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Surgical Management of Uvular Hypertrophy: An Unusual Case Report

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Abstract

Uvular hypertrophy is a rare condition characterized by significant enlargement of the uvula, often leading to obstructive symptoms and associated complications. We present a case of a twenty-eight-year-old male patient who presented with severe uvular hypertrophy causing obstructive sleep apnoea and associated discomfort. The patient underwent surgical management in the form of Carbon dioxide laser-assisted uvulectomy under general anesthesia, resulting in significant improvement of symptoms and quality of life. This case highlights the importance of early recognition and appropriate surgical intervention in the management of uvular hypertrophy.

Keywords: Uvular hypertrophy; uvulectomy; obstructive sleep apnoea; surgical management; Carbon dioxide Laser.

Introduction

The uvula is a tiny segment of soft tissue that hangs from the soft palate in the middle. It has a significant number of salivary glands and is largely responsible for lubricating the mucosa of the oropharynx and laryngopharynx. The uvula is crucial for speech articulation as well.**[1]**

Anatomically, the uvula is tightly connected to the soft palate and plays a significant role in the oropharyngeal isthmus's functional movements. At the oropharyngeal junction, an extended uvula may fall and come into contact with different upper airway tissues, which could cause mechanical irritation.**[2]**

A relatively uncommon condition called uvular hypertrophy is defined by an abnormal expansion of the uvula. This condition can cause snoring, dysphagia, and obstructive sleep apnoea (OSA), among other symptoms.**[3]** Pharyngeal constriction could be exacerbated by an enlarged uvula. A large uvula probably contributes to OSA and snoring because it reduces the retropalatal space. **[4]** One of the available treatment options is surgical resection of the uvula. Uvulectomy procedures have been documented in written instructions dating back to the sixth century **[5]**. While the uvula is not a crucial organ, patients may experience prolonged globus, xerostomia, and dysphagia if it is removed completely **[6,7]**. Additionally, some research indicates that the uvula functions as an immune organ in the body to fight ingested and breathed antigens. **[5,8]**

Although rare, substantial uvular hypertrophy can have a major negative effect on a patient's quality of life and may require surgery. The uvula is frequently removed during palate surgery in Western medicine to treat snoring. Uvulectomy is still used as part of traditional medicine in many African countries, and it has been documented by Byzantine physicians as early as the Greek era.**[9]**

Here, we present a case of uvular hypertrophy in a twenty-eight-year-old male patient who underwent surgical management with uvulectomy.

