



# The International Federation of Head and Neck Oncologic Societies

Current Concepts in Head and Neck Surgery and Oncology 2018

## Thyroid Cancer Treatment of the Neck

Ashok Shaha

# Thyroid Literature

## Medline

Thyroid disease	136,053
Thyroid tumors	33,554

- New Paper on Thyroid Disease – Every 3 Hours
- New Paper on Thyroid Cancer – Every 8 Hours

Thyroid Google search      36 million

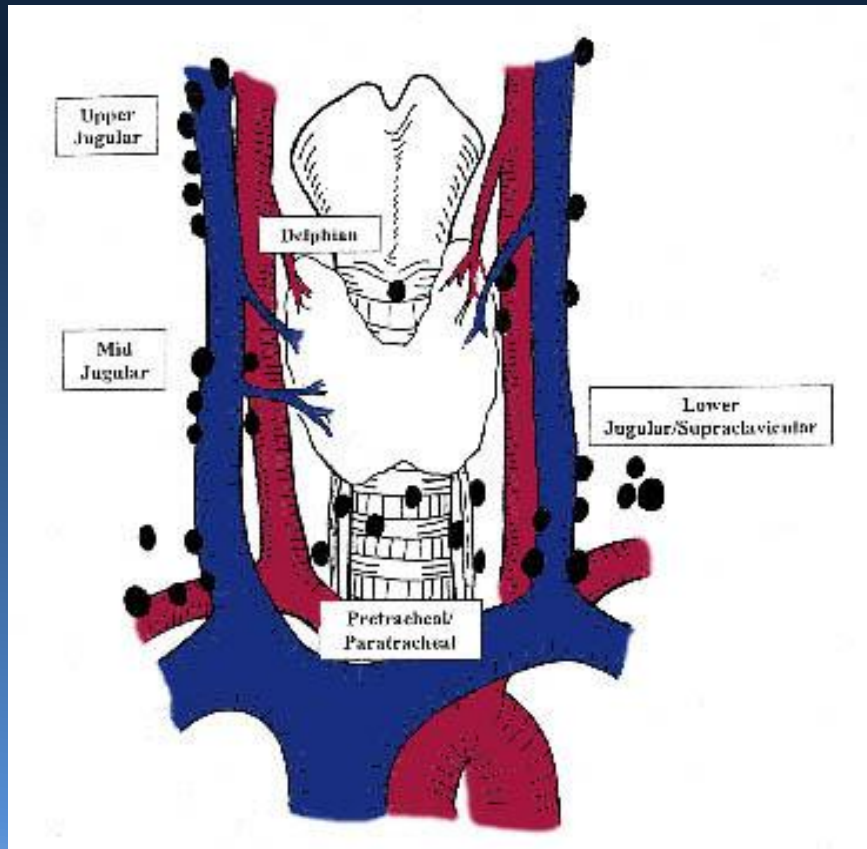
Thyroid Cancer Google search      21 million

# **American Thyroid Association (ATA) Consensus Review of the Anatomy, Terminology and Rationale for Lateral Neck Dissection in Differentiated Thyroid Cancers**

## **The ATA Surgical Affairs Committee Lateral Neck Dissection for Well Differentiated Thyroid Cancer Sub- Committee**

- Robert L. Ferris, MD, PhD
- David Goldenberg, MD
- Megan Haymart, MD
- Ashok Shaha, MD
- Sheila Sheth, MD
- Julie Ann Sosa, MD
- Brendan C. Stack, Jr., MD
- Ralph P. Tufano, MD

# Lymphatic Drainage of the Thyroid Gland



- Bilateral drainage, extensive
- High incidence of regional metastasis – 40-70%
- Multiple nodal groups at risk
- Lymphatic channels parallel venous drainage
- Must be considered when managing thyroid cancer

