TRANSHYOID APPROACH IN SURGERY OF TONGUE BASE NEOPLASMS

SUMMARY: The treatment of tongue base neoplasms is evolving continuously, remaining controversial in the same time, as it was 25 years ago.

From the variety of techniques utilized in tongue base tumor surgery, tumor resection using transhyoid approach provides similar oncologic results with other surgical techniques, having the advantage of superior functional results.

A retrospective study was conducted on 35 patients treated surgically for tongue base neoplasms in ENT Department Timisoara between 1998 and 2010. All cases were stadialised according to the UICC. Four patients were classified in stage II, 12 patients in stage III and 19 patients in stage IV.

Most common histological type encountered was the squamous cell carcinoma.

Tumor resection was performed using the transhyoid approach in all cases. Surgical treatment remains an useful alternative in tongue base cancer therapy, offering excellet results especially when associated with adjuvant therapies.

Keywords: tongue base, neoplasms, transhyoid approach.

INTRODUCTION

Tongue base neoplasms are characterized in generally by a bad prognosis (1, 2).

This situation is the result of late presentation to the specialist and of the difficulties often encountered in correct diagnostication of this disease.

Early symptomatology is poor, advanced stages being almost constantly characterised by the presence of adenopaty.

The principles of treatment suffered many transformations and readaptations in last decades, even today still being characterized by heterogenity of therapeutic models used in different institutions world wide.

Traditional methods include unimodal treatment, consisting of surgery or radiation therapy alone, and combined treatment which uses the combination between these two methods.
Recently, combining radiotherapy with chemotherapy in various radiochemotherapeutic protocols is gaining popularity as a preferred option of treatment, due to the advantage of superior preservation for organs and their functions, but prohibitive prices are still limiting their use on a large scale.

The selection of adequate therapy for these patients depends on the stage of the disease, type of tumour and the associated comorbidities.

For tumours in early stages (T1), radiotherapy is the treatment of first choice because of its excellent therapeutic results combined with minimal added morbidity.

More advanced stages (T2, T3, T4) need combined treatment, represented by surgery and postoperative radiotherapy, associated or not with chemotherapy.

Among various techniques used in the surgery of tongue base neoplasms, tumor resection using the transhyoid approach offers certain advantages, making this technique very useful, especially when combined with radiation therapy.

This study presents the experience of the ENT Department Timisoara in the treatment of tongue base neoplasms using the transhyoid approach.

**MATERIALS AND METHODS**

A retrospective chart review was performed in 35 patients who were surgically treated for tongue base neoplasms at the ENT Department of Timisoara between 1998 and 2010.

All patients underwent preoperative laryngoscopy and advanced imaging studies (computed tomography and/or magnetic resonance imaging) to evaluate the surgical feasibility of the tumour. The patient’s disease was staged according to the most recent recommendations of the Union for International Cancer Control (UICC).

In all cases, the tumour resection was performed by using the transhyoid approach.

All patients underwent simultaneous bilateral selective neck dissections and also underwent postoperative radiation therapy.

**RESULTS**

Twenty-nine patients were men with the age range between 43 to 67 years (average age, 51.86 years) and 6 patients were women with the age range between 47 to 79 years (average age, 59 years) (Table 1).

The minimum follow-up period was 12 month (range of follow-up, 12 -144 months).

Clinical symptomatology at the first medical presentation is noted in Table 2.

Seven patients had T2 tumours, 14 patients had T3 tumours and 14 patients had T4 tumours. A large proportion of the patient’s disease was categorized into Union for International Cancer Control stage III (12 patients) or IV disease (19 patients), as a result of the numerous cases presenting advanced local disease and due to the high incidence of regional nodal metastasis.
Only 4 patients were categorized as stage II and no patient’s disease was categorized as stage I (Table 3).

All interventions were performed under general anesthesia. Tracheotomy was done in all cases, either preoperatively or intraoperatively.

Tumoral resection was realized via transhyoid pharyngotomy, with simultaneous intraoperative bilateral neck dissection (Selective Neck Dissection) in all cases.

Defect was closed primary.

In 16 cases having tumors which interested only the base of tongue, it was performed the resection of tongue base by transhyoid pharyngotomy (Fig.1,2,3,4 and 5).

In the other 19 cases, where tumors presented extension to the supraglottic larynx structures, it was performed epiglottectomy with tongue base tumor resection or supraglottic laringectomy with tongue base tumor resection (Table 4).

Hystopathological findings were represented in the majority of cases (30 patients) by squamous cell carcinoma in various degrees of tumour differentiation, most frequent G2 and G3 degrees.

Other findings were represented by carcinoma "in situ" in 2 cases, anaplastic carcinoma in 1 case, mucoepidermoid carcinoma in 1 case and adenocarcinoma in 1 case (Table 5).

