ENDOSCOPIC INTRAORAL APPROACH TO PARAPHARYNGEAL MASS: CASE SERIES

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ABSTRACT

OBJECTIVE

To evaluate the advantages and disadvantages of intraoral endoscopic approach for parapharyngeal tumours and comparing it with conventional open approaches.

STUDY DESIGN

This prospective study includes 8 cases, which were managed by the intraoral approach using the endoscope.

SUBJECT

These 8 parapharyngeal tumour cases includes 6 benign and 2 malignant. All cases had intraoral manifestation and were operated intraorally using endoscope. The pathology, length of hospitalisation, postoperative complications, and advantages were evaluated.

RESULTS

Excellent results were obtained in all cases except one malignant case.

DISCUSSION

The external approach is more invasive and morbid. It is cosmetically not appealing. Endoscope offers better visualisation, focus, and magnification with end on view thereby decreasing the postoperative morbidity.

CONCLUSION

Contrary to the external approach, which traverses the neurovascular structures in order to reach the target tissue and is long, the intraoral endoscope route is shorter and right on the target thereby protecting the vital structures.

KEYWORDS

Endoscope, Parapharyngeal, Neoplasm, Technique.

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INTRODUCTION: Parapharyngeal tumours are rare contributing to 0.5% of head and neck tumours. Operating on parapharyngeal tumours is a challenging task due to the presence of important structures in it's vicinity leading to mortality.(1) The surgical approaches are transoral, transmandibular, transparotid, and transcervical are a combination of these approaches.(2,3) Ehlirch described the first transoral approach for small, less vascular tumour.(4) 80% of tumours are benign in nature commonest being pleomorphic adenoma. Neurogenic tumours being second most common such as neurofibroma, schwannoma, paragangliomas.(5) The secondary masses are from adjacent structures. The commonest secondaries are from deep extension of tonsillar carcinoma. Metastatic lymphadenopathy from tonsillar carcinoma also can occur. Secondaries can also occur from adjacent nasopharynx.(6) Following the invention of endoscope by Hirschmann, our field of otorhinolaryngology has touched new horizons. It has been increasingly used and has been popularised in the past few decades.

This study advocates an innovative technique in the management of parapharyngeal masses especially benign. In the pre-endoscopic era, intraoral approach to parapharyngeal masses was dreaded due to lack of clear visualisation, limited exposure, failure to control bleeding, and hence causing injury to neurovascular structures. Adding to these factors the actual extent of the tumour could not be assessed before the invention of modern imaging techniques. The most popular approach for parapharyngeal tumours is the external one (i.e.) submandibular, transparotid, and midline transmandibular oropharyngeal approaches. The transparotid approach carries the risk of facial nerve injury as well as an unsightly scar.

The submandibular incision followed by excision of the gland can be tailored as to our needs (e.g.) with midline mandibulotomy for salivary gland tumour of parapharyngeal space origin especially post-styloid one, lateral mandibulotomy for upward access, pre or postauricular extension to preserve facial nerve. All these external approaches though give a wider field and clear visualisation carries the risk of injury to vital structures, unsightly scar,

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and risk of osteomyelitis if mandibulotomy is done. Due to rarity of tumour, not much studies have been done so far to avert these problems and seek a reasonably good alternative.

To overcome some of the hurdles in external approach, this new concept is a boon provided the following criteriae are met with.

1. Preferably FNAC proven benign lesion.
2. Tumours limited to parapharyngeal space.
3. Good expertise with ability to do external approach in case of any misadventure.

It is relatively contraindicated in highly vascular tumours like glomus jugulare.

MATERIALS AND METHODS: Patients with parapharyngeal tumours limited to the space who presented with intraoral mass were included in the study. After complete clinical examination, patients underwent imaging studies and FNAC. All the cases included in this study had oral symptoms. CT scanning with IV contrast enhancement is the most useful radiologic modality currently employed in the evaluation of PPS tumours. It can be used to determine accurately the site of origin of the mass and thus it is likely aetiology. The key to understanding this area is the anatomy of PPS, which is the central space of deep face. The main content of PPS is fat and it is the displacement pattern of this fat that allows localisation of mass lesions arising from structures surrounding the face.

