

Medial Carotid Sheath Component Separation Combined with Lateral Approach to Lateral Neck Dissection for Thyroid Carcinoma

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Introduction:

- Lateral neck metastatic nodal disease of thyroid origin, especially papillary thyroid carcinoma, differs in location as compared to squamous cell carcinoma in the propensity for nodal involvement deep to the carotid sheath
- Typically, lateral neck dissections are performed from a lateral to medial direction without fully isolating the components of the carotid sheath, and central neck dissections end at the medial carotid artery, potentially missing or leaving involved nodal groups deep to the carotid sheath to be removed in a piecemeal fashion

Materials and Methods:

- Neck dissections for lateral neck thyroid carcinoma metastasis performed between December 2018 to March 2023 were included

Technique:

- After a lateral to medial dissection from level V or the cervical roots is performed, the nodal bearing adipose tissue is circumferentially dissected (to be sure to remove affected nodes deep to internal jugular vein [IJV] branches) away from the IJV and over the carotid artery (CA) and vagus nerve (VN) identified, and the IJV is retracted medially to expose the medial extent of the lateral neck adipose tissue just lateral to the VN, to be removed in continuity with the laterally dissected nodal bearing tissue
- Nodal disease more medially and deep to the CA possibly affecting the sympathetic plexus can be removed from the medial approach also by gentle retraction on the CA separately from the VN and IJV

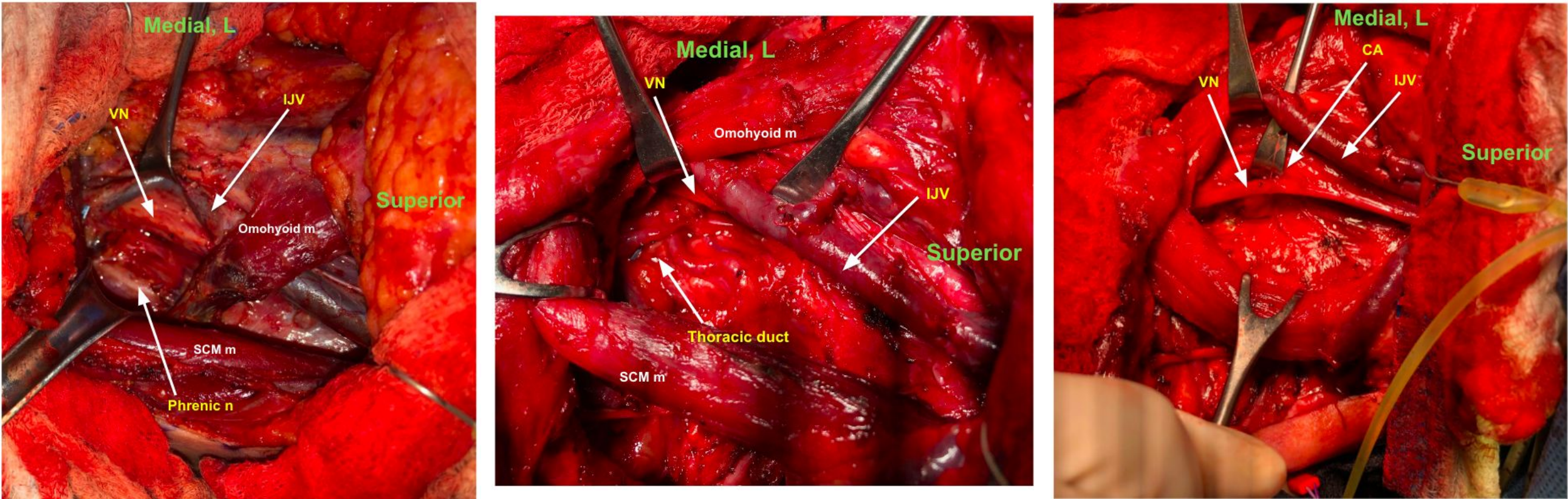
Results:

- 62 patients with 75 total modified radical neck dissections were included with 13 of those bilateral neck dissections
- 12 patients underwent previous total thyroidectomy with 11 of 12 from outside surgeons
- Average follow up time: 12.2 months
- No recurrences ipsilateral to mRND in lateral neck fields
- One patient with anaplastic carcinoma received palliative and hospice care

Table 1: Pre- & Intraoperative Characteristics	N (%)
Age at time of surgery (Average [SD])	52.5 (19.4)
Gender: Female	34 (54.8%)
Thyroid carcinoma distribution:	
Papillary	56 (90.3%)
Follicular	1 (1.6%)
Medullary	4 (6.5%)
Anaplastic arising from Papillary	1 (1.6%)
Concurrent central nodal dissection	58 (93.5%)
Unilateral	16 (25.8%)
Bilateral	42 (67.7%)
Thoracic duct visualization in L mRND (Total N=37)	33 (89.2%)
Recurrent laryngeal nerve invasion and resection	11 (17.7)
Average positive nodes/Average total nodes	12.2/58.3
Tracheal invasion and resection	6 (9.7%)
Thoracic duct invasion	1 (1.6%)
Sympathetic plexus invasion	2 (3.2%)

Table 2: Postoperative Course	N (%)
Ipsilateral complications:	13 (21%)
Shoulder ROM weakness	9 (14.5%)
Pupil miosis and/or ptosis	3 (4.8%)
Ramus weakness	2 (3.2%)
Chyle leak	1 (1.6%)
Vocal cord paralysis:	21 (33.9%)
Transient	13
Permanent	8*
Persistent node ipsilateral to mRND in lateral neck fields	1 (1.6%)
Postoperative thyroglobulin	
≤1	36 (58.1%)
>1	20 (32.3%)
Data unavailable for review	6 (9.6%)
Postoperative thyroglobulin antibody	
≤1	45 (72.6%)
>1	13 (21%)
Data unavailable for review	4 (6.4%)
Postoperative radioactive iodine	46 (74.2%)

Figure 1: Medial Carotid Sheath Component Separation



Discussion / Conclusion:

- Adding medial component separation of the carotid sheath in lateral neck dissection aids in exposing nodal disease from thyroid cancer deep/medial at the carotid sheath, may decrease lateral neck recurrence in metastatic cancer
- The nodal bearing tissues deep to the carotid sheath can be removed in an en bloc fashion using this method
- In addition, the medial to lateral dissection along the anterior surface of the IJV facilitates identification and preservation of the thoracic duct at the left level IV
- Separation allows differential retraction in different directions of CA, IJV and VN, to prevent traction injury to VN
- The approach allows medial to lateral direction of dissection in performing lateral neck dissection, affording en bloc clearance of involved nodes lateral and contiguous with an en bloc central nodal dissection, in addition to the typical lateral to medial dissection in modified radical neck dissection