

Suprahyoid Pharyngotomy - A Safe and Complete Approach for Management of Oropharyngeal, Hypopharyngeal and Supraglottic Benign Lesions

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Abstract

Introduction: Oro-hypopharyngeal and supraglottic lesions constitute large bulk of diseases producing dysphasia, Obstructive Sleep Apnea (OSA) and respiratory distress. The diverse lesion in this region constitutes lingual tonsils, lingual thyroid, dermoid, vascular malformations, vallecular cyst, laryngocoele and pharyngocoele. Majority of them are benign and is managed trans orally. As this approach has multiple limitations of positioning, exposure and field limitations, many of the surgical management become incomplete tending to recurrence. The oro-hypopharyngeal and supraglottic edema leads to severe morbidity in post-operative period. Bleeding manifestations are also difficult to control. The senior author manages the situation through a suprahyoid pharyngotomy approach. We describe five cases managed by this approach in pediatric and adult population with complete surgical removal and limited morbidity.

Methods and Materials: Five patients, who presented to our department with oro-hypopharyngeal/laryngeal lesions, are included in this report.

Keywords: Suprahyoid Pharyngotomy; Oropharyngeal; Hypopharyngeal

Case (1) was a 2.7 kg baby, in second day of life presented with stridor. She was intubated & ventilated. Aryepiglottoplasty and tracheostomy (Figure 1) was done for hypoplastic larynx. She couldn't be subsequently decanulated. At 3 months of age laryngoscopy revealed a hypopharyngeal cyst for which marsupialization was done (Figure 2). At 2 years of age attempts of decanulation failed. She had recurrence of cyst by 3 years. Due to our previous experiences of failure/recurrences with marsupialization, we did a suprahyoid pharyngotomy exteriorisation of larynx and excision of cyst. (Figure 3) Subsequently she was decanulated at the age of 4 ½ years, under general anaesthesia. She was kept under sedation

and ICU monitoring to counter dependence of the tube. Laryngoscopy was normal at one year follow up.

Case 2 was a 26-year-old woman with history of swelling of right side of the neck since birth. She had undergone surgery for a laryngeal lesion with stridor, at the age of years. The swelling had reappeared at the age of 16 years. The patient had been asymptomatic until the age of 23, when the swelling had started to increase in size and the patient had experienced dyspnoea on exertion. She underwent 10 sclerosant injection sessions from another center on a diagnosis of inoperable laryngeal hemangioma. There was only a

