The International Federation of Head and Neck Oncologic Societies

Current Concepts in Head and Neck Surgery and Oncology 2017

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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

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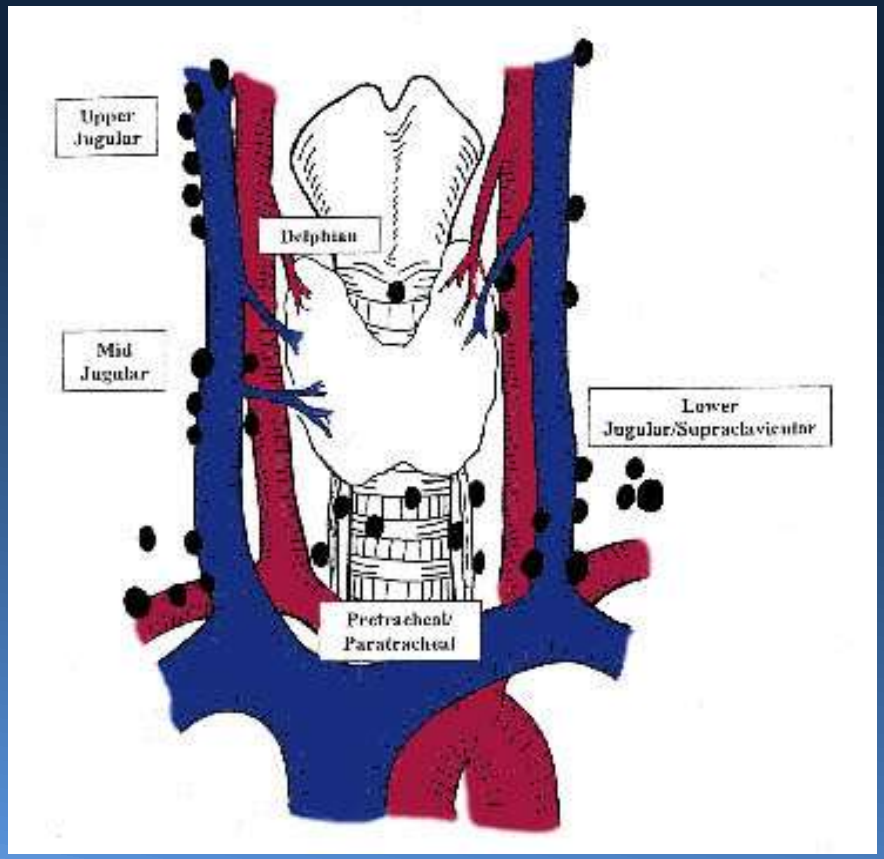
Lymphatic Drainage of the Thyroid Gland



- 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

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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

