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## Urgent Anterior Cervical Osteophylectomy for a Potential Cervical Hyperostosis to Overcome Failed Intubation: Case Report

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### Abstract

Commonly cervical spondylosis and ankylosing hyperostosis of the cervical vertebrae pass asymptomatic. This is a report of a patient with massive anterior cervical osteophytes resulting in failure of intubation prior to a lumbar canal stenosis surgery. Osteophytes extended from C3 to C7 and resulted in anterior displacement of the pharynx and the trachea respectively. The patient was managed successfully with anterior cervical osteophylectomy without fusion.

**Keywords:** Cervical spondylosis; Cervical osteophylectomy; Diffuse idiopathic skeletal hyperostosis

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### Introduction

Diffuse Idiopathic Skeletal Hyperostosis (DISH), also known as Forestier's disease, was first described by Forestier and Rotes-Querol in 1950. It is characterized radiologically by flowing calcification along the sides of the contiguous vertebrae of the spine. This ectopic calcification can lead to limitation of motion of the involved areas of the spine, which causes stiffness and dull pain. DISH is slowly progressive, and the pain is usually intermittent and thus overlooked and neglected by patients and physicians. Rarely, large bone spurs can form in front of the cervical vertebrae. These spurs occasionally interfere with the passage of food through the oesophagus. We present a case report of a male patient whom underwent failed intubation as a result of such hyperostosis with chronic neck pain and dysphagia secondary to DISH and present a review of the literature.

### Case Presentation

A 60-year-old, retired building worker presented with a chronic lumbo-sciatic pain in both lower limbs. The condition started 18 months ago, with lumbalgia followed by sciatic pain in the left side at the beginning that became finally bilaterally.

The patient has a history of type 2 Diabetes, hypercholesterolaemia, hemorrhagic recto-colitis, benign prostatic hypertrophy right inguinal hernia and was operated in his childhood for cervical lipoma. Examination was unremarkable, with average weight and his laboratory results showed a microcytic hypochromic anemia (12.4 g/dl).

His lumbar MRI showed severe lumbar canal stenosis especially in L4L5 (**Figure 1**), and his pre-anesthetic evaluation of the airway revealed easy visualization of the soft palate, fauces, uvula and pillars (Mallampaticlass 2). The patient was planned for a lumbar laminectomy that was cancelled after a failed trial of endotracheal intubation by two different anesthesiologists.



**Figure 1** A lumbar myelography shows severe L4L5 lumbar canal stenosis.

After failed intubation, the patients declared that he has been complaining of dysphagia, odynophagia and hoarseness of the voice long time ago. A spinal CT scan was ordered which revealed extensive anterior vertebral body hyperostosis including cervical, thoracic and lumbar spine in minimal degree shown in lumbar MRI (Figure 2).

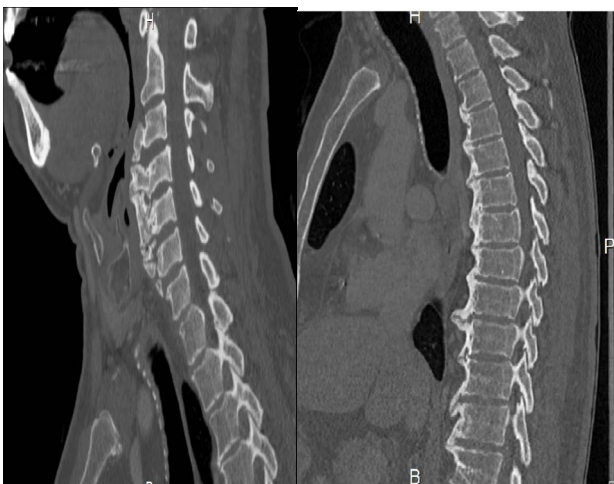
Following an anesthesiologist consultation, the patients were planned for awake fiber optic intubation was planned, and an informed consent was obtained. The patient was continually monitored through a sphygmomanometer, pulse oximeter and electrocardiograph. Topical anesthesia of the oropharynx was achieved with 10% lidocaine spray.

The patient was pre-oxygenated, and then a 1 mg Midazolam and 50 mcg Fentanyl were slowly administered intravenously for a conscious sedation anesthesia. His respiratory rate was 12 breaths per minute; oxygen saturation greater than 95% on room air.

Local anesthesia of the upper airway was accomplished with topical lidocaine spray followed by a superior laryngeal nerve and trans-tracheal blocks. An initial failed attempt of oral fiber optic laryngoscopy, using the Williams airway, to identify either the epiglottis, or the vocal cords due to the expected presence of a large soft tissue mass extending from the posterior pharyngeal wall to the base of the tongue.

