Suspected Laminoplasty

To THE EDITOR: We have read the article of Casha et al. (Casha S, Engelbrecht HA, DuPlessis SJ, Hurlbert RJ: Suspended laminoplasty for wide posterior cervical decompression and intradural access: results, advantages, and complications. J Neurosurg Spine 1:80–86, 2004) with great interest and would like to comment on an intraoperative problem that may occur during the cervical laminoplasty technique described for wide posterior decompression with the use of titanium miniplates.

Abstract

Object. Cervical laminoplasty is a recognized technique commonly used for multilevel posterior cervical decompression, and it is favored over laminectomy for maintaining spinal stability. Traditional hinge techniques, however, limit lateral exposure on one side and can limit dural exposure. The authors present their experience with a modified laminoplasty technique incorporating complete laminectomy and placement of titanium miniplate instrumentation. This method allows wide bilateral posterior decompression and unobscured dural access.

Methods. Twenty-eight patients (mean age 57 years) underwent cervical laminoplasty during a 4-year period. Twenty-seven patients presented with progressive cervical myelopathy. Seventeen patients (61%) had degenerative spondylotic stenosis; nine (32%) underwent resection of an intradural neoplasm. A mean of 3.5 levels were exposed and reconstructed. The follow-up period ranged from 4 months to 4 years (mean 15 months). The mean angular extension–flexion displacement measured between C-1 and C-7 was unchanged postoperatively, with preserved mobility across laminoplasty-treated segments in all patients. The anteroposterior diameter of the spinal canal increased 3.6 mm (27.2%) postoperatively (p = 0.004). In one patient an asymptomatic postoperative kyphosis developed. There were five cases of postoperative infection. One superficial infection resolved after intravenous antibiotic therapy alone, and four deep infections required surgical reexploration.

Conclusions. The advantages of this technique over other laminoplasty methods include wide lateral spinal canal and intradural access, as well as preserved motion with partial restoration of the posterior tension band.

After drilling the lamina bilaterally Casha et al. describe the en bloc removal of the posterior elements and the storage of the explanted lesion in hydrogen peroxide; titanium miniplates were fixed bilaterally to each laminar explant before reimplantation. In our experience, however, reimplantation may be difficult due to possible axial loss of height of the explant after reimplantation. We believe that this problem most likely occurs secondary to contracting and dehydrating posterior ligaments in the explant while being stored, particularly during a lengthy tumor surgery. Aggressive dissection of these ligament structures should be avoided prior to explantation to support the postoperative stability of the reimplanted structure.

Thus, we suggest that the posterior elements should be temporarily fixed axially with titanium miniplate osteosynthesis after drilling the laminae bilaterally and prior to removing the posterior elements en bloc (Fig. 1). This way we prevent the explant from losing axial height while being stored and allow exact axial readaptation during reimplantation. In case the decompression exceeds > 3 cervical levels, the axial fixation may be removed after lateral fixation and not affect the initial cervical range of motion.

Volker Neuschmelting, M.D.
Ali-Reza Fathi, M.D.
Department of Neurosurgery
University Hospital of Berne
Berne, Switzerland

Fig. 1. Diagram showing axial fixation with titanium miniplates after drilling the laminae bilaterally and prior to en bloc explantation of the posterior elements.
RESPONSE: Drs. Neuschmelting and Fathi have highlighted a potential limitation when using the technique of suspended laminoplasty and have recommended a modification to assist in this regard. The issue they describe is of explant contraction that might occur during long operative procedures such as those involving intradural exposure, and in which the explant may remain on the setup table for protracted periods of time.

In our hands the most common indication for suspended laminoplasty is in the setting of multilevel cervical spondylotic myelopathy in which cervical lordosis is maintained. In these cases the explant is ex vivo for relatively short periods of up to 30 minutes while the decompressive laminectomy is completed. We have not encountered significant explant contraction limiting reimplantation of the lamina in these types of cases. However, we have indeed occasionally encountered a similar phenomenon in some of our more time-consuming intradural procedures, but have typically been able to re-fix the laminae to the adjacent lateral mass. Nonetheless reimplantation under tension may lead to screw loosening and backout, which we have also observed but not yet causally associated with explant shrinkage. In none of our cases has screw backout led to postoperative radiographically documented laminoplasty migration or other clinical sequelae.

