CASE REPORT

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Prevertebral Lipoma Presenting as a Posterior Pharyngeal Wall Mass: Successful Endoscopic Transoral Excision

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Abstract

Background: Lipomas arising from the retropharyngeal or prevertebral spaces are uncommon benign tumours that may remain asymptomatic until their gradual enlargement produces compressive symptoms. Clinical manifestations may include dysphagia, nasal regurgitation, voice changes, snoring, and, in severe cases, airway obstruction. Their submucosal location and smooth overlying mucosa may make clinical diagnosis challenging.

Case Presentation: An 80-year-old woman presented with a six-month history of foreign-body sensation in the throat, predominantly solid-food dysphagia, recurrent nasal regurgitation, habitual snoring, and symptoms suggestive of sleep-disordered breathing. Clinical examination revealed a smooth, left-sided bulge involving the posterior pharyngeal wall, with intact overlying mucosa. Contrast-enhanced computed tomography performed on 26 May 2025 revealed a fat-attenuation lesion measuring 1.5 × 2.7 × 4.0 cm, with an attenuation value of approximately −114 HU, located in the left prevertebral space and extending from the skull base to the inferior margin of C2. The lesion produced anterior displacement and narrowing of the airway. A level 2 sleep study demonstrated an apnoea-hypopnoea index (AHI) of 30 events/hour. On 5 June 2025, complete en bloc excision was performed using an endoscopic transoral approach. The encapsulated specimen measured 4 × 2 × 1 cm. Histopathological examination (HP-245/25) revealed lobules of mature adipose tissue separated by fibrous septa, confirming the diagnosis of a lipoma.

Conclusion: The postoperative recovery was uneventful, with complete wound healing at one-month follow-up and considerable improvement in swallowing and airway-related symptoms. At one-year follow-up, the patient remained free from dysphagia, recurrent symptoms of obstructive sleep apnoea, or clinical evidence of tumour recurrence. Repeat sleep assessment demonstrated a marked reduction in the AHI from 30 to 5 events/hour. This case highlights the importance of considering prevertebral lipoma in the differential diagnosis of posterior pharyngeal wall masses. Endoscopic transoral excision can provide a minimally invasive and effective surgical option for appropriately selected patients with medially accessible lesions, with favourable anatomical and functional outcomes.

Keywords: Case report; prevertebral lipoma; retropharyngeal space; posterior pharyngeal wall; dysphagia; obstructive sleep apnoea; endoscopic transoral excision.

Introduction

Lipomas are benign mesenchymal tumours composed of mature adipocytes and are commonly encountered in the subcutaneous tissues. Although they may occur in various anatomical locations, lipomas of the head and neck region account for a relatively small proportion of cases. In particular, lipomas arising within the retropharyngeal and prevertebral spaces are exceptionally uncommon because of the deep anatomical location of these compartments. A systematic review of 79 reported cases of retropharyngeal lipoma identified dysphagia as the most frequent presenting symptom, with computed tomography (CT) serving as

the principal imaging modality and surgical excision being the preferred treatment [1]. Depending on their size, extent, and anatomical location, these lesions may cause progressive compression of the upper aerodigestive tract, resulting in dysphagia, dyspnoea, globus sensation, voice changes, snoring, and obstructive sleep apnoea [2,3].

The retropharyngeal and prevertebral spaces are deep cervical anatomical compartments situated posterior to the pharynx. Lesions arising within these spaces may produce anterior displacement of the posterior pharyngeal wall while preserving the integrity of the overlying mucosa [2,4]. Consequently, they may clinically mimic primary submucosal or oropharyngeal masses, making accurate diagnosis challenging. Cross-sectional imaging, particularly CT and magnetic resonance imaging (MRI), plays an important role in determining the anatomical origin, tissue characteristics, extent, and relationship of the lesion to adjacent structures, thereby facilitating appropriate surgical planning [3,4]. Although several surgical approaches have been described, the choice of technique depends on the size, location, accessibility, and extent of the lesion [1,5].

