

Neck Nodes at Level IIB in Oral Cavity Carcinoma: Can We Leave Behind Visible Nodes?

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ABSTRACT

Introduction: Oral cancer patients have a chance of metastasis to the cervical nodes. A prophylactic neck dissection is advised in clinically undetectable necks. The extent of the neck dissection has been in doubt and various levels with a low propensity are usually skipped such as level IIB. Though a routine level IIB node dissection is not suggested in patients with N0 neck, it is often confusing when visible nodes are present in this subgroup.

Patients and methods: A prospective analysis of consecutive oral cancer patients was conducted to see for level IIB nodes in an ipsilateral neck dissection.

Results: Forty-four patients underwent a neck dissection, including level IIB, retrieving 165 nodes from level IIB. Stage-wise distribution was 9, 22, 3, and 10 patients in T1, T2, T3, and T4 stages with majority in tongue cancers. An estimated 30 patients had a clinically node-positive disease, but only 18 underwent a modified or radical neck dissection. A pathologically node positive disease was seen in 12 patients, but only two had level IIB positive (0.01%), both of which had positive level IIA nodes.

Conclusion: This study adds to the evidence that the majority of nodes in level IIB are reactive nodes and a metastasis to this group in isolation is unlikely.

Keywords: Level IIB, Neck dissection, Oral cancer.

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INTRODUCTION

A comprehensive neck dissection (either radical or modified radical neck dissection) is a surgical treatment for a cervical metastasis from a squamous cell carcinoma. Although the exact role of a selective neck dissection in a therapeutic setting is unclear, it has become the standard in elective neck dissections.^{1,2} The quality-of-life of patients with a head and neck cancer and the morbidity associated with neck dissections has been a concern. The spinal accessory nerve (SAN) is preserved in selective and modified radical neck dissections to minimize a shoulder dysfunction.

Sublevel IIB nodes are located posterolateral to the vertical plane defined by spinal accessory nerve.³ A clearance of level IIB requires dissection around the SAN. SAN is at a risk of damage when dissection is done around the nerve owing to a damage to the vascularity and due to traction.⁴ The recognition of level IIB as a distinct site is recent and the concept has not been clinically validated.⁵ The incidence of metastasis to level IIB and the oncologic safety in preserving tissues in this subsite is studied by various authors. In the present study, we assessed whether the visible nodes at level IIB are of significance by finding the incidence of metastasis to this subsite.

PATIENTS AND METHODS

After institutional review board clearance, a prospective analysis of all patients who were treated by surgery for the oral cavity carcinoma at our centre was done. All patients had a histopathologically confirmed squamous cell carcinoma. The primary tumor was staged according to AJCC 7th edition (2010).

A modified radical neck dissection was done in patients with significant palpable nodes in the neck and a selective neck dissection was done in patients with clinically N0 neck. The levels of the neck dissection were marked in the dissection specimen

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and separated after completion of the neck dissection. Each level was sent separately to the pathologist. Level IIB was dissected by a surgeon to retrieve the nodes and these were sent separately.

The level IIB specimen was labeled, processed separately, and analyzed histopathologically. The nodes were sectioned according to the standard method by dividing it into two planes. The incidence of a level IIB lymph node metastasis and neck recurrence was evaluated. Shoulder dysfunction was assessed using a constant scale by a physiotherapist on the first and seventh postoperative days.

A univariate analysis was done using a logistic regression test to see for any association. Univariate associations between IIA and IIB positive patients were calculated using the Fisher exact test.

RESULTS

Forty-four patients were analyzed, 30 of which were males (68.8%) and 14 females (31.8%). Mean age was 55 years. The distribution of primary tumor included 9 patients of T1 (20.4%), 22 patients of T2 (50%), 3 patients T3 (6.8%), and 10 patients of T4 (22%). There were 15 patients of buccal mucosa (34%), 3 patients of lower alveolus (6.8%), 1 case of retromolar trigone (2.3%), 2 patients floor of mouth (4.5%), and 23 patients tongue (52%) (Table 1).

Of the 44 patients, 30 (68%) had a clinically palpable node at any of the neck levels on initial presentation. The type of neck dissections performed were selective neck dissection (I, II, and III) in 6 (14%) patients, selective neck dissection (I, II, III, and IV) in 20 (45%) patients, modified neck dissection (SAN, IJV, and SCM) in 3 (7%) patients, modified neck dissection (SAN, IJV) in 13 (30%), modified neck dissection (SCM) in 1 (2%) patients, and radical neck dissection in 1 patient. A histopathologically positive node was found in 12 patients at all levels. The total number of nodes dissected from level IIB was 165 (average: 3.75), of which only two were positive (Fig. 1). Both patients with positive level IIB nodes were in carcinoma tongue patients. The number of positive nodes from level IIA were 2 and 6, and the number of level IIB positive nodes were 1 and 4, respectively (Fig. 2). Both patients had a significant number of nodes in level IIA. Metastasis to other levels was not present.