# AJCC/UICC 2011 Staging

## Nodal Staging for Thyroid Cancer

$N_x$  – regional lymph nodes cannot be assessed

$N_0$  – No regional lymph node metastasis

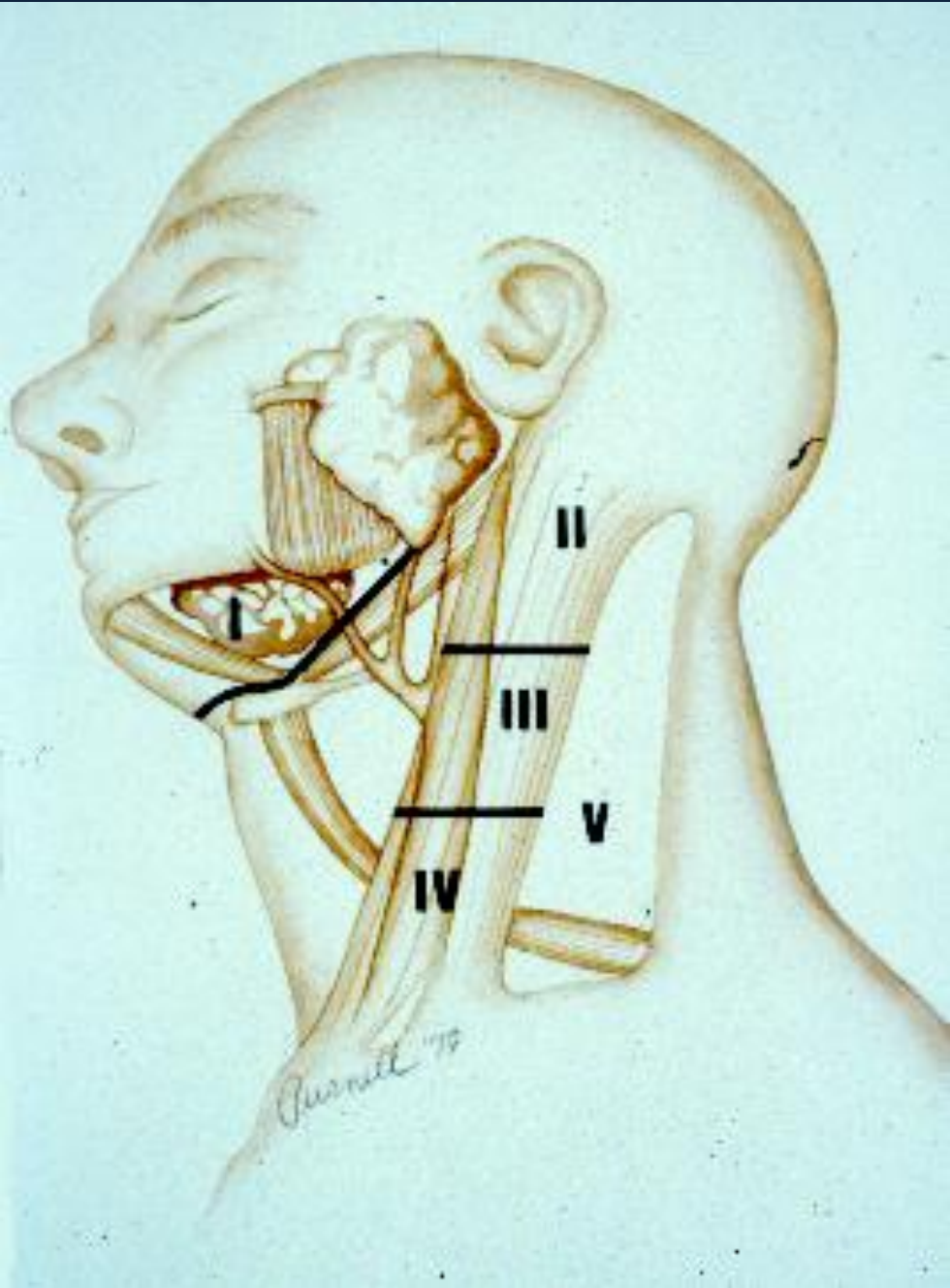
$N_1$  – Regional lymph node metastasis

$N_{1a}$

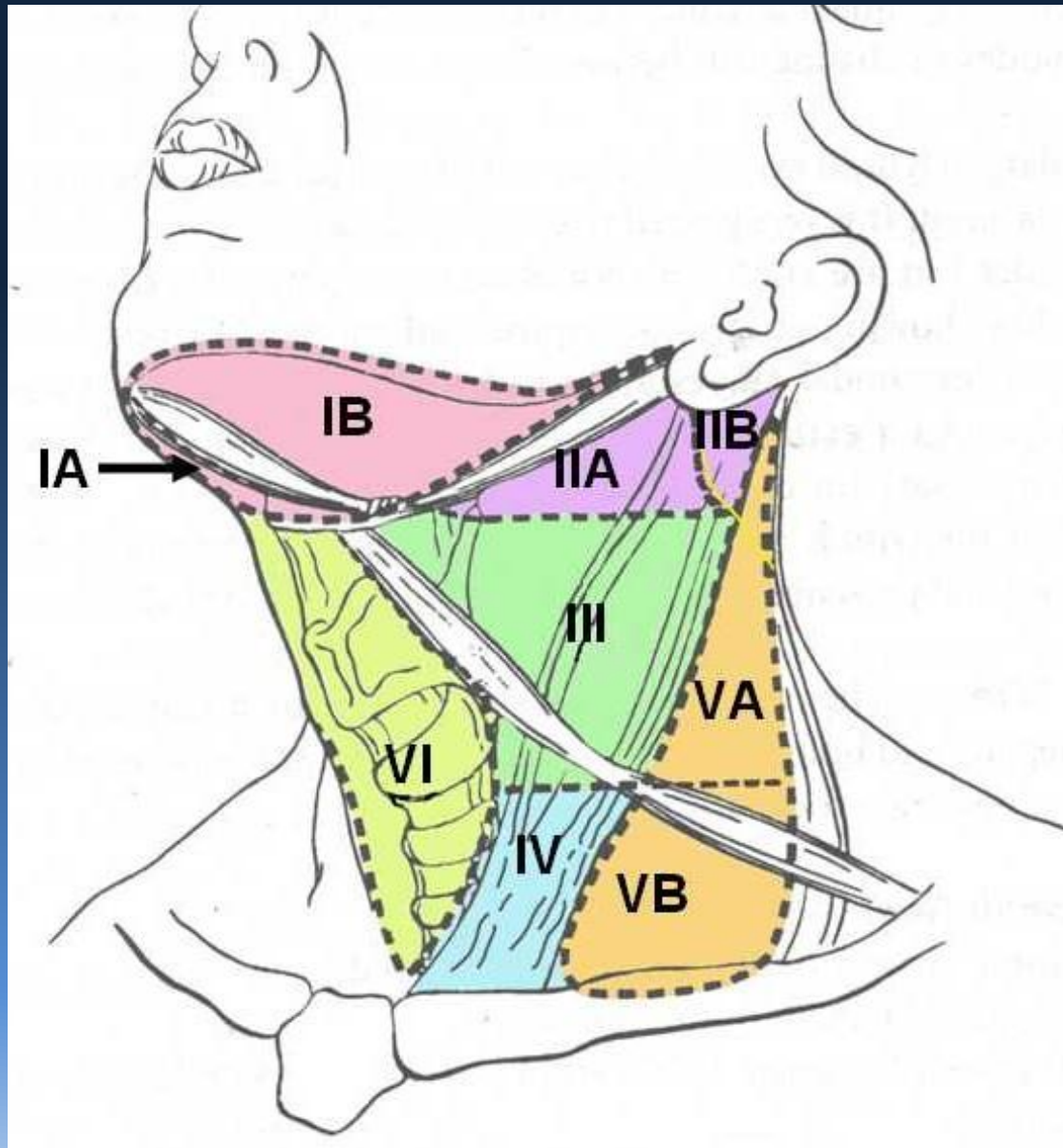
Metastasis to Level VI  
pretracheal,  
paratracheal,  
prelaryngeal,  
delphian

$N_{1b}$

Metastasis to  
unilateral, bilateral  
or contralateral  
cervical or superior  
mediastinal  
lymph nodes



