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Dr. Kacker Varun
Junior Consultant, Department of ENT, Jain ENT Hospital, Jaipur, Rajasthan, India

Dr. Narang Shivam
Junior Consultant, Department of ENT, Jain ENT Hospital, Jaipur, Rajasthan, India

Dr. Ananya Sood
Junior Consultant, Department of ENT, Jain ENT Hospital, Jaipur, Rajasthan, India

Corresponding Author:
Dr. Kacker Varun
Junior Consultant, Department of ENT, Jain ENT Hospital, Jaipur, Rajasthan, India

A surgical odyssey: Hemi-glossectomy with modified radical neck dissection in oral cancer management

Dr. Kacker Varun, Dr. Narang Shivam and Dr. Ananya Sood

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Abstract
One of the treatments for tongue cancer is a hemiglossectomy, which involves surgically removing half of the tongue. Regional metastases can be treated surgically and afterwards with supraomohyoid neck dissection (SOHND). SOHND, or selective neck dissection, is recommended for patients with T_2, T_3, and clinically negative (N0) or N1 cervical lymph nodes who have tongue cancer. 46-year-old male with a lump on the right side of his tongue that has been bothering him for the previous six months. It was established that he had a long history of chewing tobacco. The results of a physical examination revealed a painless mass measuring 4.3 x 2.2 x 4.7 cm, with 2.2 cm depth of invasion (DOI) on the right two-thirds of the anterior tongue. The biopsy's histopathology results revealed an invasive keratinizing squamous cell carcinoma, and A contrast enhanced MRI was done suggestive of a mass lesion on right lateral border of the tongue involving its root, anteriosuperior margin with infiltration into opposite genioglossus muscle and appearing hyperintense on T_2. The size of the cervical lymph nodes was also enlarged to 13 mm, and the density of the bone was normal. The main form of therapy for T3N1M0 tongue cancer is hemiglossectomy, and radiotherapy should be thought of as adjuvant therapy for a better prognosis.

Keywords: Hemiglossectomy, supraomohyoid neck dissection, depth of invasion, squamous cell carcinoma

Introduction
Oral cancer is the sixth most common malignancy worldwide. The majority of oral cancer cases and one-third of the global burden are found in India. The health of the countries going through economic transformation is seriously threatened by oral cancer [1]. An estimated 14 of all cases worldwide-roughly 77,000 new cases and 52,000 deaths-are reported each year in India [2]. Having a 14.8 age-standardized incidence rate. One of the cancers of the oral cavity is tongue cancer, which typically develops from squamous cells on the surface of the tongue (squamous cell carcinoma) [3]. 90% of oral cavity neoplasms are caused by tongue Squamous cell carcinoma (SCC) (4), the most common intraoral malignancy in the head and neck [5, 6]. The 2/3 anterior of the tongue is where the majority of lesions are found, typically on the lateral and upper side [7]. Leukoplakia, erythroplakia, and tongue ulcers are among the often mentioned symptoms. Additionally, patients report odynophagia, dysphagia, dysarthria, and localised discomfort. A lump on the neck has been discovered in a patient, and it is most likely a cancerous metastasis to the neck region [8]. Aside from a physical examination, significant supportive diagnostic techniques include a biopsy and a contrast-enhanced computed tomography (CT) scan of the oropharynx, which can reveal information on the size, location, and tumour extension as well as the radiologic appearance of the draining lymph nodes [8]. The gold standard for diagnosing tongue cancers is histology and biopsies. [7].

On the tongue, roughly 45% of carcinoma lesions are found on the lateral margin of the middle third, 25% are found in the back, 20% are found up front, and 4% are found on the dorsum [9]. The National Comprehensive Cancer Network (NCCN) 2021 guidelines state that surgical treatments, radiation therapy, and chemotherapy are all used to treat tongue cancer [10]. Based on the tumor's size, position, involvement of the mandibular bone in the lower jaw, and likelihood of metastasis, a surgical approach was chosen [11]. One intraoral surgical treatment used to treat tongue cancer is the hemiglossectomy, which involves surgically removing half of the tongue [12, 13].

Due to the high frequency of cervical lymph node metastases in tongue cancer, neck dissection during glossectomy is always taken into consideration [14]. One of the specialised neck dissections utilised to treat tongue cancer patients is the supraomohyoid neck dissection (SOHND) [8]. Patients with substantial T_2, T_3, and T_4 and cervical lymph node enlargement that is either clinically negative (N0) or distinct, solitary, and 3 cm (N1) are eligible for SOHND [15]. The prognosis for tongue cancer is often dismal, with a five-year survival rate of fewer than 25% [7]. The combination of surgical techniques and adjuvant chemotherapy or radiotherapy may improve survival rates in tongue cancer patients [16, 17].