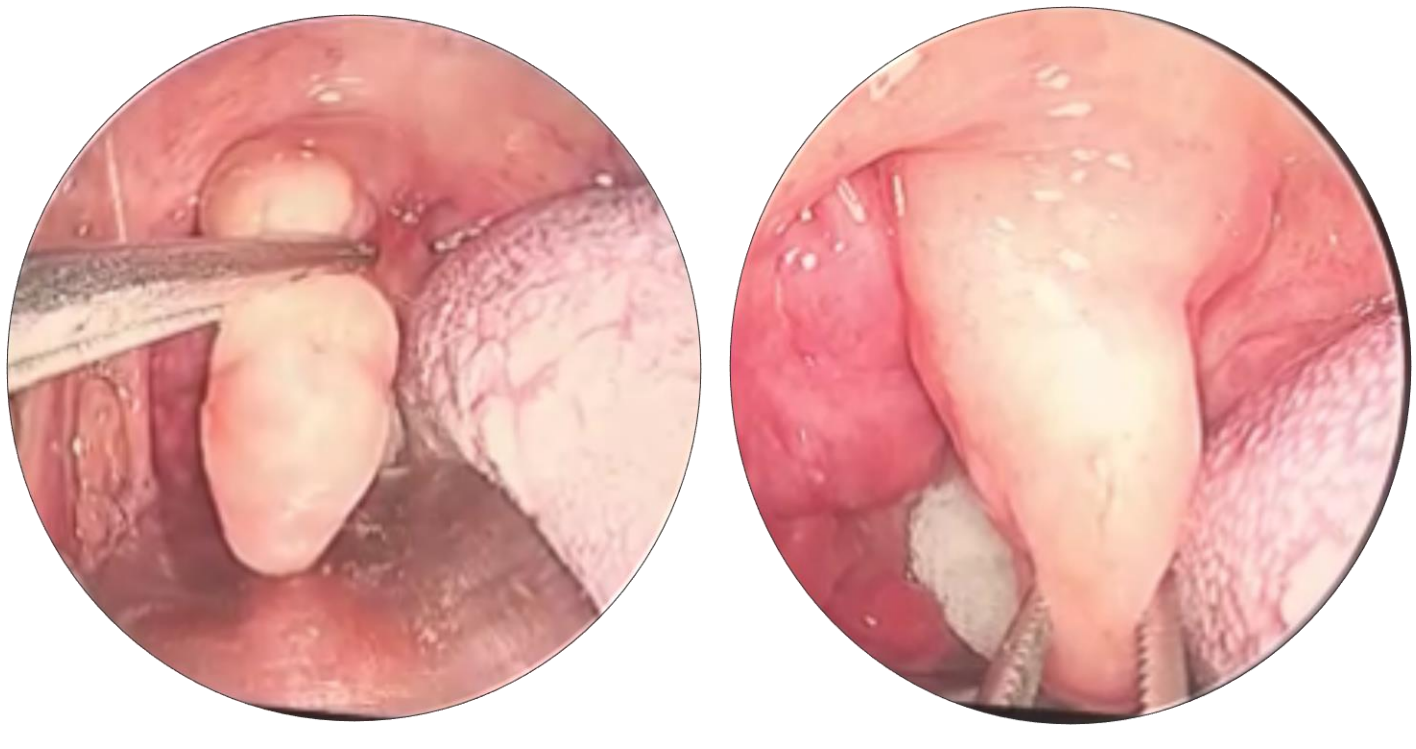
Case Presentation

A twenty-eight-year-old male patient presented to Apollo E.N.T. Hospital, Jodhpur, Rajasthan, with complaints of severe snoring, choking episodes during sleep, and daytime fatigue for the past 24-30 months. On examination, the patient was found to have massive uvular hypertrophy with the uvula extending beyond the posterior pharyngeal wall, causing partial airway obstruction. The patient had no significant medical history or predisposing factors for uvular hypertrophy.

Diagnostic Assessment

The diagnostic workup included a thorough physical examination and upper airway endoscopy. Upper airway endoscopy confirmed significant hypertrophy of the uvula, with no other significant abnormalities observed in the nasopharyngeal region. **[Figure 1 A and B]**

Figure: 1 A. and B. Intraoperative picture showing enlarged uvula.



The homogeneous enlargement of the uvula, which hangs down in the oropharynx and is next to the lingual surface of the epiglottis, is shown on a computed tomography (CT) image measuring 40 x 13 mm. The oropharyngeal lumen has been compromised. **[Figure 2 A, B, and C]**

