

Endoscopic Assisted Trans-Oral Approach to Parapharyngeal Space Tumours

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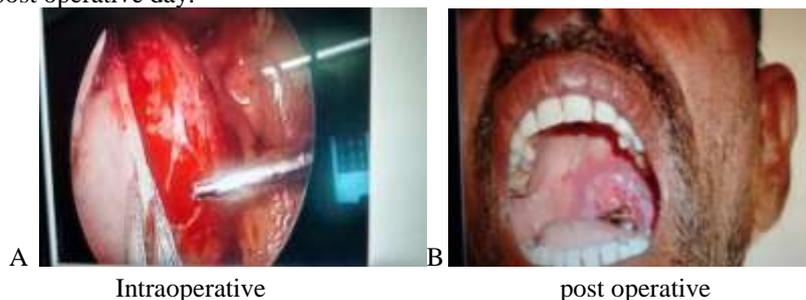
Abstract: Parapharyngeal tumours are rare tumours comprising about 1 % of all head and neck tumours. Different forms of tumour with difference in histology, extension and location may be present. Importance of these tumours lies mainly in 2 aspects A) difficulty in early diagnosis B) extreme complications while performing surgery in parapharyngeal space. Surgical resection by different approaches remain best treatment option. We describe the benefits of endoscopic assisted trans-oral approach for these tumours.

I. Introduction

Majority of the parapharyngeal tumours are benign (70-80%) while 20-30% are malignant^{1,2}. They can arise from any structure contained within the parapharyngeal space. The parapharyngeal space is a space lateral to the upper pharynx shaped like an inverted pyramid, extending from the skull base superiorly to the greater cornu of the hyoid bone inferiorly. The parapharyngeal space consists of two compartments. The anteromedial or prestyloid compartment containing the retromandibular portion of the deep lobe of the parotid gland, adipose tissue, and lymph nodes associated with the parotid gland, and a posterolateral or poststyloid compartment containing the internal carotid artery, the internal jugular vein, IX– XII cranial nerves, the sympathetic chain, and lymph nodes^{1,2}. Most parapharyngeal space tumours are of salivary (prestyloid compartment) or neurogenic origin (poststyloid compartment), although metastatic lesions, lymphoreticular lesions, and a variety of uncommon, unusual lesions may develop in this location³. Surgery is the main therapy option for tumors of the parapharyngeal space. Neoplasms of the parapharyngeal space are often present as asymptomatic lesions that are discovered on routine physical examination or incidentally on imaging performed for other purpose. These tumours must grow atleast 2.5 -3.0 cm before becoming clinically detectable⁴.

Medial extension displaces the oropharyngeal structures resulting in foreign body sensation, airway obstruction, change in voice, cervical mass and gradually facial asymmetry. Pain along with jaw lock or paralysis of cranial nerves would suggest malignancy⁵. FNAC is very specific in histological diagnosis. Open biopsy is not advised due to risk of bleeding, opening of capsule, relapse and seeding into neighbouring structures. A CT SCAN with / without contrast and MRI with gadolinium enhancement are often used together to provide complementary information that allow surgeon to delineate the size, precise location and likely cause of tumour⁶. Numerous surgical approaches to parapharyngeal space discussed in literature reflect the inherent difficulty of accessing the anatomically complex region. The most commonly used approaches include following- trans-cervical approach, trans-parotid approach, transcervicaltransparotid approach, transoral approach, combined trans-oral external approach.

