

Commentary

Cervical adjacent segment disease (ASD) is defined as changes at levels adjacent to fusion on radiographic studies, on the other hand, “adjacent segment disease” is defined as having new clinical symptoms that correspond to radiographic signs of ASD.^[1] Although some authors have thought that ASD is part of the natural history of degenerative spinal disease^[2,3] and the most author considered the ASD is a known consequence of anterior cervical discectomy and fusion (ACDF), and the incidence is vary from 25% to 92%,^[1] however only small fraction (5.6–12.16%) of the ASD have clinical symptoms and when the conservative treatment fail to resolve the symptoms of ASD, it may require reoperation.^[4,5] Another evidence to show ASD have a positive correlation with ACDF is that the third revision operation is significantly higher in ACDF than that of the counterpart of the posterior approach (29.78% vs. 12.9%).^[6] The exact reason of ASD is unknown. ASD occurred more proximal level than that of distal one. Iatrogenically introduced stress and instability at adjacent spinal segments due to ACDF may contribute to the pathogenesis of ASD.^[5,7] However, the fact of ASD occurred in patients who had preexisting ASD and in patients who also had other segment degeneration, which refers to the natural history of cervical spondylosis.^[1] Therefore, both iatrogenic manipulation (such as ACDF) and natural history of cervical degeneration play some role in ASD.

ASD obviously predispose to some special injury such as the case reported by the paper “Cervical facet dislocation adjacent to the fused motion segment: a Case report.” Individual treatment should be tailored to every case. Many authors agree that early reduction offers the best chance for neurological recovery in cervical facet dislocation. The success rates of skull traction, performed while keeping patients awake and alert and with or without manual manipulation, in reducing bilateral facet dislocation that have been reported in the literature range from 27% to 90%.^[8] If the close reduction was achieved, second ACDF was chosen at first place by most authors.

Some believe prerelation magnetic resonance imaging is mandatory for fearing disk herniation causing further cord compression upon reduction. If disc herniation was confirmed, the anterior approach of ACDF was the first choice. If cervical facet dislocation failed to achieve closed reduction, the posterior approach of open reduction, internal fixation, and bone graft fusion was the better one.^[9] Some comorbidities especially respiratory impairment or heavily anterior adhesion combined with cervical facet dislocation also favors the posterior one. However, the flaw of the posterior approach is that a greater number of cervical segments (typically four segments) sacrificed to be fixed and fused than that of in the anterior approach (typically two segments).^[9] Although there was a possibility to perform combined anterior and posterior approach operation (anterior first and posterior second; anterior first and posterior second and then anterior approach; posterior first and anterior second), the changing of the patient’s position, long operation time, large estimated blood loss, and high technical complexity of the operation makes it the inferior one sorted by surgeon, as a result, the chance of choosing the combined way is slim.

Qing-Yi He

Department of Orthopedics, Southwest Hospital, Third Military Medical University, Chongqing 400038, China

Address for correspondence:

Prof. Qing-Yi He,
Department of Orthopedics, Southwest Hospital,
Third Military Medical University, Chongqing 400038, China.
E-mail: 1349831917@qq.com

References

1. Park JY, Kim KH, Kuh SU, Chin DK, Kim KS, Cho YE. What are the associative factors of adjacent segment degeneration after anterior cervical spine surgery? Comparative study between anterior cervical fusion and arthroplasty with 5-year follow-up MRI and CT. *Eur Spine J* 2013;22:1078-89.
2. Yokoyama K, Kawanishi M, Yamada M, Tanaka H, Ito Y, Kuroiwa T. Cervical facet dislocation adjacent to the fused motion segment: Case report. *J Neurosci Rural Pract* 2016;7:133-36.

3. Hilibrand AS, Robbins M. Adjacent segment degeneration and adjacent segment disease: the consequences of spinal fusion? *Spine J* 2004;4 6 Suppl: 190S-4.
4. Wu JC, Liu L, Wen-Cheng H, Chen YC, Ko CC, Wu CL, *et al.* The incidence of adjacent segment disease requiring surgery after anterior cervical discectomy and fusion: estimation using an 11-year comprehensive nationwide database in Taiwan. *Neurosurgery* 2012;70:594-601.
5. Bydon M, Xu R, Macki M, De la Garza-Ramos R, Sciubba DM, Wolinsky JP, *et al.* Adjacent segment disease after anterior cervical discectomy and fusion in a large series. *Neurosurgery* 2014;74:139-46.
6. Xu R, Bydon M, Macki M, De la Garza-Ramos R, Sciubba DM, Wolinsky JP, *et al.* Adjacent segment disease after anterior cervical discectomy and fusion: clinical outcomes after first repeat surgery versus second repeat surgery. *Spine (Phila Pa 1976)* 2014;39:120-6.
7. Elsayaf A, Mastronardi L, Roperto R, Bozzao A, Caroli M, Ferrante L. Effect of cervical dynamics on adjacent segment degeneration after anterior cervical fusion with cages. *Neurosurg Rev* 2009;32: 215-24.
8. Lu K, Lee TC, Chen HJ. Closed reduction of bilateral locked facets of the cervical spine under general anaesthesia. *Acta Neurochir (Wien)* 1998;140:1055-61.
9. Ye ZW, Yang SH, Chen BJ, Xiong LM, Xu JZ, He QY. Treatment of traumatic spondylolisthesis of the lower cervical spine with concomitant bilateral facet dislocations: risk of respiratory deterioration. *Clin Neurol Neurosurg* 2014;123:96-101.

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

Access this article online	
<p style="text-align: center; margin: 0;">Quick Response Code:</p> <div style="text-align: center; margin: 10px 0;">  </div>	<p style="margin: 0;">Website: www.ruralneuropractice.com</p>

<p>How to cite this article: He QY. Commentary. <i>J Neurosci Rural Pract</i> 2016;7:136-7.</p>
--