

Anchored Drill Assisted Percutaneous endoscopic cervical decompression Surgery: Technical Note

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Introduction: The traditional Percutaneous endoscopic cervical decompression (PECD) may encounter drawbacks such as disorientation, excessive resection of the facet joints, and inadequate ventral decompression. Our goal is to optimize the decompression surgery of the cervical intervertebral foramina through the design of an anchoring drill tool and partial laminotomy and pediculotomy. This method aims to achieve rapid and precise localization, effectively remove dorsal bony structures and free nucleus pulposus while preserving sufficient bony architecture, thereby alleviating the compression of the nerve roots. Furthermore, it allows for the resection of hypertrophic uncinate processes and access to the intervertebral disc area to extract loose nucleus pulposus, thereby reducing the possibility of case recurrence.

Methods: Under fluoroscopic guidance, we established an osseous anchoring point at the lateral superior edge of the inferior pedicle by using an anchoring drill. This anchoring point served as a reference for the surgical segment and the lateral and inferior boundaries of the foraminotomy, enabling instruments to access the ventral side of the nerve root and spinal cord from the axilla of the nerve root for adequate decompression.

Results: This technique enables precise localization, reduces radiation exposure, allows for fine control over the extent of dissection, minimizes interference with surrounding structures, and ensures effective decompression of nerve roots. Magnetic resonance imaging (MRI) confirmed the relief of neural compression, while computed tomography (CT) demonstrated the extension of the keyhole approach and minor impact on bony structures and facet joints. During follow-up, the stability of the patient's cervical spine remained unchanged.

Conclusion: The anchoring drill facilitates complex cervical keyhole surgery.