Case Report

A 46-year-old man reported having a lump on the right side of his tongue's 2/3 posterior region over the previous six months. The patient initially experienced a 2 month long ulcer (stomatitis) on the right side of his tongue. Although he noted that occasionally he had terrible breath and swallowing pain, swallowing solid food was typical for him. He also expressed concern about a lump on his right side of the neck, which he had been experiencing for the previous two months before the visit. He has a history of tobacco chewing. General status was obtained moderate state, compos mentis awareness, cooperative and heart rate 80 times a minute, respiratory rate 20 times a minute, blood pressure 140/90 mmHg. Physical examination showed a symmetric face and skin colour appears to be normal. Localised status on oropharynx region showed a fixed pedunculated mass on the 2/3 anterior right tongue with the size about 4.3 x 2.2 x 4.7 cm, with 2.2 cm depth of invasion (DOI), appeared to bleed easily. Multiple enlarged lymph nodes seen on the right side of the neck. The largest node seen at level III which measures approximately 13mm, with smooth surface, mobile, with no tenderness and no trismus (Figure 1). The blood laboratory and chest x-rays showed a normal result.

A biopsy was performed on the patient to identify the suspected malignancy. The result histopathology before surgery revealed invasive well differentiated keratinising squamous cell carcinoma. A contrast enhanced MRI was done suggestive of a mass lesion on right lateral border of the tongue involving its root, anteriosuperior margin with infiltration into opposite genioglossus muscle and appearing hyperintense on T_2 and STIR sequences while appear hypointence on T_1 sequence. The mass shows restriction of diffusion and shows enhancement after gadolinium contrast. It also shows metastatic lymph node at level III on the right side. Based on these, the patient was diagnosed with T3N1M0 tongue cancer, then prepared for the right hemiglossectomy procedure and supraomohyoid neck dissection (SOHND).

Right Hemiglossectomy

On the patient's left side, the tongue was fixed to the drape using 1.0 silk thread. On the lateral-anterior right side of the tongue, there was an ulcerative tumour that was roughly 4x4 cm in size. At a distance of about 2 cm from the ulcer, a margin incision was noted. Electric cautery was used to remove the tumour from the tongue's midline to its front 2 cm margin. The lingual artery was then ligated, and the excision was then carried across the terminalis line to the posterior side. From the lateral anterior to the posterior, excision was continued until it reached the anterior fold of the tonsils in the fossa. The bleeding was under control, and the tumour was removed.

Right supra omohyoid neck dissection procedure

An incision of 5-7 cm was made, 2-3 cm below the angulus mandibula parallel, to mark the operative site. As soon as the digastric muscle showed, the right submandibular gland was located and released, and lymph node dissection at levels IA and IB, levels IIA and IIB, and level III upper border of omohyoid muscle followed. The spinal accessory nerve was located, and a level IIB lymph node was dissected from the internal jugular vein down until it joined a level III lymph node, starting with a level IIA level lymph node (1 cm) and progressing to a level IIB level lymph node (2 cm). The bleeding was stopped, and a drain was put in. The wound was then stitched shut and the muscles were repaired.

Discussion

This case study is about a 46-year-old male patient who had a developing mass on the 2/3 anterior right side of his tongue for the previous six months. Tongue cancer in Stage III T3N1M0 was the patient's diagnosis.

We learned through the examination that the patient had a 10-year history of chewing tobacco. The patient initially had a right tongue ulcer. During the intra-oral examination, a fixed pedunculated ulcer measuring 4.3 x 2.2 x 4.7 cm, with a 2.2 cm DOI, that appeared to be easily bleed, was found in the 2/3 anterior right tongue. A stage III lymph node enlargement, with the largest being 13 mm, was also discovered. This is consistent with other research that found that the majority of cancers begin with ulcers. Ulcerative ulcers are typically an indication of tongue cancer in its later stages. Additionally, we discovered level III lymph node enlargement in this patient, which denoted regional metastasis. A lesion with a DOI >10 mm and a surface area of 4 cm is classified as being in the T3 stage by the American Joint Committee on Cancer (AJCC) [18,20]. According to the 2018 AJCC, the patient's history, physical exam, and contrast-enhanced oropharynx CT scan revealed stage III T3N1M0.

