

## Comparison between Selective Lymph Node Dissection and Radical Lymph Node Dissection on the Overall Prognosis of the Oral Cavity Malignancies

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### Original Research Article

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**Abstract:** The management of the cervical lymph nodes is an integral part of the overall treatment of the oral cavity malignancies. The indications and uses of the various types of neck dissections and pre and postoperative radiotherapy has been a subject of much debate. Based on the results of the present study and the literature available with us, we can conclude that. (1)Dissemination of metastatic cancer to regional lymph nodes from primary sites in the upper aero digestive tract occurs in a predictable and sequential pattern. For primary tumours in the oral cavity, the regional lymph nodes at the highest risk for early dissemination by metastatic cancer.(2) For patients with clinically negative neck nodes, selective neck dissection is as effective as radical neck dissection and recommended with postoperative radiotherapy.(3) The failure rates with selective neck dissection is slightly higher than with radical neck dissection. Although radical dissection gives the best loco regional control of the disease, selective neck dissection with post-operative radiotherapy or one of the modifications of the radical neck dissection is being offered to carefully selected patients.

**Keywords:** Lymph Node Dissection, Radical Lymph Node & Oral Cavity.

### INTRODUCTION

Cancers in the head and neck region commonly metastasize to cervical lymph nodes. The term "neck dissection" refers to a surgical procedure in which the fibro fatty contents of the neck are removed for the treatment of cervical lymphatic metastases.

Neck dissection is most commonly used in the management of cancers of the upper aero digestive tract. It is also used for malignancies of the skin of the head and neck area, the thyroid, and the salivary glands [1].

Radical neck dissection was the original surgical procedure described for treatment of metastatic neck cancer. Crile [6] described the operation in 1906, and until recently, radical neck dissection was considered the standard procedure for management of both occult and clinically positive neck disease. In the last 2 decades, a shift toward the use of more conservative surgical procedures has occurred. This shift is predicated upon the following 2 important insights that developed over a period of time: 1) the removal of lymphatic tissue is not hindered by preserving adjacent no lymphatic structures; and 2) the specific nodal groups at risk for metastatic disease are predictable on the basis of the size, location, and other features of the primary tumor.

### Radical Neck Dissection

Originally described by Crile[6] in 1906, this procedure is an en bloc clearance of all fibro fatty tissue from one side of the neck, including the lymph nodes from levels I-V and lymph nodes that surround the tail of the parotid gland, the spinal accessory nerve, the internal jugular vein, and the sternocleidomastoid muscle. Radical neck dissection [7] does not include the removal of the post auricular, sub occipital, per facial, buccinators, retropharyngeal, or central compartment nodes. Previously used for neck disease of any stage, from microscopic to bulky nodal disease, this procedure is now limited to patients with advanced neck disease, recurrent disease after chemo radiation, or gross extracapsular spread to the spinal accessory nerve, stern mastoid muscle, and the internal jugular vein.

### Selective neck dissection for oral cavity cancer

Selective removal of the level I, II, and III lymph nodes is the surgical procedure of choice for management of N0 and N1 disease that originates from cancers of the oral cavity as shown below;

however, because of the lymphatic drainage of the oral tongue, some authorities advocate selective neck dissection (I-IV) for cancers that originate from this subsite. The operation includes the resection of soft tissue in the submental triangle, along with the submandibular triangle contents, including the submandibular gland and the fibro fatty tissue along the internal jugular vein from the skull base to the omohyoid muscle (or clavicle). The dissected contents include the fascia that covers the medial aspect of the stern mastoid muscle; the muscle itself is laterally retracted and preserved. These neck contents are peeled off from the internal jugular vein and from around the accessory nerve, sparing these structures.

### MATERIALS & METHODS

The material for the present study considered of 52 cases of carcinoma of oral cavity registered with the Govt. District Hospital, Ratlam, between July 2013 to July 2016. All the patients had undergone surgical treatment for their primary lesion with cervical lymph node dissection, either radical neck dissection or selective neck dissection with or without radiotherapy. After completion of the treatment, all were followed up and the results were studied.

In all the cases, the various points were noted and recorded, from the time of admission till complete follow up, in the proforma prepared for the same (vide appendix). A thorough history of the complaints was taken at the onset. A history of any significant past illness was recorded. Particular attention was given to the personal history, with history of tobacco intake, smoking or alcohol addiction recorded. Thorough examination of all the patients was done including general examination and local examination of the oral cavity and the neck nodes. Any ulcer or swelling was examined thoroughly with all the points noted and recorded as in the preform, including

the size of the lesions, their exact location, edges etc. The cervical lymph nodes were examined thoroughly bilaterally. Any palpable lymph node was noted in the preform under appropriate level. Thorough search was done to detect any metastasis, by clinical examination and relevant investigations.

