

## Simultaneous Bilateral Neck Dissection

Dr. Veeresh M<sup>1</sup>, Dr. Rashi Sharma<sup>2</sup>

1. Professor, Dept. of Oral & Maxillofacial Surgery, Krishnadevaraya College of Dental Sciences, Bangalore.  
Consultant, Bangalore institute of oncology, Bangalore

2. Senior lecturer, Dept. of Oral & Maxillofacial Surgery, Krishnadevaraya College of Dental Sciences  
Bangalore.

---

**ABSTRACT:** Contralateral metastasis in head and neck cancer is concern with its dreaded disease. Questions arise frequently of performing contralateral neck dissection simultaneously or allow time to elapse before second neck dissection, in apprehension of safety. The procedure Simultaneous bilateral neck dissection (SNBD) is indicated for patients with bilateral cervical lymph node metastases so situated that a two stage radical neck dissection could not be done without cuffing through cancer tissue.

**KEY WORDS:** Carcinoma, midline, contralateral, simoultanous, neck dissection,

---

### I. INTRODUCTION

Contralateral neck lymph nodes are occasionally involved in oral and oropharyngeal carcinoma and prognosis described is extremely poor. Questions arise frequently of performing contralateral neck dissection simultaneously or staged procedure in apprehension of safety. Simultaneous bilateral neck dissection can be performed with acceptable risk in properly selected cases<sup>1,2</sup>. Bilateral cervical metastasis occurs with greater frequency in soft tissue areas where lymphatics are abundant and the lesions invading the muscle where larger collecting trunks have multiple cross communication like lower lip, soft palate, base of tongue. Based on the anatomical location of primary lesion and the anatomy of lymphatics, occurrence of contralateral metastases and its expected location may be predicted with some certainty<sup>3</sup>.

The risk of contralateral occult neck involvement in the oral cavity squamous cell carcinomas above the T3 classification or those crossing the midline with unilateral metastases was high, and patients who presented with a contralateral metastatic neck had a worse prognosis than those whose disease was staged as N0. Therefore, an elective contralateral neck treatment with surgery or radiotherapy in patients with oral cavity squamous cell carcinoma with ipsilateral node metastases or tumors, or both, whose disease is greater than T3 or crossing the midline.<sup>4</sup>

Here we are reporting a case of simultaneous bilateral neck dissection done for squamous cell carcinoma of mandibular gingival buccal sulcus crossing the midline.

### II. CASE REPORT

A male patient 55 years old reported to our hospital with complaint of non healing ulcer in the lower jaw since two months (fig 1). clinical and histopathological evaluation done. Bilateral submandibular nodes were palpable. Incisional biopsy of primary lesion confirmed as moderately differentiated Squamous cell carcinoma of mandibular gingival buccal sulcus. The procedure of simultaneous bilateral neck dissection done and primary tumor resection done with safe margins.(fig 2,3,4,5). Reconstruction did with reconstructive plate(fig.6).

### III. DISCUSSION

The status of the regional lymphatics is one of the most important prognostic indicators in patients with head and neck cancer<sup>5, 6,7,8</sup>. Treatment of the neck in patients with clinical evidence of nodal metastasis has traditionally been surgical, that is systematic removal of all the lymphatic tissues called as radical neck dissection (RND) described by Crile and later popularized by Martin<sup>9,10,11</sup>. Dissemination of metastatic cancer to regional lymph nodes from primary sites in the upper aerodigestive tract occurs in a predictable and sequential fashion. Understanding of sequential pattern of neck metastasis facilitates surgical management of regional lymph nodes<sup>11, 12</sup>.

Oral and oropharyngeal carcinomas with homolateral positive lymph nodes and tumor extension across the midline are at higher risk of contralateral lymph node involvement. Contralateral spread of metastases can occur in head & neck by three ways: 1) via crossing afferent lymphatic vessels; 2) by actual spread over midline via efferent lymphatic vessel after regional nodes become extensively involved and contralateral lymphatics flow takes place; 3) certain anatomical area where there is no definite midline<sup>2, 5</sup>. Primary lesions at the

midline usually in the lower lip, floor of the mouth, tongue, mandibular anterior gingiva, cervical esophagus, larynx and thyroid presents with bilateral cervical metastasis<sup>3</sup>.

Lymphatic drainage of the tongue takes divergent course from different portion of tongue may or may not end in regional nodes before reaching the deep cervical group. Central vessels drain central portion of anterior 2/3<sup>rd</sup> of tongue. Those from tip of tongue drain to Submental node and further to jugulo-omohyoid nodes. Remaining central portion of tongue drains to lower/upper deep cervical node through submandibular node. Thus, carcinoma of root, body, tip, frenulum and dorsal surface of tongue involve node along both sides of internal jugular vein. Lymph node draining base of the tongue, that is deep lymphatic nodes may drain ipsilaterally or have direct branches that drain to the contralateral neck<sup>13, 14</sup>.

