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CASE SERIES

OPTIMISING FUNCTIONAL OUTCOME IN SURGICAL RESECTION OF TONGUE BASE MALIGNANCIES USING LABIO-MANDIBULO-GLOSSOTOMY

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ABSTRACT

AIM

To highlight the advantages of median labio-mandibulo glossotomy as a surgical approach for excision of tongue base malignancy.

MATERIAL & METHODS

It is a case review of 5 cases with tongue base malignant tumours treated in a tertiary care centre. There were 3 female and 2 male patients in the age group of 18-50 years. Histopathology included muco-epidermoid carcinoma in 3 cases, squamous cell carcinoma in1 case and clear cell sarcoma in 1 case. Pre-operative assessment included endoscopic examination and MRI. Surgical excision was done via medianlabio-mandibulo-glossotomy. Outcome was assessed in terms of oncologic adequacy and the functional impact.

RESULTS

Disease free resection margin could be achieved in all the 5 cases. Near normal functional recovery could be achieved within 2 weeks. 2 cases required speech therapy for few months. None of the patients developed recurrence during the follow up period.

CONLUSION

In selected cases of base of tongue malignant tumours, this approach provides complete disease clearance without any significant functional and cosmetic impact.

KEYWORDS

Labio-mandibuloglossotomy, oropharyngeal carcinoma, base of tongue malignancy, Chemo-radiotherapy.

INTRODUCTION

Tumours of the tongue base constitute one of the commonest oropharyngeal malignancies next to tonsil. Tongue base tumours are usually aggressive and are of advanced stage at presentation[1]. These tumours usually require multimodality treatment in the form of chemo-radiotherapy and surgery. However, surgical resection is technically challenging in terms of difficult access with limited reconstruction options. In addition surgical resection is fraught with risk of severepost-operative aspiration, swallowing dysfunction and long term tracheostomy dependence[1]. Thesurgical approaches usedfor accessingtongue base includesTrans pharyngeal/hyoid approach[2], mandibular swing and median labio-mandibuloglossotomy[3]. In the recent years most of these tumors are resected trans-orally using robotic arm (TORS), Co2 laser(TLM) or TOUSS approach. Each approach has its own limitations and they are associated with risk of life threatening haemorrhage, salivary leak/ fistula thereby increasing surgical morbidity further[4]. Therefore, primary surgery is generally

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reserved for radio-resistant tumours. Now-a day's most of these tumours are treated primarily with chemo-radiotherapy and surgery being reserved for salvage purposes[5,6]. The aim of this case review is to highlight the advantages of surgical resection using labio-mandibuloglossotomy in selected cases of tongue base malignancy.

MATERIALS & METHODS

It is a retrospective study of 5 cases with base of tongue malignancy treated in a tertiary care setup. Data regarding all the cases were accessed from the medical records department. Data includes clinical history and examination, HPE, surgical approach, oncologic, functional outcome and follow up. Pre- operative MRI was done in all cases to assess the tumour spread and depth of invasion. The average size of tumour in all the cases were3×2×1 cm in three dimensions (Fig 1). None of the patients had nodal metastasis at presentation.

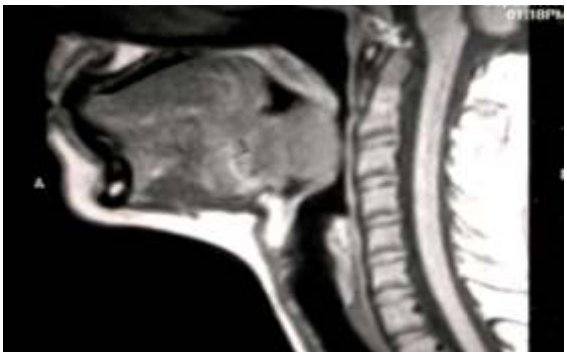

Fig 1:MRI of Head & Neck region-Sagittal cut showing tumour in midline tongue base

Surgical resection was accomplished by median labiomandibuloglossotomy, in which midline vertical skin incison was made in neck along with lip split. Body of mandible was exposed and median mandibulotomy done after pre-plating with mini plates. Then midline tongue split was done in the avascular plane of median raphe to reach the tumour **(Fig2).** Midline split ensures less bleeding and also it ensures preservation of bilateral lingual vessels and nerves (both motor & sensory). Tumour resection was done under vision with adequate margins **(Fig3)**. Defect was closed primarily after rotating/resettinganterior tongue.

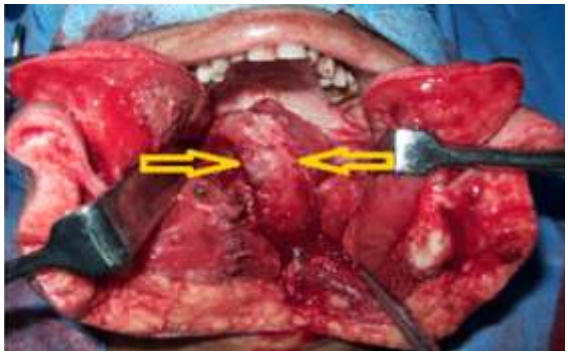

Fig 2: Tumour in tongue base exposed via Labio-mandibuloglossotomy.

Fig 3: Surgical defect after complete tumour excision.

Per operative tracheostomy was done in all cases. Patients were kept on Ryles tube feeding in the immediate post-operative period. The follow up period ranged from 6 months to 10 years. Surgical outcome was assessed in terms of oncologic and functional aspects. Oncological outcome is analysed in terms of margin status in HPEandrecurrence free survival. Whereas functional outcome was assessed in terms of speech &swallowing quality,airway status (tracheostomy dependance) and aspiration(if any).