We report a rare case of a symptomatic upper cervical prevertebral lipoma in an elderly woman, presenting as a posterior pharyngeal wall mass with swallowing difficulties and sleep-related respiratory symptoms. The lesion was successfully removed through an endoscopic transoral approach, highlighting the potential role of this minimally invasive technique in appropriately selected patients.

Case Report

Patient Information

An 80-year-old woman presented to the Otorhinolaryngology outpatient department with a six-month history of persistent throat discomfort and swallowing difficulties. Her primary complaints included a continuous foreign-body sensation in the throat, predominantly solid-food dysphagia, and recurrent episodes of nasal regurgitation. She also reported habitual loud snoring and symptoms suggestive of sleep-disordered breathing. There was no history of previous trauma, pharyngeal surgery, or other relevant local surgical intervention. All patient-identifying information was excluded from this report to maintain confidentiality.

Clinical Findings

Intraoral examination revealed a well-defined swelling involving the posterior pharyngeal wall, measuring approximately 3.2 cm at its most prominent point, with greater prominence on the left side. The overlying mucosa appeared normal and intact, without ulceration or other visible abnormalities. No palpable cervical lymphadenopathy was detected.

Flexible nasopharyngolaryngoscopy demonstrated a smooth, well-circumscribed submucosal prominence along the posterior pharyngeal wall, with no evidence of mucosal involvement. Despite the presence of the lesion, the airway remained adequately patent while the patient was awake.

Clinical Timeline

Time	Clinical event
Approximately 6 months before surgery	Onset of foreign-body sensation, predominantly solid-food dysphagia, recurrent nasal regurgitation, habitual snoring, and symptoms of sleep-disordered breathing.
26 May 2025	Contrast-enhanced CT revealed a 1.5 × 2.7 × 4.0 cm fat-density lesion in the left prevertebral space, extending from the skull base to the inferior margin of C2. Preoperative level 2 sleep study demonstrated an AHI of 30 events/hour.
5 June 2025	Endoscopic transoral excision of the prevertebral mass was performed, with complete en bloc removal of the encapsulated lesion.

Postoperative days 1–7	Enteral feeding through a Ryle's tube was maintained. No airway compromise, bleeding, infection, neurological deficit, or swallowing-related complications were observed.
Postoperative day 7	Exposed pharyngeal sutures were removed. Oral feeding was gradually resumed, progressing from liquids to semisolids and subsequently to solid foods.
9 June 2025	Histopathological report (HP-245/25) confirmed the diagnosis of lipoma.
1-month follow-up	The operative site had healed completely, with significant improvement in dysphagia, nasal regurgitation, foreign-body sensation, and sleep-related symptoms.
1-year follow-up	The patient remained free of dysphagia, clinically significant symptoms of obstructive sleep apnoea, and evidence of local recurrence. Follow-up sleep assessment demonstrated an AHI of 5 events/hour.

Diagnostic Assessment

Contrast-enhanced computed tomography (CT) of the neck, performed on 26 May 2025, demonstrated a well-defined, predominantly fat-attenuation lesion arising within the left prevertebral space. The lesion extended superiorly from the skull base to the inferior margin of C2, with extension towards the midline. Its dimensions were approximately 1.5 cm anteroposteriorly, 2.7 cm transversely, and 4.0 cm craniocaudally. The measured attenuation was approximately −114 Hounsfield units (HU), consistent with adipose tissue. The lesion produced mild anterior displacement of the left longus capitis muscle and resulted in mild-to-moderate narrowing of the nasopharyngeal and oropharyngeal airway. Although the mass was located close to the upper cervical vertebral bodies, there was no evidence of adjacent osseous destruction, erosion, or sclerosis. A preserved fat plane was also identified between the lesion and the left internal carotid artery, indicating no apparent vascular invasion. Considering its characteristic fat attenuation, well-circumscribed margins, anatomical location, and absence of adjacent bone destruction or vascular involvement, the radiological findings were highly suggestive of a prevertebral lipoma.



