



Case Report

Recurrent dysphagia after lower posterior cervical fusion

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ABSTRACT

Background: Although dysphagia following posterior craniocervical fixation is well known, the incidence after mid-lower posterior cervical fixation is not well described. Here, we presented a case of recurrent dysphagia in a 72-year-old male following C3–T3 posterior cervical fixation and discussed its etiology.

Case Description: A 72-year-old male sustained a cervical fracture in a fall; he was neurologically intact. The cervical/thoracic MR and CT studies documented ankylosing spondylitic changes in the cervicothoracic spine, a C5/6 disc herniation, and a C7 vertebral fracture. He underwent posterior cervical C3 to T3 fusion without decompression. For the 1st postoperative day, he complained of dysphagia without hoarseness, and fiberoptic endoscopy revealed poor esophageal mobility. For the next 6 postoperative years, he continued to require repeated attempts at the dilation of the esophageal entrance but remained reliant on a feeding tube.

Conclusion: Posterior cervical fixation restricts cervical motion and may restrict expansion of the esophageal duct leading to permanent postoperative dysphagia requiring continued feeding tube utilization.

Keywords: Ankylosing spine, Cervical motion, Dysphagia, Ossification, Posterior cervical fixation

INTRODUCTION

Dysphagia after posterior spinal fixation has been frequently reported in craniocervical lesions, However, it is rare following mid-lower cervical surgery.^[1,2,5-7] Here, we presented a patient who previously underwent resection of OALL for dysphagia and then showed recurrent dysphagia after C3–T3 posterior cervical fusion (PCF).

CASE REPORT

A 72-year-old male with a history of resection of the OALL due to dysphagia (i.e. still able to eat orally) presented with a cervical fracture due to a fall.

The MR and CT studies documented ankylosis from C2 to C4 and C6 to the thoracic spine, a disc herniation at C5/6, and a C7 vertebral fracture. On the day of admission, the patient underwent an emergent *in situ* PCF from C3 to T3 without reduction or decompression [Figure 1]. Postoperatively, he developed severe dysphagia without hoarseness or any other neurological deficit.

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The video fluoroscopic evaluation showed pooling of contrast at the epiglottic vallecula and inflow into the

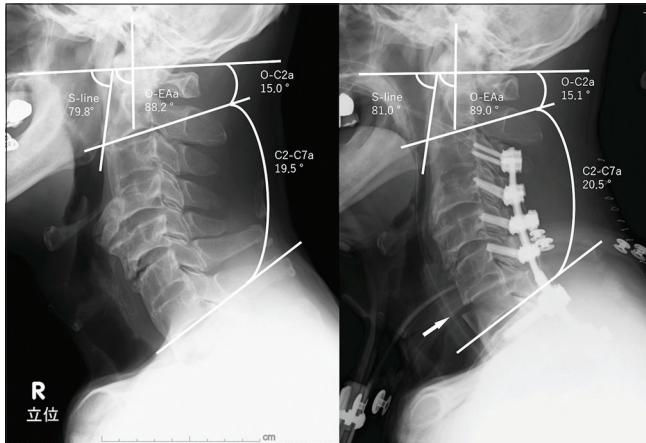


Figure 1: Although the C7 vertebra has an anterior cleft (white arrow), the preoperative (left) and postoperative (right) C2–C7 Cobb angles, O–C2 angles, S-line, and O–EA angles are almost the same.