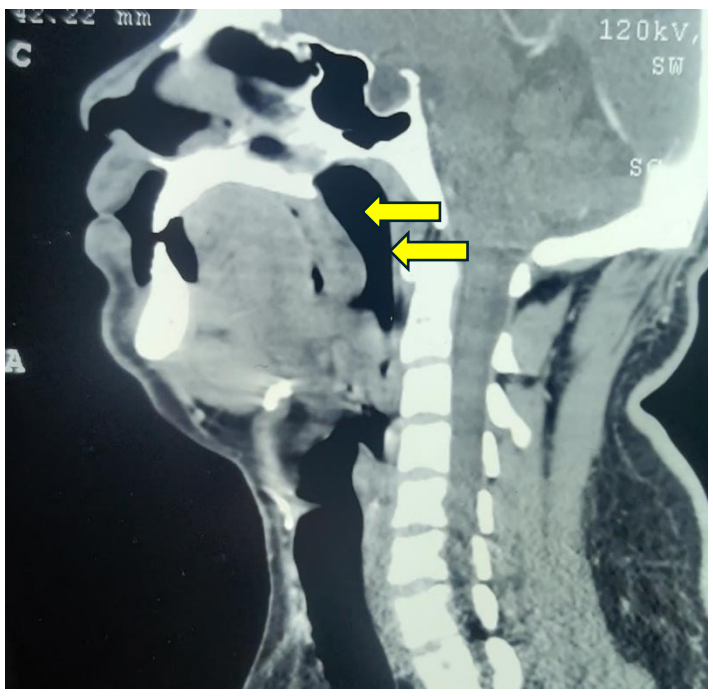


Figure:2. A

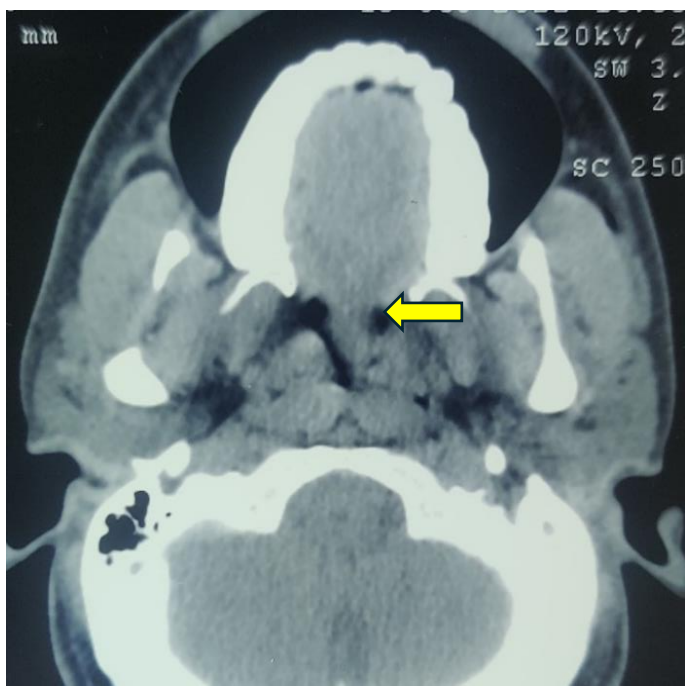


Figure: 2.B

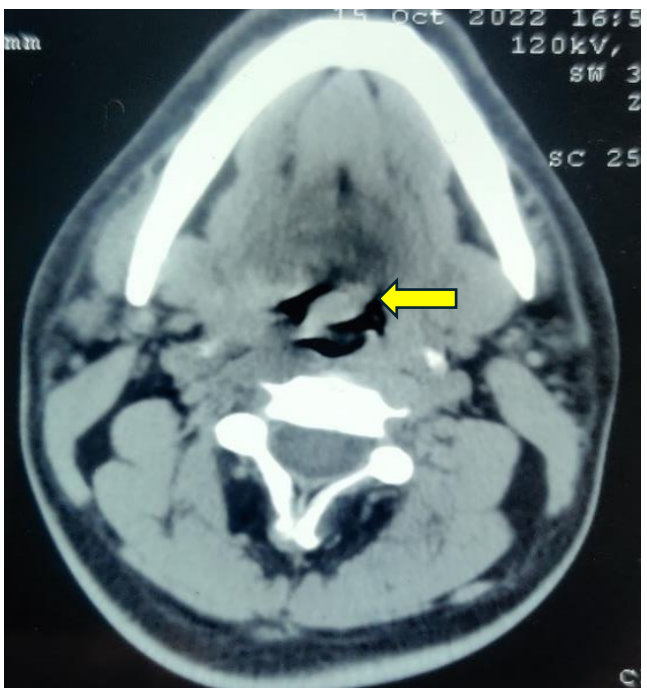


Figure:2.C

Figure: 2. A,B and C: Computed tomography (C.T.)scan 40 x 13 mm homogenous enlargement of uvula, hanging down in oropharynx and abutting the lingual surface of epiglottis. There is significance compromise in oropharyngeal lumen.