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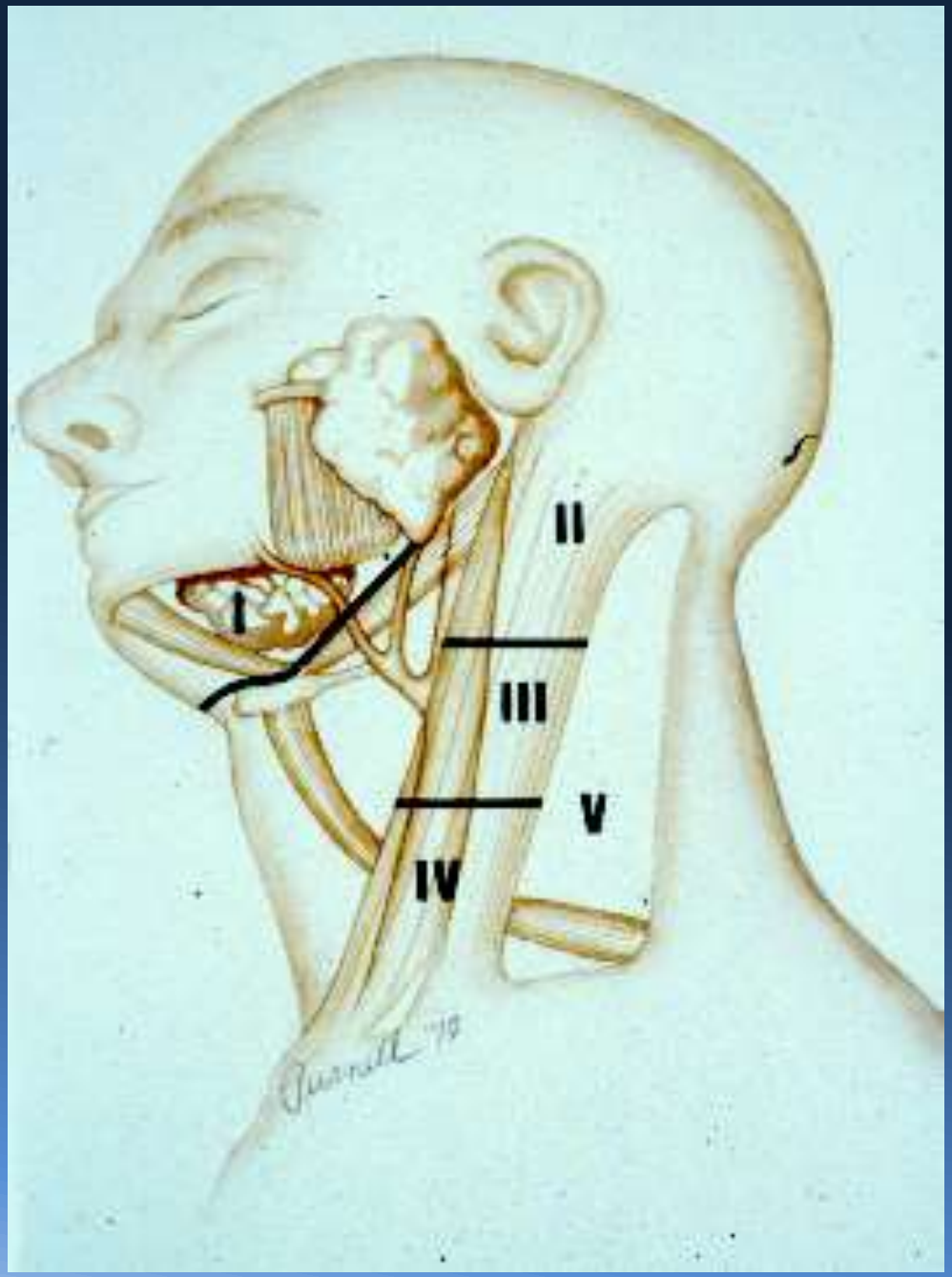
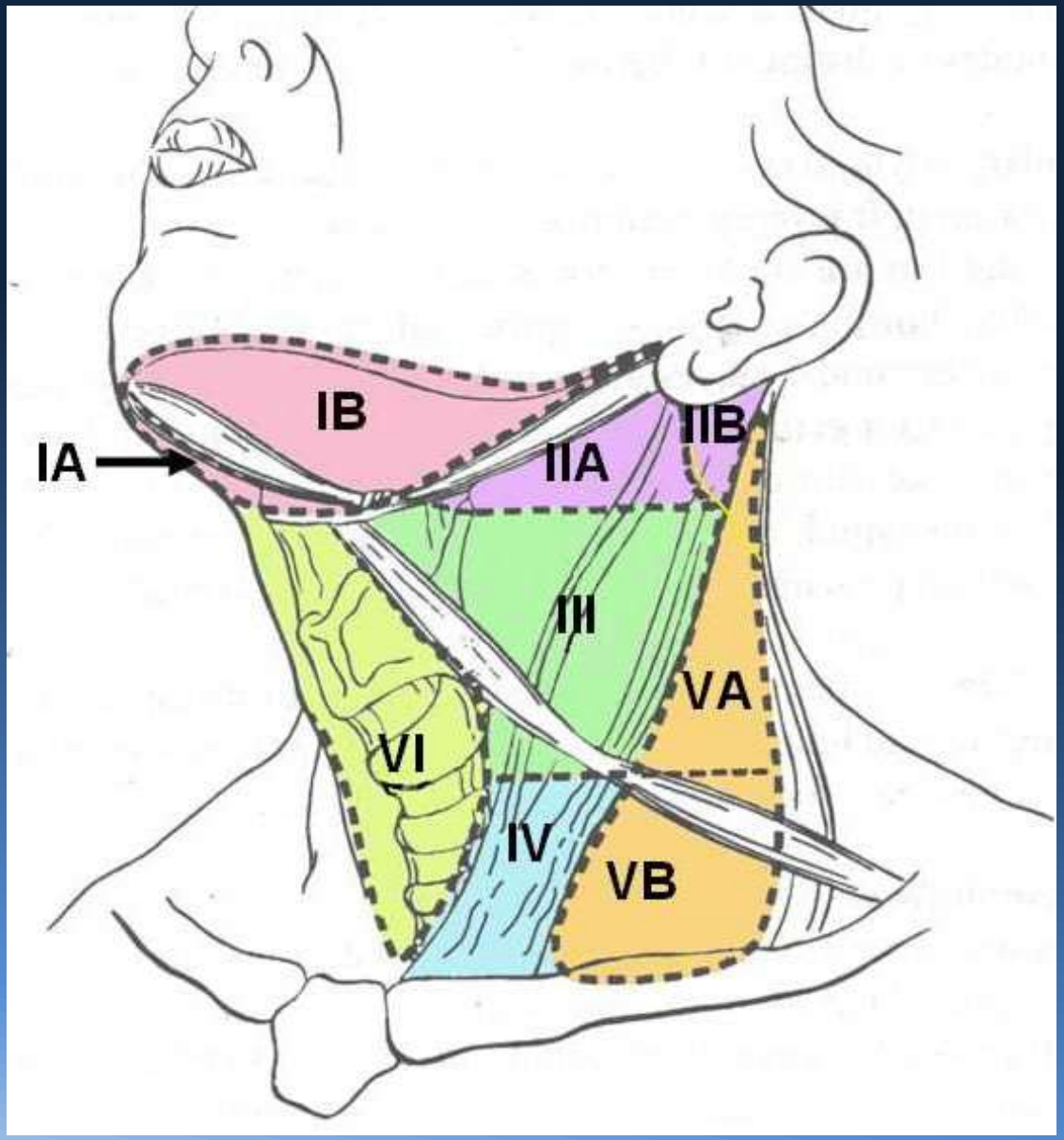

I
II
III
IV
V

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	Size	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

