# Anterior cervical osteophyte

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## Epidemiology

More than half of people over the age of 60 have osteophytes, or bone spurs, somewhere in their bodies. Osteophytes in the spine are a normal sign of aging and are not a cause for concern unless they result in pain or neurological symptoms.

Ezra et al. from the Department of Anatomy and Anthropology, Sackler Faculty of Medicine, School of Nursing Sciences, Yaffo Academic College, The Steinhardt Museum of Natural History and National Research Center, Tel Aviv University and Department of Neurosurgery, Tel Aviv Sourasky Medical Center, Israel, aimed to determine the prevalence and severity of cervical osteophytosis in a large study population. To do so, they developed a grading system for osteophytosis, enabling the assessment of their presence and severity in the cervical spine; and applied it to the analysis of dried cervical vertebral bodies (C3-C7) from 273 individuals. Statistical analyses were carried out per motion segment, while testing for the effect of age, sex and ethnicity. The highest prevalence of osteophytes was found in motion segment C5/C6 (48.2%), followed by C4/C5 (44.1%), and lastly C6/C7 and C3/C4 (40.5%). Severe osteophytes are most commonly seen in motion segment C5/C6. In all motion segments, the inferior discal surface of the upper vertebra manifests more osteophytes than the superior discal surface of the lower one. Osteophytes prevalence is sex-dependent only in the upper cervical vertebrae (C3-C4), and age- and ethnicity-dependent for all vertebrae <sup>1)</sup>.

# Etiology

Anterior cervical osteophytes can be isolated or diffuse; they are most often idiopathic and part of a form called Forestier disease (diffuse idiopathic skeletal hyperostosis). It may also be a traumatic or iatrogenic form (particularly following spinal surgery).

### **Clinical features**

Anterior cervical osteophytes are common and usually asymptomatic in elderly people. Due to mechanical compressions, inflammations, and tissues swelling of osteophytes, patients may be presented with multiple complications, such as dysphagia, dysphonia, dyspnea, and pulmonary aspiration. Paradoxical vocal cord motion is an uncommon disease characterized by vocal cord adductions during inspiration and/or expiration. This condition can create shortness of breath, wheezing, respiratory stridor or breathy dysphonia<sup>2</sup>.

Anterior cervical osteophytosis as a cause of dyspnoea and stridor <sup>3)</sup>.

Cervical anterior osteophyte might be associated with foreign body sensations of the pharynx <sup>4</sup>).

Regression of anterior-disc osteophyte complex occurs following cervical laminectomy and fusion, and likely provides another mechanism of spinal cord decompression <sup>5)</sup>.

#### **Case series**

Five patients who underwent surgical resection of the cervical anterior osteophyte due to dysphagia. Videofluoroscopic swallowing studies (VFSSs) were performed before and after surgery on each patient, and kinematic analysis of the video clips from the VFSS of a 5-mL liquid barium swallow was carried out. Functional oral intake improved after surgery in 3/4 patients who had required a modified diet before surgery. Kinematic analysis showed increases in the maximal hyoid vertical movement length (13.16±5.87 to 19.09±4.77 mm, p=0.080), hyoid movement velocities (170.24±84.71 to 285.53±104.55 mm/s, p=0.043), and upper esophageal sphincter opening width (3.97±0.42 to  $6.39\pm1.32$  mm, p=0.043) after surgery. In conclusion, improved upper esophageal sphincter opening via enhancement of hyoid movement after cervical anterior osteophyte resection may be the kinetic mechanism of improved swallowing function <sup>6</sup>.

### **Case reports**

Chen et al. Ilustrate a case of severe dysphagia caused by a large post-traumatic osteophyte with oropharyngeal swallow study showing a significant mass effect on the pharynx and resolution following osteophytectomy  $^{7}$ .

Two patients with Diffuse idiopathic skeletal hyperostosis (DISH) and anterior cervical osteophytes.

They underwent anterior cervical osteophytectomies due to severe dysphagia. At more than a year follow-up, both patients noted improvement in swallowing as well as their associated pain. The surgical removal of cervical osteophytes can be highly successful in treating dysphagia if refractory to prolonged conservative therapy<sup>8)</sup>.

