



NEED FOR DISSECTION OF LEVEL IIB IN SQUAMOUS CELL CARCINOMA OF ORAL CAVITY IN CLINICALLY NEGATIVE NECKS: A REVIEW OF LITERATURE

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ABSTRACT

Elective neck dissection in the management of Squamous cell Carcinomas of oral cavity has become a routine procedure which entails the removal of neck nodes from level I to V, leading to undue morbidity. The shoulder dysfunction is the most common complication which affects the quality of patient's life post-operatively. This untoward consequence can be prevented by evaluating the need for removal of level IIB in neck dissection in clinically negative neck. This review intends to evaluate the incidence of occult metastases in level IIB in cases of oral cavity SCC. Specific search strategies were used to identify articles published in literature on the topic of inclusion of level IIB in neck dissection of clinically negative necks. The review identified 8 articles which were suitable for inclusion in this review. The incidence to sublevel IIB in clinically negative neck is 4.2%, with a greater predilection when the primary tumor involved the tongue. Through this review, it can be inferred that the level IIB nodes be included in the dissection specimen only when the tongue is the primary site of involvement.

KEYWORDS : level IIB, Neck Dissection, occult metastases, oral cavity SCC

INTRODUCTION

Carcinoma of the oral cavity, usually, Squamous Cell Carcinoma (SCC) most often involves metastasis to the cervical lymph nodes and is an indicator of advanced disease with adverse prognosis. Occasionally there may be occult metastasis to the neck nodes, where in, the neck is negative clinically. The choice of elective neck dissection (END) is a prophylactic measure to avoid untoward consequences of any occult metastasis.

The need for the dissection of level IIB nodes and their inclusion in the neck dissection specimen, in patients undergoing END for carcinoma of oral cavity, is a topic of contention among surgeons. While some surgeons propose preservation of IIB level nodes, some other surgeons contend this by recommending its dissection and removal.

Level II nodes are subdivided into IIA and IIB by the Spinal Accessory Nerve (SAN) after its exit from the jugular foramen. The level IIB, also known as the Sub-muscular recess (SMR) is present postero-superior to the SAN with the skull base as the superior boundary, the horizontal plane defined by the inferior border of hyoid bone as the inferior boundary and the lateral border of Sternocleidomastoid muscle (SCM) as the posterior boundary^[1].

The dissection of SMR involves traction on the SAN, which might lead to neuropraxia due to devascularisation and subsequent shoulder dysfunctions.

This review evaluates the rationale behind removal of IIB lymph nodes during elective neck dissection (END) in clinically negative neckin squamous cell carcinomas of oral cavity (cN0).

METHODS

A systematic approach to identify articles published on the subject of END in oral cavity SCC was employed. Search terms used were elective neck dissection, Sub-muscular recess, level IIB, metastases. The search engines included Medline, Google Scholar and EMBASE. Of the plethora of studies obtained in the search results, articles relevant to the present review were chosen based on inclusion criteria which

were set as follows: (a) the study should identify level IIB separately by defining the boundaries (b) a separate histologic specimen of level IIB nodes should be sent for histopathologic assessment in the study. (c) Data relevant to number of patients with oral cavity carcinomas and clinically negative necks should be presented in the article. The literature search showed a total of 11 articles relevant to the present review out of which only 8 were included in this review based on the above mentioned inclusion criteria.

RESULTS

To evaluate the metastatic pattern to IIB nodes in a cN0 neck in oral cavity SCC, eight studies were included and assessed in this review, which is summarized in Table 1.

Mohd. El Sheik et al observed a distinct metastatic pattern to IIB nodes in a cN0 neck and recommended inclusion of IIB nodes in the neck dissection specimen when the primary lesion involved the tongue and suggested its sparing when the primary involved any other site in the oral cavity.^[2] This study had used molecular markers as well as standard histopathological techniques to identify metastatic nodes. To maintain uniformity, only the findings from histological analysis were used in this review.

The articles by Benjamin et al^[3], Corlette et al^[4] have evaluated the role of sublevel IIB inclusion in the neck dissection specimen for head and neck carcinomas. Although these studies have identified the sublevel IIB separately and identified metastases in this sublevel from oral cavity carcinomas, these studies have been excluded from the present review as the data on the number of oral cancer patients with cN0 neck is insufficient. The study by Silverman et al^[5] is elaborate and mentions the number of patients with oral cavity carcinoma but it fails to mention the nodal status of these patients at presentation and is hence excluded from this review.

Kraus et al^[6] observed metastatic deposits in IIB nodes in only one patient out of a series of 44 patients with SCC of oral cavity. The article by Lim et al^[7] reported involvement of the IIB lymph nodes in only four of 74 patients and suggested that the incidence of IIB nodal involvement is low and this region may

be preserved in END in SCC of oral cavity. Lee et al⁽⁸⁾ observed no positive nodes in sublevel IIb in clinically negative neck. Paleri et al⁽¹⁾ also suggested in their study that the chance of occult metastases in sublevel IIb is low in the absence of spread to other adjacent levels. Elengkumaran et al⁽⁹⁾ reported 6 cases with positive nodes in level IIb in patients with oral cavity carcinomas.

