

Skip Metastasis in Oral Cancer: An Obnoxious Phenomenon

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Abstract

Oral cavity is a common site for carcinomas. Majority of cases seen in India is squamous cell carcinomas (SCC) of oral cavity, that tend to metastases to the cervical lymph nodes. Whereas, Metastasis is eminent in all types of neoplasms. An alarming skip metastasis phenomenon is also associated with the oral oncology for the population of any age. This mini review is an attempt to discuss about skip metastasis (SM) and its' importance in diagnosis and management of oral cancer patients.

Keywords: Oral Tongue Cancer; Skip Metastasis; Squamous Cell Carcinoma

Abbreviations

SCC: Squamous Cell Carcinoma; SM: Skip Metastasis; NSM: Nodal Skip Metastasis; LN/Lns: Lymph Node/Lymph Nodes

Introduction

Oral cavity is one of the primary sites for head and neck cancer, causing public health problem in the Indian subcontinent. The oral cancer ranks among the top three types of cancer in the country [1]. The oral cancer involves basically lip, buccal mucosa, tongue, vestibule, alveolus, palate, retromolar area, floor of mouth etc. Involvement of these important anatomical structures hampers the normal form and function causing difficulty in chewing and swallowing. Eventually, the general well-being of the individual is affected due to compromised food intake causing debilitated conditions.

Lymph nodes (LNs)

LNs are the important anatomical bodies to drain the lymphatics of all the structures of oral cavity. The LNs present in neck are collectively called as cervical LNs. They have been named according to its anatomical position in the neck region. They are grouped into levels I-V, corresponding with the submandibular and submental nodes (level Ia and Ib); upper, middle, and lower jugular nodes (levels IIa and IIb, III, IV); and posterior triangle nodes (level Va and Vb) (Figure 1) [2]. They are arranged in a ring like fashion around the neck region with outer and inner circles to support the

drainage system (Figure 2) [3]. They are involved in protecting the body against infection, by delivering immune cells, known as lymphocytes, to areas where the immune response has been triggered.

Figure 1: Showing levels of cervical lymph nodes of various triangles of neck; Sabiston Textbook of Surgery: The Biological Basis of Modern Surgical Practice, 20e, Chapter 36. Thyroid; <http://www.surgicalcore.org/popup/424191>

Figure 2: Showing outer and inner circles of cervical lymph nodes in the transverse plane of neck;
<https://www.earthslab.com/anatomy/lymphatic-drainage-of-the-head-and-neck/>

Metastasis

Metastasis is a familiar sequel of oral carcinoma. Cancer of oral cavity metastasizes to the cervical LNs in a predictable fashion based on the primary sites or subsites. For example, oral cavity cancers spread likely to levels I-III, oral tongue cancer to level I-IV [4]. The literature suggested that the SCC of the oral tongue metastasize to clinically negative nodes in 20% to 30% of patients [4]. But if the metastasis skips any regional LN and show dysplastic features into the peripheral LN then it is known as 'Skip metastasis' (SM) or 'Nodal skip metastasis' (NSM). Here, it's important to take into consideration the terms SM or NSM. The NSM is defined as the presence of infiltrated LNs that are distant from the primary tumour but without the involvement of nodes in close proximity to the primary site [6]. One of the most important prognostic factors in head and neck cancer is the presence or absence, level and size of metastatic neck disease. There are about 150 lymph nodes on either side of the neck making it a very complex anatomical structure.

Skip metastasis (SM) or Nodal skip metastasis (NSM)

Several studies have suggested that the SM is more common singularity in oral cancers, especially with SCC of tongue and floor of mouth as there is often free communication between the two

sides of tongue [5,7-12]. The normal acts of mastication and swallowing enable tongue massage and can encourage both initial and rapid lymphatic spread directly to low in the neck [8].

Byers RM., *et al.* (1997) concluded that the usual supra-omohyoid neck dissection is inadequate for a complete pathologic evaluation of all the nodes at risk for patients with SCC of the oral tongue due to skip metastasis in 15.8% of population [5]. While, Woolgar JA (1999) have claimed that bilateral metastases were seen in some tumours of the floor of mouth, tongue and oropharynx which involved the midline. An erratic distribution of metastases suggestive of 'fast-tracking' (skip lesions and peppering) was only seen in tongue tumours. The pattern of metastatic spread indicates that level IV nodes must be included in staging and therapeutic neck dissections in tongue cancer [9]. Likewise, Chakraborty PS., *et al.* (2019) concluded that in tongue, retromolar trigone and floor of mouth cancers are high propensity of isolated Level II involvement suggested that process of SM therefore, routine Level IIb clearance should be considered [10].

On contrary Dias FL., *et al.* (2006) concluded that only 2% of patients with SSC of the oral tongue and the floor of the mouth presented SM in the neck [11]. While, Balasubramanian D., *et al.* (2012) have found that SM is rare in T1 and T2 oral tongue SCC. In selective neck dissection, inclusion of level IV is not mandatory for clinically and radiologically negative neck disease in early tumours (T1 and T2) [12].

However, it is also found that most of the literature available on the frequency and forms of nodal metastasis is from the Western world where tongue and floor of the mouth cancers are more common than gingivobuccal complex cancers. Prediction of the lymphatic spread could help in choosing the appropriate surgical procedure for both clinically positive and negative necks.

Conclusion

Cancers have tendency to metastasise, while oral cancers have an effective propensity of skip metastasis. But this has been cleared that a selective neck dissection could warrant further investigation for SM if the lesion is associated with tongue or floor of mouth because of its complex anatomical structure of lymphatic drainage system as well as bilateral correlation of anastomosis in the midline. Preoperatively, effective and definitive clinical and histo-

pathological diagnosis is the only key for the selection of surgical protocol and neck dissection. While, intraoperative frozen sections are mandatory to diagnose the involvement of any NSM and routine postoperative follow up is also reasonable to check for recurrences.

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Conflict of Interest

Nil.

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