Therapeutic Intervention

After a discussion of treatment options, the patient opted for surgical management due to the severity of symptoms and the impact on quality of life. The patient underwent a uvulectomy under general anesthesia. The procedure involved the excision of the enlarged portion of the uvula using a Carbon dioxide Laser, ensuring adequate hemostasis. **(Figure 3)** Postoperatively, the patient was monitored closely for any complications.

Figure:3. Main Surgical Specimen

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Follow-Up and Outcomes

The patient experienced an uneventful recovery following surgery. Postoperative pain was managed with analgesics, and the patient was advised to maintain proper oral hygiene. Follow-up examinations at 1 month, 3 months, and 6 months revealed significant improvement in symptoms, with resolution of snoring, choking episodes, and daytime fatigue.

Discussion

The maxillary palatal process is formed during embryonic development by expansions of membranous ossification from the palatine bones. The soft palate and uvula are formed by the fusion of the posterior sections of this process, which do not ossify and instead extend over the nasal septum. The uvula is made up of diffusely interdigitated muscle fibers and glandular and connective tissue. The muscularis uvulae are made up of two bundles that lie on the nasal surface of the other palatal muscles and travel sagittal towards the bulk of the uvula. They originate from the palate aponeurosis lateral to the midline. However, rather than being located in the uvula itself, the muscular uvulae in its most cohesive form is located dorsal to the muscular sling made up of the two levator palatine muscles. It appears that contractions of the muscularis uvulae would add weight to the dorsal surface of the elevated soft palate due to its location and size, which would help in occlusion of the velopharyngeal portal during speech and deglutination, according to Azzam and Kuehn.**[10]**

According to Ijaduola and Williams, a total uvulectomy only results in a partial excision of the muscularis uvulae, and this doesn't seem to have any detrimental effects on the closure of the velopharynx during speech.**[11]** The lesser palatine nerves feed the muscularis uvulae with sensory and autonomic input, whereas the pharyngeal plexus provides the muscle with its nerve supply.**[12]** The uvular artery, which often emerges as a branch of the ascending pharyngeal artery but can sometimes occasionally arise as a separate branch of the external carotid artery itself, provides the blood supply.**[13]**

It has been demonstrated that the uvula and palatopharyngeus muscles have two of the highest proportions of type II muscular fibers ever recorded for human muscles, suggesting that they are functionally involved in rapid movements. The uvula muscle appears to elevate the uvula swiftly and function as a fast intrinsic support to manage stiffness in the nasal and lateral side of the soft palate, preventing distortion, according to Stal and Lindman's research.**[14]** The surface epithelium, the subepithelial area, and the gland area make up the three primary compartments of the uvula.

The uvula's oral side is coated in a layer of keratinized/para keratinized surface epithelium, which is 15-20 cells thick. Muscle fiber and gland density decrease from proximal to distal in the uvula, but connective tissue density rises.

The subepithelial layer is made up of loose connective tissue that is abundant in collagen, fibroblasts, and elastic fibers as well as a large number of mast cells.

Seromucous glands are found in the mid-central and proximal regions of the uvula, towards the oral side, and are encompassed by myoepithelial cells.

