Improvement of Dysphagia after Anterior Cervical Screw Removal: A Case Report

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Dysphagia is common complication which might occur in spinal cord injury patients after anterior cervical fusion procedure. But it is rare to have anterior cervical fusion removal for dysphagia and thus such cases are difficult to find. Therefore, we are reporting the case where the symptoms of dysphagia, caused by posterior and anterior fusion in spinal cord injury patient, were improved after anterior fusion removal. It was 64 years old male patient who had C2-6 compressive myelopathy, which was caused by falling down from the bed, and later he received Posterior Spine Fusion (PSF) and Anterior Cervical Disectomy & Fusion (ACDF). After that, he showed gradual recovery of muscle strength but dysphagia was continued and thus percutaneous endoscopic gastrostomy (PEG) tube insertion was done. Rehabilitation therapy was done for dysphagia but its symptoms continued and thus anterior cervical screw removal was done. After that, dysphagia was improved and PEG tube removal was done 6 months after anterior plate removal. Anterior fusion removal can improve symptoms of dysphagia and increase the quality of life of the patient in selected cases, (JKDS 2015;5:66-70)

Keywords: Cervical fusion, Deglutition disorder, Spinal cord injuries

INTRODUCTION

Dysphagia is one of common complications for acute cervical spinal cord injury patients. Reported risk factors of dysphagia for cervical spinal cord injury patients are old age, high-level injury, complete injury, tracheostomy status, use of respiratory equipment and anterior cervical surgery. Especially, dysphagia, which occurs after anterior cervical fusion, is a relatively common complication and its reported incidence rate is 11-67%. Many studies have been conducted on the cause of dysphagia after anterior cervical fusion and they are suggesting its causes as direct surgical trauma, post-op edema, pressure- or stretch-induced neuropraxia and laryngeal nerve damage. But it is rare to have anterior cervical fusion removal for dysphagia and thus such cases are difficult to find.

Therefore, we are reporting the case of our study where the symptoms of dysphagia, which were occurred after posterior and anterior fusion in a spinal cord injury patient, were improved after anterior cervical fusion removal.
CASE REPORT

The patient was 64 years old male who fell from the bed and developed left limbs paralysis and thus came to the emergency room (ER). Magnetic resonance imaging (MRI) and computed tomography (CT) tests were done. There was no abnormal finding in brain CT but signal change findings of spinal cord from C2 to C6 level were revealed in MRI. He was diagnosed with compressive myelopathy and performed C3-C4-C5-C6 total laminectomy, C2 and C7 partial laminectomy with C2-C3-C4-C5-C6-C7 posterior screw fixation (PSF) and then he underwent C5-C6-C7 corpectomy with C4-C5-C6-C7 anterior cervical disectomy and fusion (ACDF) one week later. Electrodiagnostic study was underwent and it suggested incomplete myelopathy and there was no evidence of cervical radiculopathy. Right after operation, pinprick and light touch sensations were impaired below C5 dermatome and his ASIA impairment scale classification (AIS) was C.

The patient showed gradual recovery of muscle strength of upper and lower limbs after the surgery but complained dysphagia and had a difficulty of oral feeding and thus nasogastric tube feeding was done. Videofluoroscopic swallowing study (VFSS) was done due to dysphagia evaluation with 2 types of thickness (liquid and semisolid) and 2 types of amount (1.5 cc and 5 cc).VFSS showed delayed swallowing reflex (more than 2 seconds in triggering of the swallowing reflex), incomplete pharyngeal peristalsis (decreased pharyngeal peristalsis), decreased laryngeal elevation (laryngeal elevation less than 2 cm), residue in the vallecula, cricopharyngeal dysphagia (CPD) (difficulty in upper esophageal sphincter opening) and aspiration findings (contrast agent goes through the vocal cord into the airway) in semisolid and liquid. The patient was received physical therapy and exercise program for dysphagia such as electrical stimulation in anterior cervical strap muscles, effortful swallowing training, strengthening the anterior suprahyoid muscles, and so forth. He had follow-up VFSS every 2-3 weeks to confirm the effect of physical therapy and exercise for dysphagia but abnormal findings mentioned above were not significant improved, especially pharyngeal peristalsis, residue in the vallecula and CPD were not improved absolutely. So percutaneous endoscopic gastrostomy (PEG) tube insertion was done 7 months after the spinal cord injury.

