

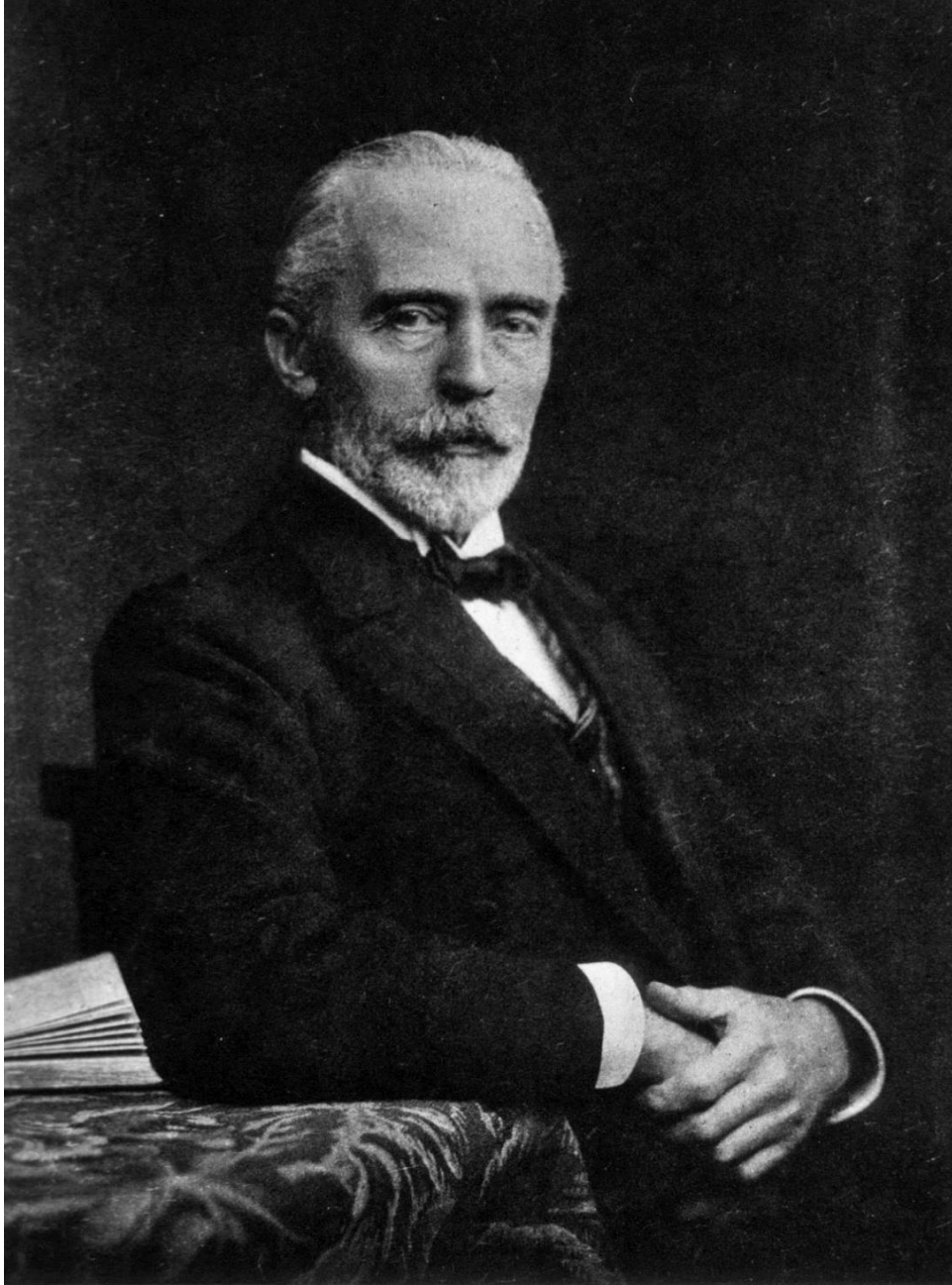
CONTROVERSIAS EN LA CIRUGÍA DEL CÁNCER DE TIROIDES

Bernardo Sandoval C.

Septiembre 2023

1er Simposio Internacional de Cáncer de Tiroides y Metabolismo





FOTOGRAF. GEN. STAB. LT. ASS.

THEODOR KOCHER

1841- 1917

Theodor

Theodor Kocher

CASE WESTERN RESERVE MEDICAL CENTER, CLEVELAND





MEMORIAL SLOAN-KETTERING CANCER CENTER NEW YORK

ud/a.

CHRISTOPHER McHENRY y ASHOK SHAHA



udla

MODELO GENERAL DEL MANEJO DEL CÁNCER DIFERENCIADO DE TIROIDES

- Tiroidectomía
- Yodo radiactivo
- Supresión de TSH
- Evaluación con ECO; Tiroglobulina, Rastreo I¹³¹, PET
- Disección radical modificada de cuello
- Sorafenib
- Radioterapia de haz externo



CONTROVERSIAS

- Cirugía o vigilancia activa en el microcarcinoma papilar
- Lobectomía o Tiroidectomía Total en cáncer diferenciado de bajo riesgo
- Disección profiláctica del compartimento central en cN0
- La ablación con radiofrecuencia en cáncer de tiroides
- Las formas variadas de tiroidectomía “mínimamente invasiva” en cáncer de tiroides

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¿VIGILANCIA ACTIVA O CIRUGÍA EN MICROCARCINOMA PAPILAR?



16.11.2011 12:18

¿VIGILANCIA ACTIVA O CIRUGÍA EN MICROCARCINOMA PAPILAR? -PREÁMBULO-

- Excesivo diagnóstico y tratamiento quirúrgico del microcarcinoma papilar
- Historia natural de crecimiento lentísimo del MCP
- Complicaciones quirúrgicas aún en cirujanos expertos
- La vigilancia activa se plantea como alternativa a la cirugía
- La conversión a cirugía ocurrirá cuando corresponda

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EVOLUCIÓN DE VIGILANCIA ACTIVA PARA MCP

- Se inicia en Japón en 1993
- En 2010 se incorpora en las guías japonesas de manejo
- En 2015 se incorpora a las guías ATA
- No hay Estudios Prospectivos Aleatorizados entre VA y Cirugía inmediata

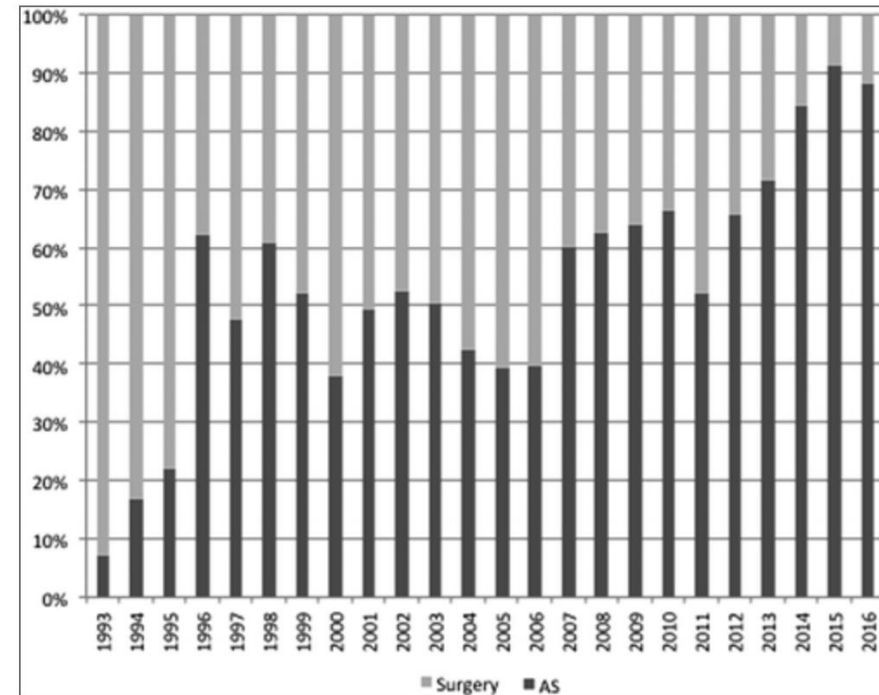


FIG. 1. Changes in the frequency of active surveillance (AS) and surgery by year from 1993 to 2016.

ud/a.



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Best Practice & Research Clinical Endocrinology & Metabolism

journal homepage: www.elsevier.com/locate/beem



8

Active surveillance of low-risk papillary thyroid microcarcinoma

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Table 1
Outcomes of active surveillance for patients with low-risk papillary thyroid microcarcinoma.

