Is Anterior cervical discectomy and fusion (ACDF) a reasonable first choice for giant cervical disc herniation?

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Purpose

- Giant cervical disc herniation (GCDH) was defined as a herniated intervertebral disc that accounted for more than 50% of the spinal canal. Giant cervical disc herniation (GCDG) can cause various symptoms. If it causes myelopathy including motor nerve paralysis symptoms, immediate surgical treatment is required. In general, Anterior Cervical Discectomy and Fusion (ACDF) is the first surgical treatment to consider for cervical disc herniation. However, if the size is large or other lesions such as spinal stenosis, OPLL, etc. are present, or if there is disc migration, decompression may be insufficient, and in such cases, paralysis may progress after ACDF surgery. We think that there are some cases where myelopathy symptoms worsen after ACDF is performed first. Therefore, it is thought that performing posterior Laminoplasty first and then ACDF should be considered.

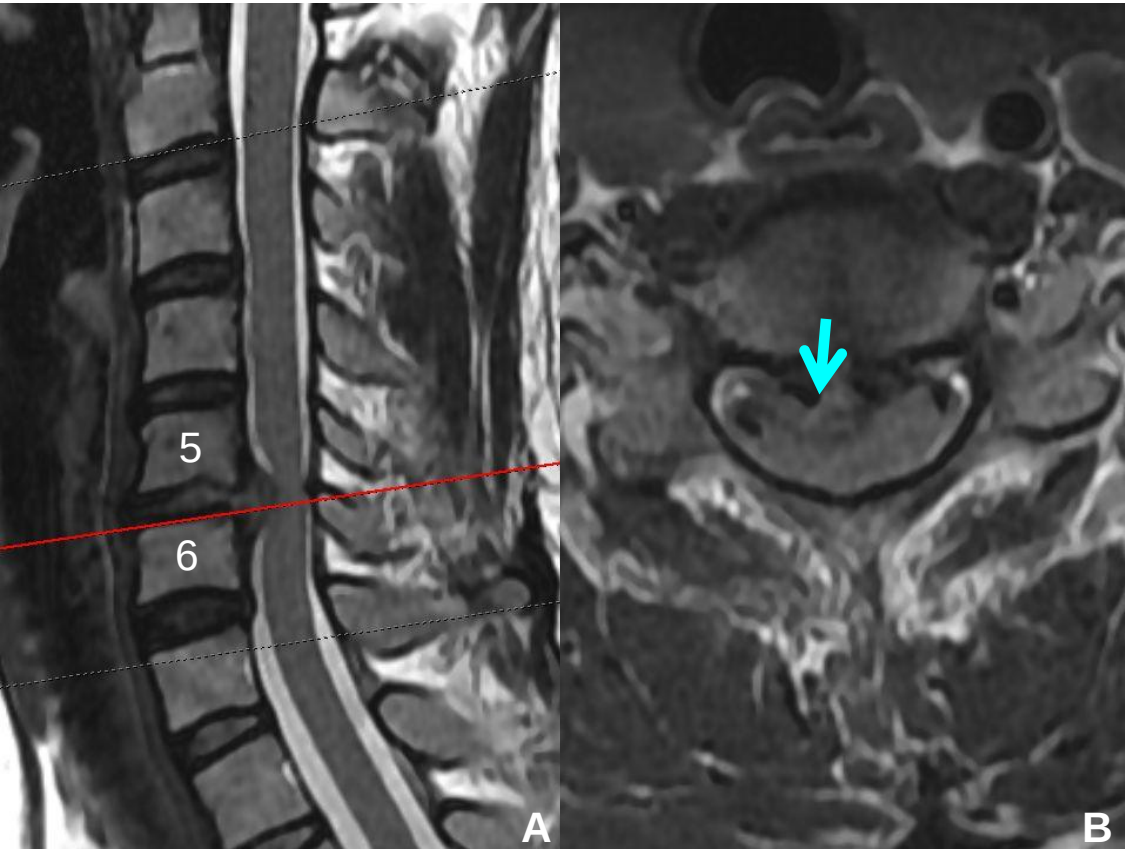
Materials and methods

- A 45-year-old female patient presented with symptoms of inability to write, falling and staggering, paralysis of the right arm, right hand clumsiness, triceps, and biceps weakness for a month. MRI showed severe cord compression due to GCDH at C5-6. Surgical treatment was performed due to severe pain and worsening symptoms. First, posterior decompression and Open-door Laminoplasty (OLP) (2022.12.12) for C5 and C6 were performed as the first surgery. Two days later, C5-6 Anterior Cervical Discectomy and Fusion (ACDF) (2022.12.14) was performed as the second surgery.

