The Posterior Midline Approach to a Cervical Disc

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A cervical intervertebral disc may be approached by the anterior, lateral, oblique, posterior paramedian, or posterior midline procedures. This is a description of the posterior midline approach, which is suitable for removal of disc extrusions and ridges on the facet of Luschka. For lesions of the main vertebral body joint, an anterior approach is preferable.

Procedure

The procedure is carried out under general anesthesia using a nonkinking cuffed endotracheal tube. The operation may be done with the patient in the prone, sitting, or lateral position. Skull fixation is desirable to maintain proper alignments. In the prone position, the patient is placed on chest rolls with shoulders well over the end of the table. The neck is then moderately flexed, and lifted straight up (posteriorly) and fixed in this position; this has the effect of relaxing the posterior neck muscles. The head of the table is then raised so that the cervical area is superior. In the lateral position, the head may be dropped and flexed slightly to open the interspace. In the sitting position, which has the advantage of decreased bleeding, precautions must be taken against air embolism. These include the placement of a right atrial catheter and a regular or ultrasonic stethoscope, plus preparations for the elevation of blood pressure by pharmacological means. Positioning and draping should permit a quick change to the left lateral decubitus position should this become necessary.

Surgical Technique

The first large spine (usually C-6) is identified by palpation and reference to the lateral x-ray film. For a C5-6 exposure, the midline skin incision is centered on C-5 and extended over two spines in each direction. When the deep fascia (fusion of external cervical fascia and ligamentum nuchae) is exposed, the spines of C-2 through C-7 are palpated through the wound and compared with the lateral film for definitive interspace location. The fact that C-6 is usually the last bifid cervical spine helps orientation. The fascia is incised unilaterally over the C-5 and C-6 spines. The subperiosteal dissection of muscles from the C-5 and C-6 laminae should always progress from below upward, since the oblique attachment of muscles to spines and laminae follows this pattern. Muscle tendons and ligaments attaching to laminae should be cut, not torn.

A small portion of the inferior lateral lamina of C-5 and superior lateral laminae of C-6 is removed with the Leksell rongeur; this excision is extended laterally with the flat-bladed Kerrison punch to include a portion of the facet (Fig. 1 upper). The ligamentum flavum is now removed, revealing the lateral dural edge and proximal nerve root sheath. It is necessary to remove the medial aspect of the facet, recalling that...
FIG. 1. Drawings to show the extent and purpose of bone removal. In the upper view the finely stippled line indicates the superior margin of C-6, and the heavy dash line the amount of lamina and facet removed. Lateral oblique view (lower), shows the relation of the nerve root to the vertebral artery.
it is the superior facet of C-6 that forms most of the dorsal foramen against which the root is compressed (Fig. 1). Whether this removal is done with a Kerrison punch, curette, gouge, chisel, or drill will depend on the degree to which the nerve root is

Fig. 2. Elevation and incision of connective tissue collar around the nerve root.

Fig. 3. Retraction of nerve root prior to removal of disc. It may be retracted cephalad or caudad depending on the exact location of the herniated disc.
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The extent of the lateral removal will depend on the lateral extension of the disc extrusion or ridge.

Following adequate exposure of the nerve root in the foramen, the extradural adventitious tissue is separated from the dura and followed laterally to the point where it forms a tight, vascular ring or collar about the root. Here, this tissue is elevated from the root with a blunt hook, carefully cauterized, and incised (Fig. 2). Extradural veins in the adventitious tissue are cauterized with fine-tipped forceps and gently packed off. The isolated nerve root can now be gently retracted upward or downward with an elevator, the posterior longitudinal ligament incised, and the disc fragments removed with fine pituitary forceps (Fig. 3). Due to the relative fixation of the short, perpendicular nerve root in the cervical area, retraction must be done with great care to avoid root injury. The motor and sensory divisions are occasionally separated and care must be taken that all the root material has been identified and retracted. Small amounts of additional disc material can be obtained with a fine curette. Lateral osteoarthritic ridges can be removed with a fine gouge.

The interspace usually cannot be entered. Midline discs and ridges should be removed through an anterior approach.

When the disc has been removed, the root should be followed well into the foramen to be sure that no fragments have been overlooked. Bleeding is easily controlled with small fragments of Gelfoam. It is well to mark the site of operation with a silver clip. Mild neck extension will facilitate closure. The external cervical fascia, superficial fascia, and skin are then closed.

The patient should be ambulatory the day after surgery. A light foam collar or rolled towel sometimes provides comfort for the first few days.

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