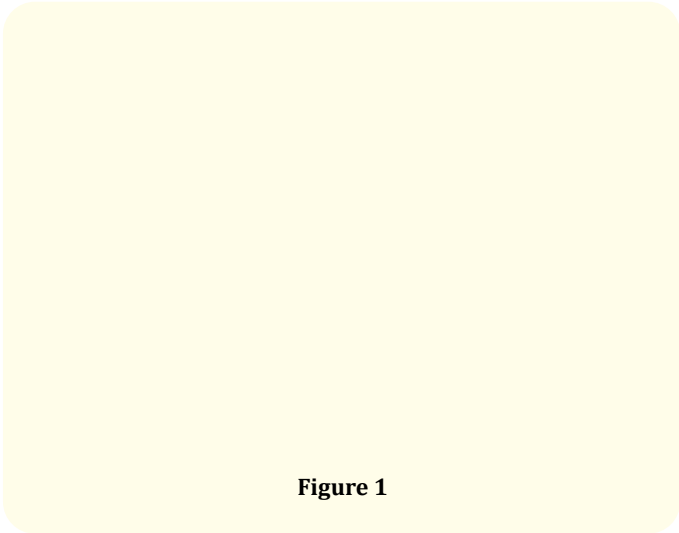


Figure 1

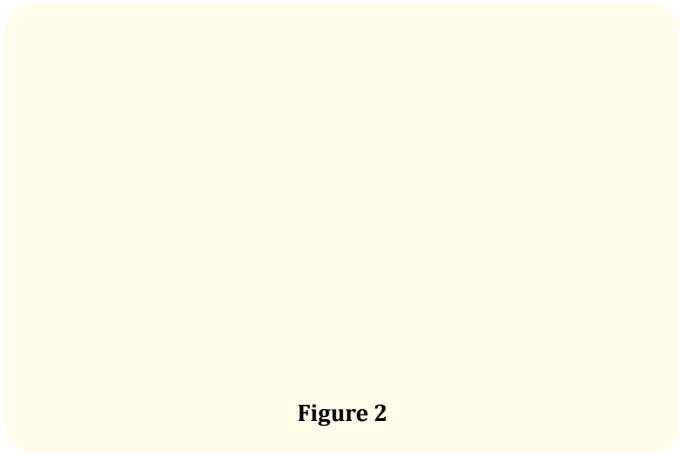


Figure 2

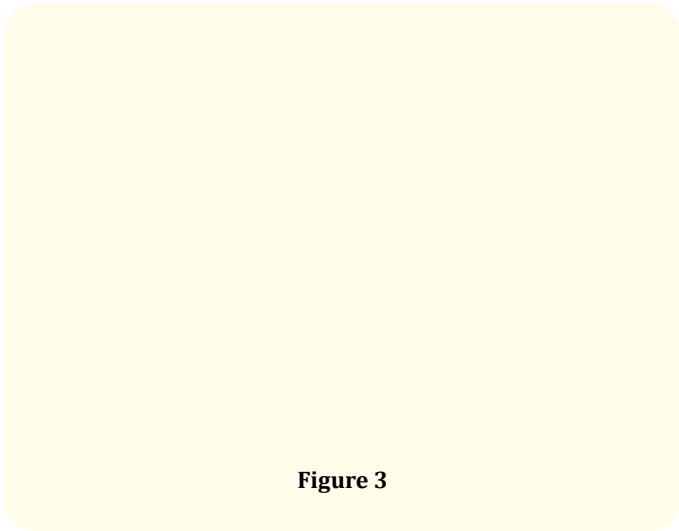


Figure 3

slight regression of the lesion with this treatment and she had been subjected to tracheostomy for air-way maintenance. The patient presented to us six months after sclerotherapy, with a swelling in the neck and an unsightly tracheostomy. On examination there was a swelling in the right side of the neck, which increased on deep expiration and phonation. Flexible laryngoscopy revealed a pinkish, irregular mass involving the right arytenoid and aryepiglottic fold obliterating the entire view of the laryngeal inlet, with sluggish movement of the right vocal fold. T2-weighted, fat-suppressed MRI showed a well-defined, vascular mass involving the right supra-glottic region, extending both medial and lateral to the thyroid lamina and encroaching into the parapharyngeal space. The tumour was explored via a transcervical suprahyoid pharyngotomy approach. Extensive fibrosis was encountered, probably due to the previous sclerotherapy. On dissection, there was a spongy, vascular mass lying over the lamina of the thyroid cartilage, invading the thyrohyoid membrane and encroaching into the paralaryngeal spaces (Figure 4). The mass was dissected out and a rent in the pyriform fossa was closed primarily. Intra-operative direct laryngoscopy confirmed complete removal of the intra-laryngeal mass. Histopathological examination revealed a cavernous lymphangioma of the larynx, showing irregular, dilated channels with widely spaced endothelial lining. The patient was decanulated and tracheotomy was closed. Pre-operative and post-operative contrast scans showed a satisfactory near-complete resection (Figure 5 a, b). A 10-year follow-up showed a minimal right pyriform fossa recurrence. There is no compromise of airway or change in voice presently [1].

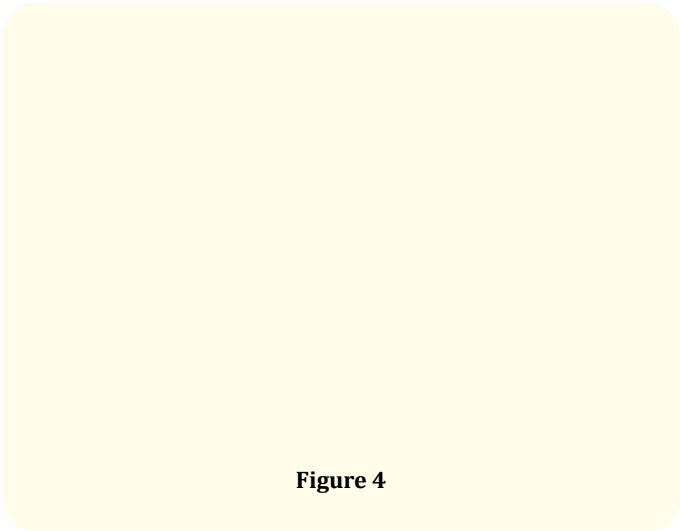
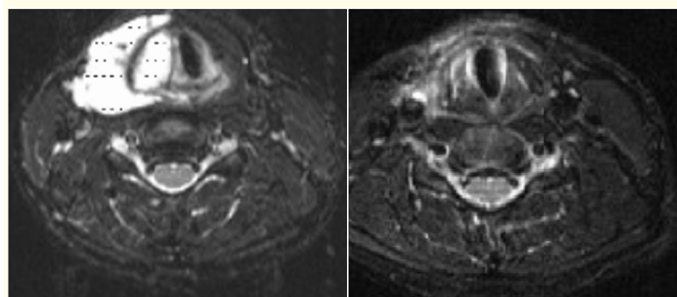


Figure 4



(a) (b)

