

Review Article

Suprahyoid pharyngotomy – a rare, but a simple approach in head and neck surgery

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Abstract

The surgical transcervical approach creates a corridor to oropharynx and hypopharynx, which provides excellent exposure for removal of different lesions at these sites. The suprahyoid pharyngotomy technique can be used in situations similar to the lateral pharyngotomy, like the management of benign and malignant tumors of the base of the tongue, hypopharynx, and posterior pharyngeal wall, and excision of lingual thyroid.

Here, we have discussed in detail about two patients for which this suprahyoid pharyngotomy approach was used – one, for a case of laryngeal schwannoma and another, for a case of lingual thyroglossal duct cyst. We have also reviewed many articles related to suprahyoid pharyngotomy and came across 36 cases for which this approach was successfully used.

Keywords: suprahyoid pharyngotomy, lingual thyroglossal cyst, laryngeal schwannoma, pharyngocutaneous fistula, transcervical

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Introduction

An unusual approach, the suprahyoid pharyngotomy, which was first described by an anatomist, Vidal de Cassis in 1826, as an incision of anterior wall of pharynx being proper surgical approach to lesions in this area, have been modified by several surgeons down through the years¹. By identifying and following the hyoepiglottic ligament, precise entry into the pharynx is accomplished easily and rapidly at the median glossoepiglottic fold². It not only provide a safe and efficient approach to the oropharynx and hypopharynx, but also provides an excellent cure rate, normal speech, good cosmesis, and swallowing without clinical evidence of aspiration. Lateral and/or median translingual pharyngotomy can permit effective surgical therapy, but however, these surgical techniques require greater effort and violate uninvolved tissues, such as the lip, mandible and floor of the mouth. Though lateral pharyngotomy is more popular based on the idea that it provides excellent exposure, the suprahyoid approach also provides excellent exposure through a more direct route with less work involved¹.

Materials and methods

In our institution, this suprahyoid pharyngotomy approach was used for two patients – for a case of laryngeal schwannoma and a case of lingual thyroglossal duct cyst, both of which are discussed in detail below. We have also reviewed many articles related to suprahyoid pharyngotomy and came across 36 cases for which this approach was successfully used.

Case 1

A 20-year-old female patient presented at the ENT department of Hassan Institute of Medical Sciences complaining of difficulty in swallowing, dyspnoea on exertion and hoarseness of voice for 6 months, snoring during sleep for 1 months. Further medical history was unremarkable the physical examination was normal. On indirect laryngoscopy a 3x4cm well defined smooth oval shaped cystic lesion was present within the left side of vallecula displacing epiglottis to the right. Computed tomography (CT) scans showed 3.5x3.9x3.6cm solid cystic lesion noted epicentered at left paraglottic space extending cranially till the base of tongue displacing the epiglottis, aryepiglottic fold towards the right side, completely covering laryngeal inlet, vocal cords not visualised. Solid tissue shows post contrast enhancement.

Preliminary tracheostomy was carried out under local anaesthesia, and the patient was anaesthetized via the tracheostomy site followed by direct laryngoscopy. On direct laryngoscopy smooth mass was seen in the pharynx completely occupying the pharynx extending up to the vallecular area which pushed the epiglottis to the right side completely. On displacing the tumour to one side, part of the right vocal cord was seen. Biopsy was taken and was subjected to histopathological examination. On histopathological examination macroscopically, specimen consisted of irregular grey-white soft tissue measuring 4.2x4x3cms. The cut section showed grey-white to grey-brown areas. Microscopically showed tumour with cellular and hypocellular areas composed of elongated spindle cells with wavy nuclei arranged in palisaded pattern (Antoni A) and scattered pattern (Antoni B). Areas of cystic change, thrombosed blood vessels admixed with chronic inflammatory cells were seen.

Subsequently, patient underwent suprahyoid anterior pharyngotomy with schwannoma excision under general anaesthesia. Post-operative recovery was smooth. The patient had Ryles tube feeding for 8 days

and tracheostomy tube for 5 days. Laryngeal oedema persisted for 4 weeks. On laryngoscope examination function of both vocal cords were normal. There is no recurrence noticed on follow up.