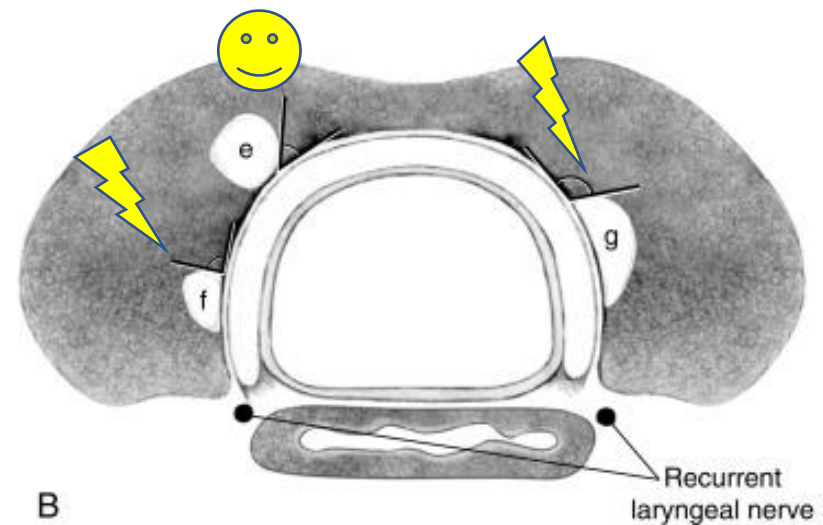
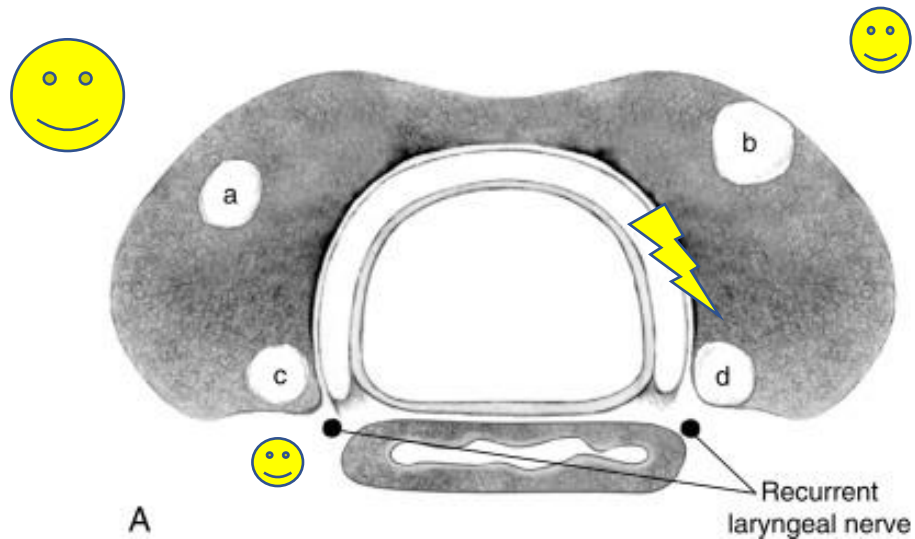
Site, Country, Year	Number of patients (study period)	Duration of follow- up (months)	Tumor enlargement (maximum diameter ≥ 3 mm)	Tumor enlargement (tumor volume $\geq 50\%$)	Appearance of lymph node metastasis	Development of extrathyroidal extension	Appearance of distant metastasis	Conversion surgery
Kuma Hospital, Japan, 2014 [22]	1235 (1993–2011)	Mean, 60 (range 18 –227)	4.6% 4.9%/5 years 8.0%/10 years	ND	1.5% 1.7%/5 years 3.8%/10 years	0.16%	0%	16%/10 years
Cancer Institute Hospital & Nippon Medical School Japan, 2021 [23]	571 (1995–2019)	Mean, 91 (range 12 –312)	9.3% 4.3%/5 years 12.1%/10 years 20.0%/15 years 22.8%/20 years	22.9%	1.4% 1.4%/10 years 3.9%/20 years	0%	0%	9.5%
Memorial Sloan Kettering Cancer Center, United States, 2017 [25]	291 ^a (ND)	Mean, 25 (range 6 –166)	3.8% 2.5%/2 years 12.1%/5 years	12.4% 11.5%/2 years 24.8%/5 years	0%	0%	0%	3.5%
Asan Medical Center, Samsung Medical Center, Seoul St. Mary's Hospital, Korea, 2018 [26]	370 (2002–2017)	Median 32.5 (IQR 21.5–47.6)	3.5%	23.2%	1.4%	ND	0%	16%
University Hospital of Pisa, Italy, 2020 [27]	93 ^a (2014–2018)	Median, 19 (range 6 –54)	2.1%	16%	1.1%	ND	0%	24%
Neck Cancer Center in Medellin, Colombia, 2020 [28]	102 ^a (2015–)	Median, 13.9 (range 0.2–112)	10.8%	25.5%	2.9%	ND	ND	13%
Santa Casa de Belo Horizonte, Brazil, 2019 [24]	77 ^a (2016–2019)	Range 6–36	1.4%	1.4%	0%	1.4%	0%	4.3%

ND: no data; IQR: interquartile range.
^a Included patients with papillary thyroid carcinoma >10 mm in diameter.

Checklist for introduction of active surveillance				
Tumor		Patient		Medical team
☐ T1aN0M0 PTC ☐ No clinically apparent LNM ☐ No evidence of ETE, especially to RLN or trachea ☐ Subcapsular location along the course of RLN is inappropriate ☐ No distant metastasis ☐ No aggressive subtype of PTC on FNAC ☐ No other thyroid or parathyroid disease indicated for surgery		☐ Age ≥ 18 years ☐ Shared decision making ☐ Willingness and compliance for active surveillance ☐ Understands that a surgical intervention may be necessary in the future		☐ Experienced multidisciplinary management team ☐ High-quality neck US ☐ Tracking/reminder program to ensure follow-up ☐ Prospective data collection

Confirmation items during active surveillance (Indications of conversion surgery)
☒ Tumor size enlargement (diameter reaches 13 mm) ☒ Appearance of novel LNM, ETE, or distant metastasis ☒ Alteration of patient preference ☒ Appearance of other thyroid disease or parathyroid disease indicated for surgery

LOCALIZACIÓN DEL TUMOR COMO CRITERIO DE VIGILANCIA ACTIVA



uol/a.

¿VIGILANCIA ACTIVA O CIRUGÍA EN MICROCARCINOMA PAPILAR? -CONCLUSIONES-

- La vigilancia activa para el MCP ha llegado para quedarse en los países desarrollados
- Es incuestionable su seguridad si se cumplen rigurosamente los protocolos
- No afecta el pronóstico si la cirugía de conversión es oportuna
- En sistemas de salud precarios como los de los países en vías de desarrollo, la cirugía inmediata ofrece mayor seguridad y, probablemente menor costo



**LOBECTOMÍA O TIROIDECTOMÍA TOTAL EN
CARCINOMA DIFERENCIADO DE TIROIDES
DE BAJO RIESGO**

LOBECTOMÍA O TIROIDECTOMÍA TOTAL EN CARCINOMA DIFERENCIADO DE TIROIDES DE BAJO RIESGO -PREÁMBULO-

Table 1

2015 ATA guidelines on surgical management of differentiated thyroid cancer.

T stage	ATA management recommendation ¹
------------	--

T1b,	(B) For patients with thyroid cancer >1 cm and <4 cm without extrathyroidal extension, and without clinical evidence of any lymph
T2	node metastases (cN0), the initial surgical procedure can be either a bilateral procedure (near-total or total thyroidectomy) or a unilateral procedure (lobectomy). Thyroid lobectomy alone may be sufficient initial treatment for low-risk papillary and follicular carcinomas; however, the treatment team may choose total thyroidectomy to enable RAI therapy or to enhance follow-up based upon disease features and/or patient preferences.

T1a	If surgery is chosen for patients with thyroid cancer <1 cm without extrathyroidal extension and cN0, the initial surgical procedure should be a thyroid lobectomy unless there are clear indications to remove the contralateral lobe. Thyroid lobectomy alone is sufficient treatment for small, unifocal, intrathyroidal carcinomas in the absence of prior head and neck radiation, familial thyroid carcinoma, or clinically detectable cervical lymph node metastases.
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LOBECTOMÍA vs. TIROIDECTOMÍA TOTAL

- Las guías ATA de 2015 generaron una disrupción conceptual y de práctica al alentar la lobectomía como alternativa válida a la tiroidectomía total en tumores de 1 a 4 cm.
- Recomendación fuerte basada en evidencia de mediana calidad
- Los resultados de sobrevida sin enfermedad son equivalentes pero la morbilidad es menor con lobectomía





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The American Journal of Surgery

journal homepage: www.americanjournalofsurgery.com



Practice patterns for surgical management of low-risk papillary thyroid cancer from 2014 to 2019: A CESQIP analysis

Sean M. Wrenn ^{a, b, e, *, 1}, Tracy S. Wang ^c, Asmae Toumi ^a, Colleen M. Kiernan ^d,
Carmen C. Solórzano ^d, Antonia E. Stephen ^a

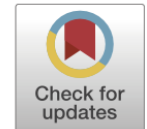
^a Massachusetts General Hospital, Department of Surgery, Division of Surgical Oncology, USA

