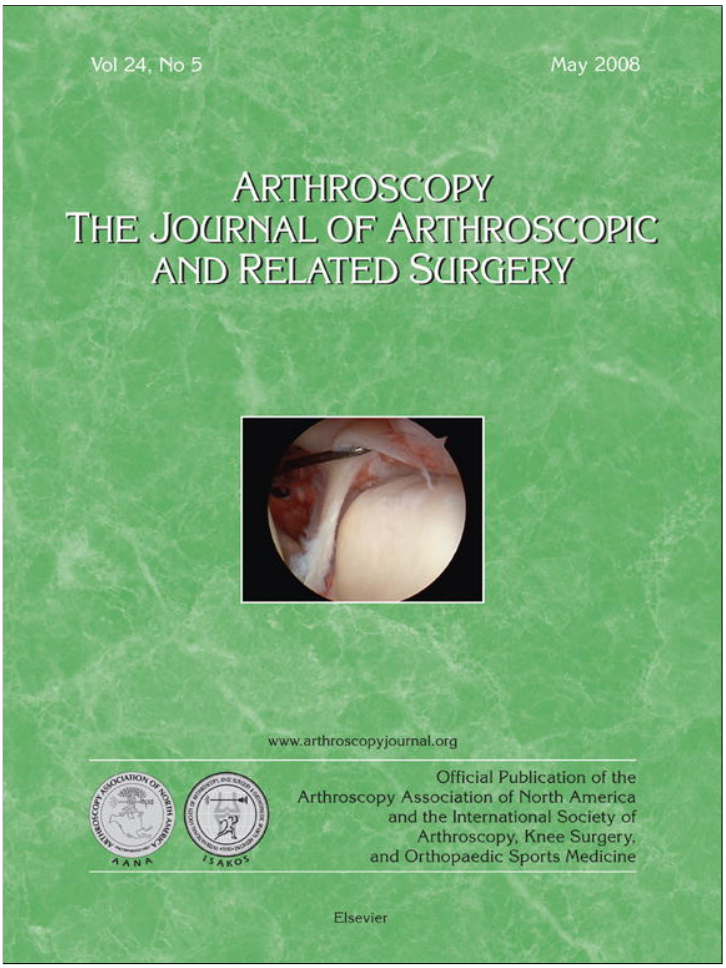

Technical Note

Arthroscopic Anterior Diskectomy of the Cervical Spine

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Abstract: We describe a minimally invasive arthroscopic technique for anterior diskectomy of the cervical spine. Fingertip pressure is applied between the carotid sheath laterally and the pharynx medially. The trachea and esophagus are displaced to the contralateral side. The disk level, soft-tissue thickness, and midline are verified with image intensification. A spinal needle is inserted through the soft tissue into the disk space at the midline. Contrast is injected to facilitate visualization. While maintaining displacement of the pharynx, a 4-mm vertical incision is made to incorporate the needle and is enlarged bluntly. A guidewire is passed through the needle. A dilator is passed over the guidewire, through the soft tissue, and usually into the disk, stopping posterior to the mid-vertebral body, as verified with lateral imaging. A cannula is placed over the dilator, and the dilator and wire are removed. Occasionally, the cannula is passed over the dilator to the anterior aspect of the disk, and the dilator is replaced with a trephine to penetrate the anterior spinal ligament, osteophytes, and annulus. The cannula seated in the middle of the disk allows diskectomy to commence with small rongeurs through the cannula, followed by a cervical spine arthroscope with a working channel. The arthroscope is removed, and further diskectomy is performed under fluoroscopic guidance with a motorized shaver and radiofrequency probe. **Key Words:** Spine surgery—Cervical spine arthroscopy—Diskectomy.

Anterior cervical diskectomy has been accepted as a treatment for disk decompression for over 45 years.[1] Twenty years ago, it was accepted that cervical diskectomy with or without a fusion resulted in similar patient satisfaction.[2] It has been suggested that partial diskectomy with preservation of the anterior disk would be a beneficial procedure by which to accomplish decompression without instability.[3,4] Historically, there have been many contributors to the development of this technique,[5-7] which has been performed numerous times with consistent, reproducible results and no serious complications.

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The authors report no conflict of interest.

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TECHNIQUE

The patient is placed supine on an operating table. Spinal cord monitoring is initiated before the induction of general anesthesia. The patient is intubated and anesthetized, and a nasogastric tube is inserted. Caudal traction is continuously applied to both upper extremities. The neck is mildly extended, and rigid radiolucent support is placed posteriorly. The head is stabilized with tape over the forehead. Fingertip pressure is applied by an assistant to the interval between the carotid sheath laterally and the pharynx medially, and the trachea and esophagus are displaced past the midline. This displacement to the contralateral side, as well as the disk level, the soft-tissue thickness, and the midline, is verified radiologically with image intensification. An 18-gauge spinal needle is inserted through a few millimeters of soft tissue into the disk space at the midline, and a small

