

A Case of Implant Migration Following Bi-level Cervical Disc Arthroplasty

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To the Editor: A 48-year-old female underwent C4/5 and C5/6 Bryan cervical disc arthroplasty 3 years earlier for right shoulder pain and right arm numbness and weakness. The symptoms resolved postoperatively, and the location of the implant was good 6 weeks after the surgery; however, the range of motion (ROM) of the C4/5 and C5/6 implant were only 1° and 4°, respectively. The patient complained of the right shoulder pain and swallowing difficulty 10 months postoperatively. She experienced no neurological symptoms, and physical examination revealed no abnormal findings. Her symptoms progressively deteriorated, and she began to have difficulty of swallowing solid food. Thirteen months after the surgery, anteroposterior and lateral radiographs showed anterior migration of the C4/5 and C5/6 implants [Figure 1]. Preoperative serum procalcitonin, erythrocyte sedimentation rate, and C-reactive protein levels were normal. Cervical computed tomography revealed that the C4/5 and C5/6 implants had subsided into the adjacent vertebral endplates. Contrast esophagography suggested that the C5/6 implant contacted, but was not compressing, the posterior esophageal wall. Cervical magnetic resonance imaging demonstrated no spinal cord compression. The chosen surgical procedure was corpectomy of the C5 vertebral body, and autogenous iliac bone graft fusion, revealing that both the C4/5 and C5/6 implants were deformed. There was no bony ingrowth between the C5/6 implant and the adjacent vertebral endplate. Bacterial culture of the resected tissue was negative.

Postoperatively, the patient's symptoms resolved, and no complications occurred. The collar was removed 6 weeks after the surgery. Cervical computed tomography showed that the bone graft was in tight contact with the adjacent vertebral endplate at 4 months' follow-up. The implant location was unchanged on the plain film 2 years postoperatively and the patient had no complaints at the recent follow-up.

Published studies of implant migration after cervical arthroplasty are rare.^[1-3] This is the first report of bi-level Bryan implant migration after cervical disc arthroplasty. The ROM of the C4/5 and C5/6 implants was minimal (1° and 4°) 6 weeks after the surgery and the implants were deformed, suggesting that the implants were oversized and overloaded. There was subsidence



Figure 1: The anteroposterior and lateral radiographs showed anterior migration of the C4/5 and C5/6 implants 13 months postoperatively.

of the C4/5 and C5/6 implant, indicating that the bony endplates were destroyed during the primary surgery. Previous reports stated that the rate of fusion after one-level corpectomy could reach 95%, with significantly lower fusion rates of 91–94% for two-level corpectomy.^[4] Besides, the C6 superior endplate was destroyed, potentially increasing the possibility of implant subsidence.^[5] Therefore, our patient underwent corpectomy of the C5 vertebra and autologous iliac bone graft fusion and got good results. Cervical disc arthroplasty becomes more and more popular; however, surgeons should carefully handle the endplate and choose appropriate implants. For cases of endplate destruction of two vertebrae, one level of vertebrae corpectomy with iliac bone graft

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could get good results, reducing the rate of implant subsidence and bone graft nonunion.

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Conflicts of interest

There are no conflicts of interest.

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