Case 2

A 40-year-old male presented with history of throat pain and difficulty in breathing for 2 years. Throat pain was insidious in onset, gradually progressive, throbbing in nature, not relieved on medication. He also complains of difficulty in breathing which aggravated at night in supine position. Patient is a chronic smoker with no other co-morbidities. Patient gives a history of similar complaints for which he was diagnosed with vallecular cyst and underwent excision for the same 2 years back. On indirect laryngoscope examination a smooth swelling approximately 2x2cm over the base of tongue was seen. The swelling was non tender, cystic in consistency and did not bleed on touch. Telescopic Video laryngoscope confirmed the same. CECT neck revealed well- defined cystic lesion with minimally enhancing rim noted at the suprahyoid region adjacent to base of tongue s/o suprahyoid thyroglossal duct cyst. Patient underwent planned tracheostomy with suprahyoid pharyngotomy with cyst excision. Postoperative period was uneventful. Patient was discharged 13 days after the surgery in good health. Patient had no breathing difficulty. Patient could swallow liquids and solids comfortably. The histopathological examination confirmed the diagnosis to be thyroglossal cyst.

Review of literature and results

Indication for which suprahyoid pharyngotomy approach was used					Primary closure	complications	Recurrence
Lingual thyroid	Base of tongue malignancy	Laryngeal venous malformation	Laryngeal schwannoma	Lingual thyroglossal duct cyst	Done for all	3 cases of pharyngocutaneous fistula	None
2	31	1	1	1			

Table 1: summarizing results of literatures reviewed for suprahyoid pharyngotomy

The literatures reviewed for suprahyoid pharyngotomy revealed that this approach was used mostly for base of tongue malignancy. It was also used for other conditions like lingual thyroid, laryngeal venous malformation, lingual thyroglossal duct cyst and laryngeal schwannoma. Primary closure was possible in all the cases studied. 3 cases of pharyngocutaneous fistula were observed for base of tongue malignancy cases, all of which was cured conservatively. Recurrence was not observed in any of the cases. This approach has been found to be simple and effective without complications in case of benign lesions of oropharynx and hypopharynx. In our institution, we used this approach successfully for 2 cases without any complications or recurrence - laryngeal schwannoma and a case of lingual thyroglossal duct cyst.

Discussion

Traditionally, surgical approaches to oropharynx (especially base of tongue) and hypopharynx include segmental resection of mandible with partial glossectomy, lateral pharyngotomy and mandibulotomy. These procedures may however produce cosmetic deformities and interfere with deglutition resulting in aspiration.

In 1895, Jeremitsch became the first surgeon to use the suprahyoid approach, based on his observation of a patient who had attempted suicide in which the cut above the hyoid bone, was a true suprahyoid pharyngotomy^{3,4}. With this approach, Jeremitsch noted that bleeding was minimal, no nerves were severed and the patient healed favourably. The technique of suprahyoid pharyngotomy was described by Barbosa, of Brazil, in his textbook⁵. In 1907, good success with this approach have been reported by Hoffman⁶.

The indications of suprahyoid pharyngotomy include early-stage cancer of the base of the tongue (T1/T2) which are limited to the base of the tongue, posterior to the circumvallate papillae and is usually combined with neck dissection, excision of cancer of the posterior wall of the oropharynx or hypopharynx, excision of a lingual thyroid, and may also be used without neck dissection for benign lesions or low-grade cancers of salivary gland origin¹.

Involvement of lateral pharyngeal wall or tonsil may require lateral pharyngotomy for adequate exposure which is another cervical approach for oropharynx. However, the need for retraction of superior laryngeal nerve and vessels, hypoglossal nerve and lingual artery, and dissection of pharyngeal constrictors to gain entry into oropharynx is always associated with a higher risk of inadvertent injury to these structures. Moreover, neck dissection of Level-IIA lies just above the pharyngotomy scar, making it more prone for fistula formation^{3,7}.

The contraindications for using suprahyoid approach includes cancer of the vallecula that involves the lingual surface of the epiglottis as excision of epiglottis can lead to delayed deglutition and chronic aspiration postoperatively, cancer of the base of the tongue that extensively involves the tonsil or lateral pharyngeal wall, cancer involving the tongue anterior to the circumvallate papillae and for patients with decreased pulmonary function who would not tolerate aspiration in the immediate postoperative period¹.