Figure 1. Sagittal contrast-enhanced CT of the neck demonstrating a well-circumscribed fat-attenuation lesion in the upper prevertebral/retropharyngeal region with anterior displacement of the posterior pharyngeal wall.

Additional Preoperative Assessment and Differential Diagnosis

A preoperative level 2 sleep study demonstrated severe obstructive sleep apnoea (OSA), with an apnoea-hypopnoea index (AHI) of 30 events/hour. Panendoscopic examination under general anaesthesia

confirmed that the posterior pharyngeal wall swelling was covered by intact mucosa and facilitated assessment of the lesion and the feasibility of transoral surgical access. A smooth posterior pharyngeal wall swelling with intact overlying mucosa may be associated with a broad spectrum of benign and malignant conditions. The differential diagnosis includes benign mesenchymal tumours, congenital or developmental cysts, lymphomas, primary neoplasms, and metastatic lesions. Retropharyngeal infection or abscess should also be considered, particularly in patients presenting acutely with associated inflammatory features. Radiological characteristics play a crucial role in differentiating these conditions. A well-circumscribed lesion demonstrating predominantly homogeneous macroscopic fat attenuation, without evidence of local infiltration, strongly favours a lipoma. In contrast, thick or irregular septations, nodular soft-tissue components, heterogeneous non-fatty areas, or infiltration into adjacent structures may indicate an atypical lipomatous tumour or liposarcoma. Such findings warrant further evaluation through advanced imaging, tissue sampling, and histopathological examination, as clinically indicated.

Therapeutic Intervention

Following detailed counselling regarding the available surgical options, including transoral and external cervical approaches, written informed consent was obtained from the patient. The potential risks and complications were explained, including haemorrhage, infection, postoperative pain, dysphagia, aspiration, velopharyngeal dysfunction, nasal regurgitation, airway compromise with possible requirement for tracheostomy, injury to adjacent neurovascular or prevertebral structures, incomplete excision, tumour recurrence, and the possibility of conversion to an external cervical approach if safe transoral access could not be achieved. The patient underwent endoscopic transoral excision under general anaesthesia on 5 June 2025. The airway was secured through orotracheal intubation using a flexometallic reinforced endotracheal tube. Equipment and personnel for emergency tracheostomy were kept available as a precaution; however, tracheostomy was not required. The patient was positioned supine with the neck extended in the Rose position, commonly employed for oropharyngeal surgical procedures. Adequate surgical exposure was obtained using a Boyle-Davis mouth gag with a Doughty tongue blade, supported by a Draffin bipod stand.

Under endoscopic visualisation, a vertical midline incision was made over the point of maximal prominence of the posterior pharyngeal wall. The submucosal pharyngobasilar fascial layer was carefully incised, followed by midline separation of the underlying constrictor muscle fibres. The muscle fibres were gently retracted laterally to expose the deeper surgical plane. Subsequently, the buccopharyngeal fascia was opened, permitting identification of the encapsulated lesion within the prevertebral space.

The mass was progressively mobilised through circumferential dissection using a combination of blunt and sharp techniques. Following adequate separation from the surrounding tissues, its attachment at the base was divided, and the lesion was delivered completely as a single intact specimen. Limited bipolar cauterisation was performed at the base to secure haemostasis.

The pharyngeal mucosal incision was subsequently closed in layers using 4-0 polyglactin 910 (Vicryl) absorbable sutures. The suture ends were trimmed appropriately to minimise postoperative pharyngeal irritation. A Ryle's tube was inserted to provide enteral nutrition during the initial postoperative period. Perioperative antibiotics were administered according to institutional protocol. Benzydamine hydrochloride 0.15% mouthwash was prescribed for local symptomatic relief, with instructions to gargle and expectorate 15 mL as required. The excised specimen was a solitary, soft, yellowish, well-encapsulated mass measuring 4 × 2 × 1 cm. Its craniocaudal dimension corresponded closely with the 4.0 cm measurement identified on preoperative CT. The specimen was subsequently submitted to the Department of Pathology, Madha Medical College and Research Institute, for histopathological evaluation and registered under specimen number HP-245/25.