Results

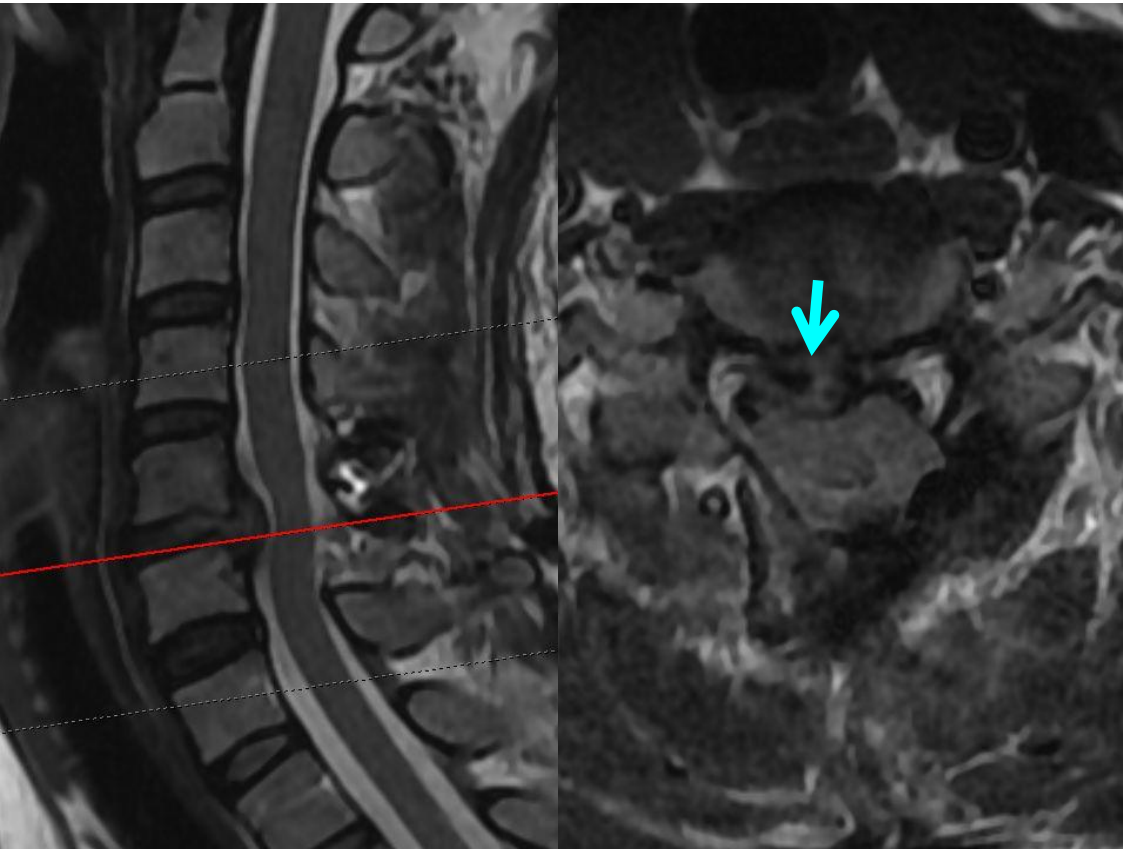
- The MRI performed after the first posterior surgery showed cord decompression, but anterior cord compression due to the disc remained. The MRI performed after the second ACDF confirmed that this part was also completely removed. After the first surgery, the right-hand numbness symptoms significantly improved, but some symptoms remained. After one month after the second surgery, there was a significant improvement, and after five months, most of the discomfort symptoms were completely resolved.

