

# SENTINEL LYMPH NODE BIOPSY IN THYROID CARCINOMA DECISION FOR MODIFIED RADICAL NECK DISSECTION

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## BACKGROUND

Surgical management of lymph nodes in the neck varies from "berry picking" to elective Modified Radical Neck Dissections (MRND) - NO CONSENSUS. Identification of LNM by palpation and ultrasonography in thyroid cancer is inaccurate. 30 to 50% of adults with DTC have palpable metastatic lymph nodes. (Haming) \* The incidence of lymph node metastases in medullary thyroid carcinoma is over 80 %

## AIM

Considering the results of previous studies of SLN biopsy in TC, the objective of this study was to determine whether SLN biopsy of first draining node/s in jugulo-carotid chain is an accurate technique to select patients with true positive but not palpable or US suspicious lymph nodes for selective MRND. The aim of this PILOT study is to show that elective MRND is not necessary if the sentinel lymph node is negative.

## PATIENTS AND METHODS

SLN biopsy of lateral neck compartment, uni/bil  
+  
Total thyroidectomy  
+  
Routine central compartment dissection  
+  
MRND if SLN positive on frozen-section

Blue dye: methylene blue 1% (approx. 0.2ml peritumorally)

Table 1  
Histology features of Differentiated Thyroid Carcinoma

Characteristics	Number of patients
<b>Histology type of DTC</b>	
Papillary carcinoma	163
Follicular variant of PTC	3
Hurthle cell carcinoma	6
Total	172

Average Tumor size 10.6mm (Rang 0.5-50)

Table 5  
Histology of SLN for DTC

Standard HP	positive	negative	N
Frozen-section			
positive	27	1	28
negative	5	139	144
N	32	140	172

Table 7  
SLN identification rate and accuracy of the method for DTC

Results	%
Identification rate (IR)	94.5
Sensitivity (Se) false negative	84.4
Specificity (Sp) false positive	99.3
Negative predictive value (NPV)	96.5
Positive predictive value (PPV)	96.4
Accuracy	96.5



## BACKGROUND

Approximately the same incidence of central and lateral lymph nodes involvement (Attie, Naguchi M, Ito Y) Although the management of neck lymph nodes has not always been standardized, it is generally recommended that in presence of metastatic nodes the operative procedure should comprise MRND. Miyauchi recommends uni or bil. MRND with CND in MTC patients with calcitonin level over 100 pg/ml.

## Patients and methods for DTC

182 patients with DTC underwent SLN mapping in lateral neck compartments  
172 patients with blue stained SLN  
Inclusion criteria: DTC with clinical and US No in lateral compartment  
Exclusion criteria: locally invasive tumors (pT4), gross lymph node metastases bil. With initial distant metastases, history of allergic reactions on drugs.  
Median age at diagnosis was 42 years (Rang 23-57)  
Female/Male ratio - 3:1

## PATIENTS AND METHODS

Sentinel lymph node biopsy in MTC-PILOT study

Sentinel lymph node biopsy may be used to support the decision to perform modified radical neck dissection in differentiated thyroid carcinoma.