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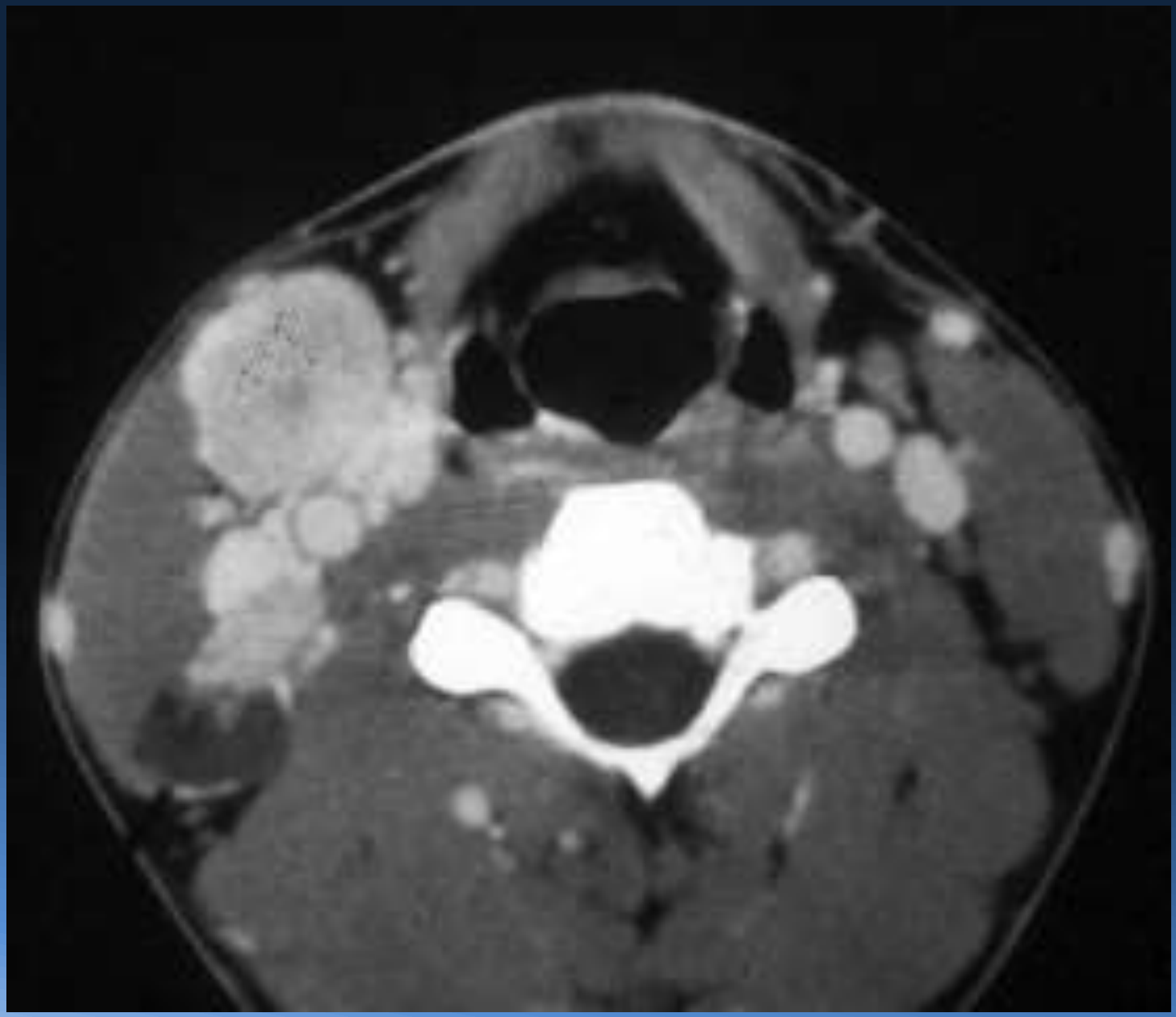