Seo et al. report a rare case demonstrating combined symptoms of dyspnea, dysphonia as well as dysphagia at the same time in a patient with asymptomatic anterior cervical osteophytes. Moreover, this is the first report demonstrating that anterior osteophytes can be a possible etiological factor for paradoxical vocal cord motion that induces serious respiratory symptoms <sup>9</sup>.

A typical description of Forestier disease is related based on the cases of two 80- and 79-year-old men referred with gradually worsening swallowing problems leading to dysphagia. Both underwent surgical resection of cervical osteophytes via a lateral cervical approach after failure of the medical treatments.

Based on the clinical presentations and the analysis of the literature, the authors describe the clinical features of the cervical anterior form of DISH presenting with ENT symptoms. The diagnosis and conservative therapeutic, and surgical management of anterior cervical hyperostosis based on ongoing gradual solutions are described <sup>10</sup>.

An 85-yr-old man complaining of swallowing difficulties was referred for a videofluoroscopic swallowing test for the evaluation of dysphagia. He had experienced swallowing difficulties for 7 yrs, but he had no complaint of dyspnea or dysphonia. Specifically, he complained of intermittent aspiration symptoms when drinking water or eating semisolid food, and he felt considerable discomfort when swallowing solid food. On physical examination, his gross motor and sensory functions were normal, and no pathologic reflex was detected. In addition, a cranial nerve examination that included gag reflex, mastication, and tongue movement evaluations produced normal findings. However, a videofluoroscopic swallowing test revealed epiglottic closure failure attributable to anterior bony spurring at the C3-6 levels, which presumably explained his complaint of aspiration. In addition, a diffuse osteophyte was found anteriorly encroaching the posterior aspect of the oropharynx and esophagus. However, his swallowing reflex was prompt, and other swallowing movements were normal <sup>11</sup>.

A 62-year-old male presented with a history of difficulty in swallowing with a duration of 6 months, which was more for solid food and was associated with a foreign body sensation during swallowing. Previously, he was able to chew food without difficulty, and he did not have regurgitation of food. His general physical examination was essentially normal and neurological examination did not reveal any focal neurological deficit; he showed normal pharyngeal sensation tongue movement, and palatal reflexes. Examination of the oral cavity did not show any abnormalities; however, endoscopic examination revealed a mucosal bulge at the posterior pharyngeal wall. X-ray cervical spine and computed tomography (CT) scan of cervical spine revealed spondylotic changes with a large C2-C3 breaking osteophyte compressing the pharynx. C2-C3 anterior osteophyte was excised by right anterior cervical approach. The postoperative period was uneventful. Patient had a significant

improvement in symptoms and was able to swallow solid food <sup>12</sup>.

An 81-year-old man had had mild dysphagia for several years. During the six months before admission, the dysphagia worsened, and he had occasional hemoptysis. For several days before admission he had increasing shortness of breath and throat tightness, both of which worsened in the supine position. Laryngoscopic examination revealed marked narrowing of the airway due to a visible retropharyngeal bulge. The patient was admitted to the intensive care unit, where stridor was noted on physical examination. Radiographs of the cervical spine and magnetic resonance images (MRI) of the neck were obtained immediately. The lateral radiograph of the cervical spine revealed a huge mantle of osteophytic bone anterior to the spine from C2 to C7, with fusion of the osteophytes from C4 to C7 (Panel A, arrow). Osteophytes at C2 and C3 compressed the hypopharyngeal airway at the level of the epiglottis (Panel A, arrowhead). A sagittal MRI scan showed anterior displacement of the prevertebral soft tissues by these osteophytes (Panel B, arrow), and an axial scan showed compression of the airway to a slit-like opening (Panel C, arrow). After a difficult intubation, a neurosurgeon and an otolaryngologist performed an anterior resection of the ventral spinal osteophytes with partial diskectomies at C2-C3 and C3-C4. The patient did well postoperatively and was completely asymptomatic at follow-up one month after discharge <sup>13</sup>.

Papadopoulos et al. report three patients with progressive dysphagia due to large anterior cervical osteophytes. All three patients were treated with anterior cervical approach with removal of the osteophytes without fusion. A review of the literature in addition to the specific case histories, video fluoroscopic and radiographic findings are presented <sup>14</sup>.

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