Figure 5

Our third case was a 22-years-old man who presented with a three-year history of progressive swelling over the left side of neck with exertional dyspnoea, snoring and hoarseness of voice. On examination, a soft compressible mass on upper part of left side of neck, anterior to sternocleidomastoid at the level of ala of thyroid cartilage was found, probably a hemangioma. An MRI showed the hemangioma involving the epiglottis and vallecula, aryepiglottic folds, both pyriform sinuses, extending to the extra laryngeal soft tissues on the left side through a breach in the thyrohyoid membrane. Through a horizontal transcervical incision at the level of the hyoid bone, dissection was carried out through the suprahyoid plane to reach the vallecula. In the neck, a bleeding, hemangiomatous, 3 x 3-cm mass was found. It had breached the thyrohyoid membrane to reach the left thyroid ala. STIR sequence MRI scans obtained 6 months after surgery show the normal epiglottis and vallecula (Figure 7) [3].



Figure 6

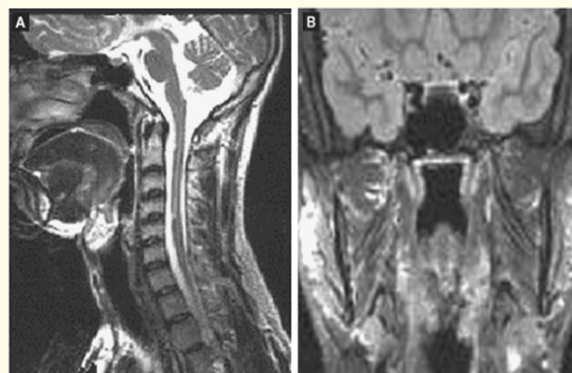


Figure 7

We had two patients, a 4-year-old child and a 50-year-old man, both presenting with dysphagia and clinically diagnosed to have a vallecular cyst (Figure 8 a, b). Both were managed by transcervical suprahyoid pharyngotomy approach as we considered it as the least invasive but most fruitful and complete approach. Both patients had uneventful recovery and were discharged on the second post operative day [2].

(a) (b)

Figure 8

Discussion

In 1895, Jeremitsch became the first surgeon to use the suprahyoid approach [4]. Suprahyoid pharyngotomy offers very good exposure to the base of tongue and vallecula thus leading to complete tumor-margin-free resections with minimal postoperative morbidity. Alternative approaches to these sites include transoral

approach, segmental resection of the mandible with partial glossectomy [5] lateral pharyngotomy [6] and mandibulotomy [7,8]. The biggest problem with transoral excision is that most often excision is incomplete and marsupialization, for cystic lesions, is the only procedure possible. This leads to recurrence of the cyst and incompleteness of solid mass excisions in many cases. This is applicable to oro/hypopharyngoscopic trans-oral excisions or pull-through excisions with or without modern gadgets like LASER, radiofrequency ablation or coblation equipment.

General anesthesia is induced and a tracheostomy is performed if airway compromise is expected in post operative period. Before making the skin incision, a direct laryngoscopy may be performed (or repeated) to confirm the extent and location of the lesion. Skin crease incision is outlined at the level of hyoid bone and the flap is elevated. The suprahyoid muscles are sharply dissected from the hyoid bone. Care must be taken to avoid injury to the hypoglossal nerve and lingual artery laterally around the greater cornu of the hyoid bone. On Superior retraction of the separated suprahyoid tongue musculature the hyoepiglottic ligament is identified. The hyoid bone is grasped with a tenaculum. An incision through the mucosa just superior to the tip of the epiglottis (anywhere in the anterior mucosal wall of the vallecula) provides entry into the pharynx. The oropharyngeal lesions can be addressed through this route and tongue base lesions can be excised completely with a sleeve of surrounding muscles. In case of laryngeal, especially supraglottic, and hypopharyngeal lesions, pulling the epiglottis outwards leads to complete exteriorization of those lesions enabling the surgeon to dissect them out completely. The transverse pharyngotomy incision can be extended up to the tip of the hyoid bone on either side for wide exposure. Thus, lesions can be removed in toto and a multilayer primary closure of mucosa and muscle is done.

All our five cases were followed up and were free of recurrence. This approach also has its application in reducing bulky tongue bases without any immediate or late post-operative swallowing or breathing morbidity in OSAS patients. In such surgeries the muscle bulk of the base of the tongue can be respected as a midline sleeve and tongue mucosa, muscle mass and neck can be obliterated and closed with very limited morbidity compared to Laser or coblation and channeling of tongue base that leads to prolonged post operative pain and swallowing problems.

Conclusion

Suprahyoid pharyngotomy technique provides excellent exposure for tumor clearance with little if any disturbance in function and excellent cosmesis. However, accurate assessment of the tumor in preoperative planning and meticulous attention to resection details intraoperatively are the "secrets for success" [9,10].

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