After PEG tube insertion, the treatment for dysphagia was continued and its results were observed but
dysphagia was continued and thus it was decided to remove anterior cervical fusion and then it was removed 9 months after the injury. (Fig. 3)

The patient showed the improvement of dysphagia symptoms after anterior cervical screw removal, VFSS was taken every 2-6 weeks after the removal and it showed the improvement of delayed swallowing reflex, incomplete pharyngeal peristalsis, incomplete elevation of the larynx, residue in the vallecula, CPD and aspiration findings in semisolid and liquid and also follow-up VFSS taken 6 months after anterior cervical fusion removal showed no aspiration symptoms and also there was no residue in the vallecula after 3 to 4 swallowing and thus PEG tube was removed. Especially, residue in the vallecula and pharyngeal residue as CPD finding improved after anterior cervical plate removal, (Fig. 4)

**DISCUSSION**

Previous studies reported that dysphagia can occur as a complication after cervical spine surgery and the incidence rate of dysphagia was especially high if it was anterior approach. And regarding its causes, many of them are known including instrumentation failure, postoperative soft tissue swelling, infection, cervical immobilization, esophageal denervation, etc.

The patient in our case had some risk factors of dysphagia such as old age, high cervical level injury and anterior cervical surgery. However he had no swallowing difficulty before ACDF and he took nutrition by oral feeding during conservative care and after PSF. So anterior cervical surgery is considered main reason of dysphagia in this case.

The patient had cervical spine surgery with anterior and posterior approach and thus it might have caused more severe cervical immobilization compared to the surgery where only anterior or posterior approach was used and this can be a reason for dysphagia. Also prevertebral soft tissue swelling was observed in cervical x-ray study and VFSS after ACDF and this is
one of causes of dysphagia. The patient in this case had a hoarseness after ACDF, so we think recurrent laryngeal neuropathy was accompanied. Recurrent laryngeal neuropathy is one of complications for anterior cervical spine surgery and cause dysphagia. Laryngeal EMG is used to help confirm recurrent laryngeal neuropathy but laryngeal EMG was not done in this case, so we think this is the limitation in our case.

Some previous studies reported that anterior cervical osteophytes caused dysphagia because osteophytes mechanically compress the pharyngoesophageal segment. Similarly, in this case, we suggested that anterior cervical plate compressed the pharyngoesophageal segment and dysphagia was caused.

It is reported that the severity of dysphagia reduces as time goes by for the patients who had ACDF but 5% of them have severe dysphagia even 6 months after procedure. The patient in our case also had severe dysphagia that lasted longer than 6 months after the surgery and thus PEG tube insertion was done. Swallowing difficulty improved spontaneously within about 6 months in many cases, but the patient in our case had no improvement of dysphagia for 6 months after anterior cervical plate removal. Cervical mobilization was more easily, prevertebral soft tissue swelling was reduced, recurrent laryngeal neuropathy improved and mechanical esophagophryngeal compression improved after anterior cervical screw removal. It is considered that dysphagia improved for reasons discussed above. Dysphagia is one of common complications that can occur after anterior cervical spine surgery. In some cases, dysphagia from anterior cervical spine surgery can be improved as time goes by or it can be improved by having rehabilitation treatment for dysphagia. But in many cases, dysphagia can be continued even with the treatment and in such cases, nasogastric tube or PEG tube is used for feeding and thus the quality of life of the patient decreases. The patient in our case gained muscle strength after cervical fixation procedure and was able to do independent ambulation and had no problem of daily activities except dysphagia and thus he underwent surgery of anterior cervical screw removal considering the quality of life of the patient, and dysphagia was improved after the surgery.

Anterior cervical screw removal is not commonly used for the treatment of dysphagia of spinal cord injury patients and there is no reported study on this issue. But from this case, we came to think having anterior fusion removal, considering the overall functional status of the patient, can be a method to improve dysphagia.

Our case is the one where the symptoms of dysphagia, which were occurred after posterior and anterior fusion due to spinal cord damage, were improved after anterior fusion removal and it suggests that having anterior cervical screw removal, considering the overall functional status of the patient, can improve the symptoms of dysphagia and thus increase the quality of life of the patient in selected cases.

REFERENCES