The complications of the procedure include wound infection, pharyngocutaneous fistula and aspiration. In a case series described by Weber et al, small pharyngocutaneous fistula was observed in 3 patients, which healed within 10 days of conservative management⁸. In our case series, involving lesions from base of tongue and larynx (aryepiglottic fold), no patients had pharyngocutaneous fistula or any other complications.

Conclusion

Suprahyoid pharyngotomy is concluded as a useful surgical technique designed to enable direct visualization and excision of carefully selected benign and malignant tumours arising in the base of the tongue and the posterior pharyngeal wall and in some benign masses of larynx. It is a simple and precise approach to the oropharynx, hypopharynx and larynx, and provide the shortest distance to the pathological process. Selection of appropriate patients with adequate functional and pulmonary capacity, as well as accurate preoperative evaluation of tumour extent, will help to enable a subset of such patients

to be candidates for this technique. As there are no important vital structures in this approach area, it is a novel better approach for base of tongue and some of the laryngeal tumours, especially benign. It also has an added advantage of possible conversion to trans-hyoid pharyngotomy by removal of body of hyoid bone if more exposure is required.

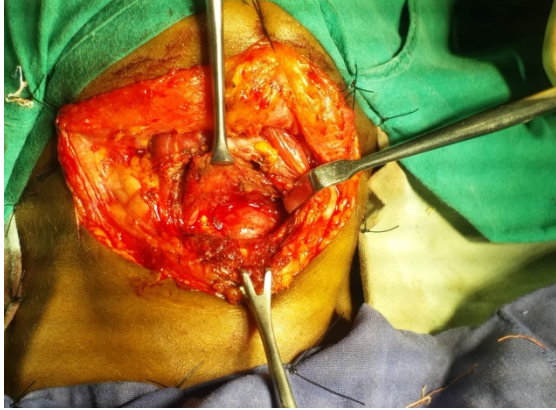


Figure 1: Tumour seen after dissection of suprahyoid muscles

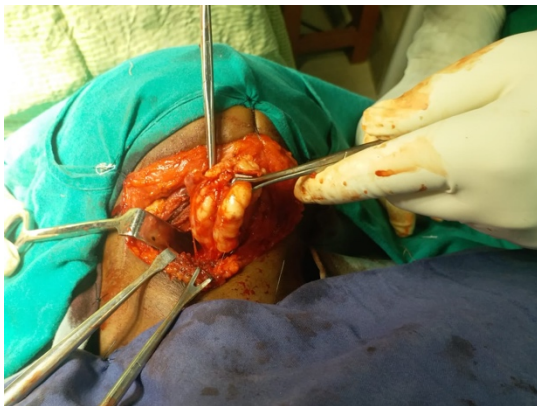


Figure 2: Delineating the tumour



Figure 3: wound closure and temporary tracheostomy



Figure 4: post-surgical scar

REFERENCES

1. Myers, Eugene N. Operative Otolaryngology Head and Neck Surgery, 3rd ed. Elsevier Ltd. 2018; 270-278.
2. Zeitels SM, Vaughan CW, Tommey JM. A precision technique for suprahyoid pharyngotomy. *Laryngoscope*. 1991 May; 101(5):565-6. <https://doi.org/10.1288/00005537-199105000-00020>. PMID:2030637
3. Majumdar KS, Sherstha DG, Roy AG, Das G, Jana U. Suprahyoid pharyngotomy for tongue base tumors reincarnated. *Int J Surg Sci*. 2018; 2(1): 17-20.
4. Jeremitsch R. PharyngotomiaSuprahyoidea. *Arch f KlinChir*. 1895; 49:793-802.
5. Barbosa JF. Surgical Treatment of Head and Neck Tumours. Grune & Stratton, New York, 1974, 63-80.
6. Hofmann M. Pharyngotomissuprahyoideatraversa. *Arch f KlinChir*. 1907; 83:308-332.
7. Zeitels SM, Vaughan CW, Ruh S. Suprahyoid Pharyngotomy for Oropharynx Cancer Including the Tongue Base. *Arch Otolaryngol Head Neck Surg*. 1991; 117:757-760. <https://doi.org/10.1001/archotol.1991.01870190069014>. PMID:1863441
8. Weber PC, Johnson JT, Myers EN. The suprahyoid approach for squamous of the base of the tongue. *Laryngoscope*. 1992; 102:637-640. <https://doi.org/10.1288/00005537-199206000-00008>. PMID:1602912