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Case Report

Effectiveness and Safety of Less Invasive Anterolateral Cervical Decompression under Intraoperative Azurion CT Guidance: A Case Report

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Abstract

Background: Precise spinal cord and nerve root decompression is crucial for treating cervical disc herniation. Decompression of the lateral nerve root portion can be a blind procedure, potentially causing insufficient decompression.

Case Description: A 68-year-old male presented with left C6 radiculopathy. MRI revealed left C6 nerve root compression. Anterolateral cervical decompression was performed under intraoperative CT guidance using Azurion. Intraoperative CT confirmed complete nerve root decompression. Postoperatively, symptoms improved and MRI showed adequate decompression.

Conclusion: Intraoperative CT-guided anterolateral cervical decompression using Azurion improves surgical accuracy and safety. High-resolution imaging and operability enhance intraoperative decision-making and efficiency. Azurion's utility in spinal surgery warrants further validation.

Keywords: Azurion; Cervical Disc Herniation; Intraoperative Ct; Minimally Invasive Surgery; Spine Surgery

Introduction

Precise spinal cord and nerve root decompression is essential for treating cervical disc herniation [1]. Lateral nerve root decompression can be a blind procedure, potentially causing insufficient decompression [2]. We report successful minimally invasive anterolateral cervical decompression using intraoperative CT with the Azurion system. High-resolution 3D CT imaging provided real-time confirmation of bone removal, allowing precise assessment of decompression and need for additional bone removal. Although originally developed for angiography, Azurion's high-resolution imaging and operability have shown utility and improved safety in anterior spinal surgery.

Case Report

A 68-year-old male presented with left neck to shoulder numbness and pain since 2016. Neurological exam revealed left C6 radiculopathy. MRI showed left C6 nerve root compression from disc herniation (Figure 1). Anterolateral decompression was performed to relieve nerve root compression. Surgery was performed in a hybrid operating room. A right anterior cervical approach was

used to expose the C5/6 disc space. Using Azurion CT guidance, the right C5 and C6 vertebral bodies were drilled anterolaterally to the posterior longitudinal ligament. The herniated disc was removed. Intraoperative CT clearly captured complete decompression of the left C6 nerve root, with bone removal extending from the right anterolateral vertebral body to the contralateral nerve root (Figure 2A-B).

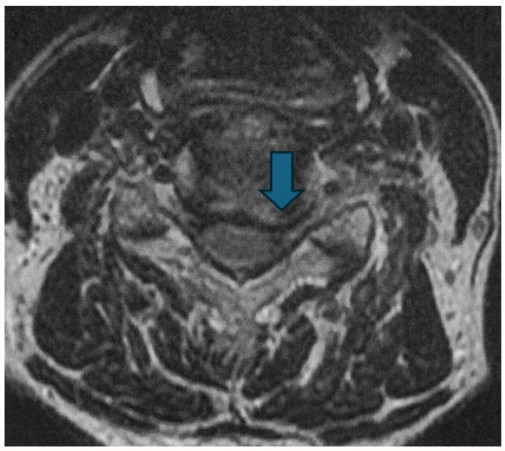

Figure 1: Preoperative cervical MRI showing left C6 nerve root compression by disc herniation (arrow).

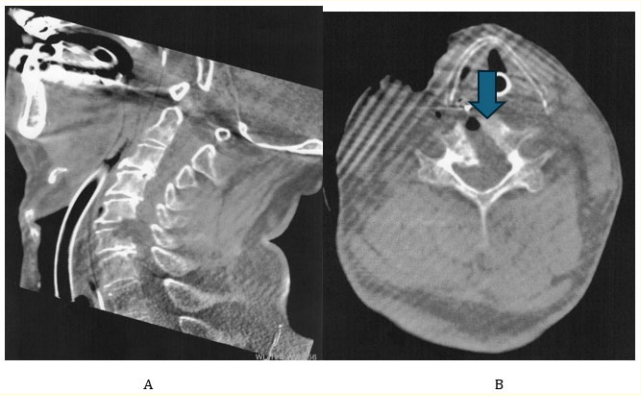

Figure 2: Intraoperative Azurion CT.

(A) Sagittal view confirming extent of bone removal.

(B) Axial view demonstrating left C6 nerve root decompression (arrow).

Postoperatively, left shoulder pain resolved but mild numbness persisted at 3-month follow-up. MRI confirmed sufficient left C6 nerve root decompression (Figure 3).

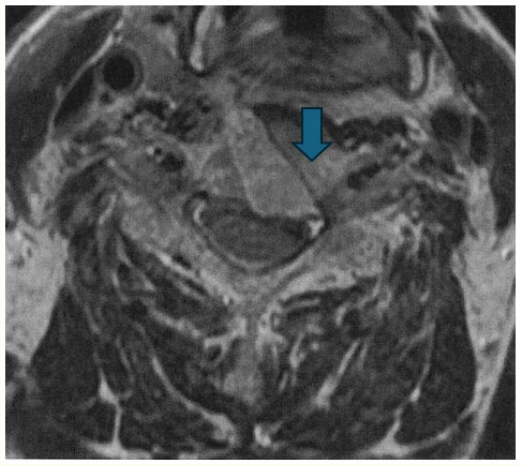

Figure 3: Postoperative MRI confirming left C6 nerve root decompression (arrow).

Discussion

Anterolateral cervical vertebral resection effectively treats anterior spinal cord lesions like OPLL, but risks complications including CSF leak, dysphagia, adjacent segment disease, and C5 palsy [3-5].

Meticulous surgical technique and specialized retractors are essential to minimize risks [6].

Intraoperative CT improves effectiveness and safety of anterolateral cervical vertebral resection by confirming complete decompression [1]. In our case, Azurion CT allowed real-time confirmation of nerve root decompression, preventing inadequate lateral decompression. Azurion's high-resolution imaging (0.5 mm slices) captures ligament and osteophyte details. Its intuitive touchscreen interface streamlines intraoperative use, potentially reducing surgery time and infection risk. Careful patient selection and intraoperative CT optimize anterolateral cervical vertebral resection. Advanced image guidance like Azurion may further improve spinal surgery accuracy and safety, but requires further study.

Conclusion

Intraoperative CT-guided anterolateral cervical decompression using Azurion improves surgical accuracy and safety. Azurion's high-resolution imaging and operability enhance intraoperative decision-making and efficiency. Originally developed for angiography, Azurion has shown promise in spinal surgery. Further studies should validate its utility in intraoperative CT guidance.

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