Endoscopic Endonasal Resection of C1–C2 Pannus, a Step-by-Step Surgical and Anatomical Description: 2-Dimensional Operative Video

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Abstract

Expanded endonasal endoscopic approaches provide access to the entire central skull base and craniocervical junction. The authors present a case of an 81-year-old man who presented with progressive spastic quadriparesis to the point of being wheel-chair bound. Cervical spine computed tomography (CT) and magnetic resonance imaging (MRI) demonstrated multilevel extensive spondylitic changes with a large pannus at the C1–2 junction, severely compressing the spinal cord (→Figs. 1 and 2). Given the significant anterior spinal cord compression and the patient's substantial weakness, the decision was made to perform an endoscopic endonasal anterior cervical decompression and resection of the pannus followed a posterior cervical fusion. The patient recovered well following surgery with significant improvement of motor function. The preoperative assessment, the step-by-step surgical technique, and the technical nuances are demonstrated and discussed.

The link to the video can be found at: <https://youtu.be/HzrZO-0Vol4>.

Keywords

- ▶ craniocervical junction
- ▶ expanded endoscopic endonasal approach
- ▶ C1–C2 pannus
- ▶ craniocervical decompression

Conflict of Interest

None declared.

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Fig. 1 Preoperative sagittal (A) and axial (C) MRI of the cervical spine demonstrating a large C1–C2 pannus severely compressing the spinal cord. Postoperative sagittal (B) and axial (D) MRI of the cervical spine demonstrating removal of the pannus and decompression of the spinal cord with evidence of residual myelomalacia. MRI, magnetic resonance imaging.

note, it is important to determine the location of the parapharyngeal carotid arteries on preoperative scans since they can be retropharyngeal. A nasoseptal flap does not need to be raised at the beginning of the surgery, since the approach is below the sphenoid sinus. The lower clivus can be exposed without a sphenoidotomy. As the anterior arch of C1 is drilled, it can be difficult to visualize the transition to the dens. The goal of surgery is to remove inflammatory pannus until pulsations transmitted from the posterior fossa are noted. This can usually be accomplished without a cerebrospinal fluid leak. If there is a leak, a nasoseptal flap can be raised secondarily. A deep defect may need to be augmented with a fat graft. Excellent healing occurs by secondary intention over several weeks. The soft-tissue defect is above the level of Passavant's ridge and palatal dysfunction is rarely seen.

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Fig. 2 (A) Preoperative and (B) postoperative sagittal CT of the cervical spine demonstrating resection of the anterior arch of C1 and the extent C2 dens resection. CT, computed tomography.

Comments

This is a good demonstration of the basic technique for a transodontoid approach for C1–C2 pannus. As the authors