Introduction

Degenerative changes in the cervical spine can produce osteophytes and other hypertrophic abnormalities including ossification of the anterior longitudinal ligament (OALL). Cervical osteophytes including OALL are common whereas asymptomatic in the aging population.

Dysphagia resulted from cervical OALL, although uncommon, is an important and treatable cause of dysphagia that must be identified.

This report describes a rare case of dysphagia which was attributed to C2-C7 OALL and non symptomatic cervical ossification of posterior longitudinal ligament (OPLL) with successful symptomatic improvement after ostectomy. The medical literature concerning this unusual case of dysphagia is reviewed.

Case Report

A 63-year-old male patient presented for the evaluation of a 10-year history of progressive swallowing difficulty of solid foods. The patient felt a blockage while swallowing foods. There was no history of hoarseness, dyspnea, odynophagia except tobacco use and alcohol intake. He complained of posterior neck pain for nearly 10 years. He had no history of gastroesophageal reflux symptoms and no remarkable weight loss. General physical and neurologic examination was normal except for mildly reduced cervical movements. Complete blood count, ESR and biochemical parameters were within normal limits.

Lateral plain cervical radiograph revealed excessive OALL formation and flowing ossification along the anterior cervical spine (Fig. 1).

Barium swallow showed narrowing of the esophagus secondary to compression by the OALL at the level of C2-C7. Endoscopy was performed to exclude another pathology but revealed no intrinsic lesion. Cervical computed tomography (CT) showed OALL at the level of C2-C7 and OPLL at the level of C2-C5 (Fig. 2). Magnetic resonance images (MRI) revealed compression of oropharynx and esophagus by OALL (Fig. 3).

The patient underwent surgery through an anterior approach: the esophagus was found to be displaced to the right side by the large OALL at the C3-C6 level. There was no adhesion between esophagus and OALL fortunately. The very hardened OALL was removed under operative microscope magnification using a drill and osteotome (Fig. 4).

Dysphagia Caused by Ossification of the Cervical Anterior Longitudinal Ligament

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We report a case of cervical ossification of the anterior longitudinal ligament (OALL) that contributed to dysphagia with ossification of posterior longitudinal ligament. A 63-year-old man complained of progressive dysphagia for solid foods. Clinical and radiographical findings including barium esophagogram and computed tomography showed OALL in cervical vertebrae from C2 to C7. Magnetic resonance images demonstrated displacement of the trachea and esophagus by OALL. The patient underwent anterior ostectomy from C2 to C7 via anterior cervical approach with excellent relief of dysphagia.

KEY WORDS: Ossification of the anterior longitudinal ligament · Dysphagia · Cervical spine.
The patient recovered from swallowing symptom on full consistency diet 3 weeks after surgery.

**Discussion**

Osteophytes and OALL of cervical vertebrae which are derived from degenerative changes usually remain clinically silent. Their incidence has been thought to be 20% to 30% of the elderly population, but progression to dysphagia is rare\(^1\). In the review of literature, dysphagia due to cervical osteophytes and OALL have been seen in men aged 60 or older\(^2\).

The most common symptom is progressive dysphagia to solid foods. If the condition worsens, dysphagia to liquid can develop. Decline in nutritional status and severe weight loss have been noted frequently in this disease.

Compression of the upper airway may lead to dyspnea, stridor, cough. Other complications include musculoskeletal and neurological symptoms, sleep apnea, aspiration pneumonia, and complete airway obstruction leading to death\(^3\). Various mechanisms rather than simple direct esophageal compression appear to be related to dysphagia\(^4\). Dysphagia caused by osteophyte including OALL may occur through several different pathogenic mechanisms: (1) luminal impingement of the esophagus by a large osteophyte; (2) periesophageal inflammation and edema caused by pharyngoesophageal irritation by the osteophytes; (3) a small osteophyte that is strategically located at the level of fixed positioning of esophagus; (4) pain and muscle spasm due to irritation by an osteophyte which may cause narrowing; (5) combination of any of these mechanisms may produce dysphagia\(^5\).

In the present case, no significant adhesions were encountered between the OALL and esophagus. This would suggest that dysphagia in our case is attributed to direct compression without inflammation.

Treatment of dysphagia caused by cervical OALL may be medical or surgical measure. In asymptomatic patients, however, no treatment is required. In patients with mild symptoms, swallowing evaluation and anti-inflammatory agents may be beneficial to control the symptoms and decrease the risk of aspiration. Such patients have some difficulty in swallowing the tablet forms of drug, so liquid forms are recommended to prevent local irritation. During acute episodes of severe dysphagia, corticosteroids may be used. In patients with life-threatening airway obstruction, emergency tracheostomy can be lifesaving\(^5\). In severe cases surgical resection of the OALL results in immediate remission of the dysphagia, although the osteophyte resection alone may result in long-term spinal instability and sometimes in recurrence of the osteophyte growth. Reosification has been described more than four years after excision as reported by Hirano\(^6\).

Extensive evaluation may be needed to prevent misdiagnosing the cause, since cervical osteophytes including OALL may be incidental radiographic findings and dysphagia may be a common complaint of patients\(^7\). Cervical OALL is a rare cause of dysphagia and a careful evaluation is necessary to rule out such coexistent abnormalities as tumors of the esophagus, lungs or larynx, esophageal motility disorders, esophageal webs, benign strictures, inflammatory disease of the esophagus and infections\(^8\).

In the current case, although extrinsic lesions were clearly demonstrated on barium swallow, endoscopy was considered necessary to exclude additional pathology. In literatures, misdiagnosing the cause of dysphagia as cervical osteophyte has been reported. A patient with severe dysphagia who underwent surgical resection of the anterior cervical osteop-
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Hyte compressing the esophagus failed to improve postoperatively, and was subsequently diagnosed as having a carcinoma at the base of tongue\(^9\).

Cervical OALL should therefore not be accepted as the cause of dysphagia until other causes have been discarded. Prognosis in dysphagia associated with cervical spine is uncertain, as few case reports include adequate follow-up. However, in most cases there is a gradual progression of symptoms\(^7\).

**Conclusion**

We suggest examining the cervical spine by radiography in patients with dysphagia when other investigations are not conclusive for gastrointestinal problem. On the other hand, cervical OALL which may be incidental findings should not be diagnosed as the cause of dysphagia until additional coexistent abnormalities have been excluded.

**References**