RESULTS:

These 5 patients were in the age group of 18 to 50 yearsand there were 3 female patients and 2 male patients. The histopathology included mucoepidermoid carcinoma in 3 female patients. Squamous cell carcinoma and clear cell sarcoma in the 2 male patients. Tumour was confined to midline base of tongue with limited deeper invasion and lateral extension in all the cases.None of the patients had nodal metastasis. Surgical resection was primary in 4 cases. In the remaining patient, surgery was done for a recurrent tumour following a chemo-radiation for squamous cell carcinoma in the tongue base.

Surgical resection was done via median labiomandibulo glossotomy in all the 5 cases by senior author (C.R). Within one week, tracheostomy tube could be decannulated in all the cases and they were started on oral feeds. Post-operative surgical margins were negative in all the 5 cases.Currently all the 5 cases are disease free with no evidence of disease recurrence.

In the functional aspect, none of the patients developed aspiration or severe swallowing disability. Normal speech quality could be achieved in 3 cases. One patient had minimal misarticulation. The other patient had unclear speech due to reduction in antero-posterior dimension with tongue retropulsion and they required speech therapy. All the 4 primary cases were on normal diet with no swallowing dysfunction after an average of 2 weeks post-op. whereas the salvage case had persistent dysphagia(Grade2)[7] requiring dietary modifications. There were no major perioperative complications. None of the 4 primary patients required post-operative radiotherapy.

DISCUSSION

Tonsil and tongue base are the commonest site for oropharyngeal malignancies of which most common being squamous cell carcinoma. It is also the commonest site for minor salivary gland tumours[1]. In view of its rich lymphatics and vascularity most of the tumours are of advanced stage at presentation.Due to their aggressive tumour behaviour, most of these tumours require multimodality treatment comprising surgery, chemo and radiotherapy.

Functionally tongue base plays a significant role in deglutition and also it lies in close proximity to laryngeal inlet. So, any form of treatment modality is met with severe post treatment functional morbidity.Aggressive chemo-radiotherapy is associated with severe dysphagia with respiratory distress[8]. Surgical treatment is still more challenging in view of difficult access, limited reconstruction options, and carries the risk of post-operative complications like salivary leak, fistula and delayed wound healing.

Currently, most of the tongue base and oropharyngeal malignancies are treated with organ preserving approach using chemo-radiation. In which stage I,II lesions are treated with radiation alone and stage III,IV lesions are treated with concurrent chemo-radiotherapy. Cure rate with such organ preserving approach in stageIII,IV lesions hovers around a median of 57 % 5yr overall survival[9].

Surgery is mainly reserved for salvage purposes and radio-resistant tumours. However, with the advent of modern technologies like TORS, trans-oral laser microsurgery(TLM), TOUSS, there has been re-emerging interest towards primary surgery in tongue base malignancies. Also overall survival is better with surgery followed by radiotherapy than concurrent chemo-radiotherapy in advanced stage malignancies[10]. Functional outcome following laser/TORS resection of stageI,II malignancies is comparable to that of radiation alone[11,12].

TLM, TORS, TOUSS for tongue base lesions requires surgical expertise, it is associated with higher cost of the procedure andnot universally available. These limitations make these technical advancements less accessible for many of our patients. There comes the role of other surgical options. Various other surgical approaches to tongue base includes mandibular swing, trans hyoid / pharyngeal approach and median labio-mandibulo glossotomy. Each approach has its own advantages and limitations. There is increased risk of salivary leak/fistula and with trans hyoid/pharyngeal approaches with significant functional impact. Mandibular swing gives better access and is best suited for tumours with lateral extension. But, mandibulotomy approach may interfere with the sensory as well as motor innervation of the tongue and this can affect the functional outcome.

Another way of approaching tongue base is via mid line tongue split as used in median labio-mandibulo glossotomy. Median labio-mandibulo glossotomy has been mainly used as an approach to gain access to central skull base including clivus and cranio-vertebral junction[13]. Wherein, one gains access to tongue base by splitting anterior tongue in median raphe in the avascular plane.The tumour is accessed first from its depth rather than from periphery as in other approaches- ensures better depth clearance. As both sensory & motor nerves and vessels are preserved in this approach there is early functional recovery. Minimal intra-operative blood loss along with better functional outcome is the main advantage of this technique[3].Midline approach ensures primary closure(anterior tongue set-back), thereby avoiding the necessity of major reconstruction options like free flap.

However, proper case selection is required prior to surgical resection. This approach is best suited for tumours confined to tongue base with limited lateral extension as in our series. Significant inferior extension into valleula and supraglottis necessitates additional supraglottic laryngectomy. Meticulous care during mucosal closure and mandible plating prevents post-operative complications. Shortening of tongue is an expected outcome with no significant impact on swallowing/phonation as fourout of five cases didn't have any significant functional impact.

All the four primary cases had localised lesions at presentation. But still we preferred surgery rather primary radiotherapy as histopathology in 4/5 cases were of Non-squamous type. Primary surgical resection in these 4 cases, helped us in avoiding radiotherapy at an younger age and its associated long term morbidity(including risk of radiation induced tumours).

We have applied this approach with much ease, even in an irradiated field. However the functional outcome is not comparable to that of primary group for obvious reasons.Better functional outcome in this series could be attributed to localised tumours requiring minimal resection. The idea of this article is to highlight the simplicity of the approach and its favourable functional outcome. Through this article we would like to clear the misconception about surgical approaches for tongue base malignancies.

CONCLUSION

Primary surgical resection should be considered in tongue base malignancies, when required without any hesitancy. Median labio-mandibulo glossotomy as a surgical approach to tongue base gives better oncologic and functional outcome in selected cases.

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