# Diagrammatic Representation of the Neck Showing Various Nodal Levels and Sublevels



# Differentiated Carcinoma of the Thyroid Prognostic Factors

MSKCC

Mayo

Lahey

Karolinska

GAMES

AGES

MACIS

AMES

DAMES

Grade  
Age  
Metastases

Age  
Grade

Metastases  
Age  
Completeness  
of resection

Age  
Metastases

DNA  
Age  
Metastases

Extension

Extension

Invasion

Extension

Extension

Size

Size

Size

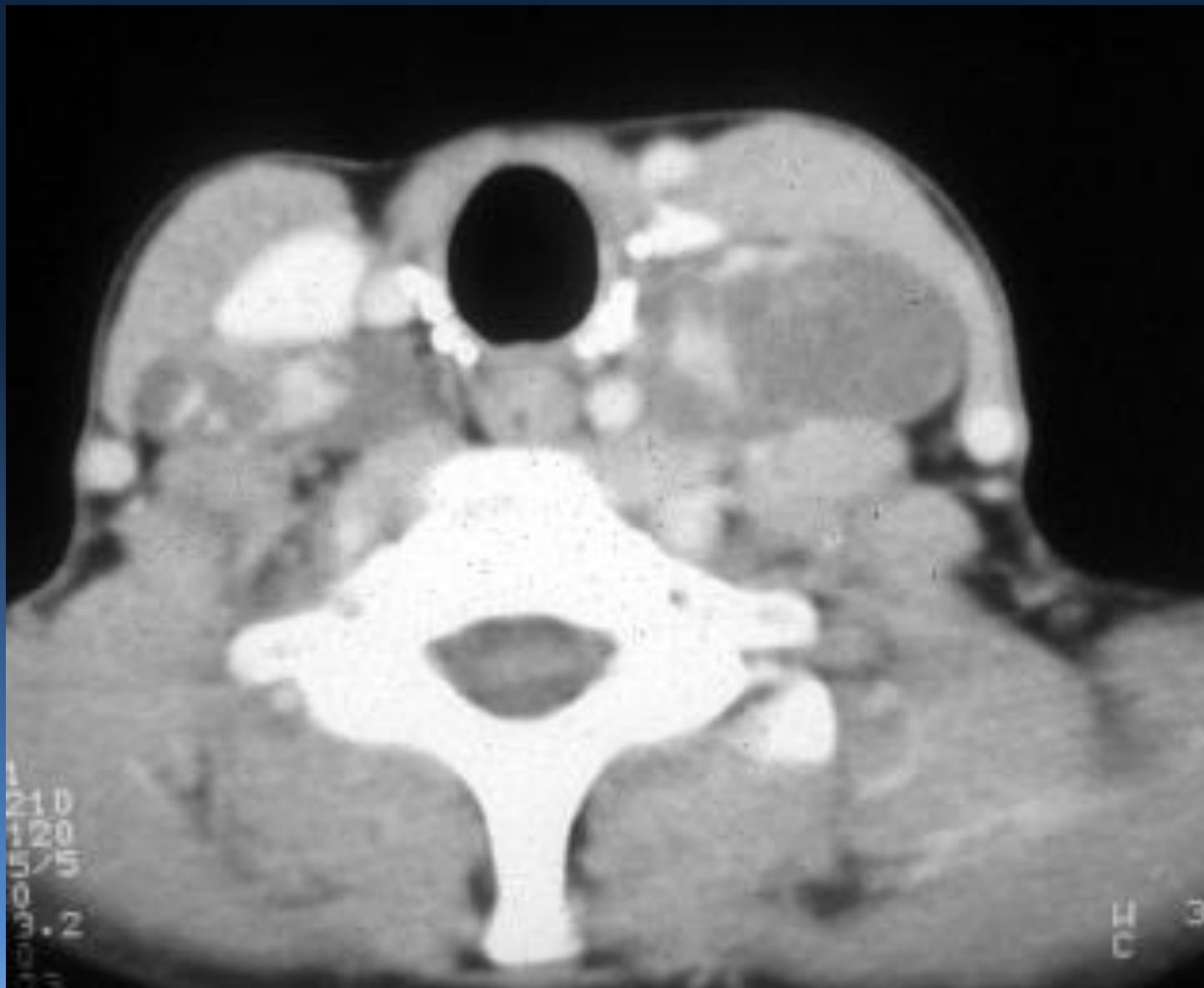
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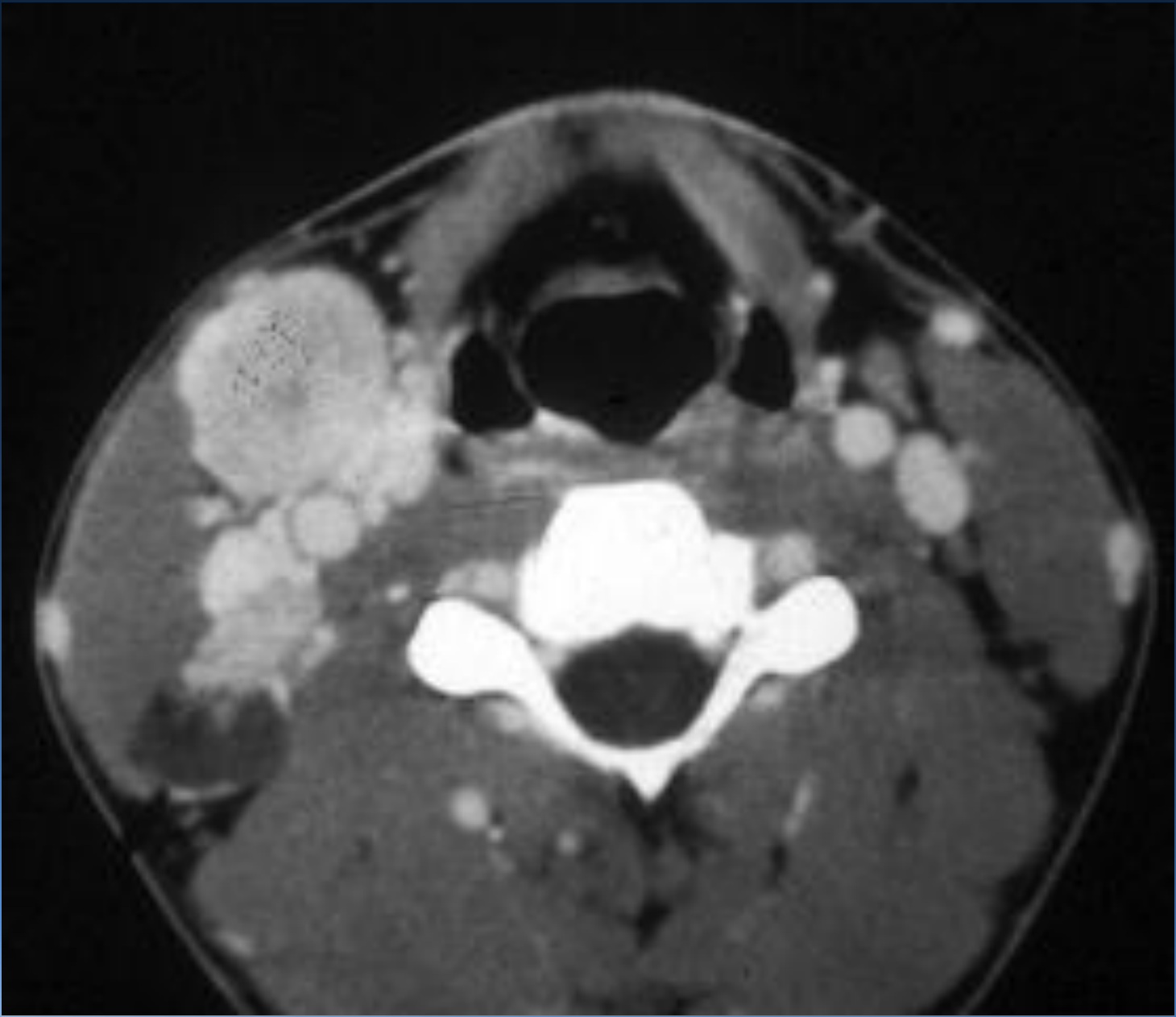
Size



# Pre-op Evaluation of the Neck

- CT scan
- Ultrasound: Suspected nodes
  - Location
  - FNA-Cytology, Thyroglobulin wash
  - Evaluation of contralateral neck
- Parapharyngeal and retropharyngeal nodes





# Thyroid Node-Met

Detailed histologic characteristics

Probably increases the risk of loco-regional  
metastases

Extra-thyroidal extension

(minor vs gross)

Multifocality

(microscopic vs  
macroscopic)

Vascular invasion

(intrathyroidal,  
extrathyroidal)

# Thyroid- Node Met

Clinico-pathologic features of the primary tumor

Predict loco-regional metastases

Size of the primary tumor

> 0.5 cm in PTC

> 2 cm in FTC/HCC

Histology of the primary tumor

PTC =TCV > FTC = HCC

Age of the patient

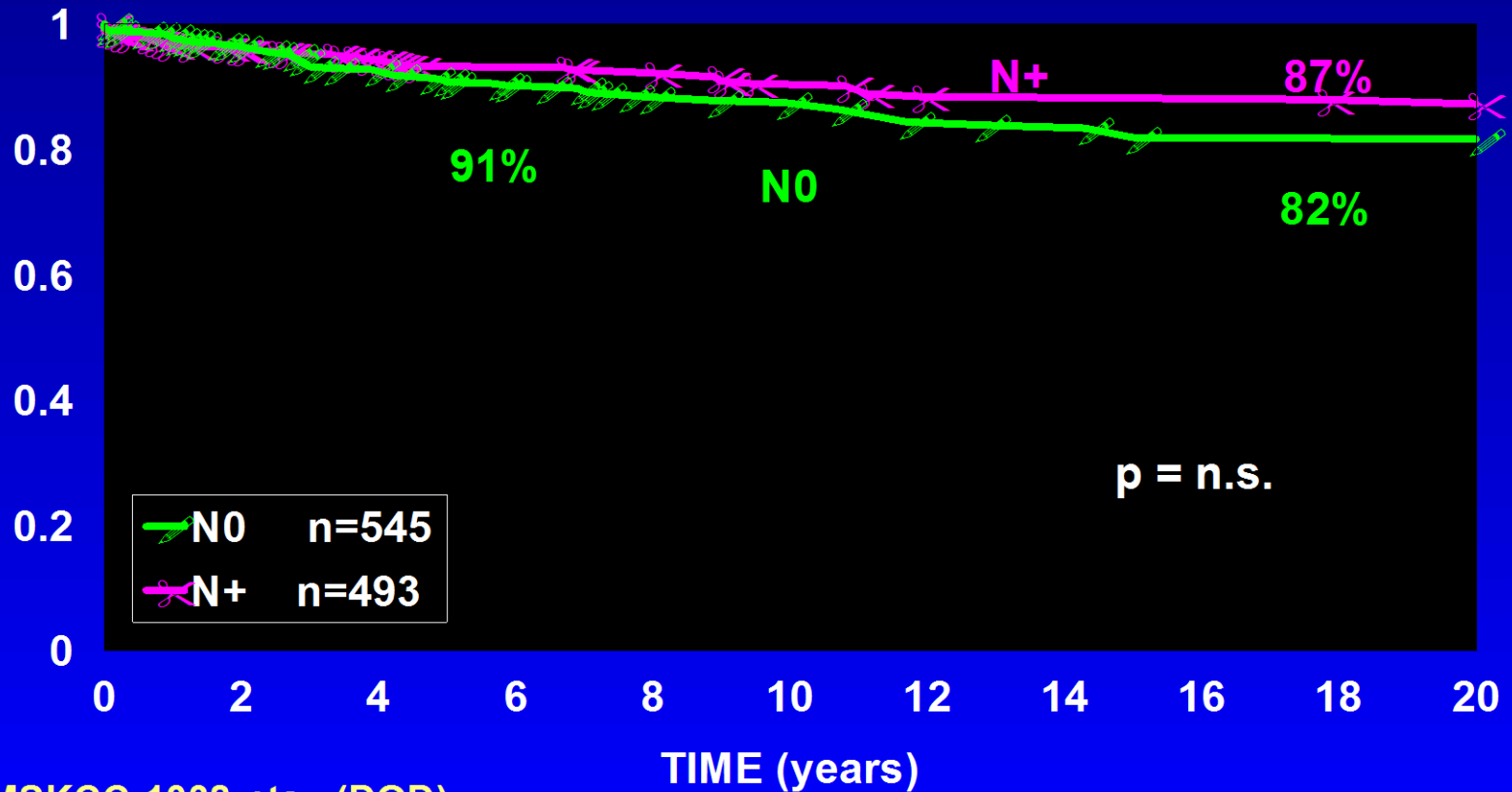
Children > Adults

Genotyping

BRAF positive

# Differentiated Thyroid Cancer 1930-1985

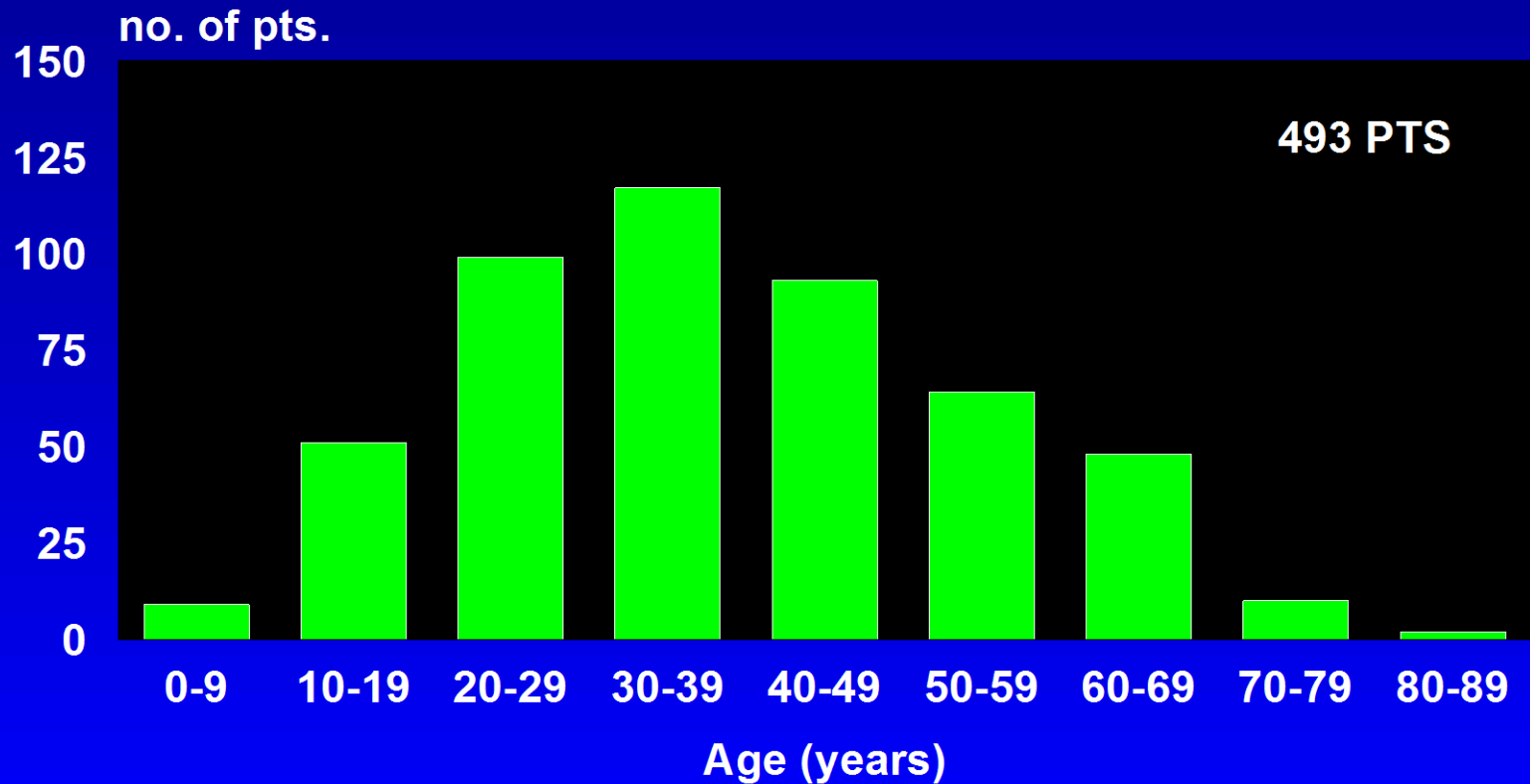
## SURVIVAL: Nodal Status



MSKCC-1038 pts. (DOD)

# Differentiated Thyroid Cancer 1930-1985

## N+ - AGE DISTRIBUTION



MSKCC-1038 pts.

## Differentiated Thyroid Carcinoma 1951-1990: Relationship of Number of Lymph Node Metastases to Outcome

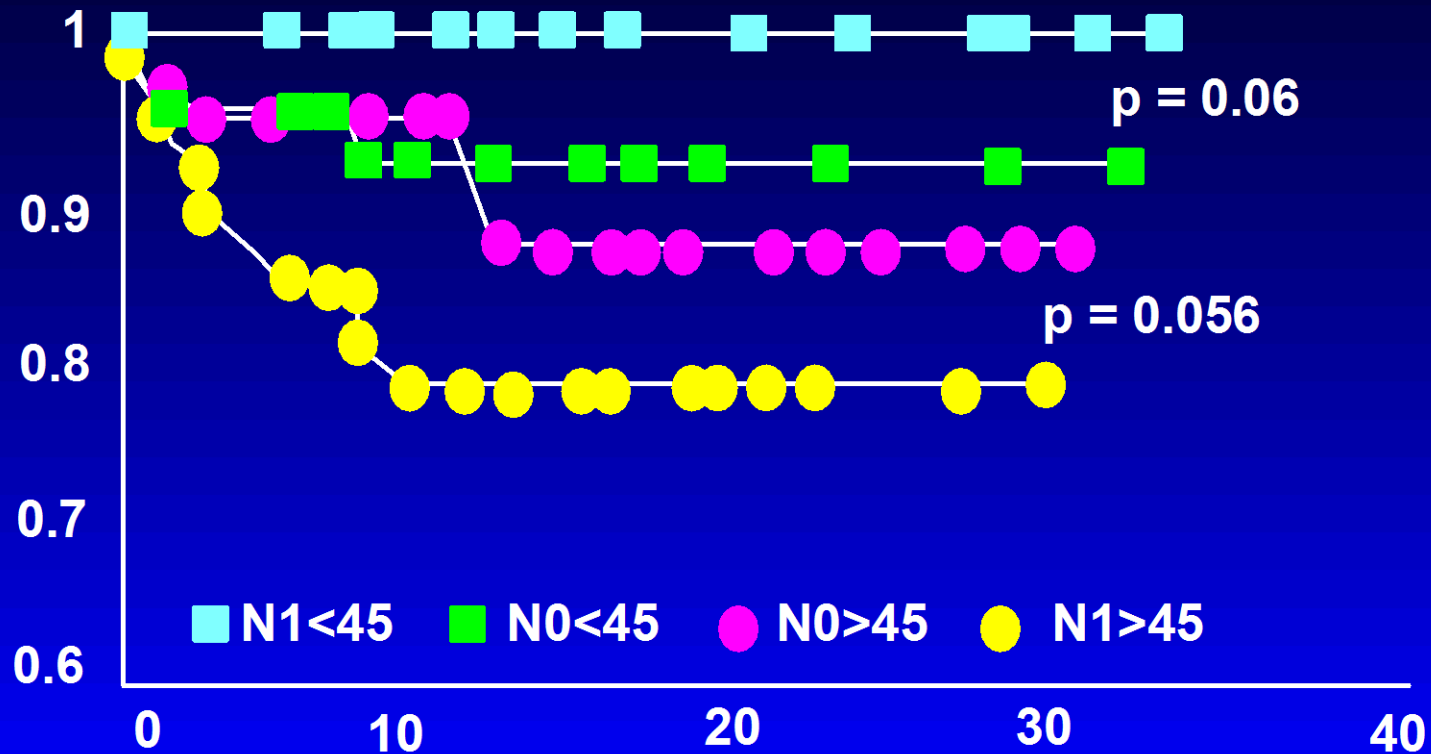
	Follow-up	SURVIVAL		
		1-3 Nodes positive	4-10 Nodes positive	>10 Nodes positive
Young (20-40 yr): Number of cases		56 (47% of patients)	50 (41% of patients)	14 (12% of patients)
	5 yr	100%	100%	100%
	10 yr	100%	100%	100%
	20 yr	100%	100%	100%
Old (60-80 yr): Number of cases		19 (63% of patients)	9 (30% of patients)	2 (7% of patients)
	5 yr	78%	75%	50%
	10 yr	71%	60%	0%
	20 yr	59%	45%	0%

Modified from Cady B: *Surgery* 124:947, 1998.



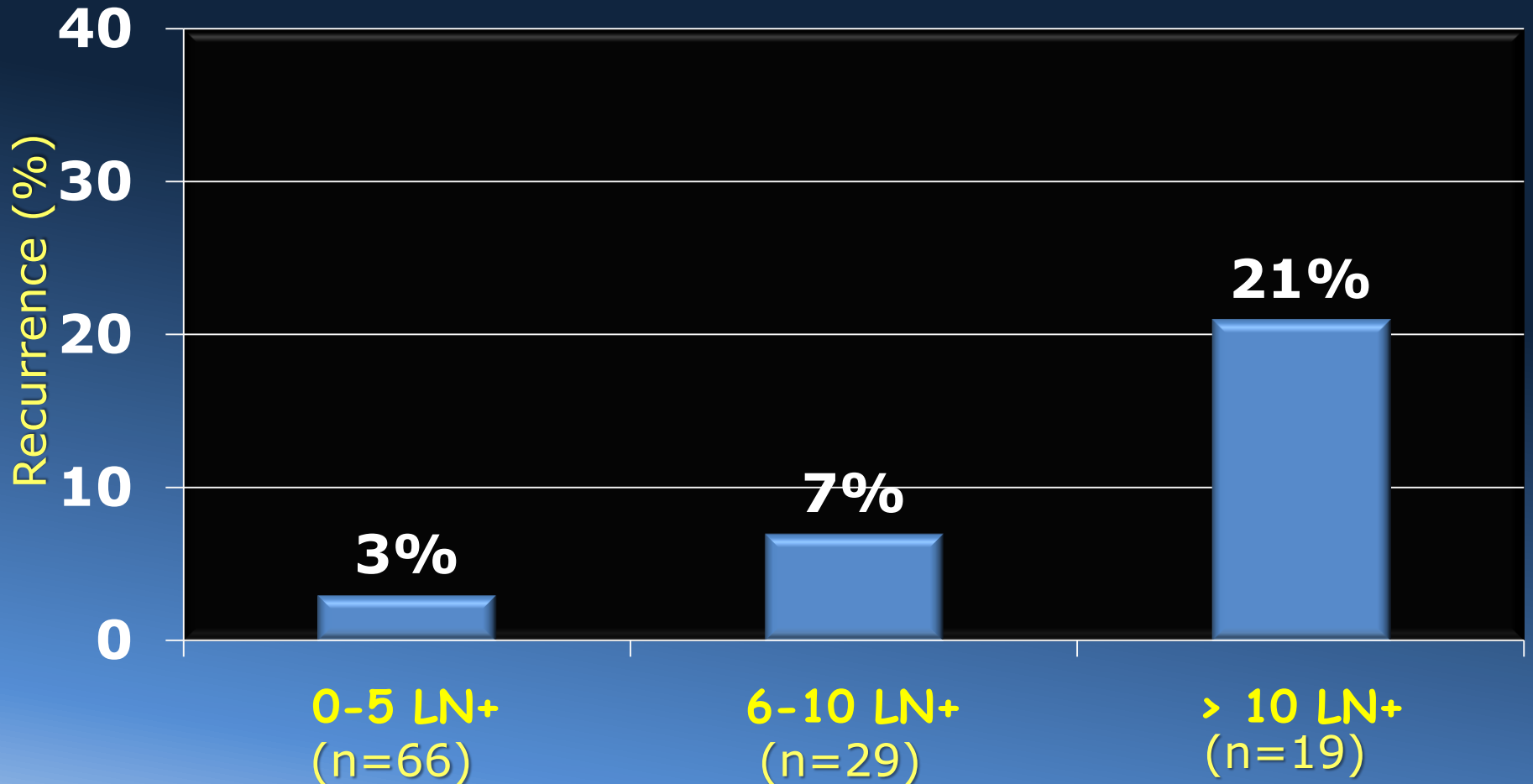
# Differentiated Thyroid Cancer

## Survival: Age & Nodal Status



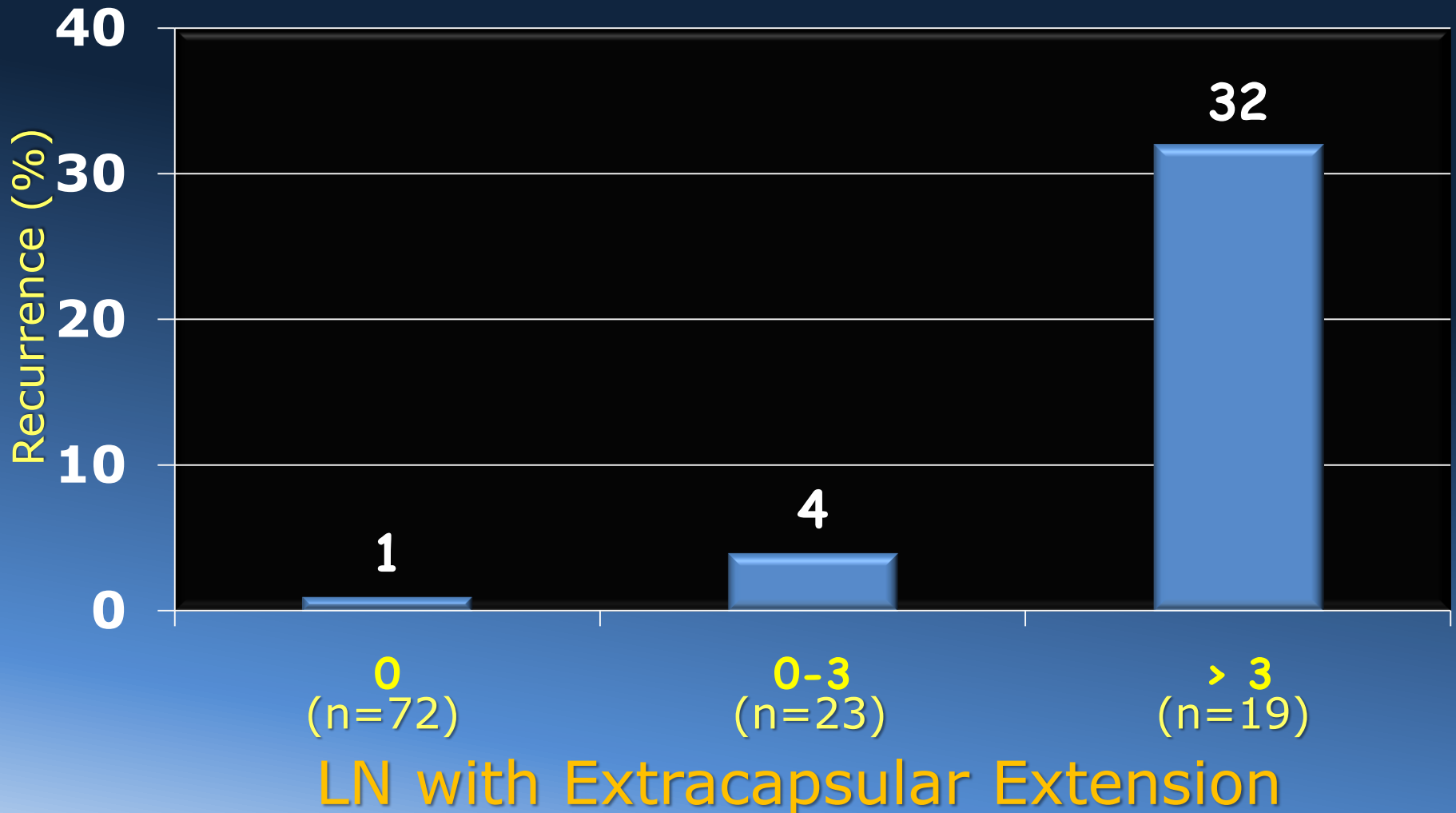
# Number of LN's Predicts Recurrence

(148 pts with LN mets, s/p total tx & routine VI, III, IV)



# LN Extracapsular Extension & Recurrence

(148 pts with LN mets, s/p total tx & routine VI, III, IV)



<b>Factors:</b>	<b>Loco-Regional Recurrence:</b>
Fewer than 5 Metastatic LN's	3%
pN1 but cN0	4%
1-3 LN's with ENE	4%
All Metastatic LN's < 2mm	5%
6-10 metastatic LN's	7%
Fewer than 5 metastatic LN's	8%
More than 5 metastatic LN's	19%
More than 10 metastatic LN's	21%
Any metastatic LN > 1cm	32%
>3 metastatic LN's with ENE	32%
Any metastatic LN > 3cm	73%

# Management Guidelines for Patients with Thyroid Nodules and Differentiated Thyroid Cancer

*The American Thyroid Association Guidelines Taskforce*

2009 Update

R27b

Prophylactic central-compartment neck dissection (ipsilateral or bilateral) may be performed in patients with papillary thyroid carcinoma with clinically uninvolved central neck lymph nodes, especially for advanced primary tumors (T3 or T4.)

Recommendation C

# Management of Neck in Thyroid Cancer

## Clinically Negative Intraoperative Management

Look for TE groove nodes

Look for sup mediastinal nodes

Look for jugular nodes

If any of these enlarged - do the  
respective clearance

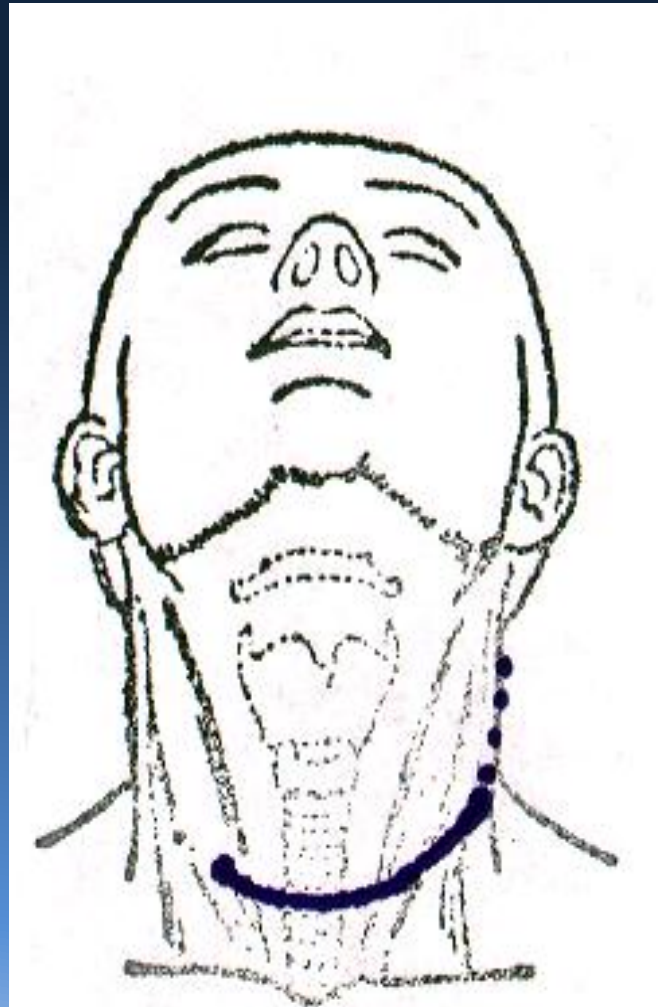
Central compartment clearance

# Management of Neck in Thyroid Cancer

## Clinically Positive Intraoperative Management

- “Berry picking” not recommended, higher incidence of neck recurrence
  - Modified neck dissection
  - Preserving SCM
    - IJV
    - Accessory nerve
    - Submandibular sal gland (Level I)
    - RND - rarely indicated

# Incision for Thyroidectomy and Neck Dissection





# Practical Tips for Neck Dissection in Thyroid Cancer

- Review pre-op imaging very carefully – CT/MRI/Ultrasound
- Review thyroid bed and paratracheal area
- Pre-op status of vocal cords and calcium levels
- Necklace incision
- Identify accessory nerve

# Practical Tips for Neck Dissection in Thyroid Cancer

- Look for jugulodigastric nodes
- Avoid dissection on the surface of submandibular salivary gland
- Look for supraclavicular and retrojugular node
- Look for pre and paratracheal nodes
- Avoid lymphatic injury – chyle leak, chyloma

# Delphian Node Metastases in Thyroid Cancer

- 101 patients with Pap Ca
- 25% had metastatic tumor to the Delphian node
- Relation of Delphian node positivity with primary tumor and extra-thyroidal extension
- Association with additional node metastases to the central and lateral compartment
- Delphian node metastases is associated with heavier nodal burden

# Complications

- Paratracheal dissection - Hypoparathyroidism
  - Parathyroid autotransplantation
- Lymphatic/chyle leaks
- RLN injury
- Accessory nerve injury
- Horner's Syndrome

# Neck Dissection

- Modified neck dissection
- Selective neck dissection
- Compartment-oriented neck dissection
- Radical neck dissection

# Neck Dissection for Thyroid Cancer

- Role of pre-op ultrasound and U/S -guided FNA
- Microdissection (Tissel)
- Use of Gamma probe for intra-op localization
- Parathyroid autotransplantation

# Sentinel Node Biopsy in Thyroid Cancer

- SLN can be located with radionuclide or
- Blue dye
- Limited or no clinical application

# Rising Thyroglobulin

- Generally recurrence in nodes
- U/S and FNA
- CT scan
- Neck dissection
- RAI
- Impact on recurrent long term outcome



Good judgment comes  
from experience;  
and experience comes  
from bad judgment!

Elective ND  
Radical ND

U/S & U/S FNA  
No clinical finding  
Rising TGB

No prognostic  
implication

Thyroglobulin  
follow-up

Only therapeutic  
ND

Clinical  
follow-up



Central compartment  
ND

# Extent of Metastatic Disease in Neck Nodes from Papillary Ca of the Thyroid

Type	Import on Outcome
Micrometastasis	None
Mini metastasis (by U/S of Tg)	None
Minivolume metastasis	None
Large volume metastasis	Maybe (Regional or distant)
Major metastasis	Yes, older pt (Regional or distant)

# Selective Paratracheal Node Dissection

- 304 patients with Papillary Cancer
- No prophylactic node dissection
- Only therapeutic
- 37% had therapeutic central compartment dissection
- Only 3 of 161 low risk patients developed central compartment recurrence (1.8%)

# PET Scan & Neck Node Metastasis

- The nodal mets not responding to RAI and not localized by RAI
- PET positive
- Surgery – preferred approach

# Surgery for Recurrent Nodal Disease

- Frequent problem
- May be difficult to find the disease
- Missing neck nodes
- May be many other nodes
- Thyroglobulin may not become normal
- Other nodes may become obvious requiring further surgery
- Higher incidence of complications
- May not have much effect on long term outcome or prognosis