From the observations in this review, four main inferences can be drawn. Firstly, the prevalence of metastatic nodes in sublevel IIb in patients with oral carcinomas with cN0 neck is only 4.2% (20/471 patients). Secondly, 60 % (12/20) of these cases had primary in the tongue. Third inference of significance is that, most of the times; the positive metastasis in level IIb is associated with metastases in other levels. Another interesting inference is that, all the cases with tongue primary had IIb positive nodes in association with positive nodes in other levels.

DISCUSSION

Elective neck dissection aims to avoid morbid consequences due to occult metastases in clinically negative necks. During the dissection of the level II nodes, traction on the Sternocleidomastoid muscle and the accessory nerve is applied for enabling good exposure. Also, the SAN needs to be dissected all around and lifted off its bed to allow for the dissection and inclusion of IIb nodes in the specimen.⁽¹⁾

This continuous traction might lead to nerve injury leading to dysfunction. This dysfunction termed as the 'shoulder syndrome' is the most common morbidity associated with neck dissections. It has been observed that the complaints of shoulder and neck pain are seen more commonly in patients who have undergone level V dissection.⁽¹⁾

TABLE 1- STUDIES INCLUDED IN LITERATURE REVIEW

Year	Author	No. of pts	Primary site	TNM stage	Neck dissection	Histo-pathological report with IIb Positive			Shoulder function
						No. of patients	Primary site	No. of patients with other positive level nodes along with IIb	
1996	Kraus et al	44 39*	Tongue -23 Gingiva-07 FOM-07 RMT-02	T -variable N0 M0	SOHND-47 U/L-41 B/L-03	0	-	-	Compromised
2004	Lim et al	74	Tongue-51 FOM-15 BM-04 RMT-02 Gingiv-01 Lip-01	T- variable NO MO	SOHND-119 U/L-29 B/L-45	4	Lateral border of tongue	Level I + IIa -1 Level IIa - 4 Level IIa + III -1	-
2005	Elsheikh et al	48	Oral tongue-23 FOM-11 Gingiva-06 BM-05 RMT-02 Lip-01	T- variable NO MO	SOHND-74 U/L-22 B/L-26	3	Oral tongue	Level IIa- 3	-
2008	Paleri et al	38 10*	Oral cavity-10	T- Variable N0 MO	SND	1	FOM-1	-	Compromised
2011	Manola et al	72	Oral tongue	T-Variable N0- 50 M0	MRND	2	Oral Tongue	Level IIa	-
2015	de Vicente JC et al	56	Tongue- 20 FOM -13 Gum- 13 Palate -2 Buccal - 2 Retromolar -6	T-Variable N0- 27 M0	SND	0	-	-	-

Elsheikh et al conducted a molecular based study to identify the micrometastases to level IIb which may be missed out by conventional histopathological examinations.⁽²⁾ But the prognosis of patients with micrometastases is comparable to patients with no cervical metastases, supporting the presumption that this sublevel may be left undissected in clinically negative necks.⁽¹⁾

It has been observed through this review that the involvement of IIb nodes is usually not isolated and is associated with positive nodes in other levels, usually the Iia.

Leaving the level IIb nodes insitu poses less risk of SAN damage and also reduces operating time. In case of tongue primaries, the reported risk of occult metastases to IIb is between 7.8% and 21.7%, indicating the need for involving IIb nodes in the specimen during neck dissection for tongue carcinomas.

CONCLUSION

Through this review, it is possible to conclude that the dissection of sublevel IIb is not essential in clinically negative necks with oral cavity carcinomas and the nodes in this level may be left insitu thus preventing the shoulder dysfunction following END. But, this has to be weighed against the possibility of inadequate oncologic control. Also, a consideration for inclusion of IIb level in the oncologic specimen may be given when the primary involves the tongue. The study points to a need for prospective studies specifically catering to neck dissections involving Level IIb node in oral cavity SCC.

Conflicts of interest

There are no conflicts of interest

2016	Eelengkumar an et al	101	Lower GBS- 51 Upper GBS-01 RMT-10 BM-35 FOM-02 Lip- 02	T-Variable N0 M0	SOHND	6	FOM-01 RMT-02 Lower GBS-03	-	Not compromised
2014	Maher, Nigel Gordon et al	71	Tongue-27 FOM-19 RMT- 4 Lip- 6 Mandible- 6 Maxilla or palate- 5 Buccal mucosa- 4	T- Variable N0 M0	END	4	Tongue – 3 RMT- 1	-	-

*- number of patients with carcinoma of oral cavity alone.

SOHND = Supra-omohyoid neck dissection

SND = Selective neck dissection

END = Elective neck dissection

FOM = Floor of mouth

BM = Buccal mucosa

RMT = Retromolar trigone

GBS = GingivoBuccal Sulcus

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