Dzodic R, et al. World Journal of Surgery, 2006

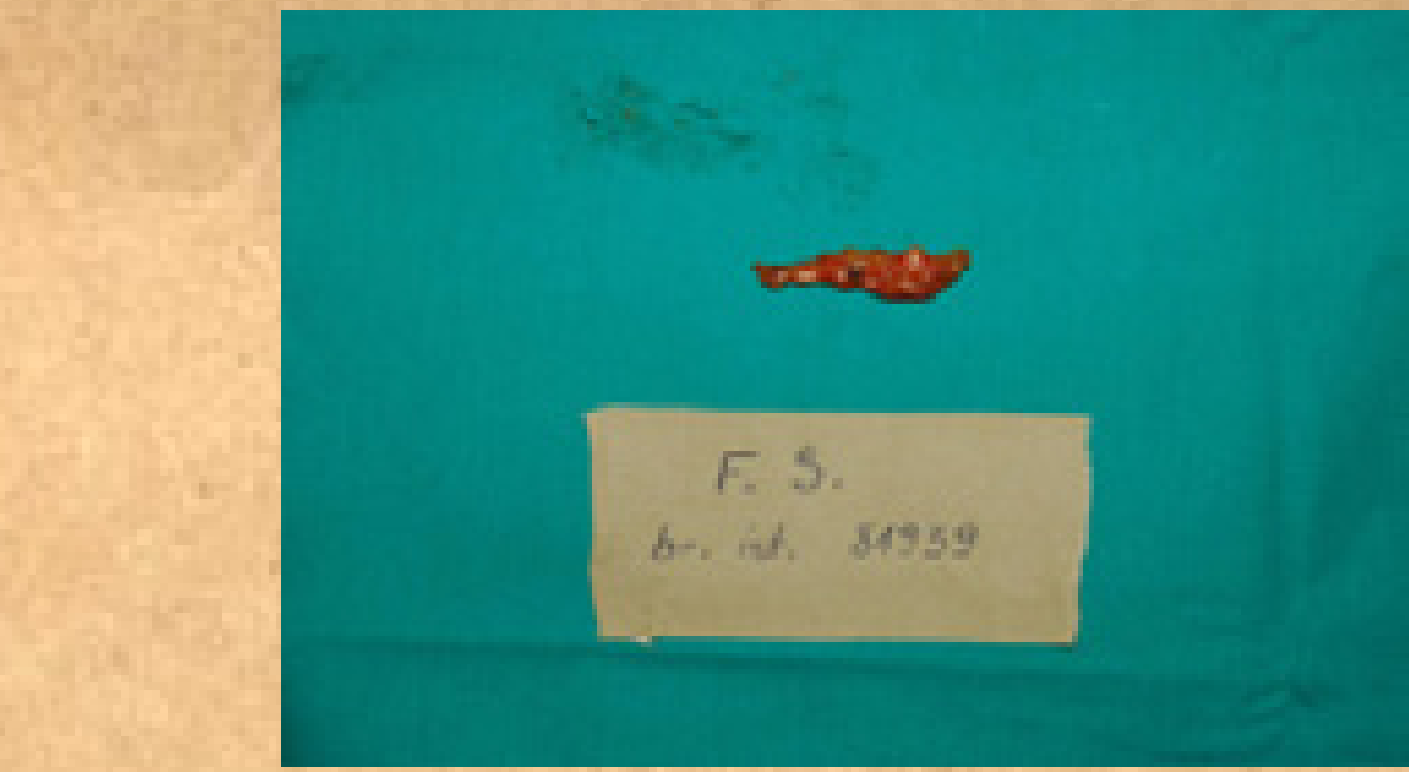


Table 2  
Histology features of Medullary Thyroid Carcinoma

Characteristics	Number of patients
<b>Histology type: MTC</b>	
	12

Average Tumor size 7 mm (Range 3-21)

Table 6  
Histology of SLN for MTC

	Lateral + LN	Lateral - LN	total
Frozen section MG	1	0	1
Frozen section BG	0	11	11
total	1	11	12

Table 8  
SLN identification rate and accuracy of the method for MTC

Results	%
Identification rate (IR)	100
Sensitivity (Se) false negative	100
Specificity (Sp) false positive	100
Negative predictive value (NPV)	100
Positive predictive value (PPV)	100
Accuracy	100



Table 3  
Lymph Nodes Management for DTC

Blue stained SLN	172 of 182
Identification rate	94.5%
Average No of SLN	3.5
Average No of central LN	7.6

## Calcitonin pg/ml levels pre/post op

Preoperative calcitonin pg/ml	Postoperative calcitonin pg/ml	Total number of patients
>16.79 <1000	≤2	9
>16.79 <1000	4	1
>16.79 <1000	3,4	1
758.2	889.7	1
Total	-	12

Only in one patient with preoperative calcitonin level 758.2 pg/ml with positive sentinel LN, we observed increase in postoperative calcitonin level to 889.7 pg/ml.

That patient had positive both central (12/20) and lateral (5/46) lymph nodes. This patient had also distant metastases (bones) The patient is candidate for Vandetanib.

## BACKGROUND

Considering these controversies, Keleman ('98) introduced the Sentinel Lymph Node concept in thyroid carcinomas.

More than 15 years since then several authors followed this idea with the efforts to establish more accurate management of LN in thyroid carcinoma, using either blue dye, 99mTc labeled colloid or combination of both tracers, but only in well differentiated, PTC.