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Thyroid Node-Met

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

Clinco-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

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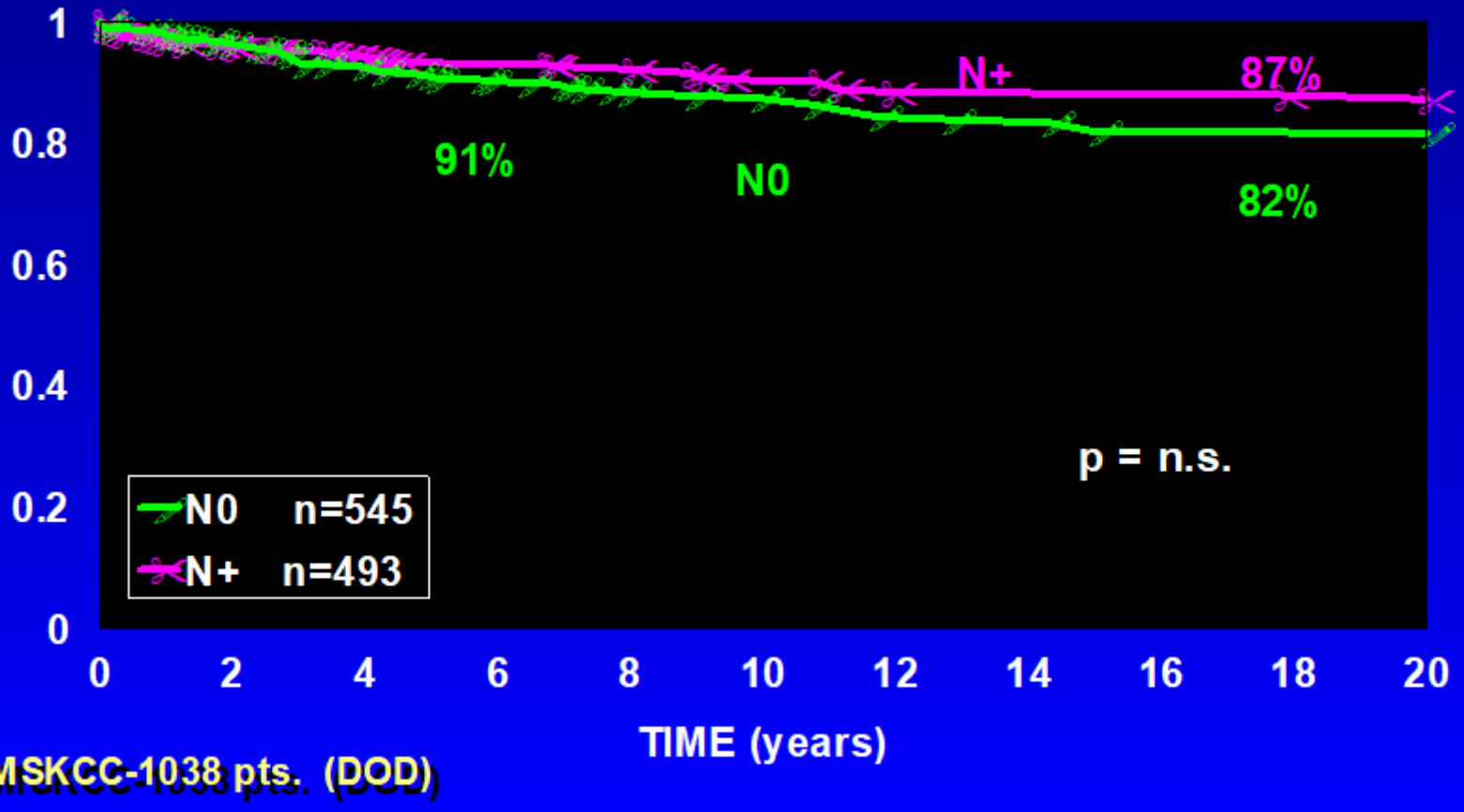
Differentiated Thyroid Cancer 1930-1985

SURVIVAL: Nodal Status



MSKCC-1038 pts. (DOD)

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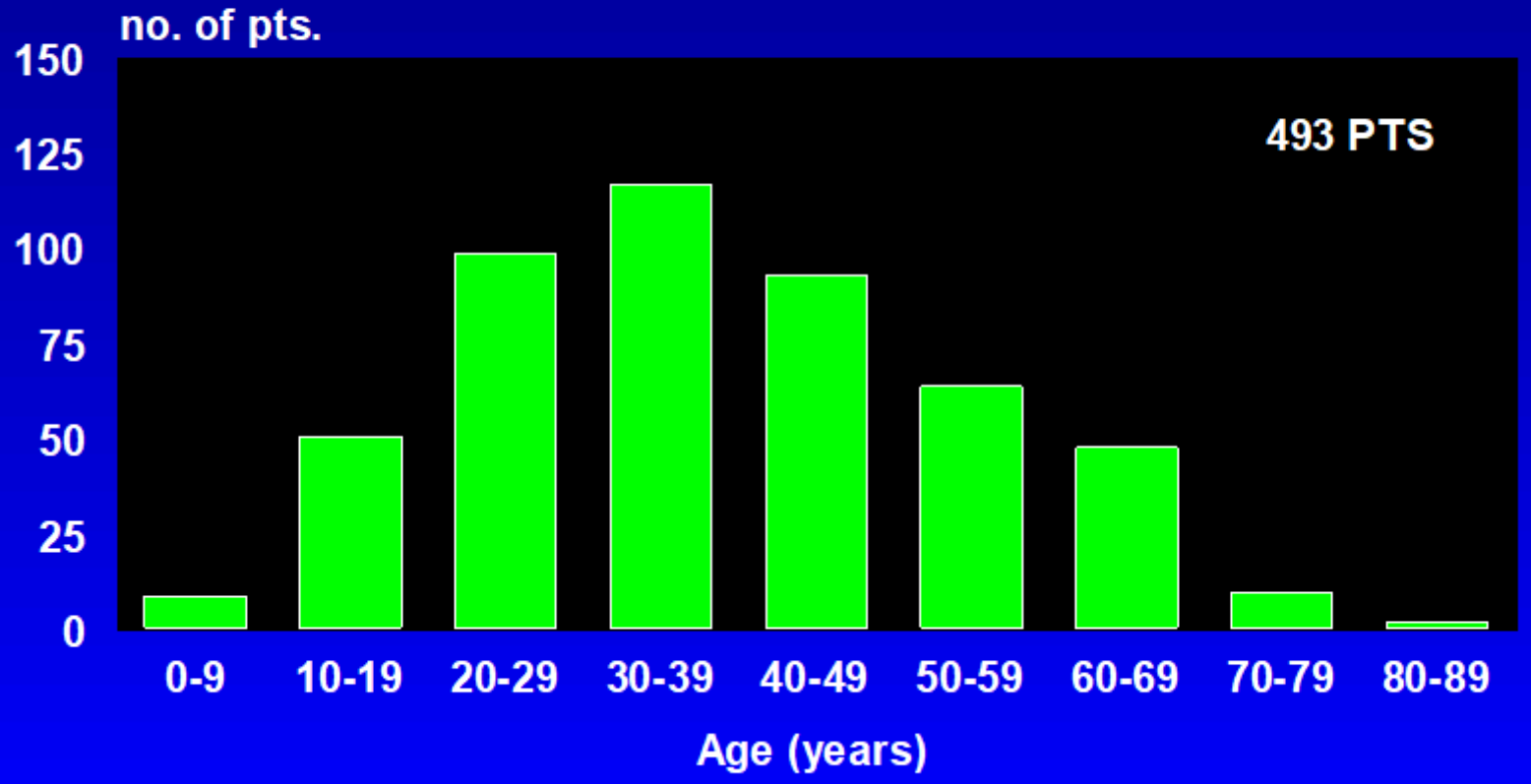
Differentiated Thyroid Cancer 1930-1985

N+ - AGE DISTRIBUTION



MSKCC-1038 pts.

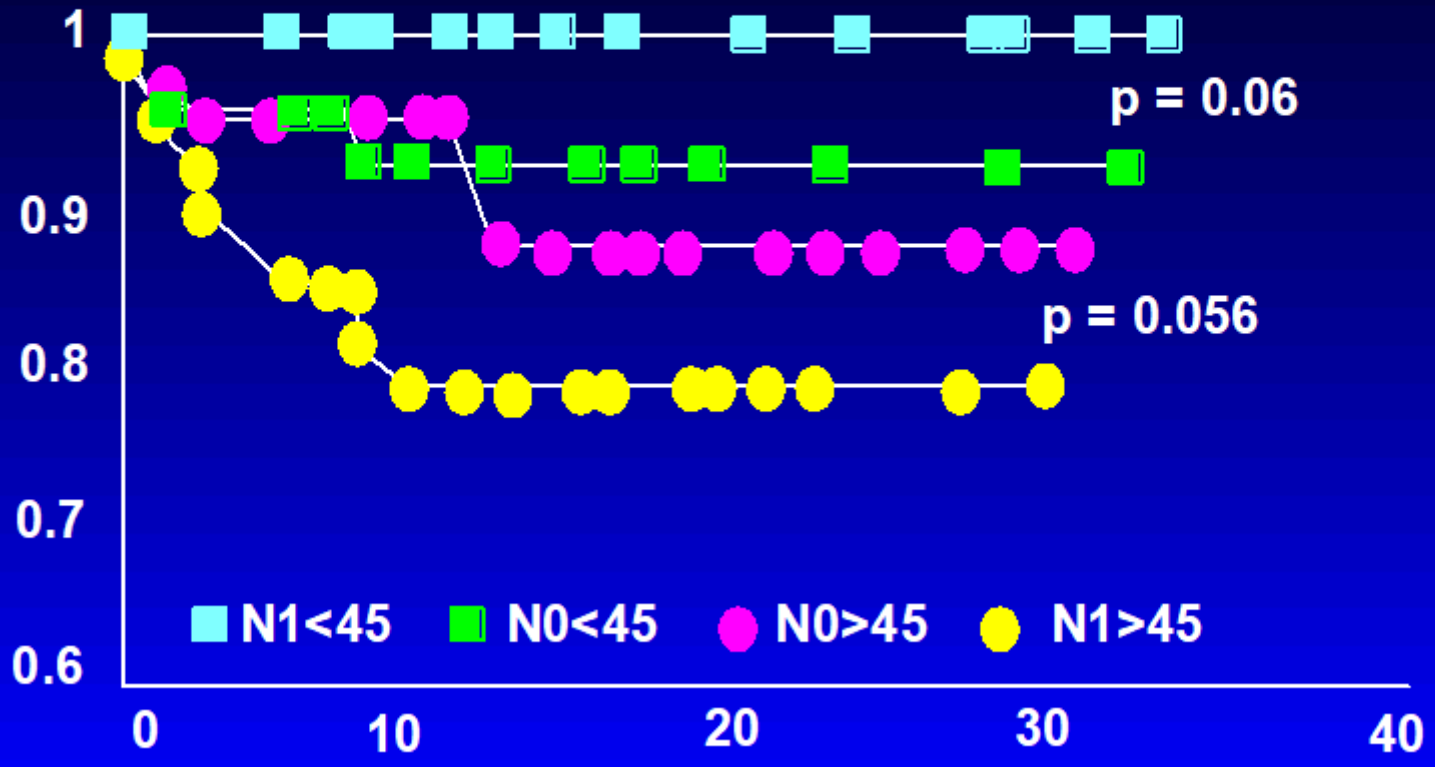
Differentiated Thyroid Carcinoma 1951-1990: Relationship of Number of Lymph Node Metastases to Outcome

		SURVIVAL		
	Follow-up	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.

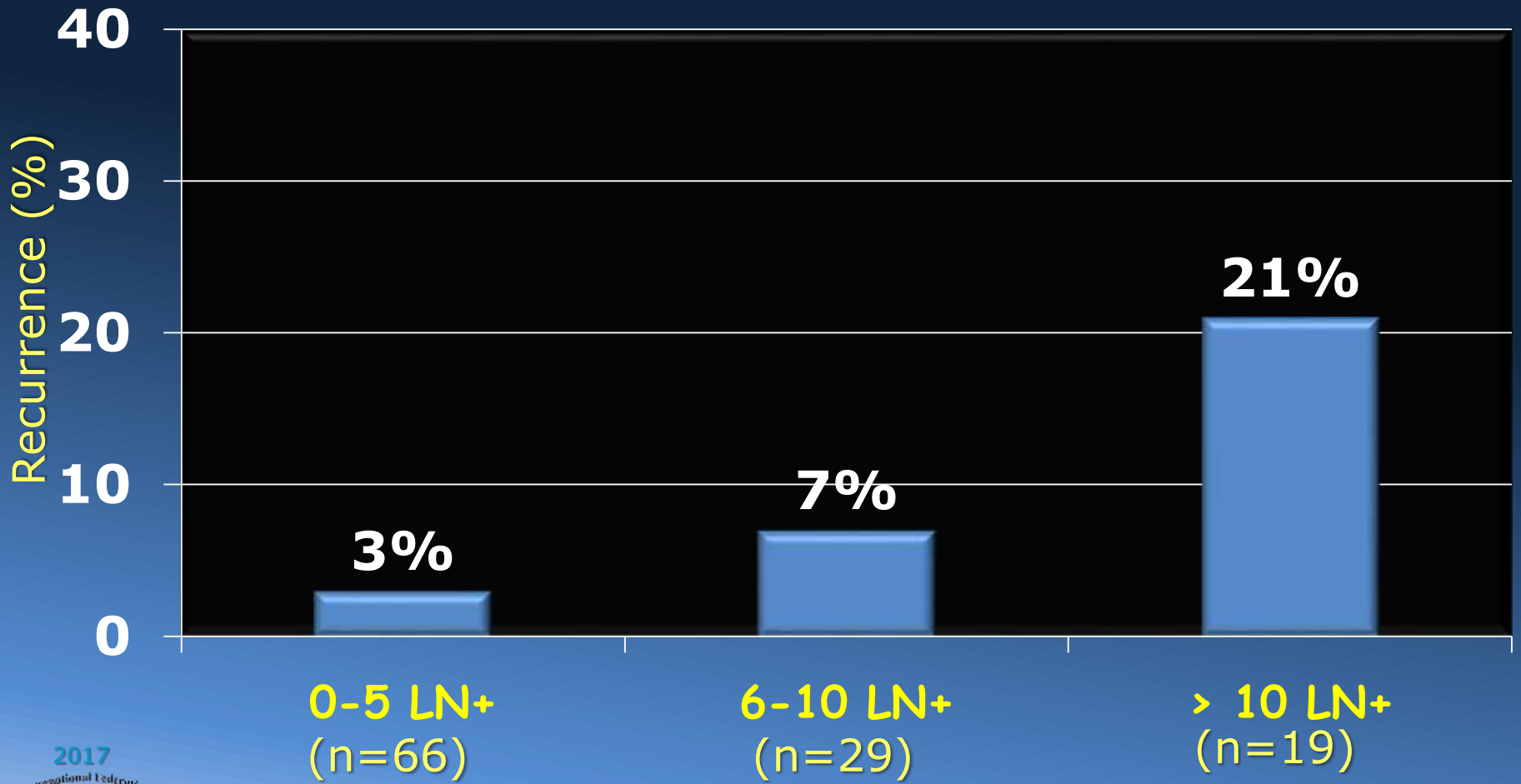
Differentiated Thyroid Cancer

Survival: Age & Nodal Status



Number of LN's Predicts Recurrence

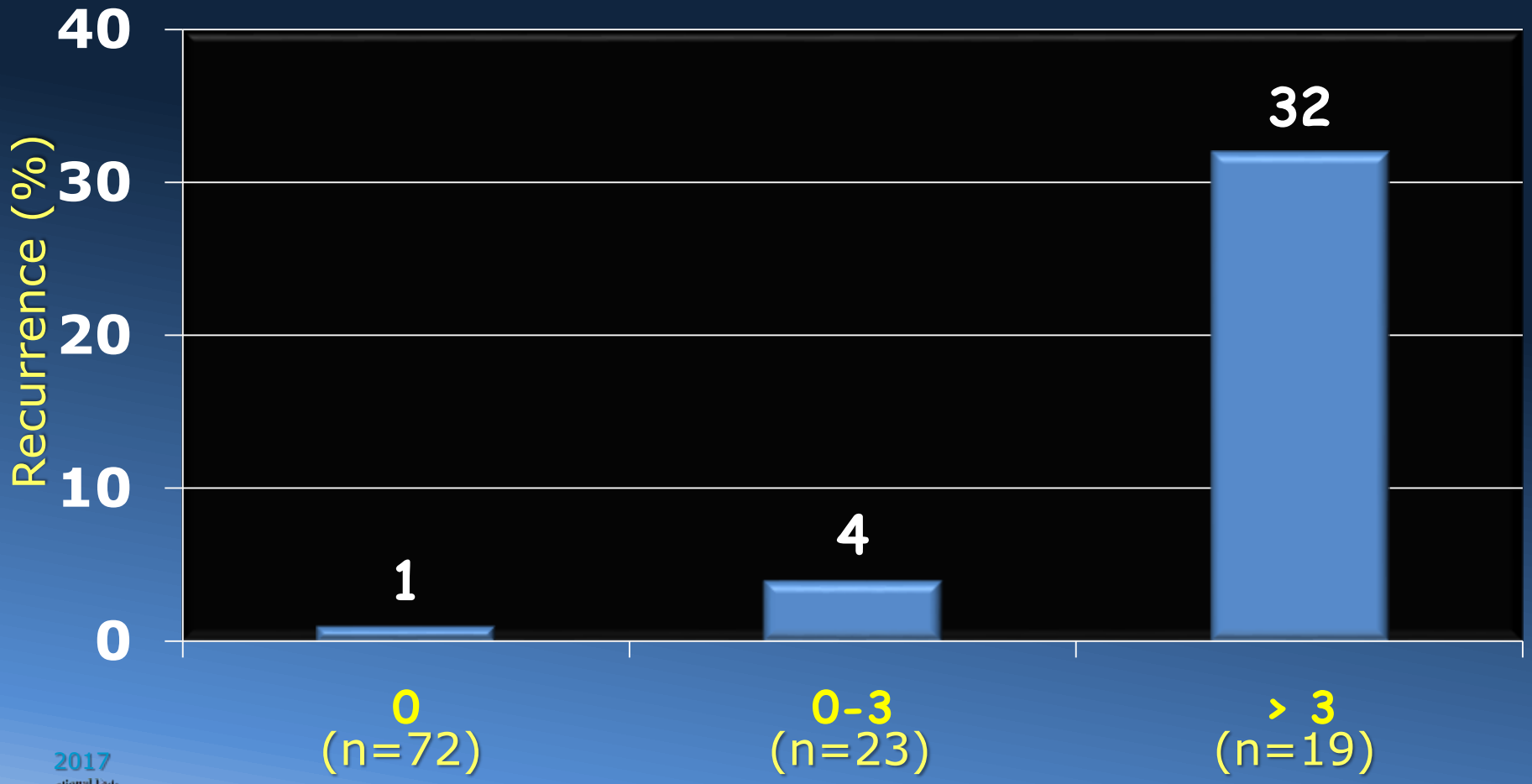
(148 pts with LN mets, s/p total tx & routine VI, III, IV)



Leboulleux, JCEM, 2005

LN Extracapsular Extension & Recurrence

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



Leboulleux, JCEM, 2005

Factors:	Loco-Regional Recurrence:
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