The lymphatic drainage of Floor of Mouth is divided into an anterior and posterior complex. The anterior complex drains the anterior half of the Floor of Mouth and anterior portion of the sublingual gland to the Level I nodes. The posterior complex drains the posterior two-thirds of the Floor of Mouth to the ipsilateral Level II lymph nodes or occasionally directly to Level III nodes bypassing Level II nodes. Anatomic studies have shown that the efferent upper jugular communicating pathway crosses the midline and drains into the contralateral subdigastric group of nodes resulting both sides of the neck at risk<sup>15</sup>. The lymphatic of middle third of the lower lip mucosa and adjacent gingiva drains into submental lymph nodes. The efferent lymphatic empties into anterior to body of hyoid bone, latter to right and left jugulo-omohyoid lymph nodes<sup>16</sup>.

Lymphatic network of mucous membrane of hard palate varies according to anatomical location. Areas of mucoperiosteum contain very fine capillary networks which become large over the area of secretory mucosa of soft palate. These collecting lymphatic pathways especially middle & posterior group cross midline. Nasopharynx too, has a rich superficial network with crossing collecting trunks<sup>2</sup>.

The management of cancer with bilateral lymph node metastasis to the neck remains controversial<sup>17</sup>. Prediction of contralateral metastases may be useful in planning more aggressive therapies in patients with head and neck SCC with poor prognosis<sup>5, 6</sup>. Morbidity with two stage bilateral procedure is worthy of consideration as apprehension exists regarding safety of simultaneous bilateral neck dissection. A survey on the literature reveals simultaneous neck dissection is well enough established as a safe operation to warrant consideration of specific indications without jeopardy to the patient. Primary indications are : 1) when metastatic lesions are present on both side of the neck; 2) as fundamental principle of oncology to avoid cutting through cancer tissue; and 3) any delay in carrying out surgery might permit the condition on either side to become inoperable.<sup>18-20</sup> As per one of the study, simultaneous bilateral neck dissection has an operative mortality of 10% with 11% life threatening complication and 62% significant facial swelling. There is an overall three- and five-year survival rate of 20% and 12.5 % respectively<sup>3</sup>.

Successful consummation of simultaneous bilateral RND depends upon potential capacity of remaining venous channels to drain intracranial cavity and dural sinuses. Vertebral veins of Baston form the safeguard of this collateral return. Vertebral system of vein adequately drains from brain, intracranial, extracranial tissue & anterior and lateral aspect of neck. As per Baston<sup>22, 23</sup> & Gius<sup>24</sup> vertebral vein passes as a plexiform network, primarily in a longitudinal direction, both intraspinally between dura & vertebra and extraspinally between vertebra & erector spinae group of muscle. Cephalad system communicates through foramen magnum with occipital and basilar sinuses which connect the major intracranial dural sinuses. At all vertebral levels the longitudinal vertebral systems of veins anastomose transversely with each other and with intercostal and lumbar veins which connect, either directly or by way of azygos system and the caval veins. This vertebral-azygos-caval route provides a detour of venous return from brain to the right heart<sup>1, 21, 22</sup>. Patient who needs bilateral ligation of internal jugular vein should be investigated preoperatively with digital subtraction angiography. Jugular vein occlusion test gives a crucial data to support the decision of jugular vein ligation<sup>17, 25</sup>.

Complications and sequelae depends upon many associated factors such as previous operations, simultaneous removal of large portions of the arterial bed, excision of midline viscera with added destruction of the venous return, sacrifice of overlying skin, local changes caused by irradiation and the general medical status of the patient. These factors cause a surprising variability in the postoperative changes<sup>1</sup>. Intraoperatively, immediate reaction after ligation of second jugular vein is, increase in pressure of cerebrospinal fluid for several hours, with moderate rise in blood pressure, acceleration of respiration and drop in pulse rate all of which were back to normal within the preoperative range at the termination of operation. Marked cyanosis and edema of head and neck is noted. Considering edema, temporary treacheostomy is almost always established. Cyanosis disappears and edema begins to recede. However, there is tendency for edema to remain persistent at lower jaw causing cosmetic alteration, which is small price to pay if the disease is eradicated. Other complications consist of wound infection or separation, pneumonic processes and oro-cutaneous fistula<sup>18, 26</sup>.

Surgery of this extent is not for palliation. Chances for cure must be presumed to be enhanced before a one stage radical neck dissection is undertaken. There is no indication for such an operation if neck dissection is elective, as less mortality and shorter morbidity with disease eradication are prime goals<sup>27</sup>.

**IV. FIGURES**



Fig.1 lesion crossing the midline



Fig2. After flap elevation



Fig3. Resection of neck nodes



Fig.4 Resection of primary tumor



Fig.5 After removal of primary tumor



Fig.6 Reconstruction.

