

Posterior foraminotomy for lateral cervical disc herniation

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Learning objectives

- Indication for posterior-lateral foraminotomy
- Surgical technique of posterior-lateral foraminotomy

General information

The ideal approach to the treatment of soft cervical disc herniation remains controversial. Although anterior cervical procedures have gained prominence over the past years, posterior cervical foraminotomy has proven benefits. Multiple studies found a relieve of symptoms in 82–97% of patients who have radiculopathy caused by foraminal stenosis or posterolateral herniated discs [1–3].

Furthermore, a posterior approach avoids complications associated with an anterior approach to the cervical spine such as injury of large vessels, esophagus and trachea, postoperative dyspnea and dysphagia, recurrent laryngeal nerve injury as well as accelerated occurrence of adjacent segment disease after fusion.

On the downside, postoperative neck pain and muscular spasm are disadvantages of a posterior cervical approach

[3]. An extensive periosteal muscle dissection for adequate visualization can induce neck discomfort, which can result in a slower recovery. Minimally invasive techniques can help to minimize the downsides and allow for fast recoveries and early resumption of normal activities. Summarized, posterior cervical foraminotomy is an effective surgical technique for the treatment of radicular pain caused by foraminal stenosis or posterolateral herniated discs.

Case description/patient history with imaging

A 28-year-old patient presented with brachialgia of the right arm corresponding to dermatome C7. The pain occurred about 2 weeks prior to presentation without any previous trauma. The patient described only minor neck pain. Also, he noticed a weakness of the right arm. No pain was described in the left upper extremity.

The medical examination revealed a 3/5 paresis of the right triceps. The triceps reflex was not provokable. No sensitive deficit could be detected.

The MRI imaging revealed a posterolateral disc herniation C6/7 to the right side with significant compression of the right C7 nerve root.

Surgical strategy

Due to the clinically evident paresis of the triceps together with the radiological findings, we decided to perform posterior cervical foraminotomy C6/7 from the right side along with removal of the sequester.

Prophylactic antibiotics are administered. After nasotracheal intubation, the patient's head is positioned in a

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Mayfield three-point pin-holder clamp and log-rolled in a prone position and secured on the operating table. After confirming the correct operative level by fluoroscopy, the microscope is swung in and a 2 cm skin incision is made slightly right of the posterior midline with the facet joint C6/7 centered on the incision. The paravertebral muscles are stripped subperiosteal on the right side from the spinous process and the lamina of the adjacent vertebra. The tubular system is inserted and the correct level C6/7 fluoroscopically confirmed. This is followed by the preparation of the interlaminar window and medial border of the facet joint C6/7. Using a diamond high-speed burr and Kerrison punches, a small portion of the medial part of the facet joint is removed in a circular—“keyhole”—manner. The partial resection of the ascending facet of C7 is the crucial point for bony decompression of the neuroforamen respectively the nerve root C7. The yellow ligament is identified. The lateral aspect is removed using Kerrison punches to visualize the lateral border of the thecal sack. A large sequester is exposed and carefully resected using the rongeur. Hemostasis is achieved by bipolar pincette. A thorough exploration of the neuroforamen is performed using the dental probe to ensure the complete removal of the sequester. The medial and lateral aspect of both, the cranial and especially caudal pedicle is palpated to ensure a proper decompression. After irrigation the wound is inspected for sources of bleeding. The muscle, fascia and subcutaneous tissue are reapproximated with absorbable sutures. The skin layer is closed with interrupted sutures and bandages are applied.

After log-rolling the patient in a supine position, the Mayfield clamp is carefully removed.

Postoperative information/patient outcome with imaging

The patient experienced a severe improvement of the brachialgia almost immediately after surgery. In the postoperative course, the initially existing 3/5 paresis of the right triceps slowly improved as well. The patient was released from the hospital at 2 days after surgery.

Compliance with ethical standards

Conflict of interest None of the authors has any potential conflict of interest.

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