Olofsson et al. report that the uvula's structure is made to withstand abrasive stresses, and this glandular area is embedded in a network of striated muscle cell bundles and adipose cells. **[15]** The composition and cytokine profile of uvular leucocytes suggest that the uvula may play some role in local immune protection and be a site for inducing mucosal tolerance to inhaled and ingested antigens. This is because the uvula is constantly exposed to airborne and alimentary antigens. Olofsson et al. came to this conclusion. **[16]**

The uvulas of patients with obstructive sleep apnoea (OSA) are thicker, bigger, and contain a significant amount of muscle and fat. The reason behind the bigger uvulas and increased muscle proportion in heavy snorers who do not have OSA could be the recurrent stresses placed on the soft palate during loud snoring. **[17-19]**

According to Stauffer et al.'s theory, pharyngeal narrowing in OSA may be exacerbated by an expansive uvula, and hypertrophy of the muscularis uvulae may be a reaction to increased pharyngeal airflow resistance.**[17]** During sleep, it could also prolapse into the hypopharynx, causing pharyngeal obstruction.

During ancient times, the uvula was regarded as extremely significant. According to Galan (122–199 AD), the uvula plays a significant role in communication and enhances the appealing qualities of the voice. **[20]** The uvula is important in producing uvular sounds, which are present in French, Arabic, and some West African languages, as well as palatal melodies, which are found in some parts of Yorkshire in the United Kingdom. Several theories have been proposed regarding the role of the uvula in speech in modern times. **[21]** The uvula prevents excessive nasality of the voice by controlling the resonance of the air column over the larynx.

While partial uvulectomy just modifies the quality of uvular noises, radical uvulectomy completely stops them from occurring; **[22]** rhinolalia aperta is prevented by the uvula. The muscularis uvula, not the uvula itself, is crucial in preventing hypernasality. **[23,24]** Uvulectomy has no negative effects on speech or swallowing. **[1]** While some claimed that uvulectomy just had little impact on speech **[25]**, others reported that it even facilitates speech. **[26]** When swallowing and articulating, this structure is crucial to pharyngeal closure. The majority of the time, uvula enlargement or elongation is asymptomatic, although it can occasionally fall and touch the vocal folds, the posterior pharyngeal wall, or the epiglottis, among other structures in the upper airway. **[27,28]** Irritation directed towards these structures may be a factor in a persistent cough, dysphagia, globus feeling, vomiting, and sleep pane.

Clinical signs of an extended or enlarged uvula include dysphagia, coughing, hawking, vomiting, painful throat, and throat irritation. Gagging and a tickling in the throat are common complaints from patients **[29]**. Reports of respiratory distress have been made **[30–32]**.

Trauma appears to be the most frequent cause of enlarged or extended uvula among the various possible reasons. Additional reasons include angioneurotic edema, papilloma, cancer, isolated infected uvulitis, and uvulitis linked to epiglottitis. Usually, the course of treatment is conservative, but occasionally, surgical excision may be required. In the fourth century BC, Aristotle and Hippocrates described the uvula as a source of swelling and inflammation that may suffocate a person.**[19]** Greek medical books from Byzantine physicians (AD 324–1453) mention uvulectomy, and Aetins also mentioned it when there was a risk of asphyxia. When expansion caused coughing,

irritation, insomnia, or a risk of suffocation, Paul of Aegina advised chopping off the extraneous portion of the uvula.**[5]**

Because it was thought that the uvula and tonsils were the main source of infection, uvula excisions with tonsillectomy were common practices until the early 20th century. **[33,34]** Harper and Renault postulated that obstructive sleep apnoea brought on by an unusually large uvula may be the cause of sudden infant death syndrome. **[35]** A case with an extended uvula hanging into the glottic larynx and covering the epiglottis has been reported; the uvula caused laryngospasm episodes and a chronic cough, which resolved with uvulectomy. **[27]** When nonsurgical treatments are ineffective in reducing symptoms or when the hypertrophy is seriously obstructing airways, uvulectomy surgery may be necessary. When patients are properly chosen, uvulectomy is a rather safe and effective treatment with favorable results.

Conclusion

We report a case of uvular hypertrophy that was well treated with a uvulectomy, which resolved the symptoms of obstructive sleep apnoea. The treatment of this uncommon but potentially crippling ailment requires early detection and the right kind of surgery.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Conflict of Interest

The authors declare no conflicts of interest.

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