Suprathyoid pharyngotomy for tongue base tumors reincarnated

Kinjal Shankar Majumdar, Devjani Ghosh Sherstha, Aditya Ghosh Roy, Goutam Das and Utpal Jana

Abstract
The surgical approach to the base of tongue and posterior wall of oropharynx and hypopharynx is controversial. Here we present our experience with ten such patients operated through suprathyoid pharyngotomy approach with the aim to study advantages and disadvantages of this approach along with review of literature. Ten patients with benign tumor and T1, T2 carcinoma of tongue base underwent surgical excision via suprathyoid pharyngotomy approach. Fifty percent of these tumors were histologically proven to be myoepithelioma followed by schwannoma. Dysphagia was the most worrisome problem post-operatively. Suprathyoid pharyngotomy is an old and time-tested approach. It provides an excellent and easier approach for benign tumor & early (T1, T2) cancer of the base of tongue for carefully selected patients.

Keywords: Suprathyoid pharyngotomy, pharyngotomy, tongue base tumors, surgical approaches to oropharynx

1. Introduction
The surgical approach to the base of tongue and posterior wall of oropharynx and hypopharynx is controversial. Carefully selected benign and malignant tumors arising in these anatomic sites may be surgically resected and reconstructed through a suprathyoid pharyngotomy approach with excellent opportunity for tumor clearance, very little morbidity and very good cure rates. Although in the era of laser assisted surgery and transoral robotic surgery for base of tongue tumors, we found this approach surgically easier to perform with very less post-operative complications and favourable outcomes, specially in smaller institutions devoid of such advanced technology.

2. Materials and methods
The study was carried out in the Department of Otolaryngology and Head Neck Surgery in a tertiary level healthcare centre comprising ten patients with base of tongue tumors successfully managed surgically over a period of four years from October, 2010 to August, 2014. Institutional ethics committee clearance and informed consent from all patients were obtained. All the patients, those were included in this study, were radiologically and pathologically proven benign and early (T1, T2) cancers limited to the tongue base. Any patient with tumors involving the anterior two-third of tongue, vallecula with lingual surface of epiglottis, lateral pharyngeal wall and tonsil, and those patients who were unable to tolerate general anaesthesia due to poor cardiopulmonary reserve were excluded from this study. Pre-operatively every patient underwent clinical evaluation which included examination of the primary by flexible fiberoptic laryngoscopy and manual palpation, clinical examination of neck, and both contrast enhanced computed tomography (CT) and magnetic resonance imaging (MRI) from base of skull to thorax. All the patients underwent elective tracheostomy for airway management during intra-operative and immediate post-operative period which were routinely removed on the seventh post-operative day, except in one patient with T2 squamous cell carcinoma (SCC) who was decannulated after 14 days [Figure-1].
Excellent control over surgical margins and adequate surgical exposure were achieved in all cases. Primary closure of the defect were possible in all patients except one case of T2 SCC, where the defect was left to heal by secondary intention. All the patients were allowed to start on oral liquids after check gastrograffin swallow on 14th post-operative day. Evaluation of the merits and demerits of suprathyroid pharyngotomy as an approach to the base of tongue was then done based on complete tumor control, adequate exposure, preservation of physiology, minimization of cosmetic deformity, post-operative complications and simplicity of the technique. Post-operatively, all the patients were followed up every month during first six months using flexible fibreoptic laryngoscopy and clinical neck examination. Three cases of malignancy were, thereafter, followed up every three months till first 24 months, and every six months thereafter following the same protocol. Whole body positron emission tomography (PET) was performed in both cases of SCC three months after completion of adjuvant radiation, and then every six months.

Data was analysed using SPSS Version 20, which were mainly descriptive in nature.

3. Results
The most common age group of presentation, in our study, was 50-60 years (4 patients; 40%) [Table-1], with malignant cases presenting in comparatively more advanced age than benign ones. Male preponderance was seen with 6 patients (60%).