Before surgery, this patient had a biopsy and histopathology examination that revealed an invasive, moderately differentiated, keratinizing squamous cell carcinoma. Compared to other tests like cytology examination with fine needle aspiration (FNAB) [7, 18, 20], tongue biopsy has a 93.53% specificity and an 83.33% sensitivity, and it produced a representative result for the removal of the entire lesion. This condition is known as hybrid or SCC with non-keratinizing maturation, and it occurs when a malignancy has both a non-keratinizing and keratinizing appearance. The right hemiglossectomy and SOHND were performed on the patient in accordance with NCCN therapeutic recommendations. Hemiglossectomy, a trans-oral surgical treatment for treating tongue cancer, involves removing half of the tongue. It is recommended for large lesions that only affect the ipsilateral of the tongue and infiltrate both intrinsic and extrinsic muscles [12, 13]. In addition to the cancer being completely removed, a successful surgery improves the patient's capacity for food swallowing and returns speech. Hemiglossectomy, as opposed to total glossectomy, resulting in better swallow function, regained speech, and decreased handicap [14]. The risk of regional

metastases of tongue cancer is considerable, particularly to the adjacent lymph nodes, because the tongue has several lymphatic drainages [14]. When they initially arrive at the hospital, 40% of tongue cancer patients already have regional metastases [21]. As a result, neck dissection should always be taken into account after glossectomy [10].

The American Head and Neck Society states that SOHND is one of the elective upper neck dissections to remove a group of lymph nodes staged I-III with preservation of the spinal accessory nerve, sternocleidomastoid muscle, and internal jugular vein in patients with N0 or N1 (with cancer spreading to one lymph node on the primary malignancy ipsilaterally) [22]. SOHND was performed on this patient because there was a level III lymph node enlargement on the right neck but no more nodule expansion. The five-year survival rate for tongue cancer patients is below 25%, and those with a third of the dorsum lesion had a poorer five-year survival rate overall [7]. Following surgery, adjuvant radiation or chemotherapy may increase the likelihood that tongue cancer patients will survive [16, 17].

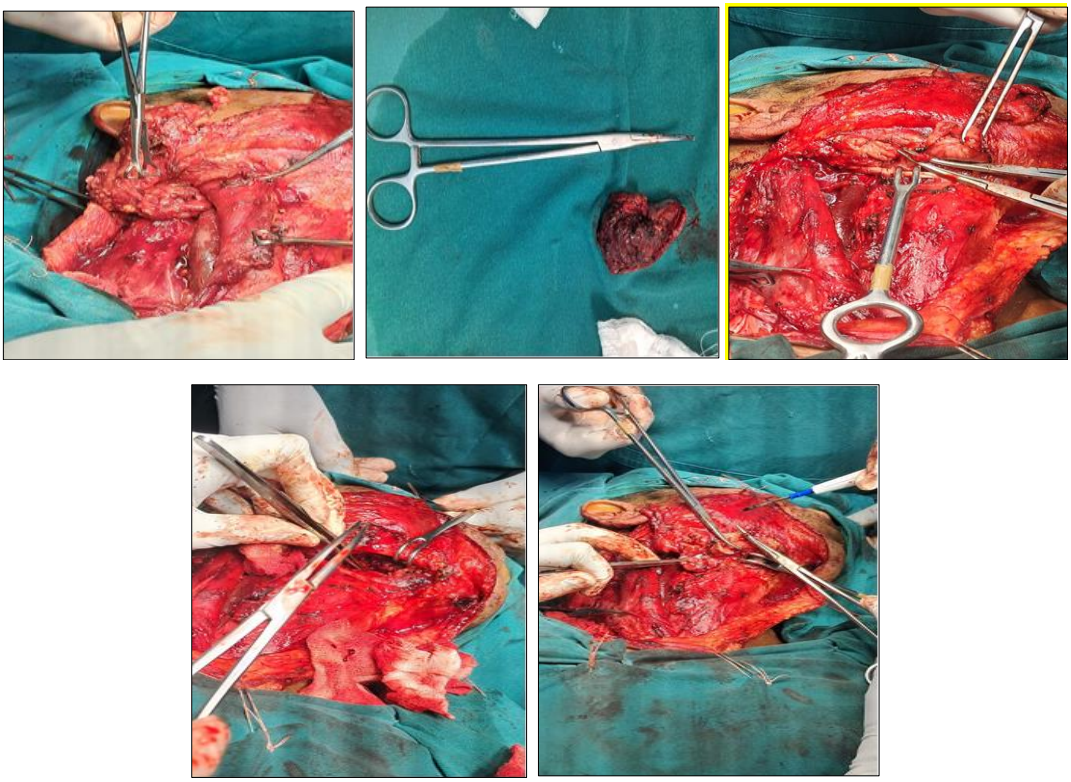

Fig 1: Intra-op pictures showing lesion of the tongue, Hemi glossectomy and neck dissection along with the tumor excised

Conclusion

The most frequent cancers of the oral cavity are SCCs of the tongue. This patient was diagnosed with stage III T3N1M0 SCC and had a hemiglossectomy operation, according to NCCN. In this patient, radiation should be administered after hemiglossectomy and SOHND for a better prognosis and greater five-year survival rate.

Author's Contribution

Not available

Conflict of Interest

Not available

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