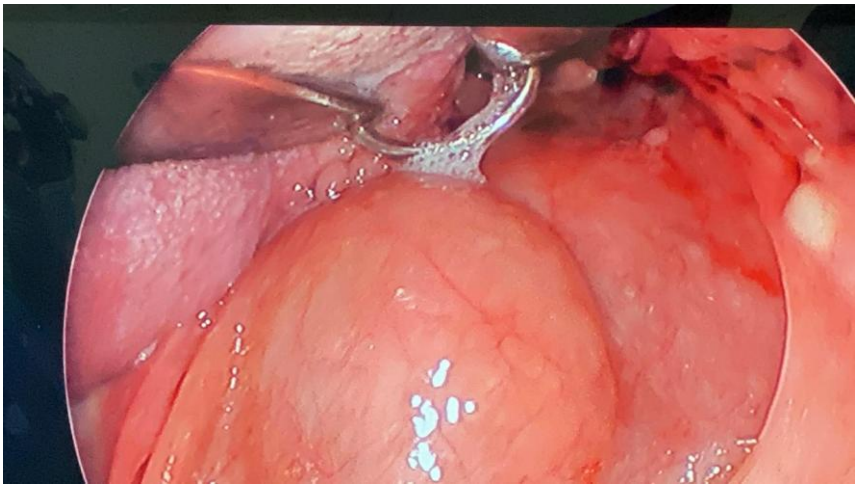


Figure 2**: **Preoperative findings

Discussion

Retropharyngeal and prevertebral lipomas are rare benign lesions that may remain asymptomatic for prolonged periods because of the relatively accommodating nature of the deep cervical spaces. As these tumours gradually enlarge, they can eventually produce compressive effects on the upper aerodigestive tract, resulting in clinically significant symptoms. A systematic review published in 2022 reported dysphagia as the most common presenting manifestation, occurring in 65.2% of patients. Surgical excision was performed in 93.6% of cases, with the transoral approach utilised in 38.4% of surgically managed patients [5]. In the present case, the patient experienced persistent foreign-body sensation, predominantly solid-food dysphagia, recurrent nasal regurgitation, habitual snoring, and a smooth posterior pharyngeal wall swelling. These manifestations were consistent with progressive compression of the pharyngeal structures by the underlying lesion.

Computed tomography (CT) plays a central role in the evaluation of suspected lipomas because mature adipose tissue demonstrates characteristic low attenuation values. Typically, lipomas appear as well-defined, homogeneous lesions with fat attenuation and minimal or absent contrast enhancement [6,7]. Magnetic resonance imaging (MRI) may provide further anatomical detail by demonstrating characteristic fat signal intensity and signal suppression on fat-saturated sequences. It is particularly useful when evaluating larger or atypical lesions and their relationship to adjacent soft tissue and neurovascular structures [8,9]. Accurate assessment of the craniocaudal extent, lateral extension, and relationship to surrounding anatomical structures is essential for selecting an appropriate surgical approach. Although radiological findings may strongly favour a diagnosis of lipoma, histopathological examination remains necessary for definitive confirmation and exclusion of atypical lipomatous or malignant changes [10,11].