Patient's was categorized as per the TNM classification and treatment was given, as deemed appropriate. After the completion of treatment, including any radiotherapy (if given), the patients were followed up. At each visit, the complaints were recorded and local examination was done to look for any loco regional recurrence. Detailed clinical examination was done to detect any metastasis.

At the end of it, the patients were grouped according to the clinical staging, their lymph node status, the treatment they received for their cervical nodes and whether they received radiotherapy or not. The results were recorded and studied in various groups.

### OBSERVATIONS & RESULTS

The present work was carried out to have a comparative study between selective lymph node dissection and radical lymph node dissection in cases of oral cavity malignancies. The subjects were studied from July 2013 to July 2016. The following were the observations:-

- Total number of cases – 52
- Total number of recurrences – 12 (10 local + 4 regional recurrences, 2 patients were common to both)
- Total number of patients undergoing selective neck dissection – 36
- Total number of patients undergoing radical neck dissection – 16
- Total number of patients receiving radiotherapy – 34

**Table-1: Distribution of patients according to treatment modality**

	No.(n=52)	%
Selective neck dissection	36	69.2
Radical neck dissection	16	30.8

Table-1 & Graph 1 shows the distribution of patients according to treatment modality. More than

half of the patients were in selective neck dissection (69.2%) and (30.8%) were in radical neck dissection.

**Table-2: Comparison of recurrence rates according to the tumor size**

	SOH+RT		SOH Only		RND+RT		RND Only		p-value <sup>1</sup>
	No.	%	No.	%	No.	%	No.	%	
<b>T1</b>									
Local recurrence	0	0.0	0	0.0	0	0.0	0	0.0	-
Regional recurrence	0	0.0	0	0.0	0	0.0	0	0.0	
Total Local regional recurrence	0	0.0	0	0.0	0	0.0	0	0.0	
No. of cases	1		2		0		0		
<b>T2</b>									
Local recurrence	0	0.0	2	28.6	0	0.0	0	0.0	-
Regional recurrence	0	0.0	1	14.3	1	11.1	0	0.0	
Total Local regional recurrence	0	0.0	3	42.9	1	11.1	0	0.0	
No. of cases	14		7		9		2		

**Table-2: shows the comparison of recurrence rate with tumor size among the groups. There no recurrence in T1 among the groups. Total local regional recurrence was in 42.9% in T2 of SOH only group**

	SOH+RT		SOH Only		RND+RT		RND Only		p-value <sup>1</sup>
	No.	%	No.	%	No.	%	No.	%	
<b>T3</b>									
Local recurrence	3	50.0	1	100.0	0	0.0	0	0.0	-
Regional recurrence	1	16.7	0	0.0	0	0.0	1	100.0	
Total Local regional recurrence	4	66.7	1	100.0	0	0.0	1	100.0	
No. of cases	6		1		5		1		
<b>T4</b>									
Local recurrence	1	50.0	0	0.0	0	0.0	0	0.0	-
Regional recurrence	0	0.0	0	0.0	0	0.0	0	0.0	
Total Local regional recurrence	1	50.0	0	0.0	0	0.0	0	0.0	
No. of cases	2		0		2		0		

<sup>1</sup>Chi-square test

**Table-3: Comparison of recurrence rates according to the level of nodal group involvement**

	SOH+RT		SOH Only		RND+RT		RND Only		p-value <sup>1</sup>
	No.	%	No.	%	No.	%	No.	%	
<b>No clinically palpable nodes</b>									
Local recurrence	0	0.0	0	0.0	0	0.0	0	0.0	-
Regional recurrence	0	0.0	0	0.0	1	25.0	0	0.0	
Total Local regional recurrence	0	0.0	0	0.0	1	25.0	0	0.0	
No. of cases	0		0		4		0		
<b>Only level 1 nodes involved</b>									
Local recurrence	0	0.0	0	0.0	0	0.0	0	0.0	-
Regional recurrence	0	0.0	0	0.0	1	25.0	0	0.0	
Total Local	0	0.0	0	0.0	1	25.0	0	0.0	

**Table-3: shows the comparison of recurrence rate with level of nodal group involvement among the groups**

	SOH+RT		SOH Only		RND+RT		RND Only		p-value <sup>1</sup>
	No.	%	No.	%	No.	%	No.	%	
<b>Regional recurrence</b>									
No. of cases	0		0		4		0		
<b>Level 1 and 2 nodes positive</b>									
Local recurrence	1	100.0	0	0.0	1	11.1	0	0.0	-
Regional recurrence	1	100.0	0	0.0	1	11.1	1	50.0	
Total Local regional recurrence	1	100.0	0	0.0	3	22.2	1	50.0	

No. of cases	1	1	9	2
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**DISCUSSION**

Carcinoma of the oral cavity is one of the commonest cancers in India. Comprising about 35% of all cancers in men and about 18% of all cancers in women. Men are affected more commonly than women (1.5-2 times). In our study, out of 52 cases, 40 were males and 12 females (3.33:1).