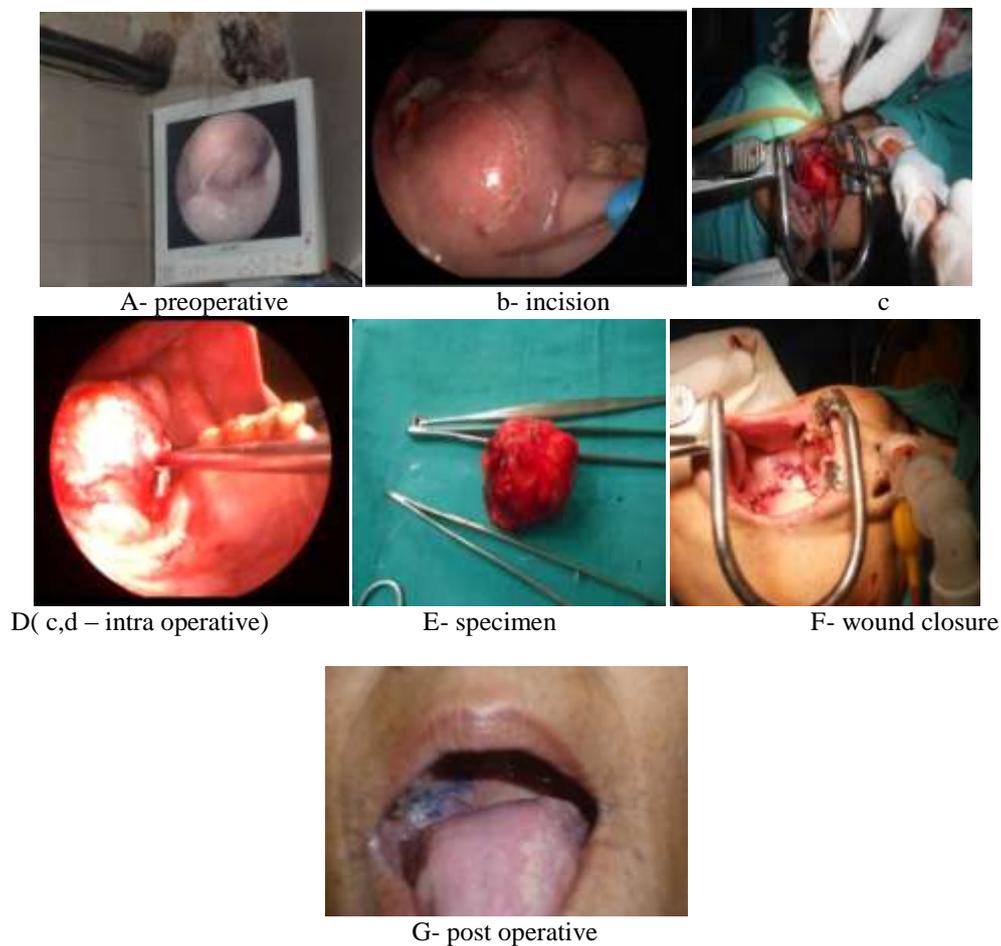
Case 1: 45 years old male came with complaints of difficulty in swallowing and swelling in throat since 3 months. On examination, a smooth globular bulge is seen on left side of oropharynx, pushing the tonsil medially. Uvula is deviated to right. FNAC showed pleomorphic adenoma. Excision of tumour is done transorally. Post operatively patient was managed by i.v antibiotics, steroids and ryles tube feeding. He was discharged on 7th post operative day.



Case 2: 35 year old male, with complaints of swelling in the throat and change in voice of 6 months duration. On examination , a smooth globular mass is seen involving left side of oropharynx. Uvula is deviated to right. FNAC showed round cell tumour. Excision was done transorally. Histopathologically it was diagnosed as schwannoma. Post operatively patient had left vocal cord paralysis.no recurrence is seen.



Case 3: A 56 year old female complaints of difficulty in swallowing and breathing since 3 months. On examination there is smooth bulge seen involving the right lateral wall of oropharynx. CECT showed moderate sized neoplastic mass in right parapharyngealspaceinprestyloid region. Transoralexcion was done .histopathologically diagnosed as pleomorphic adenoma. No recurrence is seen.



II. Discussion

Majority of parapharyngeal space tumours are either salivary glands tumours originating from the deep lobe of the parotid gland or neurogenic tumours originating from the cranial nerves, the cervical sympathetic chain or the glomus bodies (chemoreceptors). Metastatic tumours are mainly thyroid carcinoma, osteogenic sarcoma, and squamous cell carcinoma. Tumours may also extend from surrounding structures and spread to the para pharyngeal space (i.e. mandible, maxilla, nasopharynx, neck, oral cavity, oropharynx, and temporal bone)⁷.Patients with para pharyngeal space tumours should undergo a comprehensive history and complete head and neck examination (careful inspection and examination of the oropharynx and neck, and assessments of the

functional integrity of the cranial nerves). Clinical presentation is very variable. Tumours can present as an oropharyngeal or neck mass or with other symptoms such as dysphagia, dyspnea, unilateral conductive hearing loss, hoarseness, true vocal cord palsy, Horner's syndrome and symptoms of catecholamine excess like hypertension and flushing⁷. Because of complex anatomy and pathology, the appropriate surgical management differs widely. The different surgical approaches to the para pharyngeal space are External approaches and transoral. Each approach has its advantages and disadvantages. Because of its location deep within the neck, the space is difficult to examine by ordinary methods, but can be well demonstrated in the axial section by computed tomography and MRI, based on that the approach can be decided.