Both transoral and transcervical surgical approaches have been described for the treatment of retropharyngeal and prevertebral lipomas [12, 13]. The transoral route offers direct access to medially located lesions in the upper prevertebral compartment while avoiding an external cervical incision and extensive dissection around important neurovascular structures. Previous case reports have demonstrated successful removal of relatively large lesions using this approach, particularly when adequate surgical exposure is achievable and the tumour does not extend significantly into the lateral or inferior cervical compartments [14,15]. Advanced surgical techniques, including robotic-assisted excision and combined endoscopic transoral and transnasal approaches, have also been reported for selected anatomically complex prevertebral and intramuscular lipomas [10,15]. Conversely, an external transcervical approach may be more appropriate for extensive lesions with substantial lateral or inferior extension, uncertain tissue planes, or anticipated difficulties in obtaining adequate airway and vascular control [5,9,11]. Accordingly, surgical planning should be individualised based on tumour dimensions, anatomical extent, radiological

characteristics, airway assessment, and the operating surgeon's expertise.

Another important clinical aspect of retropharyngeal and prevertebral lipomas is their potential association with obstructive sleep apnoea (OSA). Masses occupying the upper airway may reduce pharyngeal calibre and contribute to sleep-related airway obstruction [8,9,14]. A previously published case involving transoral excision demonstrated a reduction in the apnoea-hypopnoea index (AHI) from 26 to 2.2 events/hour following surgical removal [14]. Similarly, in the present case, the AHI decreased from 30 events/hour preoperatively to 5 events/hour at follow-up, indicating substantial improvement in sleep-disordered breathing. This improvement suggests that mechanical airway compression by the lipoma may have contributed to the patient's OSA. However, in the absence of comprehensive postoperative polysomnographic parameters and information regarding other influencing factors, the improvement cannot be attributed exclusively to tumour excision. Therefore, the reduction in OSA severity should be regarded as an additional functional benefit of surgery rather than its primary indication.

The present case is noteworthy because the clinical examination revealed a posterior pharyngeal wall swelling that could initially be mistaken for a primary oropharyngeal submucosal lesion. However, cross-sectional imaging established its origin within the upper prevertebral compartment, highlighting the importance of correlating clinical examination with radiological findings. Despite its relatively limited dimensions, the lesion produced considerable swallowing difficulties and sleep-related respiratory symptoms through local mass effect. Complete en bloc excision using an endoscopic transoral approach, subsequent histopathological confirmation, an uneventful postoperative recovery, and favourable one-year clinical outcomes support the effectiveness of this approach in appropriately selected patients with medially accessible upper prevertebral lipomas.

The limitations of this report include its single-patient design, the absence of postoperative cross-sectional imaging to document radiological clearance, and the limited availability of paired sleep study parameters beyond the preoperative and postoperative AHI measurements. Nevertheless, the case contributes to the limited literature on symptomatic upper prevertebral lipomas and demonstrates the potential functional benefits of minimally invasive transoral excision.

Summary

Retropharyngeal and prevertebral lipomas are rare lesions that may cause significant pharyngeal and airway compression as they enlarge. This case highlights the importance of CT imaging in identifying the lesion's anatomical origin and guiding surgical planning. Complete endoscopic transoral excision resulted in histopathological confirmation, significant improvement in swallowing and sleep-related symptoms, and no clinical recurrence at one-year follow-up. The reduction in AHI from 30 to 5 events/hour further demonstrates the potential functional benefits of tumour removal. Endoscopic transoral excision is an effective minimally invasive option for appropriately selected patients with upper prevertebral lipomas.

Conclusion

A prevertebral or retropharyngeal lipoma should be included in the differential diagnosis of a smooth posterior pharyngeal wall bulge associated with slowly progressive dysphagia or regurgitation. Complete endoscopic evaluation and cross-sectional imaging clarify the lesion’s origin and extent. In selected, medially accessible lesions, transoral excision can provide definitive treatment while avoiding an external cervical approach.

Declaration

Consent for publication: Written informed consent was obtained from the patient before treatment and for publication of this anonymized case report and accompanying de-identified clinical images.

Ethics approval: Institutional ethics committee approval was not required for a single anonymized case report under local institutional policy.

Conflict of interest: The authors declare that they have no competing interests.

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Data availability: The de-identified data supporting this report are available from the corresponding author on reasonable request, subject to patient confidentiality and institutional requirements.

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