Surgical Management of Moderately Differentiated Squamous Cell Carcinoma at Lateral of tongue: A Case Report

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ABSTRACT Background: Squamous cell carcinoma (SCC) is the most common malignancy in the head and neck region and specifically in the oral cavity, with oral tongue squamous cell carcinoma (OTSCC) comprising 25–40% of all oral carcinoma. Despite the progress made in cancer management and the introduction of multidisciplinary treatment modalities, the overall survival has not improved in the past 30 years. Therefore, a refinement of the treatment strategy is needed. Aim: A case of surgical management of moderately differentiated squamous cell carcinoma at lateral of tongue is presented. Case Report: A 46-year-old man complained of canker sores at lateral of tongue for three months in prior that did not heal with gargle solution and vitamin, accompanied by pain on the tongue and migraine. Frozen section biopsy was done in the initial of surgery to make a rapid diagnosis and was found a moderately differentiated squamous cell carcinoma. Partial glossectomy followed with modified radical neck dissection was performed under general anaesthesia. Three months postoperatively, there was no sign of recurrence. Conclusion: Rapid diagnosis will lead to a better selection of surgical treatment. Surgical treatment of partial glossectomy followed with neck dissection has become an option for a better prognosis.

KEYWORDS Surgical management, partial glossectomy, moderate differentiated oral tongue Squamous cell carcinoma, neck dissection, frozen section

Introduction

The incidence of head and neck cancer has exceeded 500,000 cases around the world. Carcinomas cell is the most frequent malignancy in the oral cavity with prevalence 85% of all incidents. While 91% of cancer in the oral cavity is squamous cell carcinoma. Squamous cell carcinoma in the oral cavity is the 10th most occurring cause of cancer in the world with a wide geographical distribution and significantly causes morbidity and mortality. According to the distribution of location in the oral cavity, most site affected with squamous cell carcinoma is tongue with prevalence of 25-40%. Malignancy on the tongue is now the most common malignancies in the oral cavity. Although SCC on the head and neck mostly diagnosed in elder patients with aged around 60 years old, carcinoma incident on the tongue rapidly increasing on young adults (<40 years) [2,3].

Tongue cancer is a malignant neoplasm arising from mucous epithelial tissue in the tongue with its cell shaped squamous cell carcinoma and occurred as a result of chronic stimulation, also caused by certain specific diseases. A malignant tumour than can infiltrate the surrounding area, moreover, it can cause metastatic through limphogen and hematogenous system.[3]

The incident of squamous cell carcinoma on the tongue has not been known well, but if it compared to the results of the study in a foreign country, it can be concluded that the incidences are still rare. The incidence of male patients in France was recorded 8 per 100,000 people, in India 6 per 100,000 people. By
the year 2009 in the USA, it was recorded that there was 10,520 new cases of squamous cell carcinoma of the tongue and was estimated to cause 1900 deaths.

Squamous Cell Carcinoma on the tongue occurs more common in males, with the comparison of men and women 2:1 and more often found in the male in older age. The main factor causes squamous cell carcinoma on the tongue is the use of tobacco and alcohol in an extended period. Another factor is the papillomavirus infection and also local factors of teeth and mouth[4,5].

Of the 441 cancer of the tongue reported by Ash and Millar, 25% of the cases occur in women, while 75% occurs in men with an average age of 63 years old. On the other hand, 330 cases of cancer on the tongue reported by Gibbel and Ariel with average age of the patients was 53 years old ranging from 32 - 87 years old, means this disease is a disease of the elderly but can also occur to a relatively young people. As an example of the 11 survivors with aged less than 30 years old, 4 of them aged less than 20 years old (reported by Byers), this group of patients represents approximately 3% of all patients that were submitted to the Anderson Hospital with epidermoid carcinoma of tongue, research was carried out between the year 1959 until 1973 (418 cases). The highest incidence of malignant cancers of the tongue occurs on the front side (the anterior 2/3 of the tongue) if compared to the backside of the tongue (posterior tongue 1/3)[4,5,6].

Diagnosis of squamous cell carcinoma occurring of the tongue based on well-directed anamnesis and careful physical examination, especially with the bimanual examination. Sometimes it also takes extra examination such as CT Scan or MRI. A definitive diagnosis is based on histopathology examination. Malignant neoplasm on the tongue usually arises from the mucous epithelium within the mouth which is mostly epidermoid carcinomas, a cancerous tumour in the oral cavity most frequently encountered in clinics and has a high mortality rate, clinically it can affect 2/3 anterior of tongue and 1/3 posterior of tongue and can also metastatic on the area around the tongue, for example: to the submaxillary and digastricus also to the neck and cervical area. Squamous Cell Carcinoma on the tongue has a poor prognosis, so early diagnosis is required, primarily if metastatic occurs on surrounding areas (neck and cervical)[4,5,6].

Recent developments in multimodal treatments have not been successful in improving the prognosis of this disease since this organ is well vascularized, rich with lymphatic tissue; it tends to be a predisposition to malignancy. A study estimated that the overall survival rate is five years on 42-65% on patients with tongue cancer, depending on the stage. Therefore the most effective treatment is wide glossectomy and bilateral lymphadenectomy to eliminate undetectable lymph node metastatic[4,5,6,7].

**Objective**

Surgical management of moderately differentiated squamous cell carcinoma of the tongue is reported. A multidisciplinary approach is needed for surgical therapy in this case report, including Anatomic Pathology specialists, oral and maxillofacial surgeon and o oncology surgeon.

**Case Report**

A 46-year-old man complained of canker sores at lateral of tongue for three months in prior that did not subside. Gargle solution and vitamin, accompanied by pain on the tongue and migraine. The patient has a history of smoking tobacco over the last 20 years.

Physical examination showed that the vital signs are normal. Facial profile was symmetrical (Fig.1). The intraoral examination found an ulcerative whitish lesion on the right lateral of the tongue, with a size of 2 x 2 x 1 cm, raised border, hard consistency and fixed, has a cauliflower-shaped, and bleeds easily (Fig 2). The was no palpable of lymph node enlargement on cervical area, no pain was felt upon pressure. The patient complained of difficulty in swallowing because of soreness in the tongue, unclear speech, salivary melts, and there was a history of weight loss as much as 5 kg in 3 months due to a decrease in appetite. The patient then came for treatment at Dr Hasan Sadikin hospital in Bandung. Blood laboratory examination and chest x-ray were conducted. The patient was then scheduled to a joint operation between the oral and maxillofacial surgeon, oncology surgeon and pathology anatomy specialist. The patient was diagnosed at stage 2(T2N0M0).

![Figure 1. Symmetrical face profile.](image)

![Figure 2. Intra Oral appearance. There was ulcerative lesion at tongue.](image)

Frozen section biopsy was done in the initial of surgery to make a rapid diagnosis and was found a moderately differentiated squamous cell carcinoma. Partial glossectomy (Fig.3) followed with modified radical neck dissection was performed under general anaesthesia (Fig.4).

From the excised tissue examination, incision border and other tissue sample were free of tumour. The healing process was good; only mild post-operation pain was noticed. Three months postoperatively, there was no sign of recurrence. There were no signs of recurrence ulcer found on tongue (Fig. 5). The patient did not complain of pain or the presence of disorder in swallowing. The patient complained about phonation change
Figure 3. Post partial glossectomy (a), excised tissue (b).

Figure 4. Modified radical neck dissection on patient.

and unbalanced smile (Figure 6). According to histopathological examination was found that the 11 out of 18 excised lymph nodes and seven seromucous tissue among them has no clinical founding of malignity metastatic.

Figure 5. Intraoral appearance on three months of post-operation control.

Discussion

The human tongue has a unique anatomical structure with orthogonal orientated muscle fibre that can accelerate spreading tumour to the tissue. The tongue cancer has a lot of neovascular bundles, and lymphatic tissue is hence vulnerable for regional metastatic. Four methods commonly used for squamous cell carcinoma treatment, which is electrosurgery, excision, radiation and chemotherapy. The principle of this treatment is to cure the patient of cancer. The treatment options depend on several factors such as cell type and differential stage, size, and location of the primary lesion, lymph node status, bone involvement, speaking ability, swallowing function, mental and physical status, the total evaluation of every potential complication of therapy, and radiotherapy.

Table 1. American Joint Committee (AJCC) TNM Staging Classification.

| Stage | Description |
|-------|-------------|
| T1a   | Primary tumour is less than 2 cm in diameter and located in the tongue mucosa (oral cavity). |
| T1b   | Primary tumour is less than 2 cm in diameter and located in the tongue mucosa (oral cavity) and extends to adjacent structures such as the tongue base and/or palatine tonsil and/or soft palate. |
| T2    | Primary tumour is more than 2 cm but not more than 4 cm in diameter, or primary tumour is less than or equal to 2 cm in diameter and involves adjacent structures such as the tongue base and/or palatine tonsil and/or soft palate. |
| T3    | Primary tumour is more than 4 cm in diameter, or primary tumour involves adjacent structures such as the tongue base and/or palatine tonsil and/or soft palate and/or adjoining muscles of the mouth, or primary tumour involves deep muscles of the tongue, or primary tumour involves the thyrohyoid bone, or primary tumour involves the hyoid bone, or primary tumour involves the ramus of the mandible. |
| T4    | Very advanced local disease, or tumour invades extracapsular space, or tumour invades adjacent nerves, or tumour invades adjacent bone, or tumour invades adjacent muscles. |

Table 2. AJCC TNM Staging Classification for the Lip and Oral Cavity (2016).

| Stage | Description |
|-------|-------------|
| N0    | No regional lymph node metastasis. |
| N1    | Regional lymph node metastasis, less than 3 cm in greatest dimension. |
| N2    | Regional lymph node metastasis, more than 3 cm in greatest dimension. |

Squamous cell carcinoma in tongue clinically classification as basic of treatment plan like cancer in another place. The staging system being used is tumour-node metastatic (TNM) classification that released from the AJCC (American Joint Committee on Cancer). TNM (Table 1 and 2) (T: Primary tumour, N: lymph nodes, M: Metastatic). T showed the size tumour, N showed if there any lesion that metastatic to lymph node and M indicates metastatic activity of the tumour to other organ or location. The most common location is lungs[8,9].

The highest metastatic incidence of squamous cell carcinoma to regional lymph node according to TNM classification is N0 (50%), N1 & N2 (each kind 20%), and N3 (10%).[9,10]

Tongue’s lymphatic system plays an essential role in early metastatic of tongue carcinoma. There are four paths of the
Radiotherapy was selected because of its simple, cheaper, no functional or cosmetic significant deficiency and reliable. The late stage of cancer which hasn’t been metastasised treated with combined modality therapy, the operation followed with radiotherapy or chemotherapy-radiotherapy.

Glossectomy consists of partial glossectomy 1/3 or less than tongue, hemiglossectomy 1/3 up to half of the tongue. Nearly until total glossectomy ½–1/4 of the tongue, total glossectomy ¾–more than tongue. 41/T2 lesion, glossectomy give available margin resection. This is to maintain articulation and swallowing function. However, even though early stage of cancer can be nodule metastatic until 30%[8,9]. In this case report the patient will only be treated with hemi-colectomy surgery and neck dissection without radiotherapy or chemotherapy because still in staging II with T2N0M0. For T3/T4 cancer usually need hemi-colectomy or total glossectomy. This is because they involve the surrounding structure such as oral floor, pillar tonsil, and mandible. A comprehensive strategic treatment had been developed by O’Brien and partner which include (1) initial operation for primary cancer, (2) mandible preservation if enable, (3) selected neck dissection for negative neck grade 1—4, and modified neck radical dissection (or radical) for positive neck clinically, (4) tracheostomy for late-stage cancer[8,9].

In T1 and T2 lesson which hasn’t been biopsied before but showing carcinoma characteristic, excision biopsy as partial glossectomy can be done in operation room by frozen cut and can continue with neck dissection if a frozen cut biopsy has been diagnosed[8,9].

The little defect can be cover primarily. The size of the defect from 1/3 volume can be covered. Half of the neck resection caused trouble articulation and propulsion bolus. Local flap vs regional flap can be used for this purpose. The purpose is to achieve mastication, articulation, and acceptable aesthetics. Aside from SCCA tongue treatment, observation is needed: at the first year interval; it is done in 1—3 months, second year interval 2—4 months, interval 3—6 months on the third year, interval 4—6 months in the fourth and fifth years, interval a year after[9,11].

Some cranial nerve has high-risk damage in primary tumour resection to eliminate the lymph node which seems to be involved. Size and location of the tumour and extension to the neck if present. Usually spread to the cranial nerve, which is involved directly or close to the resected part. Highly risk approach often needed access and to ensure sufficient tumour resection, so it endangered part of peripheral mandible face nerve (C.N.7) is on high risk if the incision an elevation of the flap is standard. Access to the oral cavity for complete resection. Nerve vascularisation in subcutis m. Platysma and neuro face vein in the sub mandible gland area[9,10]. This nerve trauma caused changes to the angular mobility mouth resulted from nerve distraction of m. orbicularis oris and m. depressor anguli oris. Not only functional disorder but also aesthetic disorder. Inability to control lip lower movement interrupt liquid consumptions and give traumatic appearance such as a cerebrovascular accident. This can be seen in this case report.

Conclusion
Anatomy and embryology of tongue give useful surgical information. Various options of surgical therapy depend on size of lesion. An accurate and complete examination is the key to surgical intervention. Early diagnosis will help us to choose a better treatment.

Table 2. Clinical stage of tongue carcinoma classification based on joint committee USA (AJCC) and France (UICC).

| Stage | Clinical features |
|-------|------------------|
| T1    | 2.5 cm or less    |
| T2    | 2.6—4 cm         |
| T3    | 4.1—6 cm         |
| T4    | 6.1—8 cm         |
| T5    | Greater than 8 cm |

Table 3. Staging Group.

lymphatic system in tongue:

1. 1/3 posterior tongue lymph nodes drain into both sides of upper deep cervical lymph nodes.
2. 2/3 medial anterior tongue lymph node drains into lower deep cervical lymph nodes.
3. 2/3 lateral anterior tongue drain to the submandibular lymph node.
4. tip of tongue lymph drain to submental lymph nodes.[11]

There is a high metastatic number of tongue carcinoma to cervical lymph nodes region, and due to insensitivity of radiation therapy surgical excision still, become primary option. When there is clinical metastatic lesion N1 N2 Radical Neck Dissection (RND) should be done, combined with radiotherapy.

After surgical treatment, 40% of patient with stage T2 condition could be found with cervical metastatic. Therefore preventive therapy for cervical lymph node metastatic become very important. Patient stage T2T4 even with no clinical lymph node enlargement must be undergoing Elective Neck Dissection (END surgery), except T1N0 case that can be followed up periodically. For T3T4 patient must undergoing RND as part of primary surgical therapy.

The therapy method decision is based on clinic-radiology staging of the tumour. The treatment planning inpatient with tongue cancer depends on involvement of floor of mouth, jaw, and another surrounding landmark, the size of cancer and the presence lymph nodes disease. It was essential in the beginning to decide the aim of the therapy which supposed to be curative (I-IVA) or palliative (late IVB-locoregional stage and IVC stage- metastatic). Sometimes tumour staging IVB might be reacted to treatment then the surgery can be done. However, the case has few percentages and must be selected carefully. In the early stage it treated with single modality whether the surgery or
choice. Partial glossectomy surgery followed by neck dissection become the best choice to achieve a better prognosis. Reconstruction post glossectomy treatment is challenging therapy to cover tongue defect.

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**Competing Interests**

The authors declared that this review was done independently without any conflict of interest of any organizations that would lead this review to bias.

**Ethical statement**

This is a retrospective case report without the use of any samples from patients, so ethical approval can be waived.

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