Case Presentation



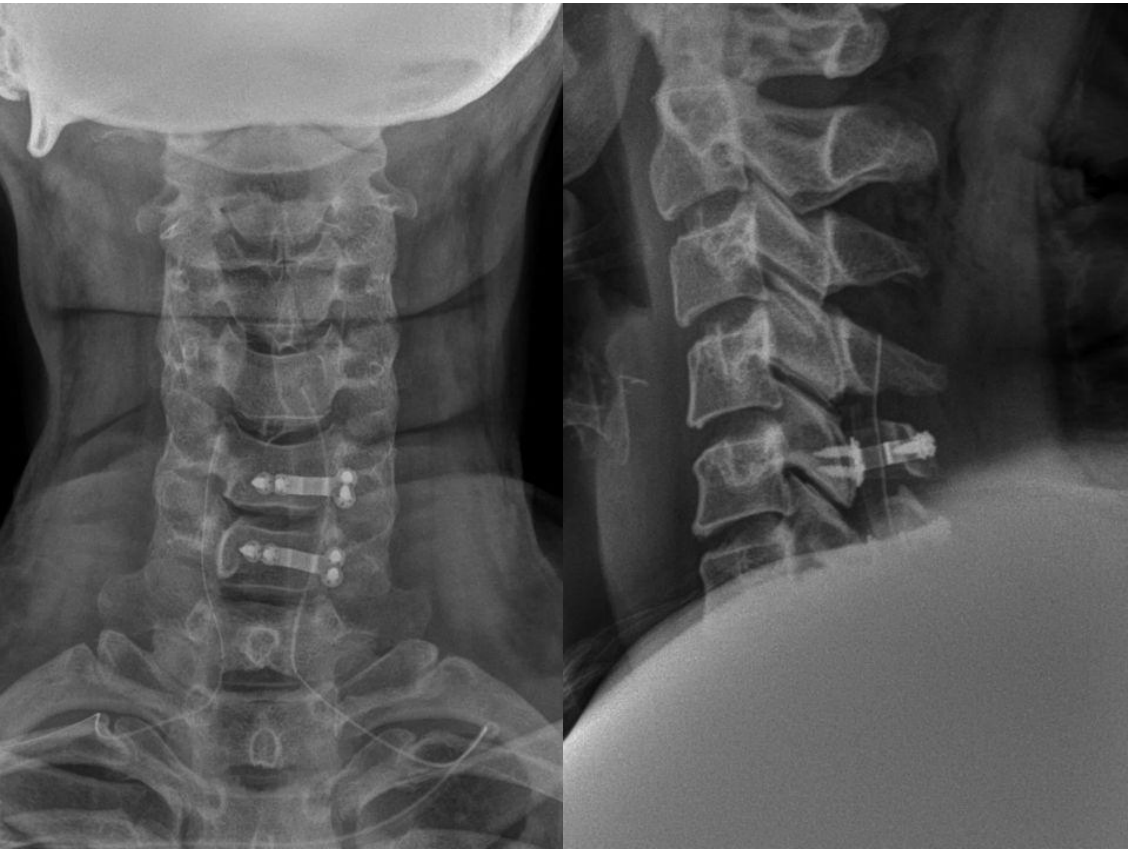
Preoperative images:(A, B) MRI scans demonstrating spinal cord compression at the C5–C6 level secondary to a giant cervical disc herniation.

Case Presentation



Postoperative images (first OLP): MRI obtained after the initial posterior surgery demonstrated adequate spinal cord decompression; however, residual anterior cord compression from the disc persisted.

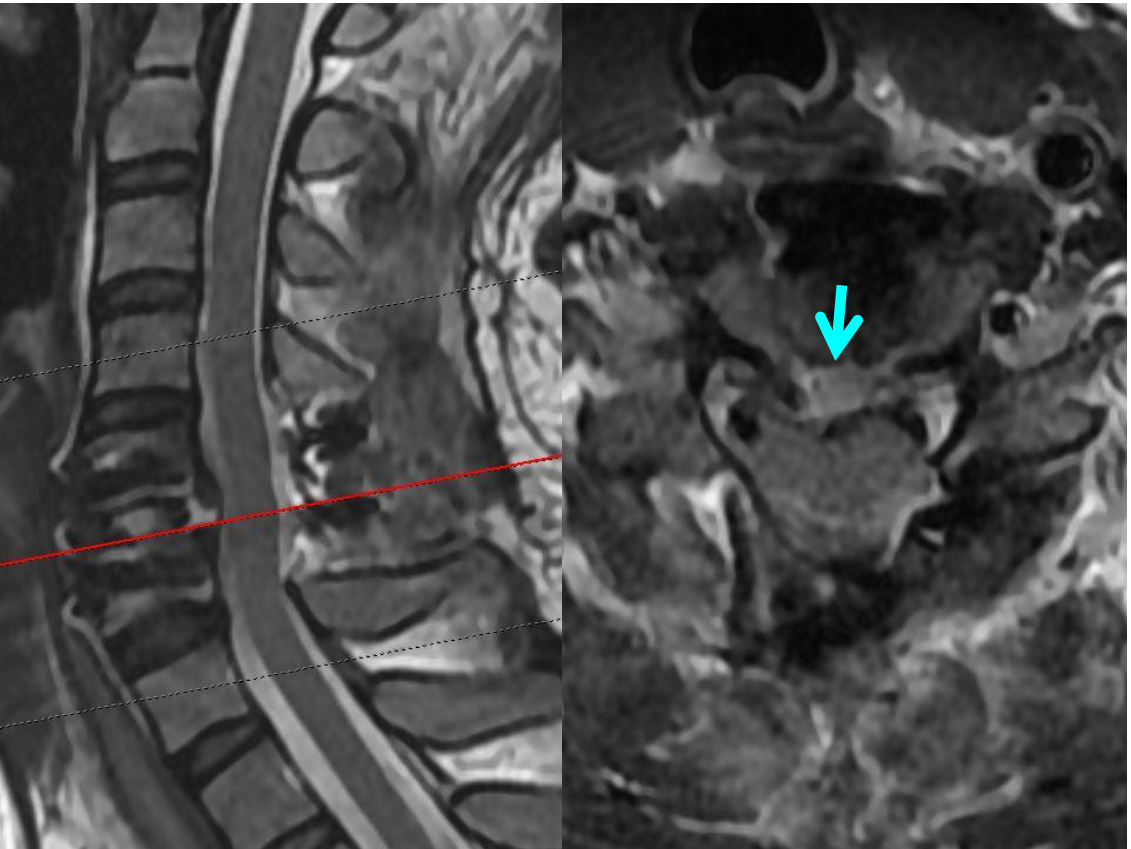
Case Presentation



Postoperative images. (1st OLP)