A mass arising from the parotid space will lie lateral to PP fat and will displace it medially. A parotid mass will widen the distance between the angle of mandible and styloid process. A mass from carotid space will displace the PP fat anteriorly with anterolateral displacement of styloid process. A mass from the posterior part of carotid space (e.g.) vagal schwannoma, neurofibroma, or paraganglioma will be seen posterior to internal carotid artery. Mass from carotid space has some characteristic features. A pseudomass may be possible due to CCA or ICA ectasia or asymmetric IJV. These can be identified with contrast-enhanced imaging. Jugular vein thrombosis and carotid aneurysm can be similarly picked up. Paraganglioma will show intense enhancement with IV contrast studies. Schwannoma appears as a well encapsulated soft tissue density displacing ICA anteriorly. Neurofibroma is seen in CT as a well-defined low-density mass.

Use of combined CT-sialogram with enhancement allows differentiation of deep lobe of parotid tumour from extra-parotid parapharyngeal space neoplasm and determines its vascularity. MRI is contributory to CT scan findings since it has typical findings in pathological conditions like schwannoma, glomus tumours, and pleomorphic adenoma. If possible, MRI has to be done in all cases of parapharyngeal tumours to know the nature of tumour as well as its vascular supply through an MRA. FNAC is crucial in determination of mode of approach. Open biopsy is condemned universally due to risks involved (i.e.) damage to neurovascular structures and due to breach of barriers, which leads to increased spread.

Our Study Includes Eight Cases. Table-1

A 20-year-old girl came with change in voice for 3 months duration and discharge both ears in 2003.

She had a smooth bulge in soft palate in left side pushing tonsil medially (Figure 1). There was restriction of soft palate movement. On palpation, it was firm in consistency and FNAC report was schwannoma. CT scan showed a left parapharyngeal mass 6*5 cms. There was no lymph nodes or secondaries. Transoral endoscopic excision (Figure 3 and 4) was done and mass removed in toto. It was sent for HPE, which confirmed the diagnosis. Patient recovery was uneventful. Patient was put on Ryles tube and feeding was started the next day itself. One of the cases was a 62-year-old female who presented with swelling right side of throat with difficulty in swallowing. It was tense and cystic extending up to piriform fossa. CT scan revealed a hypodense mass in right parapharyngeal region and the extent was confirmed. Patient gave a history of being operated twice previously through an external approach. In tonsillectomy position with Boyles Davis mouth gag applied, the mass was visualised behind the posterior pillar. Good infiltration with 2% Xylocaine and adrenaline was given over the swelling before incising to get a clear plane. (Figure 2). An intracapsular blunt dissection was done. The cyst was enucleated and removed and the wound sutured. Biopsy proved it to be a branchial cyst.

A 33-year-old male presented to our hospital with dysphagia and difficulty in breathing along with a history of snoring. On examination, a mass was seen pushing the left tonsil medially and occupying the soft palate and extending down to the epiglottis. Oropharyngeal space was grossly narrowed and the mass was firm in consistency. Patient was put in tonsillectomy position and Boyles Davis mouth gag was applied and an inverted Y-shaped incision made over the mucosa and further deepened. Flaps were elevated. An intracapsular dissection was done and the mass enucleated and removed. Histopathological examination report stated a pleomorphic adenoma.

One of our cases was a squamous cell carcinoma where we had some difficulty in releasing the adhesions. Patient had recurrence for which revision surgery and postoperative radiotherapy was given. One case of mucoepidermoid carcinoma was operated. Patient was followed up to 6 months and had no recurrence. Patients can be started on oral feeds at the earliest as in cases of tonsillectomy there by helping them to be at ease. Longest follow up had been for thirteen years and no complications have been met yet.