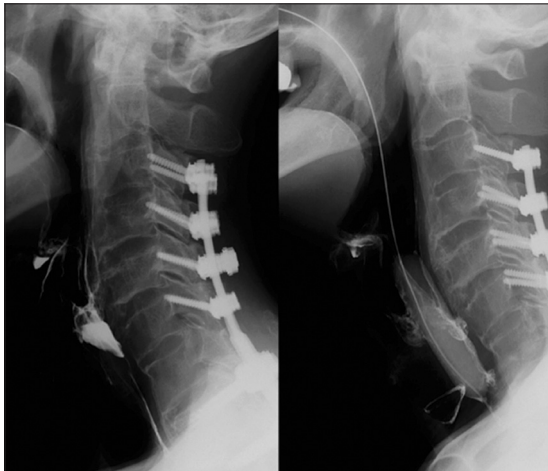


Figure 2: Video fluoroscopic evaluation shows inflow of contrast medium into the intralaryngeal space, and narrowing of the esophageal entrance (left). Enlargement with a bougie dilated the narrow esophagus and enabled formation of a new space to sufficiently move the epiglottis (right).

trachea [Figure 2]. Fiberoptic endoscopy showed poor esophageal mobility, a narrow esophageal entrance, and poor spatial expansion. Multiple radiographic study revealed no clear etiology of the dysphagia. The otolaryngologist stated that no second anterior procedure should be performed to resect the remaining remnant OALL/esophageal remobilization/realignment as this would have simply added to esophageal trauma. Thus, a feeding tube was introduced and was accompanied by several unsuccessful trials to stretch the esophagus [Figure 2]. Although the dysphagia gradually improved over the next 6 years, so he could eat some things orally, they were never able to remove the gastric tube.

DISCUSSION

A PubMed search showed a few reports on dysphagia after posterior cervical surgery in the mid-lower cervical spine occurs from 0% to 21% of the time [Table 1].^[2,4-7] Dysphagia after PCF with ankylosing spine fracture is not rare, and surgeons should recognize that posterior cervical surgery, even without PCF, sometimes induces dysphagia.^[1,2,5-7]

Causes of dysphagia following PCF

There are multiple potential causes of dysphagia following PCF. Chen *et al.* reported that patients with dysphagia had significantly greater C2–C7 lordosis.^[1] Therefore, too much lordosis should be avoided, especially for patients with a history of anterior surgery.

The O–C2 angle (the angle between McGregor's line and the inferior endplate of C2), S-line (the angle between McGregor's line and the line that links the center of the C1 anterior arch and the apex of cervical sagittal curvature), and O–EA angle (the angle between McGregor's line and the line joining the external auditory canal and the middle point of the caudal endplate of C2) have been reported to prevent postoperative dysphagia after occipitocervical (OC) fusion.^[3,7,8] Our case did not include an OC lesion, and all postoperative parameters were within normal limits and/or comparable to preoperative angles.

Table 1: Reported incidence of dysphagia after posterior cervical spine surgery.

Authors	Prospective or retrospective	Operation (number)	% of dysphagia (weeks)	Follow-up (months)
Smith-Hammond <i>et al.</i>	Prospective	Foraminotomy (4) Laminoplasty (8) Laminectomy/fusion (7)	21	36
Fehlings <i>et al.</i>	Prospective	Laminoplasty (34) Decompression/fusion (82)	0 6.1	24
Radcliff <i>et al.</i>	Prospective	Laminectomy/fusion (85)	11(2), 8(6) 13(12), 6(24)	6
Tian and Yu	Retrospective	Laminoplasty (182)	9.4	12

Radcliff *et al.* reported that PCF might result in dysphagia due to the loss of cervical motion.^[5] Cervical flexion might loosen the anterior soft tissue and enables the spatial spread of the esophageal duct.

17–28% Incidence of dysphagia with spinal ankylosis

The incidence of dysphagia with ankylosing spinal hyperostosis itself is 17–28%.^[4] Mechanical compression is just one cause, while other factors include dysfunction of the epiglottis, stenosis with fibrosis or spasms of the esophageal entrance, denervation of the laryngopharynx,^[4] or inflammation with fracture or intubation (e.g., potentially the cause the dysphagia in our case). Further, reintubation with anterior or posterior reoperation would likely aggravate the dysphagia.

CONCLUSION

Before performing subaxial PCFs in a patient with prior anterior cervical procedures for multilevel OALL, one should carefully assess the extent and severity of dysphagia to avoid a patient permanently reliant on a gastric feeding tube.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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