## Patients and methods for MTC

12 patients with MTC underwent SLN mapping in lateral neck compartments  
10 patients with blue stained SLN and 2 with stained lymphatic vessels.  
Inclusion criteria: MTC with clinical and US No in lateral compartment and calcitonin level under 1000 pg/ml  
Exclusion criteria: locally invasive tumors (pT4), gross lymph node metastases bil. with initial distant metastases, calcitonin level over 1000 pg/ml, history of allergic reactions on drugs.  
Average age at diagnosis was 49.9 years, median 55 (Range 16-74)  
Female/Male ratio - 5:1

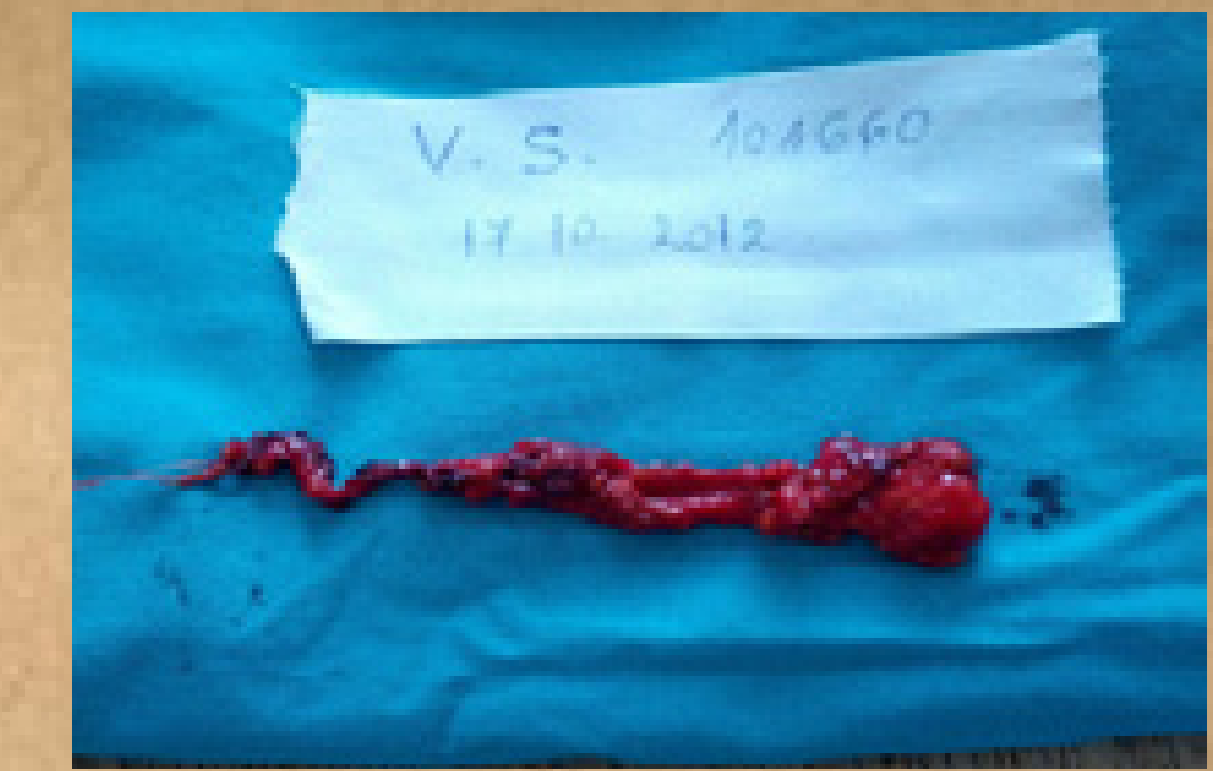


Table 4  
Lymph Nodes Management for MTC

Blue stained SLN	12
Identification rate	100%
Average No of SLN	3.5
Average No of central LN	11

## CONCLUSION

Identification SLN in jugular-carotid chain may be helpful in decision for selective MRND in patient with non palpable but true positive lymph nodes.

The method is feasible, accurate and cheap.

More accurate for lymph node staging

Complementary results to Tc99m nanocolloid.

Promising method for MTC and PMC in clinical No stage.

SLNB eliminates skip metastases.

Optimizing ablative <sup>131</sup>I treatment

Need for larger multicentre studies (need for randomized studies)

On the other hand, the method is helpful to avoid unnecessary elective MRND if the sentinels are negative.

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Table 9: Systematic review and meta-analysis of sentinel node biopsy in thyroid cancer. S. P. Balachandran and B. J. Haerlina. Academic Unit of Surgical Oncology, University of Toronto, and Department of Radiation Oncology, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada.

Systematic review and meta-analysis of sentinel node biopsy in thyroid cancer. S. P. Balachandran and B. J. Haerlina. Academic Unit of Surgical Oncology, University of Toronto, and Department of Radiation Oncology, Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada.