

(CASE REPORT)



Mandibulotomy approach and reconstruction with major pectoralis myocutaneous flap in squamous cell carcinoma of the tongue

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Abstract

Tongue squamous cell carcinoma (SCC) is a form of oral cancer that is becoming more common. In this case study, a 58-year-old woman patient presents with a mass on her right tongue that has been there for two months, along with pain and worsening ulcers. Upon physical examination, a hard and fixed lump was seen on the tongue. In addition to chemotherapy, the patient was scheduled for surgery before receiving radiation. Two surgical options for treating this tumor were reconstruction with a pectoralis major myocutaneous flap and a mandibulotomy technique. This study emphasizes how crucial early detection and suitable treatment are to improving the prognosis for tongue SCC patients.

Keywords: Squamous cell carcinoma; Oral cancer; Mandibulotomy; Pectoralis major myocutaneous flap

1. Introduction

The distribution of sexes in oral cavity SCC (squamous cell carcinoma) varies with age of onset; males make up about 70% of cases in the elderly, whereas below 45 years of age, the percentage falls to 50–65%. Thus, these epidemiological features may represent etiopathogenic differences that distinguish a subgroup of young patients from the elderly.^{1,2} An American group of academics first observed in the 1990s that SCC of the tongue is more common in young people. These findings were further supported by a worldwide investigation that comprised 22 tumor registries and specifically looked into tongue cancer. This study showed that in 14 of the 22 registries, the young age group (less than 45 years old) experienced a considerably larger yearly rise, ranging from 0.4% to 3.3%. The greatest growth in females, especially in the younger age group, was only seen in a few registries in our thorough research; in others, it displayed a uniform distribution or even male superiority.^{3,4}

For advanced tumors that need flap localization or reconstruction using microvascular free flaps, surgical techniques for treating oral cancer can vary from primary closure and wide local excision for small tumors to composite resection of the tongue, floor of the mouth, or mandible with neck dissection. Despite the fact that free flaps are frequently the first option for reconstruction, locoregional pedicled flaps are a good substitute when free flap reconstruction is not feasible because of contraindications, limited supply, or prior failure. The submental, supraclavicular, latissimus dorsi pedicled, pectoralis major muscle, and sternocleidomastoid flaps are a few examples. The benefits of locoregional pedicled flaps over free flaps include reduced donor morbidity, faster operating times, no requirement for microvascular expertise, simple retrieval, reduced expenses, and high reliability. The pectoralis major (PM) flap is often used for reconstruction of extensive oral cancer defects due to its speed, reliability and ability to provide a safe repair, especially in areas where large amounts of tissue are required. This flap has an excellent survival rate and reliability due to its rich blood supply. In addition to primary closure of the donor site, this flap can easily cover extensive skin abnormalities.^{5,6}

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2. Case Report

Patient with initials NKT, female, 58 years old, Balinese from Tabanan. The patient came to the Otorhinolaryngology-Head and Neck Surgery Polyclinic in April 2023 with complaints of a lump on the right tongue since 2 months, there was thrush since 6 months which got worse, the tongue felt stiff and painful. The patient can still eat and drink with a soft consistency. The patient was given serial chemotherapy therapy, targeting and bondronat until October 2023 but still felt a lump on the right tongue so it was planned for surgery before radiotherapy therapy.



Figure 1 Clinical photo of the patient

On physical examination, The general condition of the patient was determined to be moderately unwell, with axillary temperature 36.3 o C, body weight 45 kg, blood pressure 150/90 mmHg, pulse 72 times per minute, respiration 20 times per minute, and compos mentis consciousness. On examination of the tongue, a lump was found on the right tongue measuring 4x2x2cm, tenderness, fixed, and hard to the touch. Ear and nose examination showed no abnormalities.



Figure 2 Right tongue

On laboratory examination, the results of complete blood, electrolytes, and blood chemistry (WBC $6.13 \times 10^3/\mu\text{L}$, Hb 10.80 g/dL, Ne# $3.87 \times 10^3/\mu\text{L}$, K 4.03 mmol/L, Na 144 mmol/L). Thoracic X-ray examination results were within normal limits.

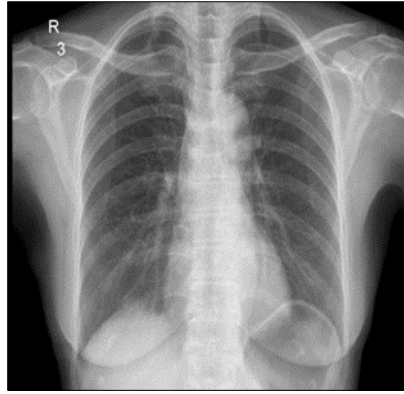


Figure 3 Thoracic x-ray

Based on history, physical examination and supporting examination, the patient was diagnosed with Squamous Cell Carcinoma (SCC) std IVC (T4aN2cM1) bone metastases post chemotherapy series VI + targeting VI + bondronat III. The patient underwent CT-Scan evaluation with the impression: heterogeneous solid mass of irregular shape with indistinct boundaries with necrotic center inside on the anterior to posterior body of the right tongue extending to the left side, infiltrating the right vertical, transverse, and transverse M. vertical right, M. transverse and M. longitudinal 2/3 anterior right, M. genioglossus right left, M. hyoglossus, M. mylohyoid, M. styloglossus, M. palatoglossus right, extending too the sublingual space right, sublingual gland right, and attached to right pharyngeal space mucosal, impression of malignant mass, reduced impression lesion (at posterior aspect), multiple suspicious lymphadenopathy at level Ia/b, IIa/b, III right and left, impression of relative number, reduced impression size.

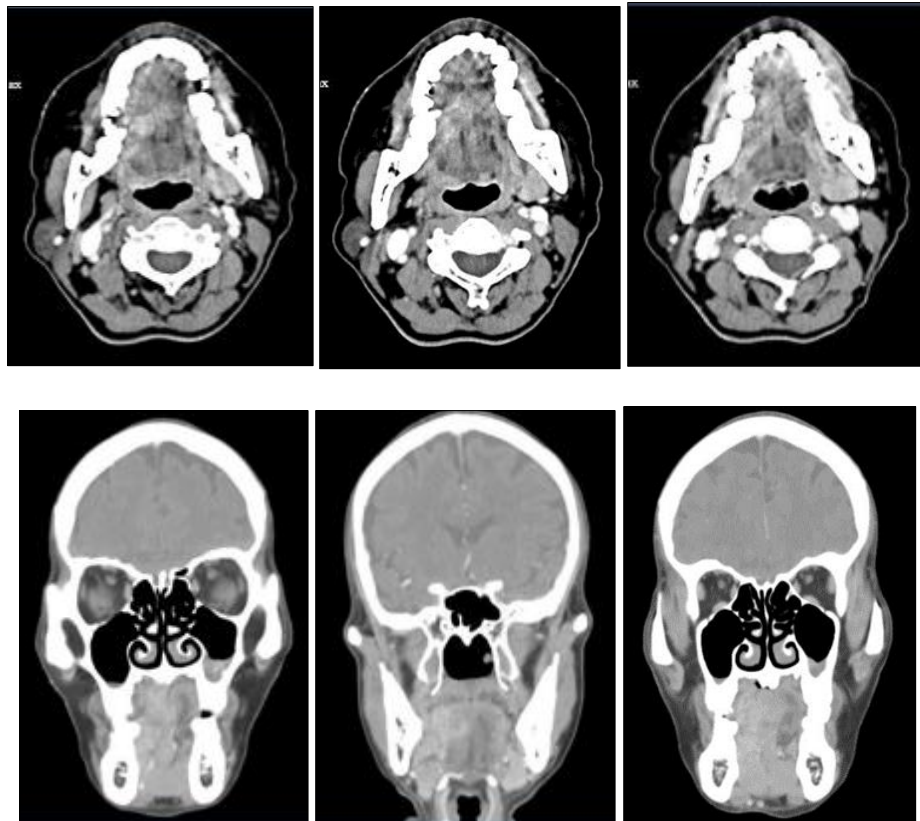


Figure 4 Ct-scan of the tongue with contrast

The patient was then planned for subtotal glossectomy+ mandibulotomy + modified radical neck dissection (MRND) + pectoralis major myocutaneous flap under general anesthesia. The patient underwent a complete preoperative laboratory examination and was referred to anesthesia colleague for surgical feasibility. Anesthesia colleague

consultation results obtained patients with ASA III physical status (post chemotherapy, mild kidney impairment with CCT 50, moderate anemia).

On December 13th, 2023, subtotal glossectomy + mandibulotomy + MRND pectoralis major myocutaneous flap was performed. Intra-operatively a tumor mass was found on half of the tongue to the base of the tongue, enlarged lymph nodes level I - V dextra



Figure 5 MRND procedure with mandibulotomy and subtotal glossectomy



Figure 6 Pectoralis major myocutaneous flap harvesting and insertion



Figure 7 Mandibular closure using plate and screws and skin suturing

At the postoperative follow-up, the patient reported that the surgical wound hurt. On the second day, the patient continued to complain of pain in the chest and tongue surgical wounds. There were no indications of infection on the surgical wound. The drain was removed on the fourth postoperative day since there was no more blood coming from it. The wound was well maintained. On the 9th postoperative day on December 22nd, 2023, the surgical pain was minimal, the surgical wound was dry, then the patient was discharged. Treatment was continued through the Otorhinolaryngology-Head and Neck Surgery Polyclinic. The patient was given home medications such as; cefixime 2x200mg, tranexamic acid 3x500mg, paracetamol 3x500mg, tantum verde 3x daily, and durogesic patch.



Figure 8 The 9th postoperative day, flap and wound well-preserved

The patient came to the polyclinic on the 13th postoperative day on December 26th, 2023, minimal postoperative pain, no signs of wound infection and NGT tube replacement. On the 60th postoperative day, the surgical wound had dried and healed, the flap was well-preserved, and the patient had learned to eat and drink orally. Then the patient was planned to continue radiotherapy.



Figure 9 The 60th postoperative day

3. Discussion

Based on history, physical examination and supporting examination, the patient was diagnosed with Squamous Cell Carcinoma (SCC) std IVC (T4aN2cM1) bone metastases post chemotherapy series VI + targeting VI + bondronate III. A number of variables, including the defect's location, the type of tissue needed, the functional and cosmetic consequences, related comorbidities, and the resources available, influence the actual reconstruction choice. In Indonesia, myocutaneous flaps are the primary repair technique used on most patients. The advantages of a well-designed microvascular flap are unrivaled, however high failure rates are seen when performed in high-risk patients with advanced stages of disease and poor performance status. Prospective research by Sen et al. on 29 patients who had PM flaps for oral cancer found that the very big skin paddle covers the entire PM muscle with skin paddle extension as far as the rectus abdominis sheath can be taken, making the use of PM flaps favorable. Complications are most common with flaps that extend past the sixth rib. Partial flap loss can be carefully controlled, and total flap necrosis is uncommon. Female gender (28.6% vs. 9%), the presence of comorbidities (3 out of 4 patients, $P=0.0001$), and infection (4/4 patients, $P=0.0001$) were determined to be potential risk factors for flap necrosis.

In this case, a 58-year-old female underwent glossectomy, mandibulotomy, modified radical neck dissection (MRND), pectoralis major myocutaneous flap under general anesthesia. Glossectomy, either sub-total or total, is the mainstay of treatment for squamous cell carcinoma of the tongue (SCC) to achieve healing with optimal function. Reconstruction after glossectomy is challenging, with various flap options used to restore tongue mobility, articulation and swallowing. Various types of flaps, such as pectoralis major, latissimus dorsi, sternocleidomastoid, and supraclavicular island flaps, can be used for post-glossectomy tongue SCC reconstruction. Despite their advanced age, there have been no reports of flap issues or necrosis.^{6,7}

Because the subclavian route was used to avoid jeopardizing the distal skin flap, Chen et al. (2015) proposed a variation of the PMMC flap technique that preserved the lateral thoracic vasculature without restricting the flap's arc of rotation. Compared to methods that slice and anastomose the lateral thoracic blood vessels or split the pectoralis minor muscle, this modified technique turned out to be easier and safer. This method might eventually inspire more study to produce better outcomes. In every instance, the flap can be retrieved concurrently with the resection, which reduces the duration of the procedure. There was no flap vascularization issues with the design. Furthermore, these patients were assessed as having a high risk of thromboembolic complications and would not have tolerated the idea of reoperation, despite the fact that some contend that surgery including microvascular reconstruction is not always longer.⁸

4. Conclusion

The mandibulotomy and pectoralis major myocutaneous flap approach is an effective technique in the management of squamous cell carcinoma of the tongue. Using this approach, can perform a thorough resection of tumor and reconstruction of the affected area with good results. The mandibulotomy approach allows optimal access to the tumor area, while the pectoralis major myocutaneous flap provides sufficient tissue for reconstruction. Depending on the tumor's location and size as well as the patient's health, these two procedures can be used singly or in combination. To achieve the best outcomes in the treatment of tongue squamous cell carcinoma, however, a comprehensive patient evaluation and the choice of a suitable approach are essential.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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