After the first surgery, the right-hand numbness symptoms significantly improved, but some symptoms remained.

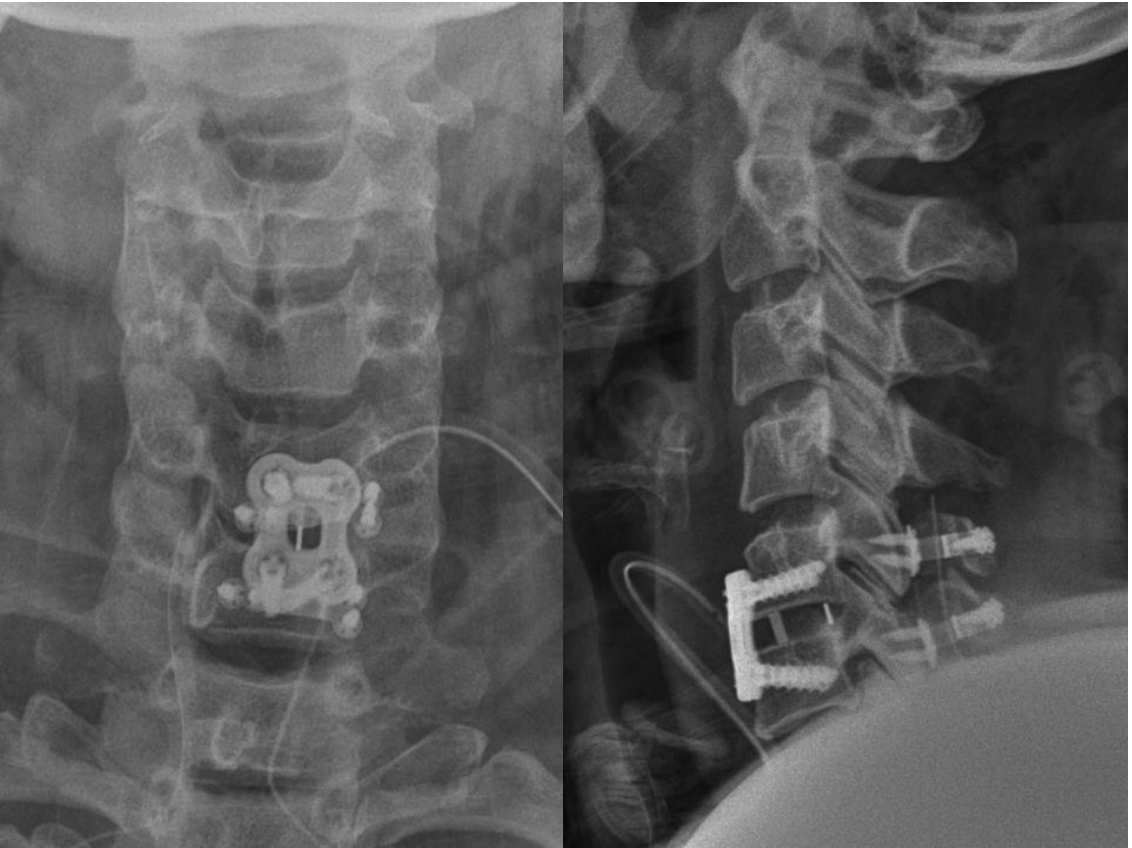
Case Presentation



Postoperative images. (2nd ACDF)

The MRI performed after the second ACDF confirmed that GCDH was also completely removed.

Case Presentation



Postoperative images. (2nd ACDF)

After one month after the second surgery, there was a significant improvement, and after five months, most of the discomfort symptoms were completely resolved.

Conclusion

- Among patients with GCDH, residual disc migration may persist following ACDF.
- Myelopathic motor symptoms can also worsen due to intraoperative manipulation or neck extension.
- In selected cases, a staged surgical approach is considered.
- This approach involves performing open-door laminoplasty (ODL) first, followed by ACDF after comprehensive preoperative evaluation, including assessment of 1. Lhermitte's sign, 2. Neck extension provocation test, and 3. MRI confirmation of a herniated disc occupying over 50% of the spinal canal.