# Recurrent Neck Disease

A Scientific Reality

OR

Iatrogenic Problem

Victim of Technology

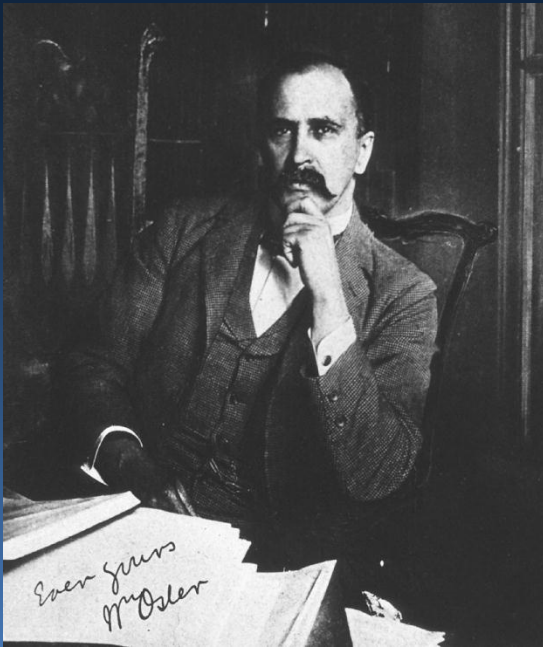
A Balance Between Risk of the Disease &  
Risk of the Treatment

# Prophylactic central compartment dissection in thyroid cancer: A new avenue of debate

Ashok R. Shaha, MD, FACS, *New York, NY*

- Surgical experience is an important consideration while debating the issue of central compartment dissection
- Recurrence in the low-risk group necessitating central compartment reoperation is quite rare and in the high-risk group it is probably unavoidable
- It is important to develop a balance between the risk of recurrence against the benefit from elective nodal dissection
- *Primum non nocere – FIRST DO NO HARM*





“The *good* physician  
treats the disease;  
the *great* physician  
treats the patient  
who has the disease.”

- Sir William Osler

# Radiofrequency ablation of regional recurrence from well-differentiated thyroid malignancy

Dupuy DE, Monchik JM, et al

Rhode Island Hospital, Providence, RI

Surgery. 2001 Dec; 130(6):971-7.

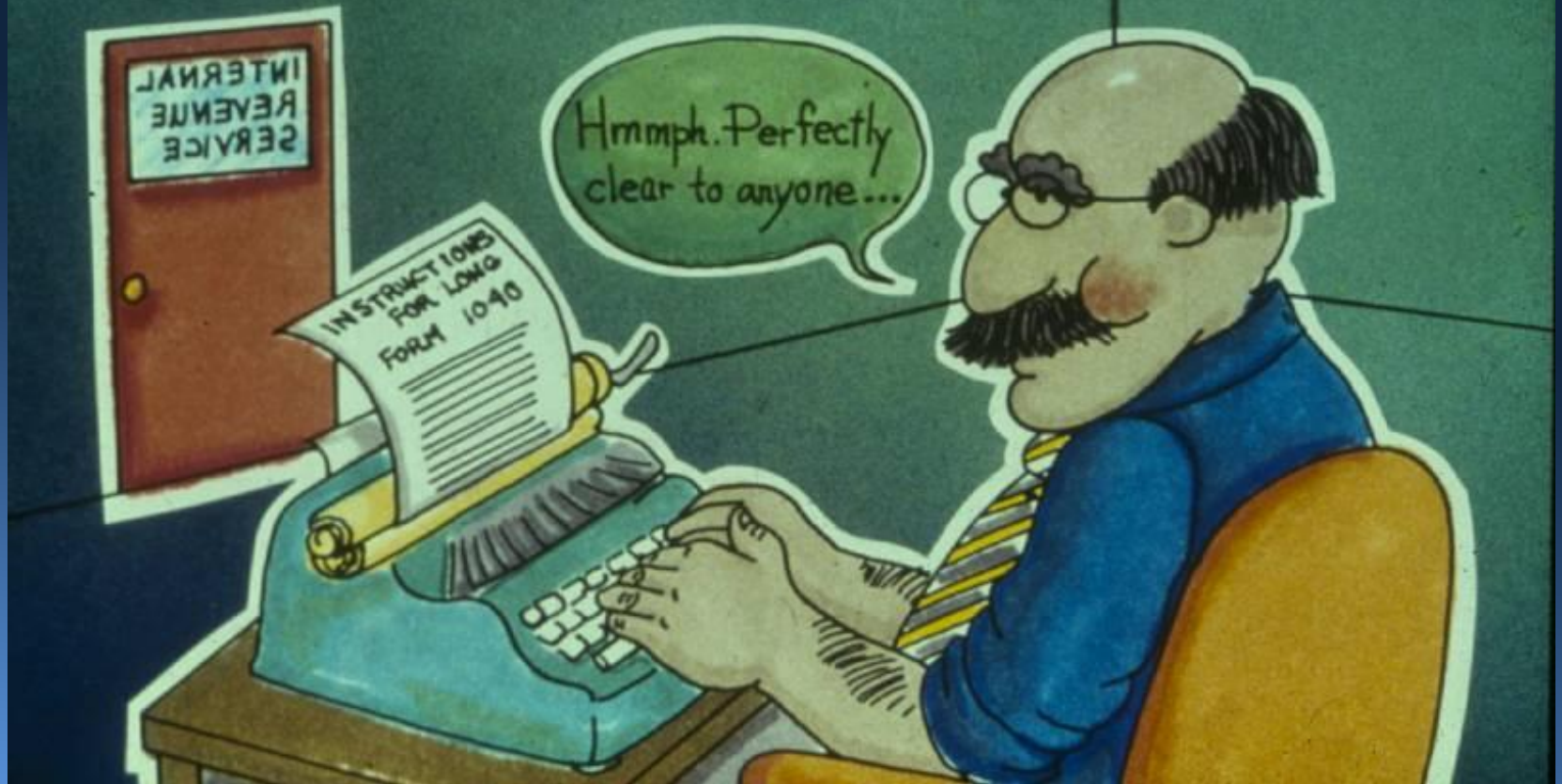
# Percutaneous ethanol injection for treatment of cervical lymph node metastases in patients with papillary thyroid carcinoma

Lewis BD, Hay ID, et al

Dept. of Radiology, Mayo Clinic, Rochester, MN

AJR Am J Roentgenol. 2002 Mar;178(3):699-704.

**Making something perfectly clear  
will totally confuse most people.**



# Summary

- High incidence of nodal mets in differentiated thyroid ca
  - But biologic difference
  - No survival impact
- Elective node dissection - not recommended
- Central compartment clearance - look for paratracheal and sup mediastinal and jugular nodes
- Lateral neck dissection - only if palpable nodes
- Modified neck dissection for clinical nodes
- Preserve SCM, IJV, XI and Level I
- No “berry picking”
- Role of RAI

# Summary

Patients with multiple positive neck nodes from papillary ca may have additional paratracheal, sup mediastinal, or lateral neck nodes, and may remain with persistent mild hyperthyroglobulinemia. We may not achieve biochemical cure.