Of the 35 patients, 32 (91.42%) had clear margins in the final pathologic specimen.

For 2 patients were confirmed the clinically negative neck (out of 6 patients N0) and for 2 patients were nodal metastases.

For 24 patients were confirmed the clinically positive neck (out of 29 patients N+).
None of the patients developed immediate complications such as infection of the wound, necrosis or fistula.

Functional results were assessed by evaluating postoperative deglutition and speech.

Deglutition resumed for all patients, immediately after removal of the nazogastric feeding tube. Seven patients (20%) presented temporary difficulties of feeding, but swallowing was good after 10-14 days.

Speech was good for 31 patients (88.57%). Four patients (11.43%) presented poor speech due to impossibility of decanulation for a longer period.

Death rate in the follow up period was 25% (8 patients).

Three patients developed tumoral recurrence and died at 3,6 and 12 months postoperatively, 2 patients died from other pathologies at 12 and 18 months postoperatively and 3 patients developed lung metastasis and died at 12, 18 and 26 months postoperatively.

Twenty-seven patients were free of locoregional recurrence or distant metastasis, disease-free survival rate being 75% in the follow up period.

There were no significant differences in the response to therapy, between patients with squamous cell carcinomas and the others having non squamous cell carcinomas.

**COMMENTS**

Tongue base cancers can be resected through 3 main surgical approaches. These include the transoral, transmandibular and transpharyngeal approaches.

Transoral approach has limited indications, represented by small sized tumors of tongue base. Resection is most often performed by using CO2 laser.

Steiner et al. (3) have advocated the use of CO2 laser for squamous cell carcinoma of the base of the tongue in selected patients with good oncological and functional results.

Transmandibular approach provides the advantages of a wide tumor exposure, being indicated in large oropharyngeal tumors. His main disadvantages consist in significant secondary morbidity, including lip and chin scars, malocclusion, compromised deglutition, chronic aspiration and altered speech articulation.

Although the transhyoid approach to the pharynx has been classically described during the initial approach to lesions involving the supraglottic larynx, its potential utility in providing access to other sites within the pharynx has been historically recognized.

Since its first description by Jeremitsch in 1895, several authors (4,5,6,7) have reported on its use.

Ferris and Meyers (8) described the "secrets for success" as being accurate assessment of the tumor in preoperative planning and meticulous attention to detail intraoperatively.

Their preoperative selection criteria include patients with tumor limited to the tongue base (posterior to the circumvallate papillae), T1/T2 tumors of the tongue base, tumors not involving the pre-epiglottic space and patients with good pulmonary performance.

Moore and Calcaterra (9) reported oncological success even in T3 squamous cell carcinoma of the tongue base using the transhyoid approach.

Historically, stage III and IV tongue base tumors have been associated with poor outcome.

Researches showed that the biologic behavior of squamous cell carcinoma of tongue base is governed by the size and depth of the tumor rather than the nodal stage and that locoregional metastases do not significantly impair survival (10,11).

Zeitels et al. (12) also evaluated 15 patients who had mostly T3 and T4 tongue base tumors that were resected via a transoral-transhyoid method. All patients had primary closure and clear margins in the final pathologic specimen. None of the patients had problems with aspiration, and all patients resumed an oral diet within 3 weeks. Their only complication was a pharyngocutaneous fistula, which resolved with conservative measures.

Transhyoid resection of tongue base tumors results in significantly lower morbidity than do the transmandibular methods.

Authors like Nasri, Civantos and Wenig, realized comparative studies between patients treated by using the transhyoid approach and patients treated with composite resection or mandibulotomy. In their studies, they did not see any significant difference between the 2

---

**Table 5. Hystopathological findings.**

<table>
<thead>
<tr>
<th>Hystopathologic type</th>
<th>Number of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scuamous cell carcinoma</td>
<td>30</td>
<td>85.71%</td>
</tr>
<tr>
<td>&quot;In situ&quot; carcinoma</td>
<td>2</td>
<td>5.71%</td>
</tr>
<tr>
<td>Anaplastic carcinoma</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>Mucoepidermoid carcinoma</td>
<td>1</td>
<td>2.85%</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>1</td>
<td>2.85%</td>
</tr>
</tbody>
</table>
groups in disease-free survival, status of surgical margins, recurrences, or complications. However, they did observe significantly superior postoperative speech and swallowing function in the transhyoid group.

Association of postoperative radiation therapy to the surgical resection improves substantially the rates of local control in these cases (13,14).

**CONCLUSIONS**

Among various techniques used in the surgery of tongue base neoplasms, tumor resection using the transhyoid approach offers the advantages of an excellent tumor exposure, low postoperative morbidity, and local control rates similar to the other techniques.

**References:**