Table 1: Descriptive data of patients surgically treated for oral cavity SCC

Variable	Result
Gender	
Male	30 (68.8%)
Female	14 (31.8%)
Age	55 years
Premalignancy	
Yes	17 (38.6%)
No	27 (61.3%)
Primary site of SCC	
Oral tongue	23 (52.3%)
Buccal mucosa	15 (34%)
Alveolus	3 (6.8%)
Retromolar trigone	1 (2.3%)
Floor of mouth	2 (4.5%)
Type of neck dissection performed	
Selective neck dissection (I, II, III)	6 (14%)
Selective neck dissection (I, II, III, IV)	20 (45%)
Modified radical neck dissection (SAN, IJV, SCM)	3 (7%)
Modified radical neck dissection (SAN, IJV)	13 (30%)
Modified radical neck dissection (SCM)	1 (2%)
Radical neck dissection	1 (2%)
pT stage	
T1	11 (25%)
T2	18 (40%)
T3	7 (15.9%)
T4a	8 (18.2%)
pN stage	
N0	32 (72.7%)
N1	10 (22.7%)
N2b	2 (4.5%)
Adjuvant treatment	
Radiotherapy alone	22 (50%)

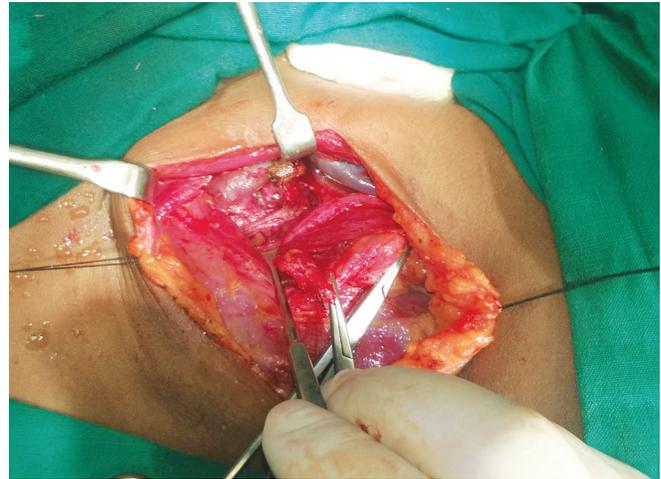


Fig. 1: Level 2B node dissected in left side neck (IJV retracted)

An estimated 15 patients (31%) had no shoulder dysfunction, 13 had a mild shoulder dysfunction (29.5%), and 16 had a moderate to severe shoulder dysfunction (36.4%).

Statistical association was found for the pT-stage (Chi-square test, $p = 0.027$), and association close to significance was found for the primary site (chi square test, $p = 0.06$). There was an association between nodal metastasis to level IIA and IIB ($p = 0.011$). There was no occult metastasis to level IIB alone. Statistical significance was also noted between the extracapsular spread and level IIB nodal metastasis. The number of patients with a nodal positivity was 12, of which only 2 were positive at level IIB (16%), but there was a greater nodal positivity in the tongue carcinoma (34%).

DISCUSSION

Smith et al.¹³ in a prospective study analyzed the incidence of lymph node metastases to level IIB in selective neck dissections. Only 8.75%⁷ had positive nodes to level IIB. Only patients with N2b or greater stage were positive for level IIB nodes. They advocated a level IIB dissection in patients with a greater than N2b status. Santoro et al.⁵ questioned the necessity of dissecting this level in N0 necks. The authors prospectively analyzed 114 patients and found that the incidence of positive level IIB was 2% and 5% in N0