The single most important prognostic factor in the treatment of patients with oral malignancies is the status of cervical lymph nodes. Thus, the management of cervical lymph nodes is a vitally important component of the overall treatment strategy for patients with oral cavity malignancy.

**Distribution of cases**

In this study, out of 52 cases, 18 were of Ca- buccal mucosa (34.61%), 16 were of Ca- alveolus (30.76%), 15 were of Ca- tongue (28.84%) and 3 were affected with Ca- lip (5.76%).

As reported by Rao D.N. and Ganesh B, the incidence of various forms of oral cavity cancers in India are:- Ca buccal mucosa-38%, Ca. tongue -16%, Ca alveolus-15.7% and Ca lip-7% (Current trends in the management of Head and neck cancer, Mumbai, TMH, pp- 10,1998) [5]

**Pattern of cervical metastasis**

Dissemination of metastatic cancer to regional lymph nodes from Primary sites in the upper aero digestive tract occurs in a predictable and sequential fashion. Thus, all regional lymph node groups are

usually not at risk of nodal metastasis initially from any primary site in the absence of grossly palpable metastatic lymph nodes.

For primary tumours in the oral cavity, the regional lymph nodes at highest risk for early dissemination by metastatic cancer are limited to levels 1, 2 and 3. Anatomically, this translates into regional lymph node groups, contained within the supraomohyoid triangle of the neck. Skip metastasis to levels 4 and 5 in the absence of metastatic disease at levels 1,2 or 3 is very rare.

In our study, 28 patients (53.84%) had only level 1 involvement; whereas 13 patients (25%) had involvement of both level 1 and 2 nodal groups. 11 patients (21.15%) had no nodal involvement clinically. None of the patients had involvement of level 3 nodes or beyond on clinical examination and none of the patients had involvement of level 2 nodes without the involvement of level 1 node.

Shah, who had reviewed 1119 cases of radical neck dissection at Memorial Sloan Kettering Cancer Centre, had reported that only 1.5% of patients with clinically negative neck and pathologically proven nodal metastasis had involvement of level 5 nodes where as 5.3% of patients with clinically positive neck and pathologically proven metastasis had level 5 involvements [2-4]. Also, none of the patients with carcinoma of tongue, retro molar trigone or buccal mucosa had level 5 nodal involvements. The incidence of various nodal involvements was as follows:

**Table-04: The incidence of various nodal involvements**

Primary site	Percentage of nodal involvement					
	1a	1b	2	3	4	5
Oral Tongue	3.3aaa	22.8	59.7	10.7	2.6	7.0
	9.0b	18.0	73.0	18.0	--	--
	--c	14.0	19.0	16.0	3.0	--
Floor of Mouth	4.3a	43.1	37.1	9.5	4.3	1.7
	7.0b	64.0	43.0	--	--	--
	--c	16.0	12.0	7.0	2.0	--
Buccal Mucosa	--a	--	--	--	--	--
	--b	--	--	--	--	--
	--c	44.0	11.0	--	--	--
Lower gum	--a	--	--	--	--	--
	--b	60.0	40.0	--	--	--
	--c	27.0	21.0	6.0	4.0	2.0
Retromolar Trigone	0.6a	17.1	61.8	16.4	3.3	0.6
	--b	25.0	63.0	12.5	--	--
	--c	19.0	12.0	6.0	6.0	--

a = Based on clinical examination b = Based on examination of selective neck dissection c = Based on examination of radical neck dissection

In our study, only clinical examination of the nodes was considered and the pathological involvement, either preoperative or post-operative

### **CONCLUSION**

To conclude, the management of the cervical nodes should be highly individualized and cafeteria approach should be offered to the patients, explaining the risks and benefits of the various procedures. Selective neck dissection, when used in combination with postoperative radiotherapy, is an efficacious way to manage metastatic squamous cell carcinoma of the neck in early nodal disease (N0, N1 and N2a) and is being considered for more and more patients, with good results. For N2b disease and beyond Radical neck dissection with post-operative radiotherapy gives best loco-regional control. More studies need to be done with larger data base and multivariate analysis to formulate comprehensive guidelines for the management of neck in cases of oral cavity cancers, so as to have the best results with least morbidity.

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