Among various histological entities that we came across in our study, myoepithelioma was the commonest (4 patients; 40%), followed by schwannoma (3 patients; 30%), squamous cell carcinoma (2 patients; 20%) and low grade mucoepidermoid carcinoma (1 patient; 10%; abbreviated in Table-3 as MEC) [Table-3]. Negative tumor margins were achieved in all cases. Two patients with SCC also underwent bilateral modified radical neck dissection through the same apron flap that was raised intra-operatively. Both of them showed extra-capsular spread and received adjuvant chemoradiation.

In the post-operative period, dysphagia was the most common complication noted (7 patients, 70%; four patients with benign tumor and three with carcinoma). Bleeding was encountered in two patients only (20%) which were managed conservatively [Table-4]. No instance of neurovascular injury, pharyngocutaneous fistula or aspiration was noted in any of the patients. All the patients could be started on oral liquid diet 14th post-operative day onwards. All of them were satisfied with nature of the scar in their neck.
Correct pre-operative staging is essential to determine whether suprathyroid pharyngotomy is the best surgical approach for the tongue base tumor. Magnetic resonance imaging (MRI) has proved to be the most sensitive modality for evaluating tumors of the base of tongue because of the excellent soft tissue definition that it provides. Gross invasion of the pre-epiglottic space and the depth of infiltration into the tongue base may be determined by obtaining sagittal MRI cuts of the tongue base-larynx complex. The high signal intensity of pre-epiglottic fat can usually be distinguished from the dense fibres of hyoepiglottic ligament, tongue base musculature, lingual lymphoid tissue and cancer [8].

Weber et al described in a case series of 13 patients where suprathyroid pharyngotomy was used in all cases with T1, T2 SCC of the base of the tongue. Patients with lymph node metastases underwent radical neck dissection, and many patients received adjuvant radiation. Patients in whom extracapsular spread was demonstrated received adjuvant chemotherapy in addition to radiation. All the patients were decannulated before discharge within 3 weeks after surgery. All patients were able to take regular diet 2 months post-operatively. Long term follow up revealed stable weight after an initial weight loss. No patient required a completion laryngectomy for chronic aspiration. Speech was found to be well understood in all of the patients. All these patients have a minimum 2-year follow up with no evidence of local recurrence [9]. Another paper by Zeitels et al showed strikingly similar results when this technique was used primarily for limited lesions of the tongue base [8]. Post-operative follow up for 3 cases of malignancy in this series was done according to the National Comprehensive Cancer Network (NCCN) guidelines version 1.2015 for head and neck cancers. No incidence of local recurrence is noted yet in the present study. One patient died due to development of distant metastases to lungs and bones 2 years after surgery.

Regarding complications, Weber et al found in their case series, small pharyngocutaneous fistula in 3 of their patients, all of which healed within 10 days with conservative management. Pneumonia was found in one patient due to aspiration, which also resolved with antibiotics [9]. In the present series, no neurovascular injury, pharyngocutaneous fistula or aspiration was found in any of the patients post-operatively. The most common worrisome symptom was dysphagia, found in 7 patients (70%) post-operatively which resolved over a period of time varying from 20 days to 3 months. Bleeding was encountered in 2 patients (20%) only, and was managed conservatively. None of the patients was found to be dependent on tracheostomy or feeding tube for a prolonged period.

5. Conclusion

Although suprathyroid pharyngotomy is an age old surgical approach in the modern era of minimally invasive surgery and largely superseded by transoral laser or robotic surgery in advanced centres, we found this approach to be extremely useful, particularly in institutions devoid of laser and robotic surgery facilities. Surgeons who are not trained with these modalities, can address the tumors of the base of tongue through suprathyroid pharyngotomy as it is surgically less demanding, easier to perform and with favourable post-operative outcome. Meticulous pre-operative evaluation and planning are the keystones to success when used for surgical excision of benign & early (T1, T2) cancer of the base of tongue.
6. Acknowledgement
The authors thank Prof. Tapan Kanti Hazra, Head, Department of Otorhinolaryngology and Head Neck Surgery, Nilratan Sircar Medical College and Hospital for his valuable guidance and relentless support.

7. Conflicts of interest
The authors declare no conflict of interest.

8. References