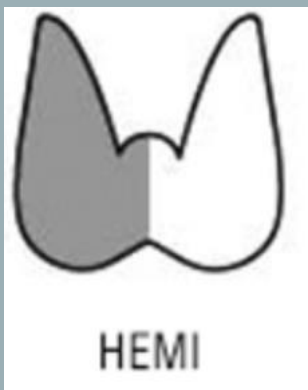


SOCIEDAD PUERTORRIQUENA DE ENDOCRINOLOGIA Y DIABETES
A MULTIDISCIPLINARY APPROACH TO THE EVALUATION OF THYROID LESION

LOBECTOMY VS TOTAL THYROIDECTOMY FOR THE MANAGEMENT OF THYROID NEOPLASIA: THE SURGEON'S PERSPECTIVE



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DISCLOSURE

- Nothing to disclose financially

WHAT DO THEY HAVE IN COMMON?

DR JOSE GARCIA MATEO



LANCE ARMSTRONG



WHY DO WE NEED TO TALK ABOUT THIS?

- In 2015, the American Thyroid Association, published a new set of guidelines for the management of Differentiated Thyroid Carcinoma (DTC)
- It was a consensus work from a group composed by endocrinologists, surgeons, pathologists, and others.
- One of the most striking new guidelines was the recommendation to treat MOST DTC with a thyroid lobectomy (TLx).
- Up to that time, the gold standard treatment for most DTC was a total thyroidectomy (TTX) +/- Radioactive Iodine (RAI)
- Five years after the publication of the new guidelines, there are still areas of concern and discussion.

2005

- Total Thyroidectomy: mainstay treatment for a thyroid nodule positive for DTC
- Prophylactic central lymph node resection (CLN) recommended by several authors
 - 40-70% micrometastasis
- CLN for grossly positive lymph nodes
- Incidental Papillary Thyroid Carcinoma
 - No completion thyroidectomy if lesion \leq 10 mm and no other unfavorable features
 - The presence of ANY "unfavorable feature" (incl. extrathyroidal extension, multifocality, multicentricity, capsular invasion) was an indication for completion thyroidectomy.

2010

- Total Thyroidectomy mainstay treatment for thyroid nodule positive for DTC
- **Backlash on prophylactic neck dissection**
 - Increased rate of transient and permanent hypocalcemia.
 - Despite high rate of metastatic disease, recurrence free survival not affected by removing lymph nodes.
- **Incidental Thyroid Cancer**
 - Certain “unfavorable features” no longer considered indications for completion thyroidectomy. (i.e. capsular invasion, multicentricity)
 - First long term series (>20 years follow up) showing outcomes comparable with TTx when controlled for tumor size and extent of disease.

Total thyroidectomy is associated with increased risk of complications for low- and high-volume surgeons

Adam Hauch ¹, Zaid Al-Qurayshi, Gregory Randolph, Emad Kandil

- Rate of complications 20.4% vs 10.8% ($p < 0.001$) in TTx vs TLx
- TTx is associated with a significantly higher rate of complications when compared to TLx. EVEN AMONG HIGH VOLUME SURGEONS.
- Higher volume surgeon is associated with improved patients outcome.

SURGICAL COMPLICATIONS ACCORDING TO SURGICAL EXTENT

				After individual matching		
	Lobectomy (n = 755)	Total thyroidectomy (n = 1276)	P-value ^a	Lobectomy (n = 688)	Total thyroidectomy (n = 688)	P-value ^a
Total complications	8 (1)	213 (17)	<0.001	7 (1)	124 (18)	<0.001
Bleeding	7 (1)	13 (1)	0.8	5 (0.7)	7 (1)	0.6
Hypoparathyroidism	0	193 (15)	<0.001	0	115 (17)	<0.001
Transient	0	170 (13)		0	103 (15)	
Permanent	0	23 (1.8)		0	12 (1.7)	
RLN injury	2 (0.3)	12 (0.9)	0.1	2 (0.3)	4 (0.6)	0.7

^aP value estimated by χ^2 test.

RADIOACTIVE IODINE??

- Several publications were questioning the benefit of RAI in all Thyroid DTC

Extent of surgery for papillary thyroid cancer is not associated with survival: an analysis of 61,775 patients

Mohamed Abdelgadir Adam ¹, John Pura, Lin Gu, Michaela A Dinan, Douglas S Tyler, Shelby D Reed, Randall Scheri, Sanziana A Roman, Julie A Sosa

Surgery for papillary thyroid carcinoma: is lobectomy enough?

Abie H Mendelsohn ¹, David A Elashoff, Elliot Abemayor, Maie A St John

Overall and cause-specific survival for patients undergoing lobectomy, near-total, or total thyroidectomy for differentiated thyroid cancer

Brandon M Barney ¹, Ying J Hitchcock, Pramod Sharma, Dennis C Shrieve, Jonathan D Tward

2015

- Goals of Therapy
 - Completeness of Resection: remove the primary tumor, disease that has extended beyond thyroid capsule and clinically significant lymph nodes metastases.
 - Minimize the risk of recurrence/metastases.
 - Facilitate treatment with RAI where appropriate
 - Permit accurate staging and stratification of disease.
 - Permit long term surveillance.
 - Minimize treatment related morbidity (Extent of surgery and experience of surgeon)

2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer

Bryan R. Haugen , Erik K. Alexander, Keith C. Bible, Gerard M. Doherty, Susan J. Mandel, Yuri E. Nikiforov, Furio Pacini, Gregory W. Randolph, Anna M. Sawka, Martin Schlumberger, Kathryn G. Schuff, Steven I. Sherman, Julie Ann Sosa, David L. Steward, R. Michael Tuttle, and Leonard Wartofsky

-Rec 35 (Strong Recommendation/ Moderate Quality Evidence)
Tumors ≤ 4 cm without extrathyroidal extension, and without evidence of lymph node metastasis (cN0), can be treated with a Thyroid Lobectomy.

INITIAL SURGICAL MANAGEMENT

TUMORS 1 TO 4 CM

- Thyroid Lobectomy is an appropriate management if:
 - No history of neck radiation
 - No strong family history of Thyroid Ca
 - No concerns for malignancy in contralateral lobe
 - No concurrent pathology best managed by TTx
 - No preoperative evidence of metastatic disease
 - No clinical/imaging suggestive of extrathyroidal extension.
 - Patient's preference

TUMORS \leq 1 CM

- Can be managed by Active Surveillance if:
 - No subcapsular location
 - Away from RLN
 - No cytological evidence or concern for aggressive pathology
 - Surrounded by > 2 mm of normal appearing thyroid tissue
 - Older patients
 - Requires a center with expertise in neck sonography and thyroid cancer

PREOPERATIVE EVALUATION

- History
- Physical Examination
 - Voice assessment
 - Preoperative laryngoscopy if recent voice changes, bulky disease, reoperative surgery
 - Quality of mass, presence of palpable lymph nodes
- Imaging
 - Ultrasound/ Surgeon performed ultrasound- Most important for preoperative staging
 - CT/MRI for large, bulky disease
- Laboratories
 - Thyroid function status important for medical considerations but **NOT A CRITERION TO DETERMINE EXTENT OF SURGERY.**

Impact of Surgeon-Performed Ultrasound on Treatment of Thyroid Cancer Patients

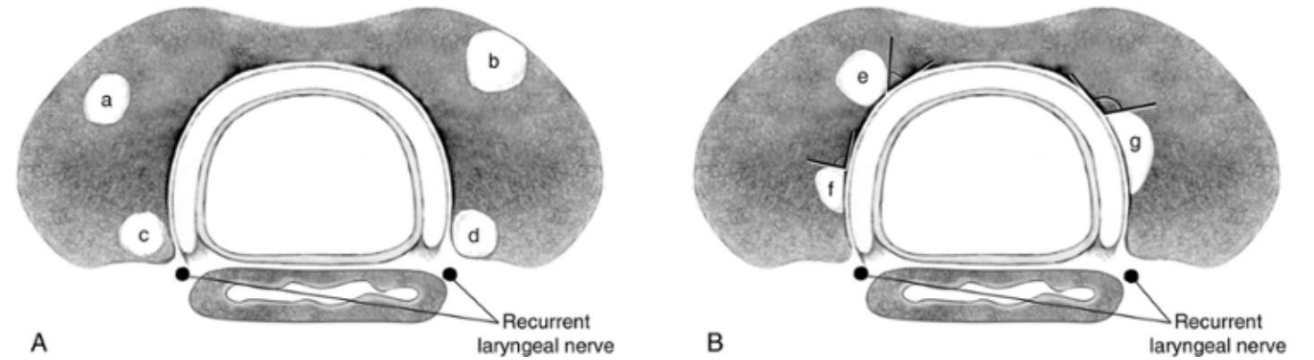
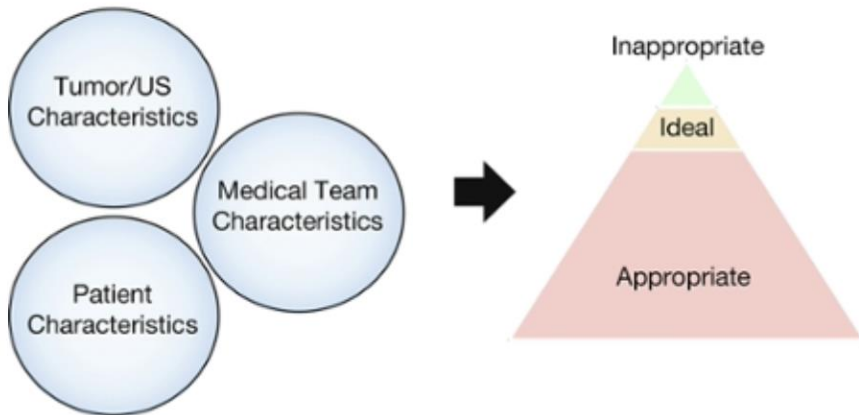
Mahmoud Shalaby¹, Deena Hadedeya¹, Grace S Lee¹, Eman Toraih¹, Emad Kandil¹

- Preoperative neck ultrasound performed by their endocrine surgeon could enhance management planning and outcome.
- Up to 29.7% of patients (n=267) extent of surgery was different after Surgeon US when compared with Radiology US.

ACTIVE SURVEILLANCE

Clinical Framework for Active Surveillance

Requires concurrent evaluation of three interrelated domains



ACTIVE SURVEILLANCE-OUTCOMES

First Author	n (Tumor Size)	Median Follow-Up	Maximum Diameter \pm 3 mm			Tumor Volume \pm 50%			Lymph Node Metastasis
			Increase	Stable	Decrease	Increase	Stable	Decrease	
Ito ¹¹	1235 (< 1 cm)	5 yrs	5% (5 yrs) 8% (10 yrs)	95% (5 yrs) 92% (10 yrs)	— —	—	—	—	2% (5 yrs) 4% (10 yrs)
Sugitani ¹³	415 (< 1 cm)	6.5 yrs	6%	91%	3%	—	—	—	1%
Tuttle ²²	291 (< 1.5 cm)	2 yrs	4%	92%	4%	12%	79%	7%	0%
Kwon ²¹	192 (< 1 cm)	2.5 yrs	2%	95%	3%	14%	69%	17%	0.5%

COMMUNICATION WITH PATIENT

- All available options should be presented to patient and documented.
- Patient was oriented about pros and cons of thyroid lobectomy and total thyroidectomy. He/She is a candidate for thyroid lobectomy and patient participated in the discussion of his surgical management.
- Patient's endocrinologist and endocrine surgeon should agree on the surgical management.

COMPLETION THYROIDECTOMY

YES

- Marked extra thyroidal extension with perithyroidal tissue extension
- > 4 cm
- Lymphovascular invasion
- Positive lymph nodes for metastatic disease
- Marked or multiple points of complete vascular invasion
- Unfavorable histopathology (Tall, Columnar)

NO

- Extrathyroidal extension that might be due to peripheral lesion location
- Incomplete capsular invasion
- Absence of capsule
- Multicentricity
- Multifocality

Should multifocality be an indication for completion thyroidectomy in papillary thyroid carcinoma?

Victoria Harries¹, Laura Y Wang¹, Marlena McGill¹, Bin Xu², R Michael Tuttle³,
Richard J Wong¹, Ashok R Shaha¹, Jatin P Shah¹, Ronald Ghossein², Snehal G Patel¹,
Ian Ganly⁴

- 849 patients, 230 + multifocal disease (27.1%), 58 mo average follow up
- Similar rates of contralateral carcinoma, regional recurrence and overall survival
- No disease related deaths in either group
- Multifocal disease should not be an indication for completion thyroidectomy



2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer

Haugen, Alexander, *et al.*, Thyroid. Jan 2016, 26(1): 1-133.

ATA Risk Stage (TNM)	Description	RAI Improves Disease-Specific Survival?	RAI Improves Disease-Free Survival?	Postoperative RAI Indicated?
ATA low risk, T1a N0, Nx M0, Mx	Tumor ≤ 1 cm	No	No	No
ATA low risk, T1b, T2, N0, Nx, M0, Mx	Tumor 1-4 cm	No	Conflicting	Not routine—may be considered if aggressive histology or vascular invasion
ATA low to intermediate risk T3, N0, Nx, M0, Mx	Tumor > 4 cm	Conflicting	Conflicting	Consider in the presence of other adverse features, including advancing age
ATA low to intermediate risk T3, N0, Nx, M0, Mx	Microscopic ETE, any size tumor	No	Conflicting	Consider based on risk of recurrent disease. Smaller tumors with ETE may not require RAI
ATA low to intermediate risk T1-3, N1a, M0, Mx	Central compartment node metastases	No except patients ≥ 45 years old	Conflicting	Generally favored due to slightly higher risk of persistent disease especially with increasing number of large nodes or ENE. Advanced age may also favor RAI use.

ATA low to intermediate risk T3, N0, Nx, M0, Mx	Microscopic ETE, any size tumor	No	Conflicting	Consider based on risk of recurrent disease. Smaller tumors with ETE may not require RAI
ATA low to intermediate risk T1-3, N1a, M0, Mx	Central compartment node metastases	No except patients ≥ 45 years old	Conflicting	Generally favored due to slightly higher risk of persistent disease especially with increasing number of large nodes or ENE. Advanced age may also favor RAI use.
ATA low to intermediate risk T1-3, N1b, M0, Mx	Lateral or mediastinal node metastases	No except patients ≥ 45 years old	Conflicting	Generally favored due to higher risk of persistent disease especially with increasing number of clinically evident nodes or ENE. Advanced age may also favor RAI use.
ATA high risk T4, any N, any M	Any size, gross ETE	Yes	Yes	Yes
ATA high risk any T, any N, M1	Distant metastases	Yes	Yes	Yes

RAI, radioactive iodine, ATA, American Thyroid Association, TNM, The Tumor, Node, and Metastases scoring system, ETE, extrathyroidal extension, ENE, extranodal extension.

THE NUCLEAR MEDICINE POV

Why the European Association of Nuclear Medicine has declined to endorse the 2015 American Thyroid Association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer

Frederik A Verburg¹, Cumali Aktolun², Arturo Chiti^{3 4}, Savvas Frangos⁵, Luca Giovanella⁶,
Martha Hoffmann⁷, Ioannis Iakovou⁸, Jasna Mihailovic⁹, Bernd J Krause¹⁰,
Werner Langsteger¹¹, Markus Luster¹², EANM and the EANM Thyroid Committee

SUMMARY

LOBECTOMY

- Ambulatory
- Less complications
- No lifelong hormone replacement (if euthyroid)
- 2-8% require completion thyroidectomy
- Requires surveillance
- Less cost (even if completion thyroidectomy is required in the future)

TOTAL THYROIDECTOMY

- Hospital stay 2-4 days
- Lifelong hormone replacement
- 3%. Require future surgery
- Requires surveillance
- Patient can feel “safer”

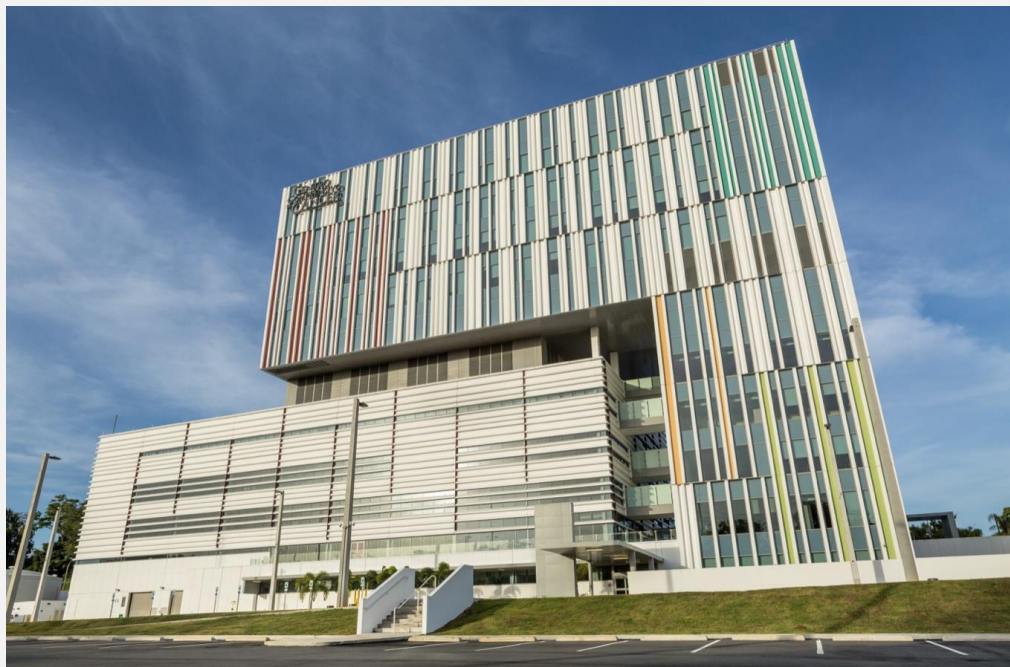
INDETERMINATE CYTOLOGY

- Follicular Neoplasia/Suspicious for Follicular Neoplasia
 - Diagnostic Thyroid Lobectomy
 - Molecular testing is not firmly established as a recommendation
- Suspicious for Malignancy
 - Treat as if malignant (lobectomy unless preoperative clinical findings/imaging suggest more extensive disease)

THREE MAIN GOALS

- -Make your patient healthy
- Make your patient happy
- Make your endocrinologist happy

THANK YOU!



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