P-123

Compensatory Strategies of Unilateral Dysphagia After Anterior Cervical Spinal Surgery: A Case Report

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INTRODUCTION

Anterior Cervical Discectomy and Fusion (ACDF) is a widely performed surgical procedure for treating cervical disease. Including cervical disc herniation, a condition in which a disc compresses a nerve, degenerative disease of the cervical spine, instability, and certain types of spinal fractures or spinal deformities. ACDF is a relatively minimally invasive surgery performed through the anterior approach of the neck. This approach helps shorten recovery time after surgery and reduces the risk of surgery-related complications. However, after ACDF, in addition to common postoperative complications such as bleeding, infection, and pseudoarthrosis, because of the anterior approach method, there may be damage such as laryngeal nerve, muscle, soft tissue damage, and dysphagia. In a previous report, the percentage of patients who experience difficulty swallowing immediately after surgery is relatively high. In the short term, the rate of dysphagia ranges from 1 to 79% of cases have been reported after surgery, but in most cases, these symptoms are temporary and tend to improve over time naturally4. Nevertheless, there is limited information regarding the rehabilitative strategy for post-ACDF dysphagia. In our case, we report a rehabilitation strategy for unilateral dysphagia after ACDF.

CASE

A 65-year-old Asian male patient (weight: 66 kg, height: 160 cm) presented left arm radiating pain and left upper extremity weakness for a month. A manual muscle test for his shoulder and elbow showed grade 2. The neurologic examinations for myelopathy, such as Hoffman's sign, Lehermitte, biceps, knee jerk, and ankle clonus, were normative findings. There was no past medical history and no relevant past surgical and injection interventions. He took a cervical MRI; the result was multiple spinal stenosis and degenerative disc herniation at the C3-C6 level. The patient underwent ACDF at the C3-C5 levels and artificial disc replacement at the C5-C7 levels by right side approach (Figure 1). After the surgery, he complained of having difficulty swallowing. He complained of difficulty passing food into the esophagus when solid swallowing and foreign body sensation. A videofluoroscopic swallowing study (VFSS) detected swallowing dysfunction in the pharyngeal phase of the patient (Figure 2-A). The study revealed large amounts (>50%) of pharyngeal residue, reduced laryngeal elevation, reduced upper esophageal sphincter opening, and evidence of aspiration at the semi-solid swallowing. The Right-side asymmetric vallecular pouch and pyriform sinus residue were detected in the anterior-posterior view of the VFSS, with a relatively preserved passage of food bolus at the left side compared to the right side (Figure 2-B). Based on the VFSS findings, the patient underwent swallowing rehabilitation therapy and was educated on compensatory techniques such as head rotation to the right side and head tilting to the left side for unilateral laryngeal weakness.

After two months of rehabilitation, with compensatory techniques, food moves smoothly towards the robust side and improvements in the subjective symptoms of dysphagia (Figure 2-C). However, without compensatory techniques, the follow-up VFSS revealed only minimal improvements in the patient's pharyngeal residue and laryngeal elevation.

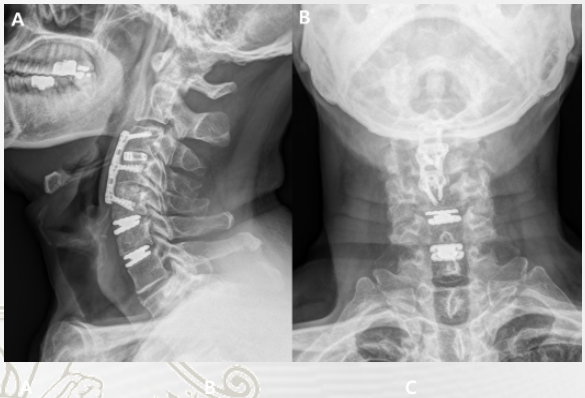

Figure 1. Post-operative Cervical spine X-ray image. (A) Lateral and (B) Anterior-posterior projection showing anterior cervical fusion at the C3 to C5 level and artificial disc replacement at the C5 to C7 level.

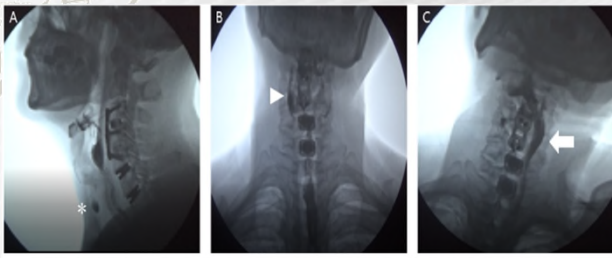

Figure 2. Videofluoroscopic swallowing study.
(A) Lateral view. A large amount of pharyngeal residue is present in the pyriform sinus, and there is an evidence of semi-solid bolus aspiration in the airway(asterisk).
(B) Anterior-posterior view. A relatively large amount of pharyngeal residue is detected in the right side compared to the left side(arrow head).
(C) Anterior-posterior view with compensatory techniques. There is an intact passage movement of food bolus on the robust left side compared to the weak right(arrow).

CONCLUSION

Consequently, it is imperative to assess the patient's swallowing function post-ACDF surgery, and if unilateral dysphagia is detected, compensatory techniques may prove beneficial. This case study showed that based on the objective findings of the VFSS, an effective swallowing compensation strategy can be established and applied to patients with postoperative dysphagia.