Trans oral approach was first described by **EHRlich** in 1950 and it was indicated for small, nonvascular tumours^{8,9}. In 1963, McElroth et al describe the use of this approach in a study of 112 patients along with ligation of external carotid artery¹⁰. In 1988 Goodwin and Chandler advocated this approach to give adequate access to the parapharyngeal space. In their study of six cases, there were no surgical complications and blood loss was minor¹¹. This approach is essentially same as an extended tonsillectomy. Using an endoscope 0 and angled, provided excellent visualization of areas beyond line of sight and enabled confirmation of adequate hemostasis and complete resection prior to closure, which may potentially decrease the recurrence rate. The improved visualization provided by the endoscope allowed us to take advantage of the low morbidity. Hence this approach requires appropriate patient selection. Common types of surgical approach of parapharyngeal space are transcervical approach with / without digastric muscle section with or without resection of the submandibular gland, transcervical approach with / without mandibulotomy and trans-oral approach with / without mandibulotomy. Also are used transparotid approach and infratemporal approach of parapharyngeal space tumours. Transcervical approach is the most common method for removal of most poststyloid parapharyngeal space tumours. A transverse incision at the level of the hyoid bone is used to access the vascular fossa. Dissection reveals the digastric and stylohyoid muscles. For access to the parapharyngeal space the muscles are retracted or sectioned. Also the submandibular gland can be retracted anteriorly for exposure, or it can be removed if necessary. Transparotid approach is usually used for tumours originating in the deep lobe of the parotid. Care full dissection of the facial nerve is required and superficial parotidectomy is performed. Transcervical approach associated with lateral or anterior mandibulotomy may be appropriate in cases when better exposure is required, such as cases of large tumours, vascular tumours with superior parapharyngeal space extension in which distal control of the carotid at the skull base is required, malignancies in which better exposure facilitates oncologic resection. Tracheostomy may be required in the immediate postoperative period.

III. Surgical Technique

After orotracheal or nasotracheal intubation Boyle-Davis mouth gag is placed for exposure of oral cavity, a transoral pharyngotomy was performed by linear-vertical incision through the overlying mucosa. The mucosa, submucosa, and superior constrictor muscles are divided with electrocautery. Dissection had been carried out down to the level of the tumour. It was performed with assistance of 0 and 30 rigid endoscopes. A combination of sharp and blunt dissection was used to expose and completely free the tumour from surrounding structures. Blunt dissection was done on capsule (endoscope assisted) and care has taken not to rupture it. There was no damage to surrounding nervous structures or vasculature. Incision wound is closed in layers resorbable sutures. Watertight closure is essential.

Postoperative management should include airway observation in a monitored setting during the first postoperative day, perioperative steroid therapy, and intravenous antibiotics during their hospitalization. Patients are started on a liquid diet on the 5-7th postoperative day and limited to a soft diet for 2 weeks.

Advantages of transoral approach:

1. Absence of cervical scar.
2. Provide direct and magnified visualization.
3. Less amount of bleeding.
4. Reduced tissue damage.
5. Improved cosmetic appearance.
6. Fewer wound related complications like fistulas.
7. Less postoperative morbidity.
8. Immediate return of function.
9. Preserves greater auricular nerve which is damaged in transcervical and transparotid approach.
10. No need of mandibulotomy.

Disadvantages^{12,13,14}:

1. limited exposure
2. Increased risk of tumour spillage.

3. Neurovascular injury.
4. Does not give adequate control during haemorrhage.
5. Aspiration of haemorrhage into trachea.
6. Not suitable for malignant lesions.

IV. Conclusion

Traditionally surgeons were considering trans-oral approach to the para pharyngeal space as poor and unsafe. But with endoscopic assistance , trans-oral route provides direct and magnified visualization. This approach is best suitable for benign, non-vascular tumours with good exposure. With this approach tumours can be excised completely with minimal post-operative complications. Hence endoscopic assisted trans-oral approach should be one of the primary surgical options for benign tumours not involving the critical structures.

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