Since publication of our original description, we have also moved to storing the explanted structure in full strength betadine after 10 minutes in hydrogen peroxide. This additional step was created in an attempt to reduce our originally reported infection rate of 18%. In this regard, the betadine appears to have been quite successful (data not yet reported). In retrospect, however, it may also help reduce explant contraction.

In the modification suggested by Drs. Neuschmelting and Fathi, one employs a temporary plate to maintain the explant in distraction while it is being stored for reimplantation. In our minds, this certainly seems a reasonable undertaking when a lengthy case is anticipated. It also makes implicit sense to remove the temporary plate after lateral fixation so as to restore motion across the reimplanted laminae. We would like to congratulate the authors on their experience with suspended laminoplasty and thank them for sharing it with us. (DOI: 10.3171/SPI/2008/8/2/201)

STEVEN CASHA, M.D., PH.D., F.R.C.S.C.
R. J. HURLBERT, M.D., PH.D., F.R.C.S.C.
Foothills Hospital and Medical Centre
Calgary, Alberta, Canada

Intramedullary Epidermoid Cysts


Abstract

Intramedullary inclusion cysts are extremely rare within the rostral spinal cord. In this case report the authors outline the clinical features and surgical treatment of one dermoid cyst and one epidermoid cyst of the cervicothoracic junction. The authors also include a relevant literature discussion regarding the treatment and the embryological origin of these lesions.

The authors reported on 2 adult patients—one with an intramedullary dermoid and 1 with an epidermoid cyst—and reviewed the relevant literature. Their second case was not a pure intramedullary epidermoid cyst case but rather a mainly intradural extramedullary cyst (as evidenced by the preoperative magnetic resonance [MR] images and microphotographs). To my surprise, the authors reviewed the spinal epidermoid cyst literature only until 1992, citing Roux et al.'s paper as the final landmark article (without any attempt to see what has been published in the ensuing 15 years). After an exhaustive but too historical review, the authors reached an unfortunate conclusion that only a single case of cervical epidermoid cyst (albeit extramedullary) existed in the literature.

In 1993, we published the case of a 4-year-old girl who harbored an intramedullary epidermoid cyst that extended from C-4 to T-2.1 Neuroimaging showed satellite lesions like hemivertebra and partial fusion of vertebrae at the caudal end of the cystic lesion. More important than these, a prevertebral mediastinal mass, also at the caudal end (T3–6), was diagnosed on MR imaging. At surgery for the intramedullary mass, a creamlike fluid gushed out through the initial limited myelotomy. Considering the benign nature and the preoperative minimal neurological deficit, no attempt was made to extend the myelotomy or to remove the tumor capsule. The satellite mediastinal mass was removed by the cardiovascular surgeons, and microscopic examination revealed a Type 2 neuroenteric cyst. This type—and this deep accompanying developmental disorder—was described for the first time. When follow-up neuroimaging demonstrated reaccumulation of the spinal intramedullary cystic content, a second and more radical surgery was undertaken 8 months later, and the capsule was removed totally without causing any additional deficit.

In the discussion section of our manuscript submitted to Neurosurgery in August 1991, we stated that our case was the first case of cervical intramedullary epidermoid cyst. However, during the review and acceptance process of our manuscript, a case from Italy was published and in great respect we added that case as an addendum to our article.2 Recently, the third case of an intramedullary cervicothoracic epidermoid cyst appeared in the literature.3

Sometimes we face uncommon situations and try to see briefly how others have managed it, not only to learn for ourselves but also to enlighten the families of our patients. For this purpose reviews of the literature are extremely helpful. I do not think every review should start with 18th or 19th century citations, because science goes like an elevator: you do not need to go to the basement to look for the origin of a file when you are on the 15th floor and there is a useful and somehow documentary file at the 14th floor. Considering the difference in diligence of different authors, one can analyze a few contemporary reviews at the same time for a more accurate account. Finally, if the authors have not achieved total capsule removal, they should be ready for recurrence and reaccumulation, or at least should not be as comfortable as they are only if there is really an intramedullary compartment in their second case.

ISHMAIIL H. TÇKKÖK
Ankara, Turkey