]. Retethering typically manifests several years after the initial repair, often coincident with rapid axial growth in childhood or adolescence.

Symptoms of retethering vary with patient age, and untreated retethering can lead to significant neurological deterioration. This complication is reported most frequently after repair of myelomeningoceles or lipomyelomeningoceles. Only two cases of retethering have been reported after sectioning of a fibrolipomatous filum terminale, both in children [2]. We report the first case, to our knowledge, of an adult patient presenting with tethering that recurred after sectioning of a fatty filum terminale.

### Materials and methods

A 21-year-old woman presented with a 3-week history of low back pain radiating into the right lower extremity. She reported having urinary and defecatory frequency with one instance of urinary incontinence and multiple episodes of encopresis. She denied any trauma or other inciting event. Her history was remarkable for excision of a “lobulated sacrococcygeal skin tag” in early infancy, which was found to

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Fig. 1. (Left) Preoperative sagittal T2-weighted magnetic resonance imaging (MRI) of the lumbar spine at age 21 years. A low-lying conus medullaris is situated dorsally and appears adherent to the thecal sac. (Right) Preoperative axial T2-weighted MRI of the L4 vertebral level. Dorsal displacement of the cauda equina is seen, with near obliteration of the subarachnoid space.

extend no further than the deep fascia and did not communicate with the thecal sac. She then developed urinary frequency and incontinence at 11 years of age, and magnetic resonance imaging (MRI) revealed a low-lying conus medullaris at the L3–L4 interspace. Although the imaging was not available for review, the radiologist reported a fibrolipoma of the filum terminale that extended from S1 to the coccyx. At age 12, sacral laminectomy and filum terminale sectioning were performed, followed by primary dural closure. According to the operative report, a gap of two inches was left between rostral and caudal portions of the filum terminale, and each end was cauterized. The patient's urinary function improved somewhat, but her compliance with prescribed anticholinergic therapy was poor. Her postoperative course was remarkable for subjective weakness and dysesthesias of both lower limbs that eventually resolved over the next few years.

Physical examination revealed a well-healed midline scar over the lumbosacral region. Neurological examination demonstrated diminished sacral sensation; but motor function, deep tendon reflexes, and gait were normal. No scoliosis was noted. Magnetic resonance imaging revealed that the conus medullaris terminated at the L4–L5 level and appeared adherent to the dorsal aspect of the thecal sac (Fig. 1). Urodynamic testing documented decreased bladder capacity and increase in early uninhibited contractions compared with findings 1 year prior.

## Results

Surgical exploration of the previously operated area was performed with rostral extension of the exposure to the

level of the L4–L5 interspace. Durotomy revealed that the conus medullaris, proximal filum stump, and associated sacral nerve roots were adherent to one another and to the left dorsolateral aspect of the thecal sac at the S1–S2 level. The right-sided sacral nerve roots appeared taut owing to the lateralized adhesion (Fig. 2). Successful untethering of the neural elements from the thecal sac was accomplished with microneurosurgical sharp dissection technique.

Immediately after the surgical procedure, the patient reported resolution of her radicular pain. Neurological and urinary functions were unchanged. Her convalescence was complicated by superficial wound infection and pseudomeningocele formation. These were managed operatively by debridement, direct repair, and temporary external cerebrospinal fluid diversion. There were no signs of meningitis; and cerebrospinal fluid cultures were negative. Her low back pain resolved as her incision healed. She no longer had any incontinence. Repeat urodynamic testing performed 3 months later documented increased bladder capacity and decreased early uninhibited contractions. One year later, she was working without restriction and required no analgesics for back or leg pain. In addition, urodynamic studies revealed a stable bladder; and anticholinergic therapy was no longer needed.

## Discussion

The physiological significance of the filum terminale is not well understood; however, the long-term consequences of sectioning the filum appear negligible. The clinical benefit of sectioning a “tight” filum was first commented by

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