On the 2<sup>nd</sup> trial with patient's cooperation the epiglottis was noted to be deviated to the left side, while the vocal cords could only be visualized briefly with deep inspiration. A difficult Intubation was then successfully accomplished with 8.0 flexometallic cuffed endotracheal tube, with lubricated lidocaine gel.

An anterior cervical osteophyctomy from C2-3 to C7 through right semi-vertical para-midline incision, guided by intra-operative fluoroscopy, was done without any complication. Total anesthesia time was 45 minutes while surgery time was 180 minutes (Figure 3).



**Figure 2** Sagittal cervical CT scanner shows anterior hyperostosis and anteriorly airway deviation (A), sagittal thoracic CT scan shows anterior hyperostosis (B).



**Figure 3** Sagittal cervical CT scanner show anterior hyperostosis and anteriorly airway deviation pre-op (A), CT scanner post-op (B).

## Discussion

DISH, also known as Forestier disease, is disorder of unknown origin. It was first described by Forestier and Rotes-Querol in 1950 [1]. The disease is characterized by diffuse ossification and calcification of tendons, ligaments, and fasciae in both the axial and the appendicular skeleton.

This disease has a predilection for men (65%) and is common in patients over the age of 50, with a prevalence of approximately 15% to 20% in the elderly population [2,3]. The spinal column is most often affected, with the thoracic spine being most commonly involved (95% of the patients), followed by the lumbar and cervical spines [4,5].

According to Resnick [6], the radiographic diagnostic criteria in the spine include: 1) osseous bridging along the anterolateral aspect of at least four vertebral bodies; 2) relative sparing of intervertebral disc heights, with minimal or absent disc degeneration; and 3) absence of apophyseal joint ankylosis and sacroiliac sclerosis.

The classical surgical risks include: hematoma, resection or compression of the superior and/or inferior laryngeal nerves, salivary fistula and oesophageal perforation or infection [7].

The spine is usually characterized by ossification of the anterior longitudinal ligament resulting in fusion between at least four motion segments with variable degree of anterior ossification that could be very extensive. Secondary degenerative changes may occur in the posterior longitudinal ligament [8].

While DISH lacks the systemic inflammatory manifestations of ankylosing spondylitis, but it can be presented in different ways while, some patients complain of neck pain or stiffness in the early phases, sparing of the cervical discs and accelerated degeneration of the posterior annuli results in prolapse, causing or adding to pre-existing central or foraminal symptoms [9].

Ossification of the posterior longitudinal ligament may also contribute to central canal stenosis. Extensive anterior ossification may result in compression of the pharynx and oesophagus, causing dysphagia and/or dysphonia. In severe cases, patients may present with respiratory symptoms such

as recurrent respiratory tract infections or, rarely, with acute respiratory distress [10].

Removal of the anterior osteophytes typically requires a more extensive exposure than anterior cervical discectomy and fusion or cervical corpectomy. A long exposure, particularly to access lower cervical segments as in our case incision was made from C2 to C7 to enable access all bony spur, risks damage to the recurrent laryngeal nerve, which may already be under considerable tension. Commonly, a right-sided approach is favoured to lessen the risk of iatrogenic recurrent laryngeal nerve injury [11].

One should be strict to only remove the abnormal tissue and not to breach the intact anterior annulus, risking iatrogenic destabilization. Typically, there is a cleavage plane between the vertebral body and pathological tissue [12].

Intraoperative fluoroscopy was helpful in determining the degree of bony resection and so a radiolucent head clamp is an advantage. Standard spinal haemostatic agents and particularly bone wax is useful in the control of bleeding.

The use of a postoperative drain is recommended owing to the significant risk of developing a postoperative hematoma. Surgery outcomes are generally very good. Neurological decompression will follow the expected postoperative course with radiculopathy recovering more predictably than established myelopathy.

Dysphagia settles very early. Three case series of (20 patients) published in the peer-reviewed literature with between five

and nine years of follow-up, all concluded that dysphagia was settled within one month postoperatively, with one patient requiring revision anterior decompressive surgery for recurrent osteophyte formation [13].

In our case we had chosen to start by cervical spine osteophylectomy before fixing his lumbar canal stenosis to avoid the need of emergent intubation in case of presence of complication from lumbar surgery, which will be more difficult, especially that will find the airway more edematous and narrowed. Lumbar canal stenosis was operated, two weeks later, after the first intervention. And we think that this is excellent strategy to deal with such situation. By doing this strategy we solve the two problems of the patient without facing anticipated difficulty.

## Conclusion

Osteophytes are likely to be missed in routine airway examination. A high index of suspicion is required to anticipate this condition if there is history of dysphagia, dyspnea, sensation of lump in the throat or change in character of voice in patients with cervical spine disorders.

In such cases, cervical CT scan should be considered. Surgical excision of the osteophyte via anterior approach is an effective method of treatment for such patients before dealing with other non-emergent surgical condition to secure the airway and emergent intubation in case it was needed.

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