

Technique

Wound-peritoneal shunts: part of the complex management of anterior dural lacerations in patients with ossification of the posterior longitudinal ligament

Nancy E. Epstein, MD*

*Neurological Surgery, The Albert Einstein College of Medicine, Bronx, NY 10461, USA
Neurosurgical Spine and Education, Winthrop University Hospital, Mineola, NY 11051, USA*

Received 28 January 2009; accepted 4 May 2009

Abstract

Background: The complex management of dural lacerations occurring after the resection of multilevel ossification of the posterior longitudinal ligament (OPLL) requires further clarification.

Methods: Both preoperative MR and CT studies documented multilevel ventral cord compression attributed to OPLL with kyphosis in 82 patients requiring multilevel anterior corpectomy/fusion (ACF) (average, 2.6 levels) followed by posterior fusion (PF) (average, 6.6 levels) under the same anesthetic. The 5 patients who developed intraoperative dural lacerations/penetration demonstrated the single-layer sign (2 patients: large central mass) or the double-layer sign (3 patients: hyperdense/hypodense/hyperdense layers) on preoperative 2-dimensional CT studies. All 5 patients were managed with complex dural repair (sheep pericardial grafts, fibrin sealant, microfibrillar collagen) and had shunts placed (wound-peritoneal and lumboperitoneal).

Results: After complex dural repair/shunting, all 5 intraoperative dural lacerations (DLs) resolved. The application of low-pressure wound-peritoneal shunts was unique to this study (Uni-Shunts, Codman, Johnson and Johnson, Dorchester, Mass). The proximal end is placed lateral/parallel to the fibula strut graft/plate complex, whereas the distal catheter is tunneled into the peritoneum in the right upper quadrant (always prepared and draped in anticipation of the need for a shunt).

Conclusions: Of 82 patients undergoing multilevel anterior corpectomy for OPLL/kyphosis, 5 developed intraoperative DLs successfully managed with a complex dural repair, wound-peritoneal, and lumboperitoneal shunting procedures.

© 2009 Elsevier Inc. All rights reserved.

Keywords:

OPLL; Anterior cervical corpectomy; Dural laceration repair; Wound-peritoneal; Lumboperitoneal shunts

1. Introduction

Of 82 patients undergoing multilevel anterior cervical corpectomy(s)/fusion (ACF) to resect ossification of the posterior longitudinal ligament (OPLL) followed by simultaneous posterior fusion (PF), 5 developed intraoperative

dural lacerations. All 5 required complex dural repair, uniquely accompanied by wound-peritoneal (WP) shunts and lumboperitoneal (LP) shunts.

2. Materials and methods

2.1. Clinical data

Eighty-two patients with multilevel OPLL with kyphosis underwent 1 to 4 levels of anterior corpectomy with iliac/fibula strut graft fusion/plating (Figs. 1-4) (Table 1). Immediately after the first procedure, under the same anesthetic, patients had posterior rod-eyelet (Vertex System,

Abbreviations: ACF, anterior corpectomy fusion; CSF, cerebrospinal fluid; CT, CAT scan; JOA, Japanese Orthopedic Association; LP, lumboperitoneal; MR, magnetic resonance imaging; OPLL, ossification of the posterior longitudinal ligament; OYL, ossification of the yellow ligament; PF, posterior fusion; WP, wound-peritoneal.

* Long Island Neurosurgical Associates PC, New Hyde Park, NY 11042, USA. Tel.: +1 516 3564 3401; fax: +1 516 354 8597.

E-mail address: dch3@columbia.edu (N.E. Epstein).

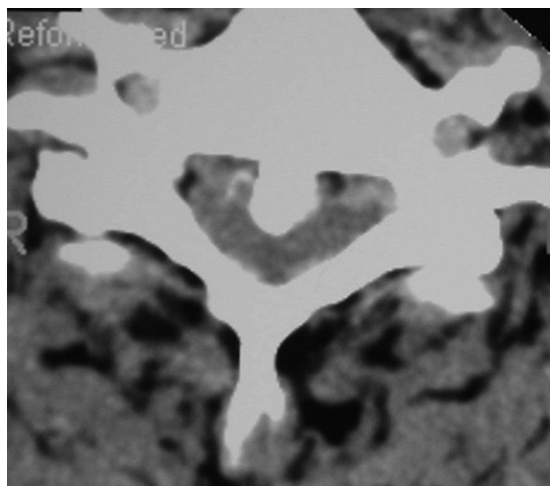


Fig. 1. Single-layer axial CT sign of dural penetration. A noncontrast axial CT scan at the mid C6 vertebral level documents the typical close space sign defined by a large central mass of OPLL.