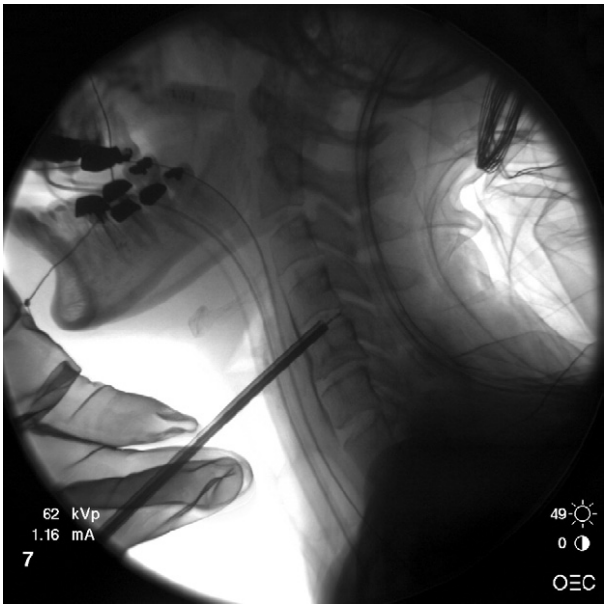

FIGURE 1. (Left) Radiograph of a cervical spine arthroscopy in progress shows a cannula in the disk space with an instrument being used through a working channel arthroscope. (Middle) Photograph and (Right) drawing of the posterior cervical disk space with an instrument being used through a working channel.

amount of contrast mixture is injected to facilitate visualization. While maintaining displacement of the pharynx, a 4-mm vertical incision is made to incorporate the needle and is enlarged bluntly.

A guidewire is passed through the 18-gauge needle, the needle is removed, and a dilator is passed over the wire, through the soft tissue, and usually into the disk, stopping posterior to the mid-vertebral body, as verified with lateral imaging. A cannula is placed over the dilator, and the dilator and wire are removed (Fig 1). Occasionally, if the dilator cannot be passed through the anterior disk, the cannula is passed over the dilator to the anterior aspect of the disk and the dilator is replaced with a trephine to penetrate the anterior spinal ligament; osteophytes, if present; and annulus. The cannula, having been seated in the middle of the disk, allows diskectomy to commence with small rongeurs through the cannula, followed by the insertion of a cervical spine arthroscope with a working channel (Richard Wolf Medical Instruments, Vernon Hills, IL). The working channel allows the passage of a curved laser fiber (LISA Laser Products, Katlenburg, Germany) for ablation, small rongeurs, and direct visualization of part of the diskectomy. The arthroscope is then removed, and further diskectomy is performed under fluoroscopic guidance with the use of a motorized shaver and a radiofrequency bipolar probe, used for tissue ablation, and hemostasis of the endplates if necessary (Fig 2). The arthroscope, laser, and small rongeurs are returned to complete the diskectomy. At the termination of the procedure, the endplates of the cephalad and caudal vertebrae are routinely visualized, and confirmation is made of evacuation of all disk material posterior to the arthroscope. This is documented with intraoperative photographs.

DISCUSSION

Acknowledging that there is much controversy concerning an arthroscopic approach to spine surgery, we

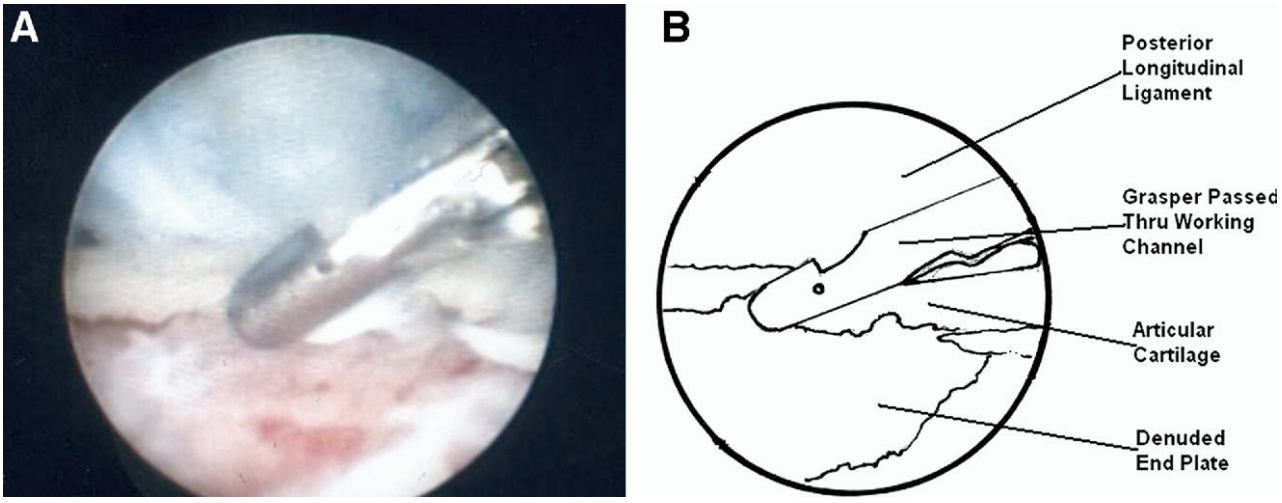

FIGURE 2. (A) Photograph and (B) drawing of the posterior cervical disk space with an instrument being used through a working channel.

contend that the benefits to the patients brought by a less invasive method in terms of postoperative pain, wound healing, and morbidity will prove to be substantial. Furthermore, as these techniques are refined, more patients will consent to undergo the procedure (including many who have refused open procedures) and will thereby benefit.

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