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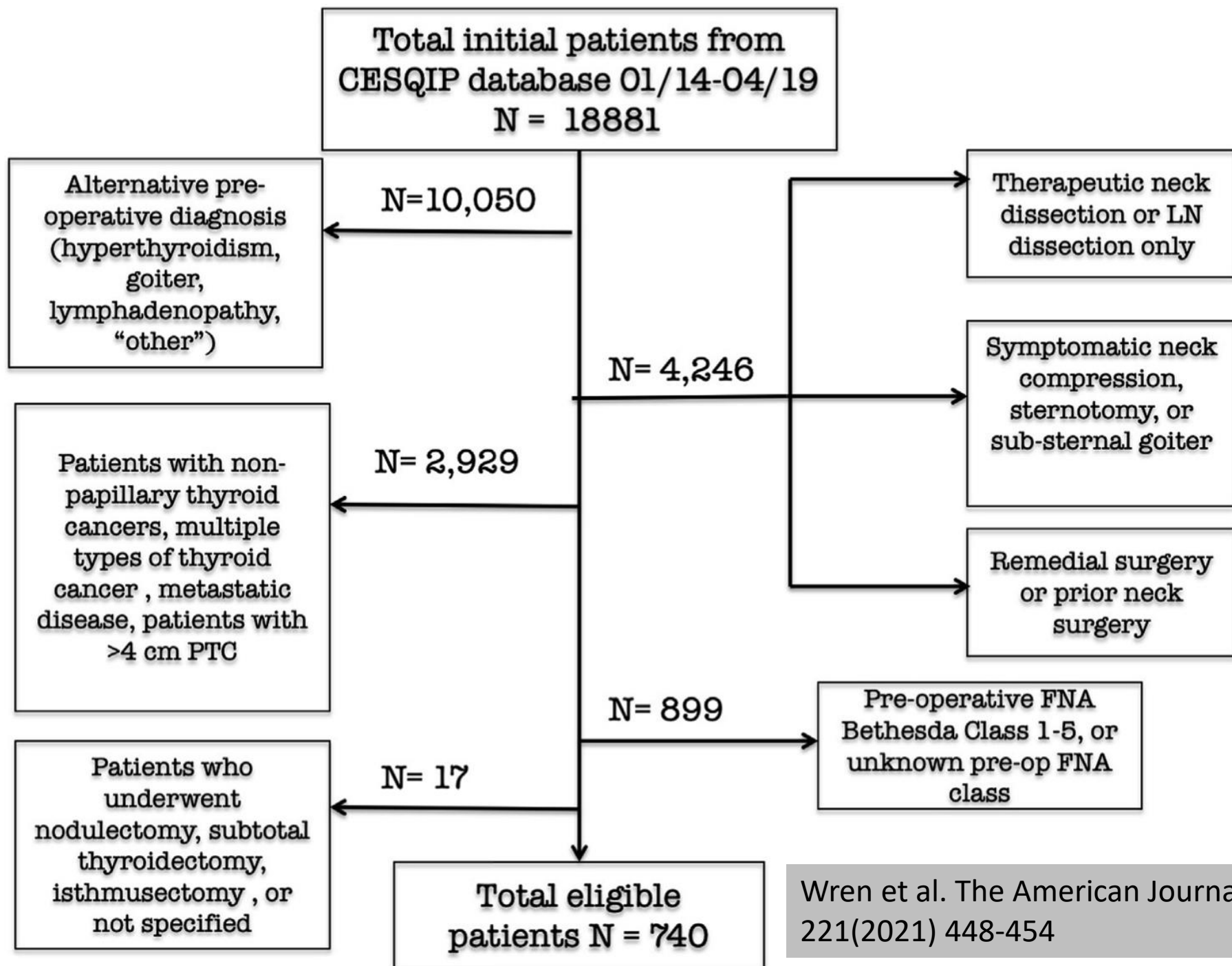
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TIROIDECTOMÍA vs. LOBECTOMÍA EN CÁNCER DIFERENCIADO DE TIROIDES DE BAJO RIESGO

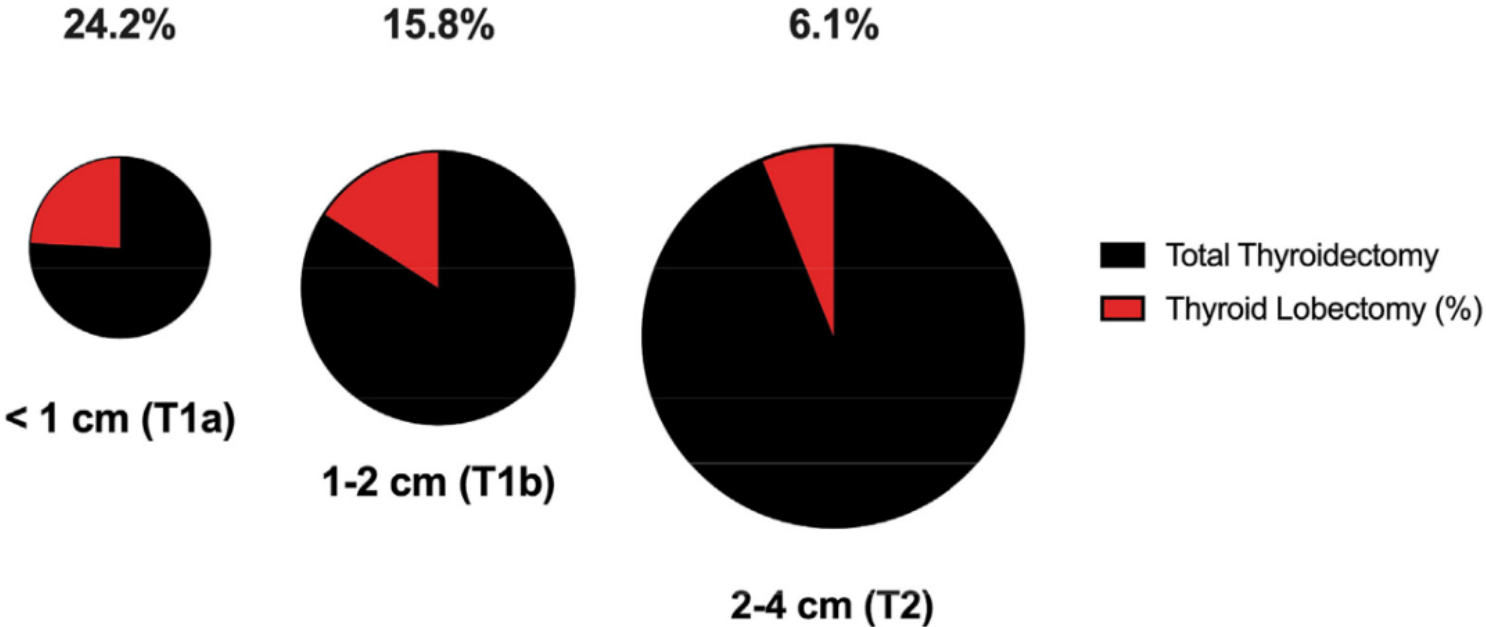
Table 1
2015 ATA guidelines on surgical management of differentiated thyroid cancer.

T stage	ATA management recommendation ¹	Strength of Recommendation
T1b, T2	(B) For patients with thyroid cancer >1 cm and <4 cm without extrathyroidal extension, and without clinical evidence of any lymph node metastases (cN0), the initial surgical procedure can be either a bilateral procedure (near-total or total thyroidectomy) or a unilateral procedure (lobectomy). Thyroid lobectomy alone may be sufficient initial treatment for low-risk papillary and follicular carcinomas; however, the treatment team may choose total thyroidectomy to enable RAI therapy or to enhance follow-up based upon disease features and/or patient preferences.	Strong recommendation, Moderate-quality evidence
T1a	If surgery is chosen for patients with thyroid cancer <1 cm without extrathyroidal extension and cN0, the initial surgical procedure should be a thyroid lobectomy unless there are clear indications to remove the contralateral lobe. Thyroid lobectomy alone is sufficient treatment for small, unifocal, intrathyroidal carcinomas in the absence of prior head and neck radiation, familial thyroid carcinoma, or clinically detectable cervical lymph node metastases.	Strong recommendation, Moderate-quality evidence



TIROIDECTOMÍA vs. LOBECTOMÍA EN CÁNCER DIFERENCIADO DE TIROIDES DE BAJO RIESGO

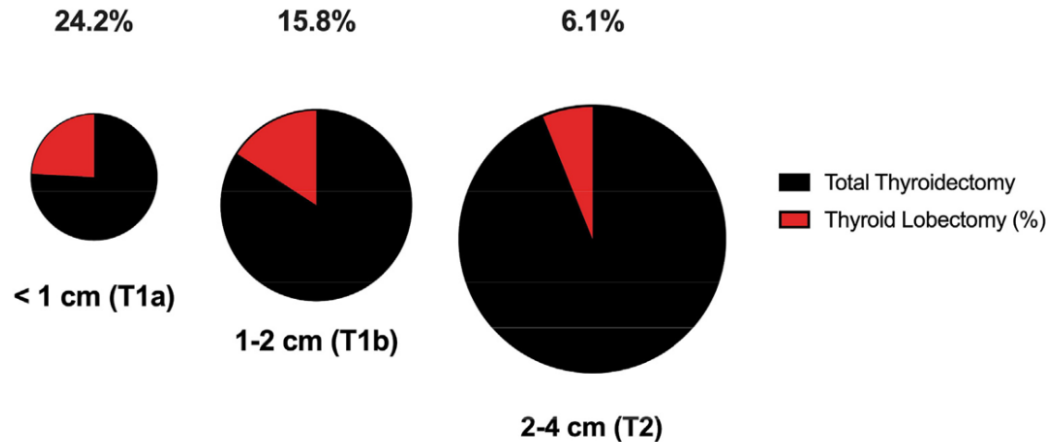
Changes in Utilization of Thyroid Lobectomy in Papillary Thyroid Carcinoma by Tumor Size



ALIENTO A LA LOBECTOMÍA EN GUÍAS ATA 2015

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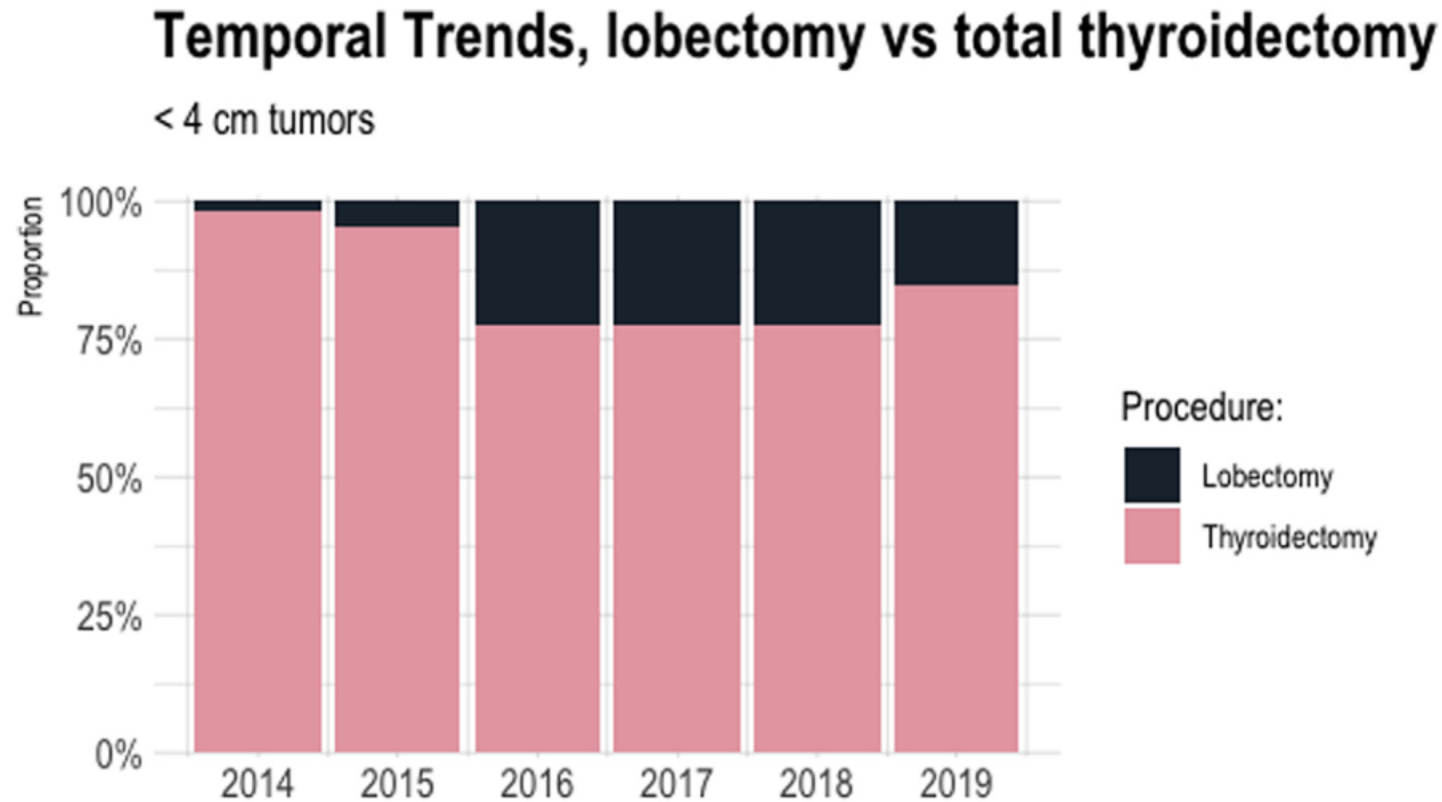
Changes in Utilization of Thyroid Lobectomy in Papillary Thyroid
Carcinoma by Tumor Size



No se está cumpliendo la
recomendación de las
guías ATA

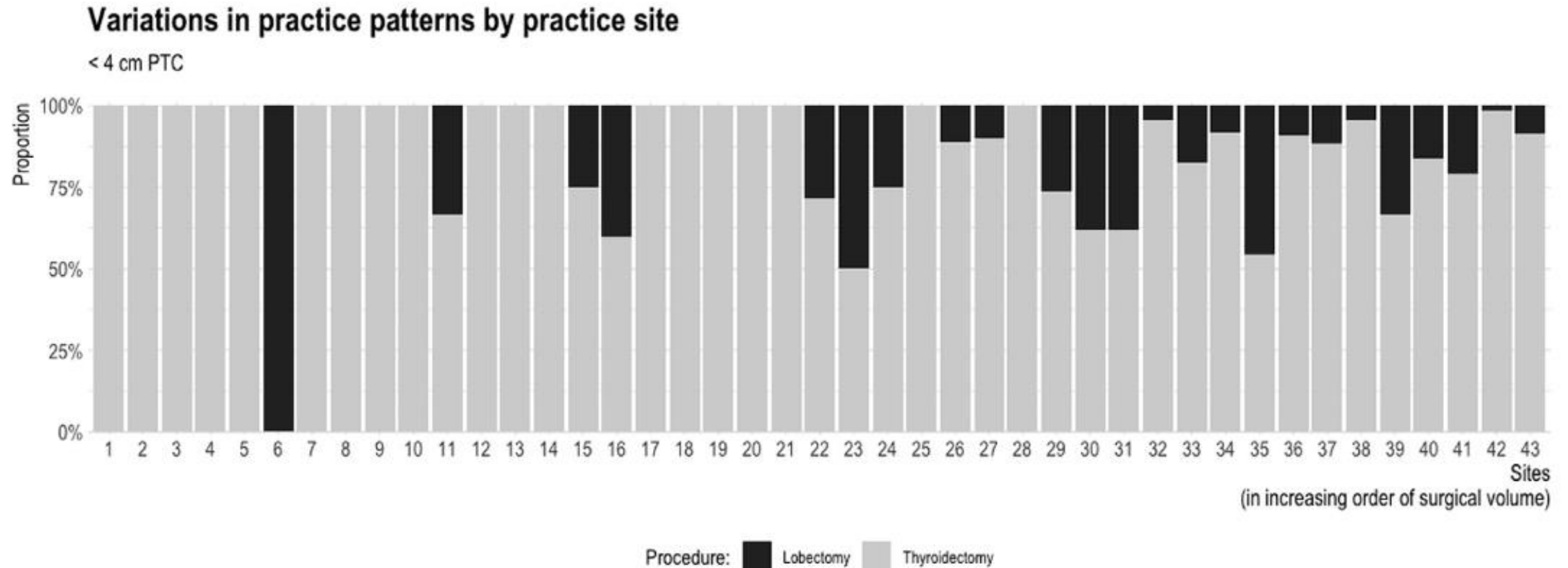
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Practice patterns for surgical management of low-risk papillary thyroid cancer from 2014 to 2019: A CESQIP analysis



Wren et al. The American Journal of Surgery
221(2021) 448-454

Practice patterns for surgical management of low-risk papillary thyroid cancer from 2014 to 2019: A CESQIP analysis



Wren et al. The American Journal of Surgery
221(2021) 448-454



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European Journal of Surgical Oncology

journal homepage: www.ejso.com



Review Article

Continuing controversy regarding individualized surgical decision-making for patients with 1–4 cm low-risk differentiated thyroid carcinoma: A systematic review

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^b Institute for Chronic and Non-communicable Disease Prevention and Control, Yunnan Center for Disease Control and Prevention, China



Table 1

The surgical recommendations for low-risk patients with 1–4 cm DTC in various guidelines or consensuses.

Affiliation	Published year	Statement type	Operative approach	Recommendation and evidence quality	Evidence source	Core viewpoints
ATA [11]	2009	Guideline	TT/NTT	Strong recommendation Good evidence	Evidence includes consistent results from well-designed, well-conducted studies in representative populations	Improve survival and recurrence rates
ATA [8]	2015	Guideline	LT	Strong recommendation Moderate-quality evidence	Strong evidence from observational studies	Survival rate is similar between unilateral and bilateral surgery More selective indication for RAI ablation Follow-up management changed into US and serum TG measurements
NCCN [24]	2019	Guideline	LT	Category 2B (from 1 to 3) recommendation Lower-level evidence	Lower-level evidence from an NCCN (not uniform) consensus that the intervention is appropriate	Survival rate is similar between unilateral and bilateral surgery There are high complication rates with more extensive thyroidectomy
China ^a [12]	2012	Guideline	TT/NTT	Category C (from A to I) recommendation Expert opinion	Based on expert opinions	Treatment should be administered immediate for multifocal disease A decreased recurrence risk was facilitated by RAI ablation and follow-up
NHCC [22]	2018	Guideline	LT + isthmusectomy	Recommendation (unrated)	Not explained	Not explained
European Societies ^b [13]	2006	Consensus	TT/NTT	Recommendation (unrated)	Based on expert opinions	Decreased recurrence risk Minimum complications under expert hands
ESMO [14]	2019	Guideline	TT	Category IVB (from I to V) recommendation Strong or moderate evidence	Cohort studies	Facilitate RAI ablation and follow-up LT does not reduce OS but is associated with increased regional recurrence The large databases may be inaccurate
International symposium ^c [15]	2017	Consensus	TT/NTT Especially >2 cm	Recommendation European panellist perspectives in the 2015 ATA guidelines	Based on expert opinions	Multifocal diseases are frequent in iodine-deficient countries Eliminates RAI's potential benefits on both diagnosis and therapy outcomes The large databases may be inaccurate
BTA [27]	2014	Guideline	Personalized decision-making	Category 4D (from 1 to 4) recommendation Based on expert opinions	Based on expert opinions and cohort studies with a low risk of confounding or bias	As many as 43% of LT patients may need completion thyroidectomy Equally favourable outcomes in total lobectomy and lobectomy without RAI
UK National Multidisciplinary [28]	2016	Guideline	LT; TT requires discussion at MDT	Recommendation (unrated) These guidelines are based on the 2014 BTA guidelines	Not explained	Not explained
GAES [16]	2013	Guideline	TT; LT only for FTC without vascular invasion	Recommendation (unrated)	Cohort studies	Improve survival and recurrence rates There is a high rate of multifocality
SEOM [26]	2019	Guideline	TT/NTT or LT	Recommendation (unrated)	Not explained	Facilitate RAI ablation and follow-up Not explained
Italian ^d [25]	2018	Consensus	TT or LT	Recommendation (unrated)	Conflicting evidence of recurrence and survival from cohort studies	TT would decrease recurrence rates Overall survival and cause-specific survival rates are similar following TT and LT
Polish ^e [17]	2018	Guideline	TT/NTT	Weak recommendation	Based on Polish experts and a uniform consensus	Complication rates are comparable to those of TT Not explained
JSTS/JAES [23]	2014	Guideline	LT Especially ≤2 cm	Recommendation (unrated)	Observational cohort studies	TT decreases recurrence in remnant thyroid tissues but not in lymph nodes and distant organs Low-risk cases often do not require RAI therapy
KTA [18]	2016	Guideline	TT	Recommendation (unrated)	Observational cohort studies	Severe complications under non-expert hands Patients without ETE and with stage cN0 disease are rare in 1–4 cm DTC patients
ESI [19]	2011	Guideline	TT		Not explained	Surgical volume is much higher and complication rates are lower Not explained

Table 1

The surgical recommendations for low-risk patients with 1–4 cm DTC in various guidelines or consensuses.

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European Societies ^b [13]	2006	Consensus	TT/NTT	Recommendation (unrated)	Based on expert opinions	Decreased recurrence risk Minimum complications under expert hands
ESMO [14]	2019	Guideline	TT	Category IVB (from I to V) recommendation Strong or moderate evidence	Cohort studies	Facilitate RAI ablation and follow-up LT does not reduce OS but is associated with increased regional recurrence The large databases may be inaccurate
International symposium ^c [15]	2017	Consensus	TT/NTT Especially >2 cm	Recommendation European panellist perspectives in the 2015 ATA guidelines	Based on expert opinions	Multifocal diseases are frequent in iodine-deficient countries Eliminates RAI's potential benefits on both diagnosis and therapy outcomes The large databases may be inaccurate As many as 43% of LT patients may need completion thyroidectomy
ATA [27]	2014	Guideline	Unilateral	Category 4B (from 1 to 4) recommendation Moderate-quality evidence	Based on expert opinions	Probably favorable outcomes in total

BTA [27]	2014	Guideline	Personalized decision-making	Category 4D (from 1 to 4) recommendation Based on expert opinions	Based on expert opinions and cohort studies with a low risk of confounding or bias	Equally favourable outcomes in total lobectomy and lobectomy without RAI
UK National Multidisciplinary [28]	2016	Guideline	LT; TT requires discussion at MDT	Recommendation (unrated) These guidelines are based on the 2014 BTA guidelines	Not explained	Not explained
GAES [16]	2013	Guideline	TT; LT only for FTC without vascular invasion	Recommendation (unrated)	Cohort studies	Improve survival and recurrence rates There is a high rate of multifocality Facilitate RAI ablation and follow-up
SEOM [26]	2019	Guideline	TT/NTT or LT	Recommendation (unrated)	Not explained	Not explained
Italian ^d [25]	2018	Consensus	TT or LT	Recommendation (unrated)	Conflicting evidence of recurrence and survival from cohort studies	TT would decrease recurrence rates Overall survival and cause-specific survival rates are similar following TT and LT Complication rates are comparable to those of TT
Polish ^e [17]	2018	Guideline	TT/NTT	Weak recommendation	Based on Polish experts and a uniform consensus	Not explained
JSTS/JAES [23]	2014	Guideline	LT Especially ≤ 2 cm	Recommendation (unrated)	Observational cohort studies	TT decreases recurrence in remnant thyroid tissues but not in lymph nodes and distant organs Low-risk cases often do not require RAI therapy Severe complications under non-expert hands
KTa [18]	2016	Guideline	TT	Recommendation (unrated)	Observational cohort studies	Patients without ETE and with stage cN0 disease are rare in 1–4 cm DTC patients Surgical volume is much higher and complication rates are lower
ESI [19]	2011	Guideline	TT		Not explained	Not explained

LOBECTOMÍA vs. TIROIDECTOMÍA TOTAL PARA CARCINOMA DE TIROIDES DE 1-4 cm

La tiroidectomía total evitaría la reoperación si acaso la patología tras la lobectomía demostrase:

- Variedad de células altas
- Invasión vascular
- Extensión extratiroidea
- Márgenes positivos
- Linfonodos metastásicos

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LOBECTOMÍA O TIROIDECTOMÍA TOTAL EN CARCINOMA DIFERENCIADO DE TIROIDES DE BAJO RIESGO -CONCLUSIONES-

- Si bien ha aumentado la incidencia de lobectomía en el cáncer diferenciado de bajo riesgo, la tiroidectomía total prevalece ampliamente
- La mayoría no sigue la recomendación
- Hay mucha discrepancia entre las distintas guías y protocolos de diversas organizaciones
- Hay condicionantes explícitos para justificar la tiroidectomía total: I¹³¹



TIROIDECTOMÍA TOTAL

- Ventajas de la TIROIDECTOMÍA TOTAL:
 - Se evita la **incidencia** del 7% en el lóbulo contralateral
 - Los cánceres papilares suelen ser **multifocales**
 - Se facilita la valoración de seguimiento con **tiroglobulina**
 - **Se permite el tratamiento suplementario** o de metástasis con Yodo radioactivo



**DISECCIÓN PROFILÁCTICA DEL COMPARTIMENTO
CENTRAL EN AUSENCIA DE EVIDENCIA CLÍNICA
DE METÁSTASIS A LINFONODOS**

TIROIDECTOMÍA + GRUPO VI



ud/a.

DISECCIÓN PROFILÁCTICA DEL COMPARTIMENTO CENTRAL EN AUSENCIA DE EVIDENCIA CLÍNICA DE METÁSTASIS A LINFONODOS -PREÁMBULO-

La razón de defender la disección central profiláctica es la creencia de:

1. Reducción de recurrencia
2. Reducción de persistencia
3. Reducción de metástasis

La razón de rechazar la disección central profiláctica es la creencia de:

1. Mayor riesgo de lesión del NLR
2. Mayor riesgo de hipoparatiroidismo





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journal homepage: www.elsevier.com/locate/YJSRE



Association for Academic Surgery

Prophylactic Central Neck Dissection in Papillary Thyroid Carcinoma: All Risks, No Reward



Jonathan Dismukes, BS,^a Jessica Fazendin, MD,^a Ruth Obiarinze, MD,^a Gianina C. Hernández Márquez, BS,^a Kimberly M Ramonell, MD,^a Erin Buczek, MD,^b Brenessa Lindeman, MD,^a and Herbert Chen, MD,^{a,*}

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DISECCIÓN PROFILÁCTICA DEL GRUPO 6

Table 1 – Demographics of patients with cN0^a papillary thyroid carcinoma.

Demographics	CND(+) ^b	CND(-) ^b	P value
N	61	431	
Gender			0.665
Male	23.0%	25.5%	
Female	77.1%	74.5%	
Race			0.761
American Indian / Alaskan Native	0%	0%	
Asian	0%	2%	
Black / African American	11%	16%	
White / Caucasian	70%	63%	
Other / Unknown	18%	19%	
Age (years; at time of surgery)			0.619
Mean	50	51	

DISECCIÓN PROFILÁCTICA DEL GRUPO 6

Table 4 – Post operation data for patients with cN0^a papillary thyroid carcinoma.

Post operation Data	CND(+) ^b	CND(-) ^b	P value
Follow-up Thyroglobulin (ng/mL)			0.495
Mean	0.565	10.63	
Std. Error of Mean	0.88	76.4	
Evidence of Recurrence or Distant Metastasis	8%	4%	0.105
Evidence of Persistent Disease	8%	5%	0.069

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DISECCIÓN PROFILÁCTICA DEL GRUPO 6

Table 5 – RAI^a Therapy and outcomes for patients with cN0^b papillary thyroid carcinoma.

Post operation Data	CND(+) ^c	CND(-) ^c	P value
Adjuvant RAI Therapy - Given	46%	34%	0.268
Evidence of Recurrence or Distant Metastasis	7%	8%	0.855
Evidence of Persistent Disease	7%	10%	0.614
Adjuvant RAI Therapy - Not Given	31%	33%	
Evidence of Recurrence or Distant Metastasis	16%	1%	< 0.001
Evidence of Persistent Disease	16%	2%	0.009
Adjuvant RAI Therapy - Unknown	23%	33%	

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DISECCIÓN PROFILÁCTICA DEL GRUPO 6

Table 6 – Post operation complications for patients with cN0^a papillary thyroid carcinoma.

Post operation Complications	CND(+) ^b	CND(-) ^b	P value
Transient Hypocalcemia	36.07%	14.39%	< 0.001
Intravenous Calcium Administration	18.03%	5.10%	< 0.001
Recurrent Laryngeal Nerve Injury			< 0.001
Transient (< 6 months)	19.67%	6.96%	
Permanent (> 6 months)	3.28%	0.70%	

a cN0 = no clinically-evident nodal metastasis

b CND = central neck dissection

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Prophylactic Central Compartment Neck Dissection for Papillary Thyroid Cancer

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Surg Clin N Am 94 (2014) 529–540

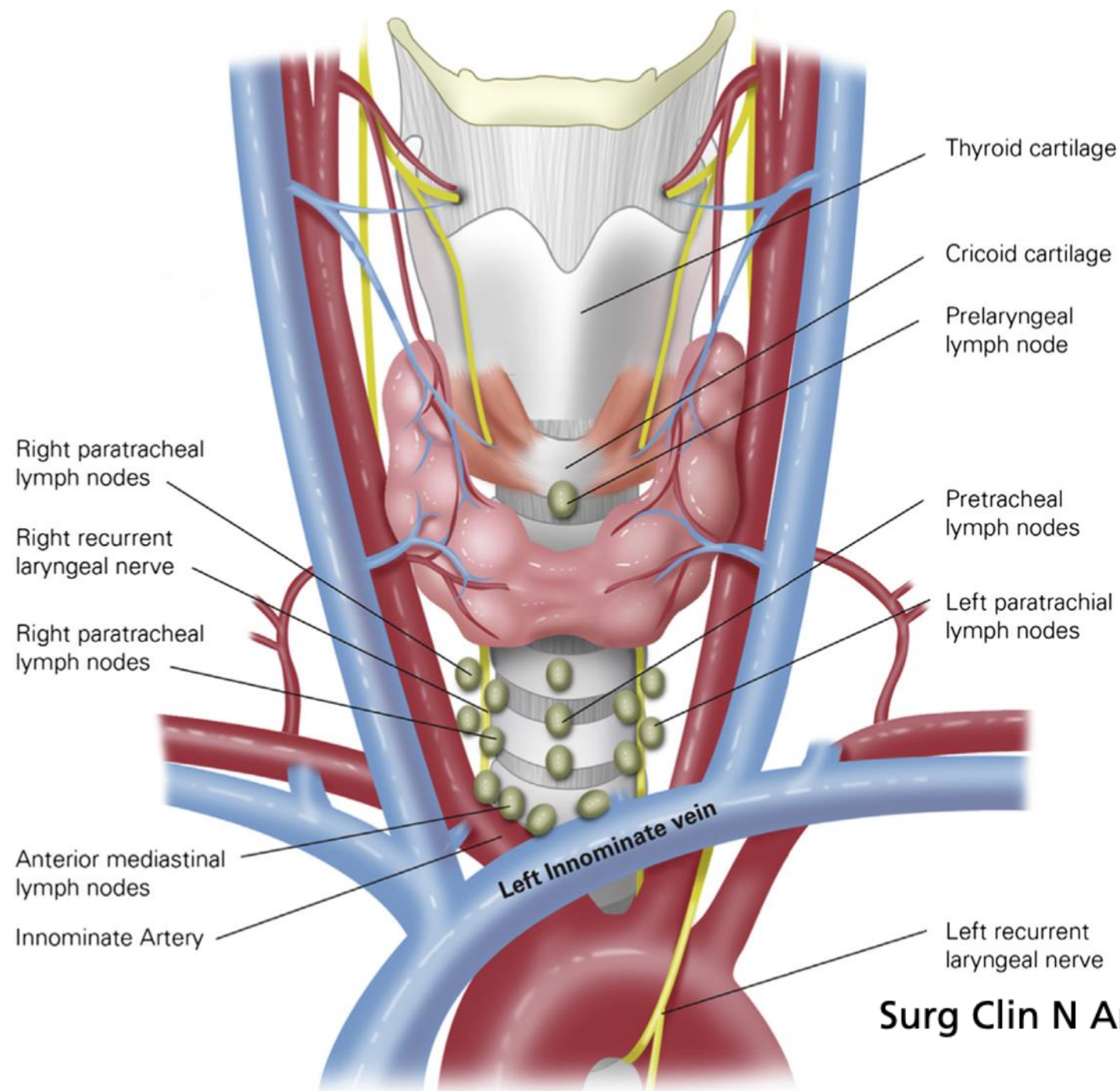


Table 1**Central compartment recurrence of papillary thyroid cancer (PTC) following total thyroidectomy (TT) versus TT with prophylactic central compartment node dissection (pCCND)**

Authors,^{Ref.} Year	N	TT Only	TT + pCCND	Recurrence with TT	Recurrence with TT + pCCND
Barczyński et al, ²⁷ 2013	640	282	358	22 (7.8%)	2 (0.6%)
Besic et al, ⁴³ 2009	89	83	6	0 (0.0%)	0 (0.0%)
Costa et al, ³¹ 2009	244	118	126	4 (3.4%)	4 (3.2%)
Gemsenjäger et al, ³⁹ 2003	159	88	71	2 (2.3%)	4 (5.6%)
Hughes et al, ⁴⁹ 2010	143	65	78	2 (3.1%)	2 (2.6%)
Lang et al, ²⁸ 2012	185	103	82	0 (0.0%)	0 (0.0%)
Moo et al, ³⁰ 2010	81	36	45	2 (5.6%)	1 (2.2%)
Moreno et al, ⁵⁸ 2012	252	133	119	3 (2.3%)	2 (1.7%)
Roh et al, ⁴¹ 2009	197	49	148	0 (0.0%)	0 (0.0%)
Roh et al, ⁴⁰ 2007	113	73	40	3 (4.1%)	1 (2.5%)
Sywak et al, ³³ 2006	447	391	56	7 (1.8%)	0 (0.0%)

Table 2
Defining the morbidity of central neck dissection

Authors,^{Ref.} Year	TT + CCND	TT Only	Recurrent Laryngeal Nerve Paralysis		Permanent Hypoparathyroidism	
			TT + CCND	TT Only	TT + CCND	TT Only
Henry et al, ⁵⁹ 1998	50	50	0	0	2 (4%)	0
Gemsenjäger et al, ³⁹ 2003	88	71	4 (5.6%)	0	1 (1.4%)	0
Rosenbaum & McHenry, ⁴² 2009	22	88	0	1 (1.1%)	1 (4.5%)	0
Hughes et al, ⁴⁹ 2010	78	65	0	2 (3.1%)	2 (2.6%)	0
Giordano et al, ⁵³ 2012	308	394	7 (2.3%)	4 (1%)	50 (16.2%)	25 (6.3%)
Pereira et al, ⁶⁰ 2005	43	0	0	—	2 (4.6%)	—

DISECCIÓN PROFILÁCTICA DEL COMPARTIMENTO CENTRAL EN AUSENCIA DE EVIDENCIA CLÍNICA DE METÁSTASIS A LINFONODOS -CONCLUSIONES-

- La disección profiláctica del compartimento central no tiene ventajas oncológicas en el cáncer de tiroides
- La disección profiláctica del compartimento central aumenta significativamente las complicaciones del NLR y de hipoparatiroidismo
- La disección profiláctica del compartimento central debe desterrarse

PAPEL DE LA ABLACIÓN POR RADIOFRECUENCIA EN CÁNCER DE TIROIDES

ABLACIÓN POR RADIOFRECUENCIA EN CÁNCER DE TIROIDES -PREÁMBULO-

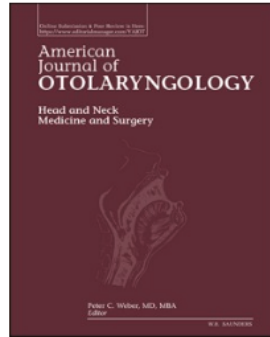
- La ablación por RFA se ha utilizado ampliamente en Asia y Europa para tratar nódulos tiroideos benignos
- No se ha utilizado mucho en Estados Unidos
- Se ha empezado a aplicar para el cáncer de tiroides
- Su utilidad se ha demostrado para el cáncer en ciertas circunstancias
- Su morbilidad respecto a la cirugía es menor
- No impide el ulterior uso de cirugía



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Radiofrequency ablation and thyroid cancer: review of the current literature

Haris Muhammad ^{b,*}, Anika Tehreem ^a, Jonathon O. Russell ^b

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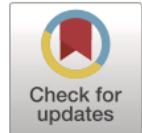


Table 1
Showing the results of the review for differentiated thyroid cancer (DTC).

Authors	Design	Sample (n)	Gender (F/M)	Age (years)	Follow up (months)	VRR %	Tumor ^a disappeared (n)/%	Tumor type	Complications (n)
Lim et al. [14]	Retrospective	39	25/14	52.8 ± 16.7	26.4 ± 13.7	95.1 ± 12.3	50/82.0%	Papillary thyroid carcinoma	Transient voice change (3)
Mazzeo et al. [15]	Prospective	13	4/9	70 ± 7	11.2 ± 4.6	80.8 ± 23.1	1/7%	Papillary, medullary and follicular	Permanent laryngeal nerve paralysis(n = 2)
Ha, S. M et al. [16]	retrospective	10	46/8	45.1 ± 10.5	66.4 ± 5.1	99.5 ± 1.0	8/80%	Follicular neoplasm	Transient neck pain (n = 6)
Jeong et al. [17]	Retrospective	8	6/2	64 ± 17	19.3	48 to 99	—	Papillary macro-carcinoma papillary microcarcinoma anaplastic carcinoma	None
Kim et al. [18]	Retrospective	6	4/2	72	48.5 ± 12.3	98.5 ± 3.3	4/66.7%	Small papillary carcinomas	Transient hypertension(n = 1) neck pain (n = 1)
Kim et al. [19]	Retrospective	27	20/7	42.3 ± 10.2	36	>70	31/86%	Papillary thyroid carcinoma	Hoarseness(n = 2)
Lee et al. [20]	Retrospective	32	25/7	53	30	96.4	31/94%	Papillary and medullary	Permanent voice change (n = 1)
Baek et al. [21]	Retrospective	10	6/4	44.8	23 ± 5.5	93% ± 15%	6/50%	Papillary thyroid carcinoma	Permanent dysphonia (n = 1)
Choi et al. [22]	Retrospective	70	53/17	45.4 ± 13.6	76.8 ± 23.7	>90%	100%	Papillary thyroid carcinoma	Transient voice change (n = 6)
Chung et al. [23]	retrospective	29	17/12	51.8 ± 14.7	80 ± 17.3	99.5% ± 2.9%	42/91.3%	Papillary thyroid carcinoma	None
Ding et al. [24]	retrospective	37	29/8	45.1	>12	99.3 ± 3.49%	37/97%	Papillary thyroid carcinoma	None
Monchik et al. [25]	Retrospective	16	12/4	53	40.7	—	14/87%	Papillary thyroid carcinoma medullary carcinoma	Permanent vocal cord paralysis (n = 1) skin burn (n = 1)
Park et al. [26]	Prospective	11	8/3	69	6	50.9	—	Papillary and follicular carcinoma	Skin burn (n = 1), neck swelling (n = 11)
Dupuy et al. [27]	Prospective	8	5/3	59	10.3	—	25%	Papillary and follicular carcinoma	Skin burn(n = 1), permanent laryngeal nerve paralysis(n = 1)
Zhang et al. [28]	Retrospective	94	70/24	45.4 ± 10.8	64.2 ± 2.8	—	99% (no recurrence)	Papillary	None
Xu et [29]	Retrospective	35	20/15	43.49 ± 13.01	2 weeks	—	—	Papillary	Transient voice change (n = 2)
Lim et al. [30]	Retrospective	133	114/19	46 ± 12	39 ± 25	100%	139/91.4%	Papillary	Transient voice change (n = 1) and hematoma (n = 2)
Guenette et al.	Retrospective	14	7/7	—	61.3	—	21/100%	Papillary and follicular	Vocal cord paralysis (n = 1)

ARF PARA CÁNCER DE TIROIDES

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Baek et al. [21]	Retrospective	10	6/4	44.8	23 ± 5.5	93% ± 15%	6/50%	Papillary thyroid carcinoma	Permanent dysphonia (n = 1)

ARF PARA CANCER DE TIROIDES

Author	Study Design	n	Recurrence	Survival (%)	Survival (months)	Recurrence (%)	Recurrence (months)	Cancer Type	Complications
Choi et al. [22]	Retrospective	70	53/17	45.4 ± 13.6	76.8 ± 23.7	>90%	100%	Papillary thyroid carcinoma	Transient voice change (n = 6)
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ABLACIÓN POR RADIOFRECUENCIA EN CÁNCER DE TIROIDES -CONCLUSIONES-

- La ARF en cáncer de tiroides es una técnica válida para quienes rehusan la cirugía
- Apropiaada para quienes no deben operarse porque tienen un alto riesgo quirúrgico
- Adecuada para tratar recurrencias
- Adecuada para tratar linfonodos metastásicos aislados

TIROIDECTOMÍA CONVENCIONAL vs. FORMAS DE MÍNIMAMENTE INVASIVA O ALTERNATIVAS EN CÁNCER DE TIROIDES

CIRUGÍA CONVENCIONAL vs. FORMAS ALTERNATIVAS EN CÁNCER DE TIROIDES -PREÁMBULO-

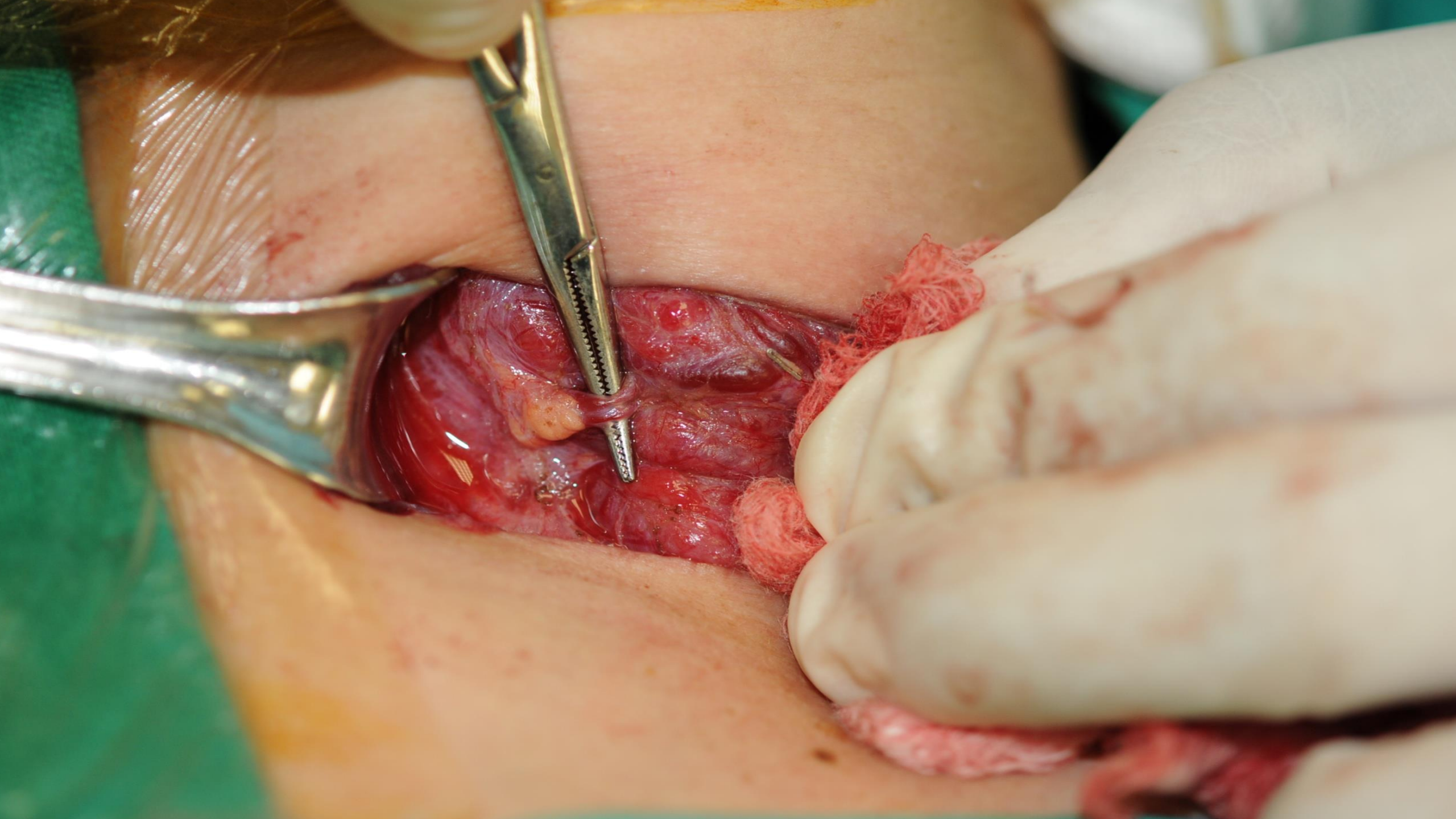
- La tiroidectomía total por incisión de collar cervical se realiza desde hace más de 120 años
- La disección radical de cuello se realiza desde hace aproximadamente de 100 años
- La cirugía endoscópica en distintas formas y con distintos nombres se realiza desde hace aproximadamente 30 años
- Enormes esfuerzos se hacen para justificar una ventaja de estas modalidades
- La motivación es evitar una cicatriz cervical