Medtronic, Memphis, TN) spinous process fusions without decompressions (no laminectomies/laminotomies) performed using braided titanium cables, iliac autograft, and a bone graft supplement (Table 1). Six morbidly obese patients had 1-level ACF/plating followed by PF performed to help ensure adequate fusion. For 31 patients undergoing 2-level ACF, simultaneous PFs helped avoid the 9% failure rate cited by Vaccaro et al [7] for 2-level ACF/plates performed without PFs. In addition, 41 patients had 3-level ACF/PF to avoid the 50% failure rate cited for 3-level ACF/plates reported in the same series [7]. Simultaneous PF was used for the remaining 4 patients undergoing 4-level ACF to avoid an

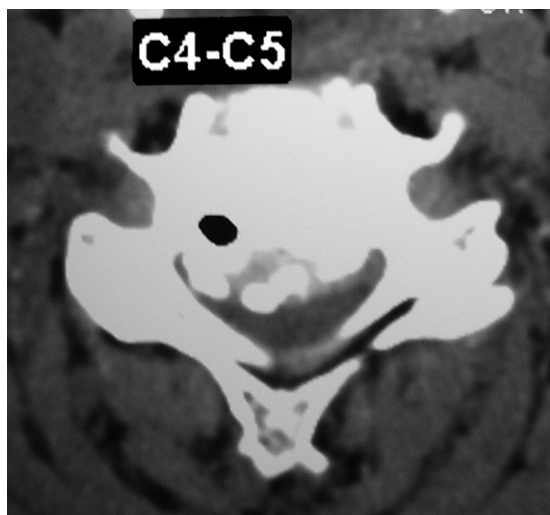


Fig. 2. Single-layer axial CT sign of dural penetration. Combined with a right-sided “C” sign. This axial noncontrast CT study obtained at the C4-C5 level demonstrates the single-layer sign and a right-sided “C” sign both of which contribute to marked compression of the spinal cord with greater right-sided compromise. Typically the “C” configuration indicates that at surgery, the lateral dura becomes imbricated or folded over itself making a CSF fistula during the course of resection more likely.



Fig. 3. Double-layer CT sign of dural penetration. This parasagittal 2-dimensional CT study defines the triad characteristic of the double-layer CT sign as follows: hyperdense OPLL, hypodense dura, and intradural hyperdense OPLL. Here, OPLL extends to/through the dura from C2 through the mid-C4 level. In this case, the patient required an ACF from C2-C5 to address neural compression attributed to extradural/intradural OPLL. The CSF fistula required a complex dural repair consisting of on-lay dural graft, microfibrillar collagen, fibrin sealant, an anterior WP shunt, and an LP shunt.

even higher anticipated frequency of failure with a 4-level ACF/plating procedure.

Of 82 patients with OPLL, 5 developed anterior dural lacerations in the course of performing multilevel ACF. These 5 patients averaged 55 years of age, included 1 man and 4 women, all of whom exhibited severe preoperative myelopathy (average Nurick grade, 4.4; Table 1). Before surgery, plain and dynamic x-rays, magnetic resonance imaging (MR), and CAT scan (CT) studies documented multilevel OPLL with kyphosis (loss of lordosis). In addition, 2 patients exhibited the “single-layer” CT sign of dural penetration (large central mass of OPLL, lateral “C” sign), whereas 3 showed “double-layer” signs (hypodense line between the hyperdense OPLL involving the posterior aspect of the vertebral body and hyperdense intradural ossification) [2,4] (Figs. 1-3). Multilevel ACFs (average, 2.8 levels) were immediately followed by PFs (average, 7.0 levels) and the application of halo devices.

2.2. Complex dural repair

Dural repair used bovine pericardial grafts (sewn in place with 7-0 Gore-Tex sutures (WL Gore and Associates Inc, Flagstaff, Ariz) and microdural staples in 1 patient, on-lay

Download English Version:

<https://daneshyari.com/en/article/3092021>

Download Persian Version:

<https://daneshyari.com/article/3092021>

[Daneshyari.com](https://daneshyari.com)