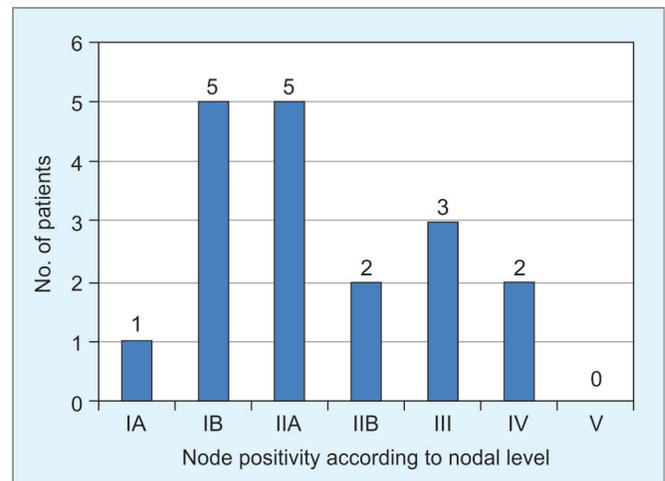


Fig. 2: Level wise positive nodes in patients with oral cancer

Table 2: Incidence of level IIB nodal metastasis

	Site	Type of study	N0 (%)	N1 (%)
Santoro et al. ⁵	Head and neck	Prospective	2	5
Corlette et al. ¹⁰	Upper aerodigestive tract	Prospective	4.5	25
Silverman et al. ¹⁴	Head and neck	Prospective	1.6	11
Lim et al. ¹	Oral cavity	Prospective analysis of case series	5 (overall)	
Paleri et al. ¹¹	Oral cavity	Prospective	3.9 (overall)	
Our study	Oral cavity	Prospective	0	6.6

and N1 patients, respectively. All the patients with metastases at level IIB also showed metastases at level IIA. Metastasis between the presence of level IIA and level IIB were statistically associated. In our study, the pathological node positivity was found in 12 (out of 44) patients, of which only two were positive in level IIB.

Silverman et al.¹⁴ found the prevalence of level IIB metastasis to be 1.6% in clinically N0 necks and 11.1% in clinically node-positive necks, with an overall incidence of 4.4%. In our study, the presence of level IIB nodal metastasis in N0 neck was 0% and N1 neck was 16%, with an overall incidence of 4.5%.

The incidence of occult metastasis in level IIB for oral cavity, oropharyngeal, and laryngeal cancer was found to be 3.9%, 5.2%, and 0.4% patients, respectively by Paleri et al.¹¹ They found nodes between 0 and 7 nodes were harvested from level IIB. The number of nodes dissected from level IIB was between 0 and 11 in our study. (Average 3.75). The authors found a nodal metastasis to level IIB to be uncommon even in the presence of a nodal metastasis to level IIA (Table 2).

Corlette et al.¹⁰ found that, in N0 necks from the upper aerodigestive tract (UADT) and skin/parotid squamous carcinoma primaries, level IIB was involved in 4.5% and 33%, respectively. In N+ necks from UADT and skin/parotid squamous carcinoma primaries, level IIB was involved in 25% and 71%, respectively. Apart from skin/parotid squamous carcinoma primaries, level IIB was never involved unless level IIA was also involved. In our study, there was an association between nodal metastasis to level IIA and IIB ($p = 0.011$).

Metastases at level IIB were observed only in combination with other levels, as was observed by Manola et al.⁶ in the oral tongue carcinoma. They also found no occult metastasis to level IIB. Similar results were found in our study, as there was no occult metastasis to level IIB alone. For N0 necks, they advocated relatively conservative procedures in the form of sentinel node biopsy aided by lymphoscintigraphy.

Patients with a small primary tumor in the oral cavity and negative nodes on clinical examination should be considered for elective neck treatments as there is chance of occult nodal metastases and the tendency to regional recurrences.⁶ Rajan et al.² evaluated whether or not patients treated with a therapeutic selective neck dissection for a head and neck squamous cell carcinoma were oncologically disadvantaged compared with those having comprehensive procedures. They concluded that patients undergoing an aggressive neck surgery had a more extensive disease. A selective neck dissection can be used to effectively treat a clinically positive nodal disease in selected patients. Ferlito et al.¹² evaluated the optimal elective treatment of the neck for patients with a supraglottic and glottic squamous carcinoma. They concluded that SND of sublevel IIA and level III appears to be adequate for an elective surgical treatment of the neck in a supraglottic and glottic squamous carcinoma.

The functional implication of a neck dissection on the spinal accessory nerve has also been studied. Ghani et al.⁸ evaluated 59 patients who underwent neck dissections of various types. They found radical neck dissections to have significantly more morbidity than modified radical neck dissections. Preservation of the cervical plexus and less disturbance of the spinal accessory nerve is important to diminish a postoperative shoulder disability. Celik et al.⁹ in a prospective study evaluated the relationship between accessory nerve functions and level IIB-preserving selective neck dissection. Preserving level IIB during selective neck dissection was found to decrease trauma to the accessory nerve and improve functional results. As level IIB subsite lies posterior to the spinal accessory nerve, it may be damaged even when it is macroscopically preserved during neck dissection.⁴ This may be due to traction or skeletonizing the nerve.

Preserving level IIB may help reduce the morbidity owing to the damage of spinal accessory nerve. Appropriate case selection according to a particular site may be necessary when level IIB is preserved. Tongue carcinomas may be considered as a separate site owing to their more aggressive nature.

CONCLUSION

All visible nodes in the submasseteric triangle (level IIB) are not metastatic nodes. A dissection of this subgroup may be done only in a selected group where there is a metastatic node at level IIA. The dissection leads to more chances of spinal accessory injury, thereby causing a shoulder dysfunction.

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