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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

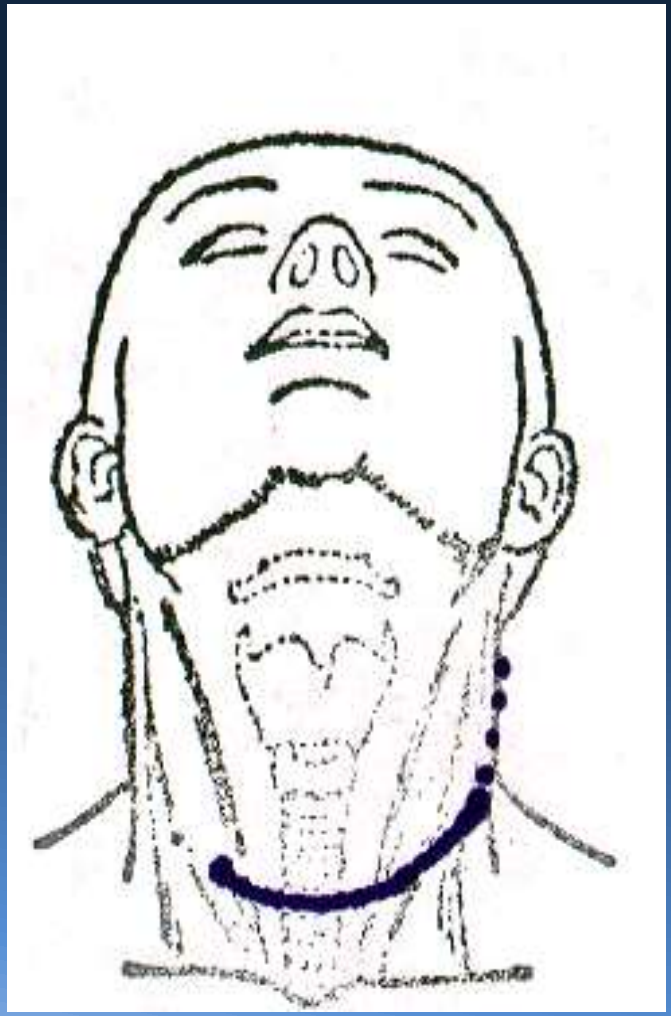
Central compartment clearance

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

Iyer/Shaha et al, Ann Surg 2011

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 radionucleide 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

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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%)

Monchik et al., Surgery 2009

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

Recurrent Neck Disease

A Scientific Reality

OR

Iatrogenic Problem

Victim of Technology

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

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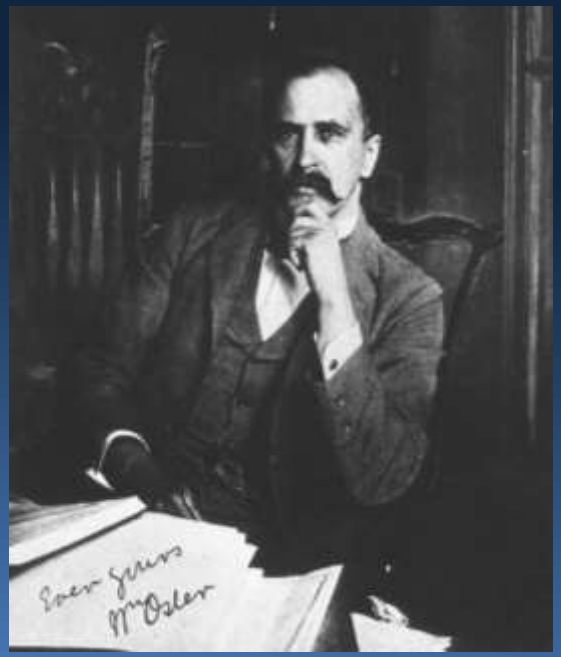
Prophylactic central compartment dissection in thyroid cancer: A new avenue of debate

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*

Surgery 2009; 146;1224-7



"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

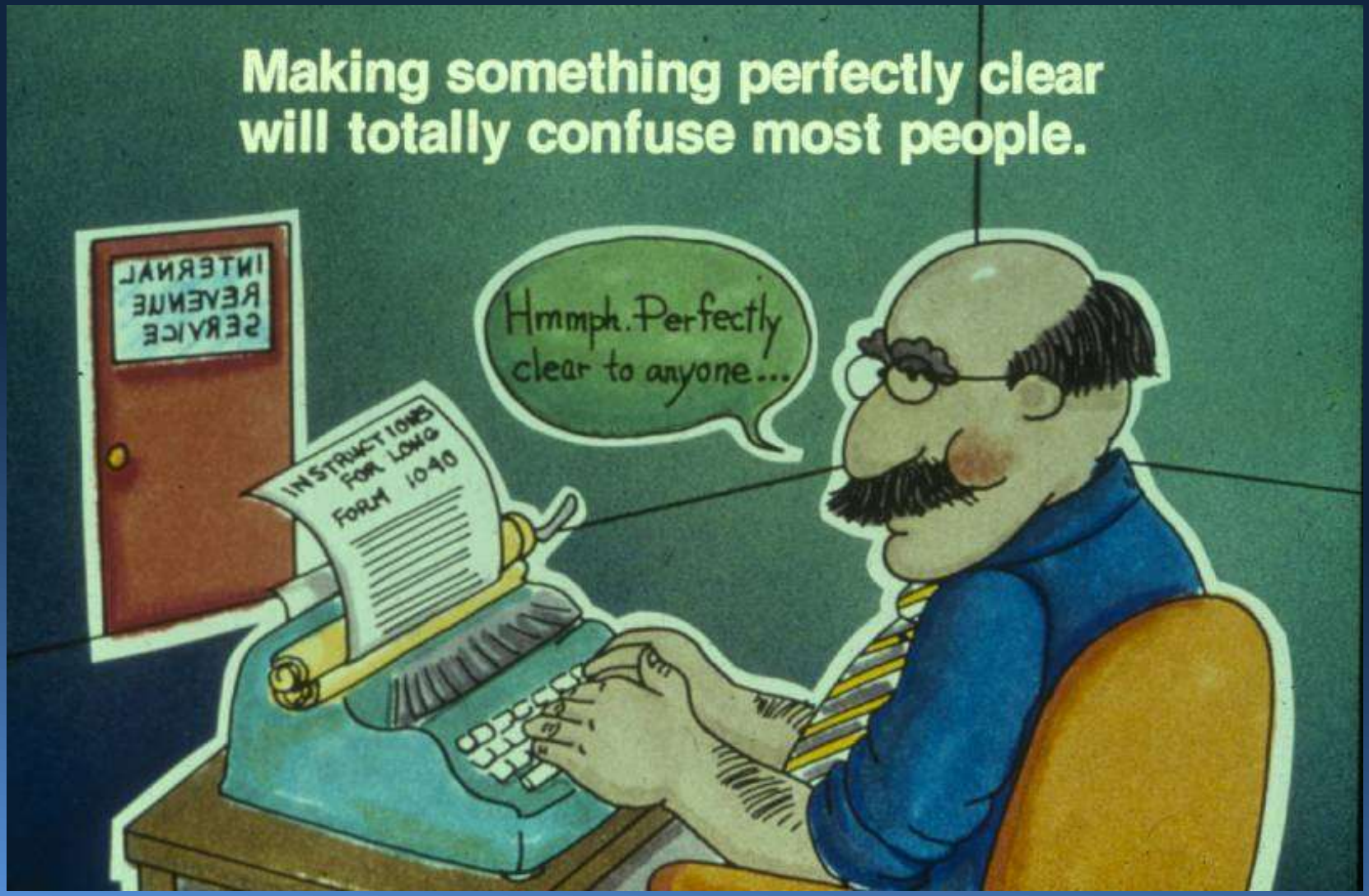
Surgery. 2001 Dec; 130(6):971-7.

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.
INTERNAL REVENUE SERVICE
Hmmph. Perfectly clear to anyone...
INSTRUCTIONS FOR LONG FORM 1040

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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.