



Case Report

Cervical instability following artificial disc replacement

Ki Joon Kim¹, Mun Soo Gang², Jung-Sik Bae², Jee Soo Jang¹, Il-Tae Jang³

¹Department of Neurosurgery, Nanoori Hospital Suwon, Suwon-si, Gyeonggi-do, ²Department of Neurosurgery, Nanoori Hospital Gangseo, ³Department of Neurosurgery, Nanoori Hospital Gangnam, Seoul, South Korea.

E-mail: Ki Joon Kim - kkj723@hanmail.net; Mun Soo Gang - may-key@hanmail.net; Jung-Sik Bae - medmaxx@naver.com; Jee Soo Jang - spinejs@naver.com; Il-Tae Jang - nanoori_research@naver.com



***Corresponding author:**

Ki Joon Kim, MD, PhD,
Department of Neurosurgery,
Nanoori Hospital Suwon 295,
Jungbu-daero, Yeongtong-gu,
Suwon-si, Gyeonggi-do, Korea.

kkj723@hanmail.net

Received : 12 August 19
Accepted : 14 August 19
Published : 20 September 19

DOI
10.25259/SNI_431_2019

Quick Response Code:



ABSTRACT

Background: Although there has been increased interest in utilizing artificial disc replacement (ADR) techniques to treat cervical degenerative disease, few reports have focused on their postoperative complication and reoperation rates.

Case Description: A 52-year-old male underwent the uneventful placement of a C5-C6 cervical ADR for disc disease and foraminal stenosis. One year later, he experienced the onset of severe neck pain attributed to instability of the ADR construct. This required removal of the C5-6 ADR and subsequent fusion.

Conclusion: Strict adherence to appropriate criteria is critical for choosing when to place a cervical ADR. This requires documenting; adequate surgical indications, careful selection of the appropriate ADR device, meticulous surgical technique, proper preservation of the supporting structures, and sufficient neural decompression.

Keywords: Artificial disc replacement, Cervical instability, Fusion

INTRODUCTION

Anterior cervical discectomy and fusion (ACDF) is typically utilized to treat degenerative cervical disease but carries an approximately 5% risk of adjacent segment disease. Artificial disc replacement (ADR) was developed to preserve motion and avoid this complication of ACDF.^[1] Nevertheless, few reports focus on the unique post-ADR risks, complications, and reoperation rates.^[2,5] Here, 1 year following an initial C5-C6 ADR, the patient developed postoperative pain and instability warranting a C5-C6 ACDF.

CASE DESCRIPTION

A 52-year-old male underwent an uneventful C5-C6 ADR for an MR documented herniated disc with foraminal stenosis [Figure 1a-d]. One year later, he developed severe neck pain and instability documented on dynamic X-rays. This required removal of the ADR and performance of a C5-C6 ACDF [Figure 2a-g]. At surgery, it was difficult to pull out the ADR. As this required excessive widening of the interbody space, a secondary C5-C6 ACDF was necessitated. One-year postoperatively, the patient was radiographically stable and asymptomatic [Figure 2g].

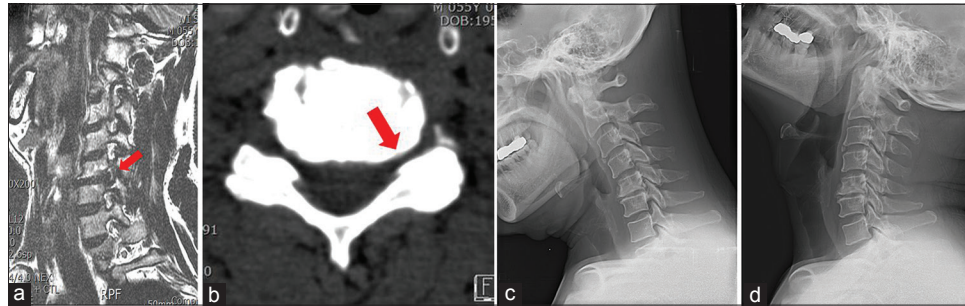


Figure 1: (a) The magnetic resonance imaging showed a herniated intervertebral disc (arrow), foraminal stenosis at C5-6 left. (b) The computed tomography showed a foraminal stenosis (arrow) at C5-6 left. (c) The flexion view, (d) The extension view showed disc space narrowing and bony spur at C5-6.

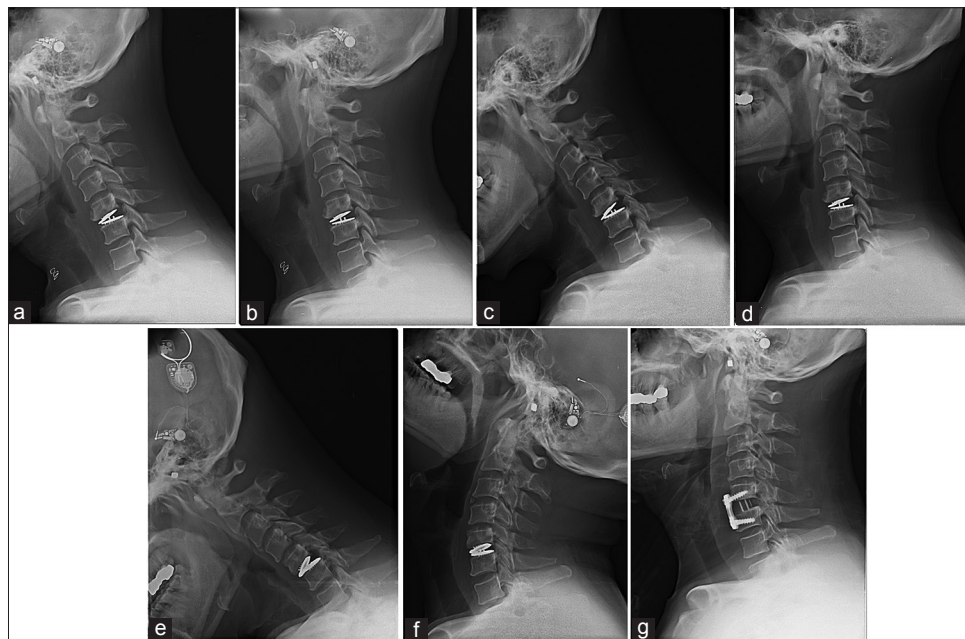


Figure 2: (a) Postoperative – 1 week, (b) Postoperative – 1 week, (c) Postoperative – 2 months, (d) Postoperative – 2 months, (e) Postoperative – 14 months, (f) Postoperative - 14 months showed an aggravation of cervical instability at C5-6. Cervical instability at C5-6, the ADR site, aggravated in the temporal order of (a-f). (g) Radiograph obtained after a revision operation, in which the ADR implant was removed and ACDF was performed.

DISCUSSION

The success of ADR is attributed to; proper patient selection, operating for the right surgical indications, utilizing meticulous technique, and careful implant device selection.^[3,4,6] When patients present with symptomatic postoperative cervical instability following ADR placement, extensive removal of tissue surrounding the ADR device may be warranted, leading to the requirement for ACDF placement.^[2,7] In our case, wide removal of the uncovertebral joint was necessary to achieve adequate neural decompression, likely contributed to the instability warranting the secondary ACDF.

CONCLUSION

With the increased use of the ADR, more revision surgery is anticipated. To prevent cervical instability following ADR, one must carefully choose appropriate patients and strictly follow surgical techniques that preserve supporting structures while achieving sufficient neural decompression.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have

given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Burkus JK, Haid RW, Traynelis VC, Mummaneni PV. Long-term clinical and radiographic outcomes of cervical disc replacement with the prestige disc: Results from a prospective randomized controlled clinical trial. *J Neurosurg Spine* 2010;13:308-18.
2. Kerferd JW, Abi-Hanna D, Phan K, Rao P, Mobbs RJ. Focal

3. hypermobility observed in cervical arthroplasty with mobi-C. *J Spine Surg* 2017;3:693-6.
3. Kowalczyk I, Lazaro BC, Fink M, Rabin D, Duggal N. Analysis of *in vivo* kinematics of 3 different cervical devices: Bryan disc, proDisc-C, and prestige LP disc. *J Neurosurg Spine* 2011;15:630-5.
4. Park SB, Kim KJ, Jin YJ, Kim HJ, Jahng TA, Chung CK, *et al.* X-ray-based kinematic analysis of cervical spine according to prosthesis designs: Analysis of the mobi C, bryan, PCM, and prestige LP. *J Spinal Disord Tech* 2015;28:E291-7.
5. Salari B, McAfee PC. Cervical total disk replacement: Complications and avoidance. *Orthop Clin North Am* 2012;43:97-107.
6. Sekhon LH, Ball JR. Artificial cervical disc replacement: Principles, types and techniques. *Neurol India* 2005;53:445-50.
7. Yu CC, Hao DJ, Ma YL, Huang DG, Li HK, Feng H, *et al.* The role of posterior longitudinal ligament in cervical disc replacement: An ovine cadaveric biomechanical analysis. *Med Sci Monit* 2016;22:1843-9.

How to cite this article: Kim KJ, Gang MS, Bae JS, Jang JS, Jang IT. Cervical instability following artificial disc replacement. *Surg Neurol Int* 2019;10:183.