## V. CONCLUSION

Simultaneous bilateral radical neck dissection can be accomplished safely, and it offers patients a chance for a cure. But it is not recommended as prophylactic procedure unless the patient presents with homolateral node involvement, and tumors that has crossed midline, it should be done along with adjuvant radiotherapy.

## REFERENCES

- [1] Perzik S. L. One-stage bilateral radical neck dissection. *California medicine* 78(4), 1953, 288-292.
- [2] Feind C R, Cole R. M. Contralateral spread of head & neck cancer. *Am Jr of Surg.* 118, 1969, 660-665.
- [3] Razack M. S., Baffi R., Sako K. Bilateral radical neck dissection. *Cancer* 47(1), 1981, 197-199.
- [4] Koo BS, Lim YC, Lee JS, et al: Management of contralateral N0 neck in oral cavity squamous cell carcinoma. *Head Neck* 28,2006, 896-901.
- [5] Capote-Moreno A, Naval L, Muñoz-Guerra MF, et al. Prognostic factors influencing contralateral neck lymph node metastases in oral and oropharyngeal carcinoma. *J Oral Maxillofac Surg.* 68(2), 2010, 268-75.
- [6] Kurita H, Koike T, Narikawa J, et al: clinical predictor for contralateral lymph node metastasis from unilateral squamous cell carcinoma in the oral cavity. *Oral Oncol* 40, 2004, 898-900.
- [7] Kowalski LP, Bagietto R, Lara JRL, et al: Factor influencing contralateral lymph node metastasis from oral carcinoma. *Head Neck* 21, 1999,104-106.
- [8] Chow TL, Chow TK, Chan TTF, et al: Contralateral neck recurrence of squamous cell carcinoma of the oral cavity and oropharynx. *J oral Maxillofac Surg* 62, 2004, 1225-28.
- [9] Martin. H., Del. Valle. B., Ehrlish H., Chan W.G., Neck dissection, *Cancer* 4,1951,441-499.
- [10] Brown, B., and McDowell, F, Neck dissections for metastatic carcinoma, *Surg., Gynec. & Obst.* 79,1944,115-124.
- [11] Jatin Shah, Head & Neck surgery & oncology. 3<sup>rd</sup> edition
- [12] Jatin shah, *Surg Oncol Clin N Am* 2005
- [13] Jamieson J. K, Dobson J. F. The lymphatics of the tongue: With particular reference to the removal of lymphatic glands in cancer of the tongue. *Br J Surg* 8,1920, 80-87.
- [14] - W H Hollinshed , *Text book of anatomy for surgeon's* 3<sup>rd</sup> edition,3.
- [15] Ossopp R H, Sisson G. A. Lymphatics of the floor of the mouth and neck: anatomical studies related to contralateral drainage pathways. *Laryngoscope.* 91(11),1981, 1847-50.
- [16] Hua Xi Yi Ke Da Xue Xue Bao, Applied anatomy of lymph drainage of lower lip mucosa. 22(3),1991, 300-2.
- [17] Ensar S., kaptanoglu E., Tun K.,et al.Venous outflow of the brain after bilateral complete jugular ligation. *Turkish Neurosurgery* 18(1),2008, 56-60.
- [18] .Barber K W, Beahrs O H. Bilateral radical dissection of the neck. *Arch Surg.* 83(3),1961,388-394.
- [19] Ahn C, Sindelar WF, Bilateral radical neck dissection: Report of results in 55 patients. *Journal of Surgical Oncology* 40,1989 252-255.
- [20] Beahrs, OH: Surgical anatomy and technique of radical neck dissections. *Surgical Clinics of North America* 57,1977, 663-702.
- [21] Perzik S L. Simultaneous bilateral radical neck dissection with recovery. *Surg* 31(2),1952, 297-306
- [22] Baston O. V.: anatomical problems concerned in the study of cerebral blood flow. *federation proc* 3,1944, 139-144.
- [23] Baston O. V.: the function of vertebral veins and their role in spread of metastasis. *Ann, Surg.*112,1940,138-148.
- [24] Gius J A, Grier D H: venous adaptation following bilateral radical neck dissection with excision of jugular veins. *Surgery* 28,1950, 305-321.
- [25] Ambesh SP, Pandey JC, Dubey PK: Internal jugular vein occlusion test for rapid diagnosis of misplaced subclavian vein catheter into the internal jugular vein. *Anesthesiology.* 95(6),2001, 1377-1379.
- [26] Morfit H M. Simultaneous bilateral radical neck dissection. *Surg* 31(2),1952,216-225.
- [27] Inoue H, Nibu K, Saito M, Otsuki N, Quality of Life After Neck Dissection. *Arch Otolaryngol Head Neck Surg.* 132, 2006, 662-666.