RESULTS AND ANALYSIS: In case of benign tumours and in mucoepidermoid carcinoma, there was no recurrence in any case (Figure 5 and 6). Regarding squamous cell carcinoma in a followup of 3 years, it once recurred, and was managed in the same way. Thereby, results were excellent in dealing with benign tumours.

Pathology	No. of Cases
Benign schwannoma	2
Pleomorphic adenoma	2
Branchial cyst	1
Lipoma	1
Mucoepidermoid carcinoma	1
Squamous cell carcinoma	1

Table 1: Pathology of Parapharyngeal Lesions

Fig. 1: Schwannoma with Intraoral Presentation

Fig. 2: Branchial Cyst Right Side before Dissection

Fig. 3: Intraoral Incision of Schwannoma

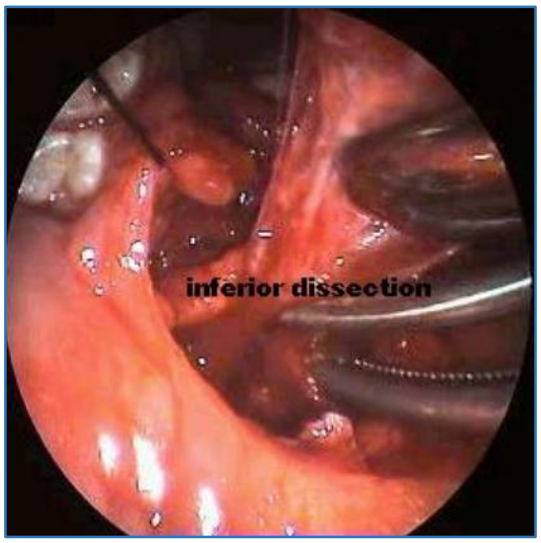

Fig. 4: Inferior Dissection of Schwannoma

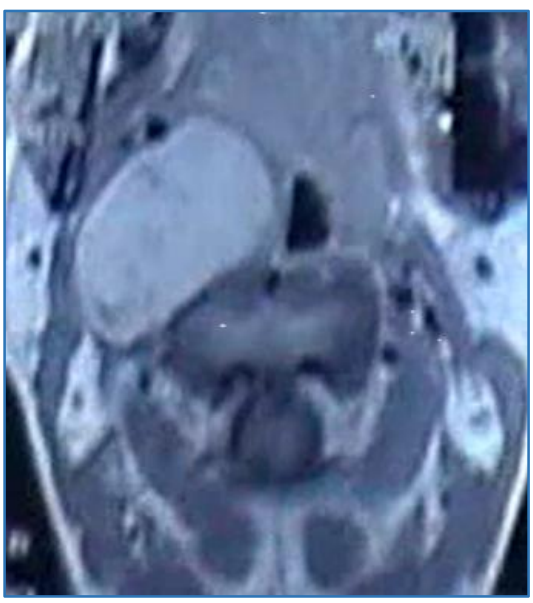

Fig. 5: Preoperative scan - Schwannoma

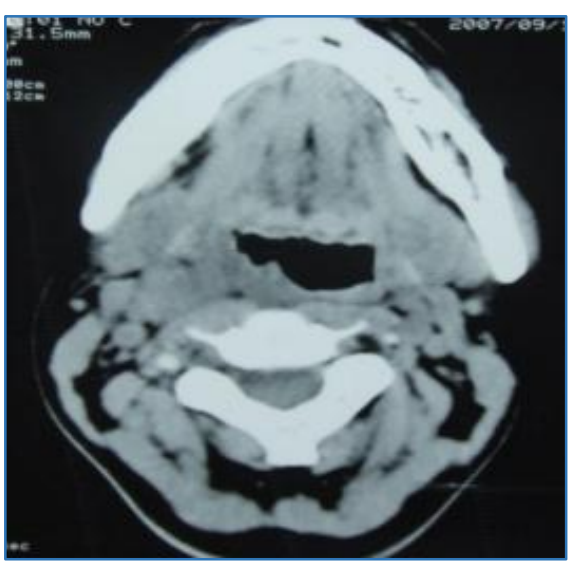

Fig. 6: Postoperative scan – Schwannoma

Legends:

- CT - Computerised Tomography.
- CCA - Common Carotid Artery.
- PPS - Parapharyngeal Space.
- ICA - Internal Carotid Artery.
- IJV - Internal Jugular Vein.
- IV - Intravenous.
- HPE - Histopathological Examination.
- MRI - Magnetic Resonance Imaging.
- FNAC - Fine Needle Aspiration Cytology.

DISCUSSION: W. Jarrad, Goodwin Jr found in 6 patients with parapharyngeal tumour presenting intraorally over past 16 years was managed transoral route. All the patients had benign salivary gland tumour with no surgical complications and less blood loss.[7] Wei-Liang Chen, You-Yuan Wang et al in their study of evaluating the outcome of endoscopic-assisted transoral resection of large benign tumours of the parapharyngeal space concluded that it is a simple and safe technique that achieves excellent aesthetic and functional results.[8] Wang X, Gong S et al in their comparison between long-term effects of endoscopic-assisted transoral excision of their parapharyngeal tumours and other methods like transcervical, transparotid, transmandibular approaches found that endoscopic-assisted transoral approach was found to be significant statistically lower blood loss, hospitalised time, and postoperative pain ($P<0.05$).

They also concluded that tumour of parapharyngeal space can be removed completely with preservation of facial cosmetic.[9] Iseri M, Ozturk M et al in their study of endoscopic excision of four cases of parapharyngeal tumours concluded that the technique provided less operative trauma, more comfortable operative period, and most importantly increased operative exposure. In a retrospective study of operative procedures and followup examinations, tumours removed from parapharyngeal space has extremely low recurrence rates. Endoscopic assistance in transoral route gives better visualisation of areas behind the tumour and good vascular control of minor vessels. Arteriography though a valuable and safe diagnostic study was not necessary in non-enhancing lesions.[10] Having analysed the whole issue and weighing the pros and cons, this endoscope approach is safer and a superior alternative to the external approach in carefully selected cases and in expert hands. In the external approach in addition to the cosmetic disfigurement in cases of post-styloid lesions, we have to work through the neurovascular structures having a direct encounter with them. Also, osteotomies though they give a wider field end up with postoperative residual trismus and increase the time factor.

The Advantages of Endoscope Being:

1. Magnification.
2. Illumination.
3. Angled view through angled endoscope. Superior and inferior limits can be made out easily and hence good clearance can be given and injury to neurovascular structures can be avoided.
4. Documentation.
5. Serves as teaching purpose for one can visualise through television.
6. Minimally invasive, less morbidity, and mortality.
7. Cosmetically acceptable.
8. In post-styloid lesion, we can reach the tumour without having to go through the neurovascular structures (i.e.) the vital structures can be carefully bypassed.

The only limiting factor is that one hand is always engaged in holding the scope and hence only one hand is free for action. This handicap can be overcome if the assistant is adequately trained to hold the scope in position. The keys to success are adequate knowledge of radio imaging, proper preoperative planning of surgery, good infiltration thereby creating a good plane of dissection, careful blunt dissection, and use of cautery to control bleeding to get a clearer field.

CONCLUSION: In our experience with 8 cases of parapharyngeal space tumours, we were able to get excellent results in all benign cases and a fairly good result in malignant cases. This innovative approach has avoided unsightly scars, complications, and postoperative discomfort to patients. To conclude with endoscope is a valuable resource in our hand and it is our duty to utilise it and get ourselves trained adequately for the benefit of the public as well as to keep ourselves in the stream.

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