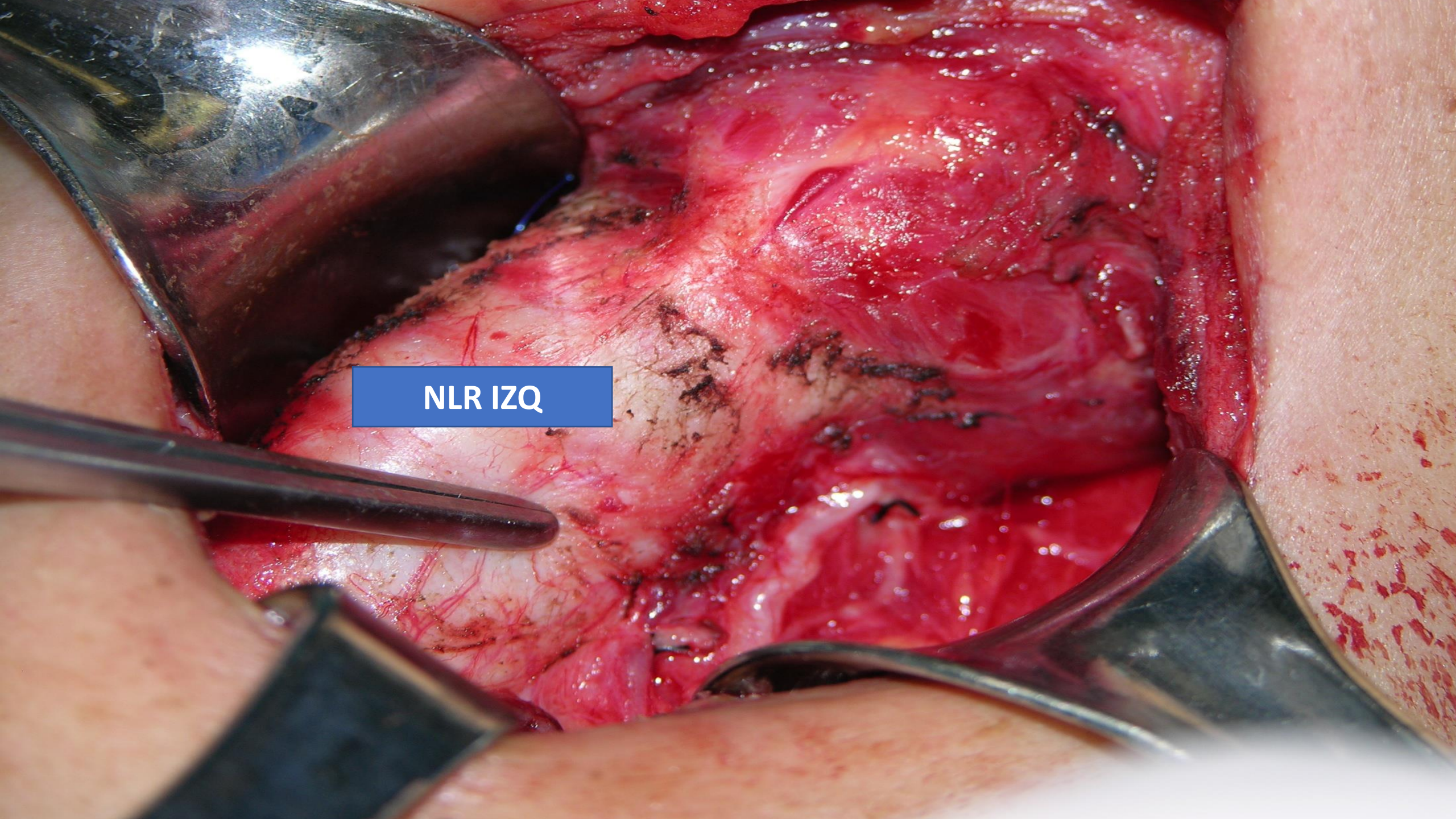
PEDÍCULO TIROIDEO SUPERIOR

**RAMA EXTERNA DE N LARÍNGEO
SUPERIOR (N. DE AMELITA GALLI
CURCI)**

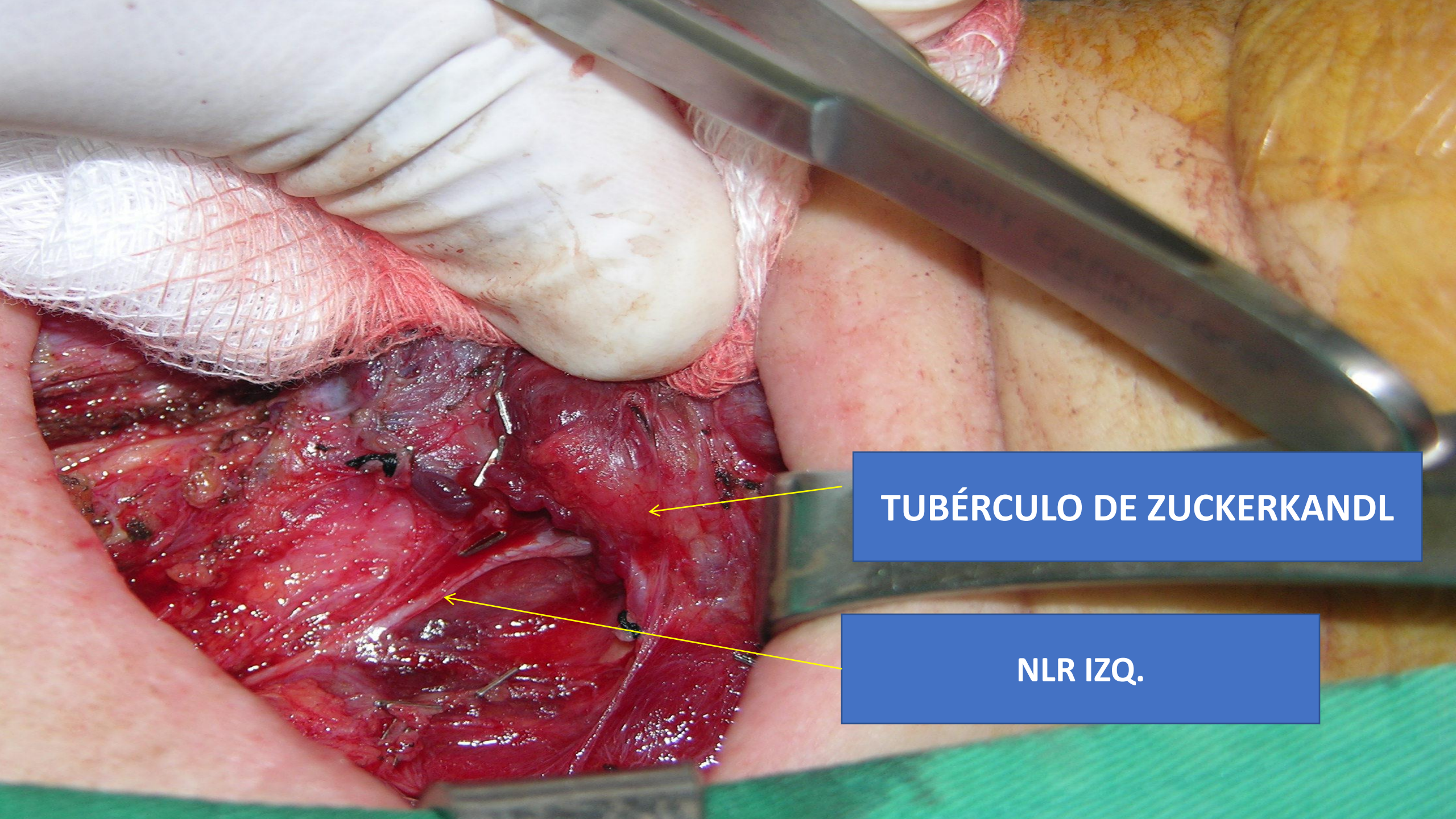
**POLO SUPERIOR DE LÓBULO
DERECHO**





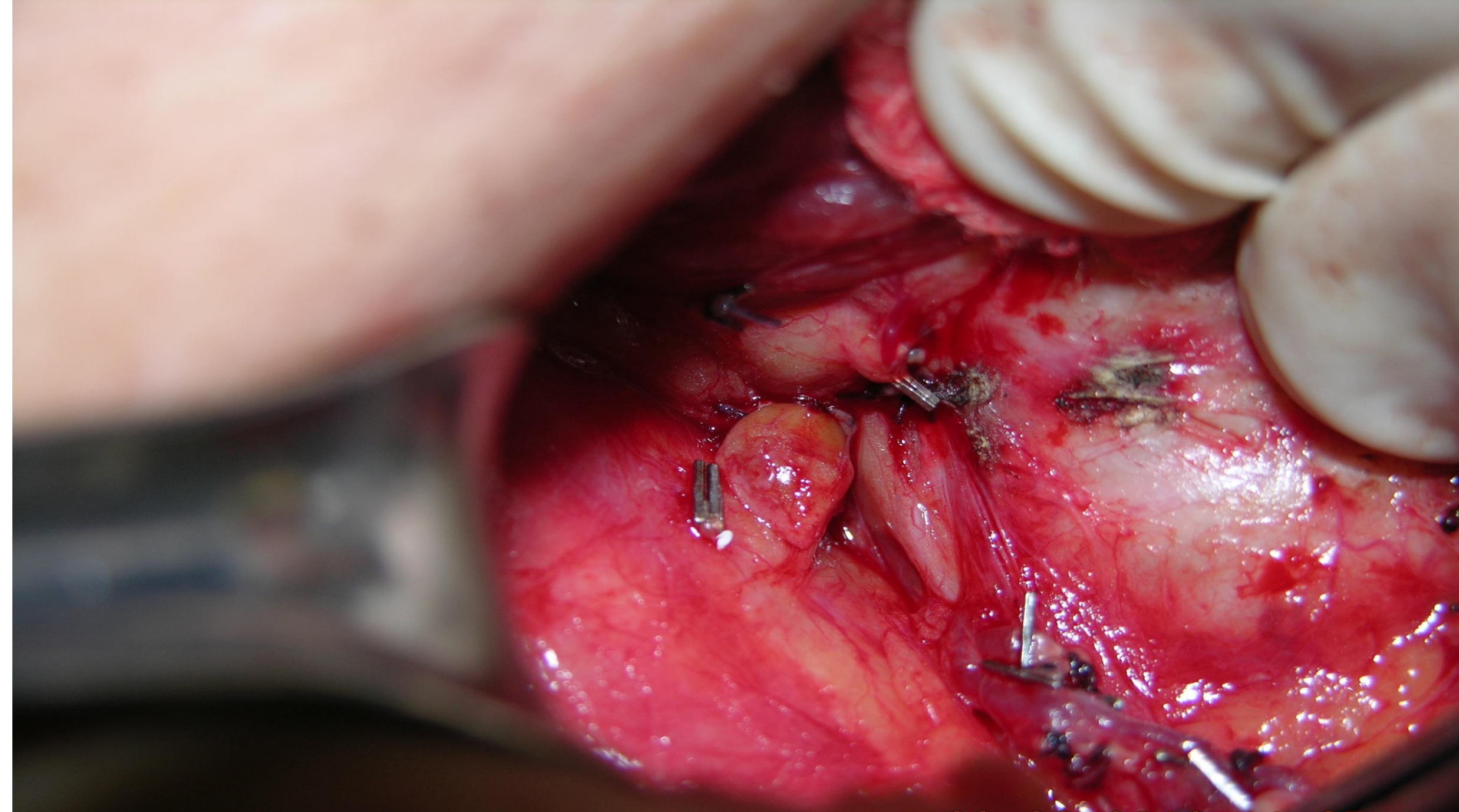
An intraoperative photograph showing a surgical site. The tissue is highly vascularized and red. Several surgical instruments are visible: a large metal retractor or dissector on the left, a pair of surgical forceps at the bottom left, and a metal instrument on the bottom right. A blue rectangular label with the text 'NLR IZQ' is overlaid on the central part of the image.

NLR IZQ



TUBÉRCULO DE ZUCKERKANDL

NLR IZQ.

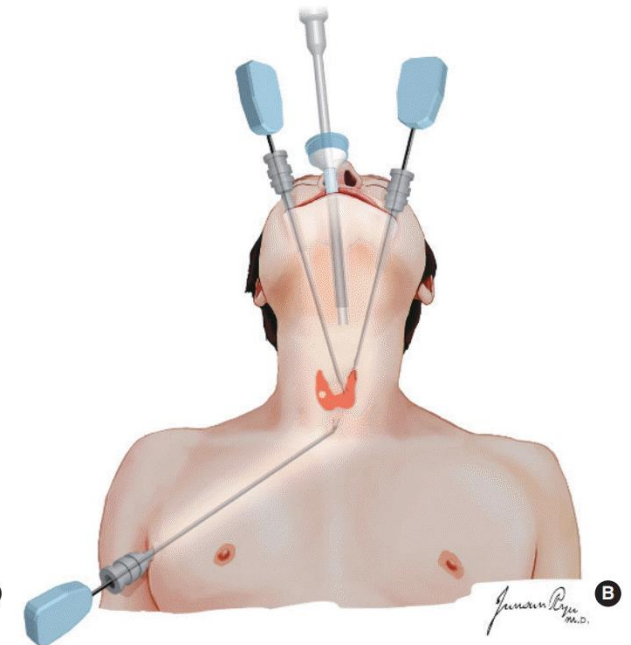
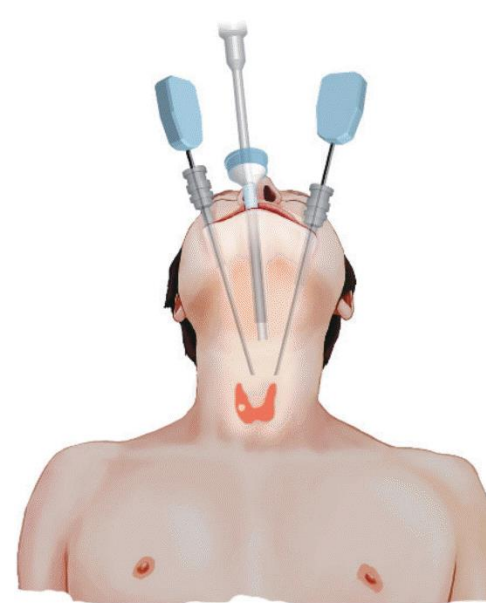
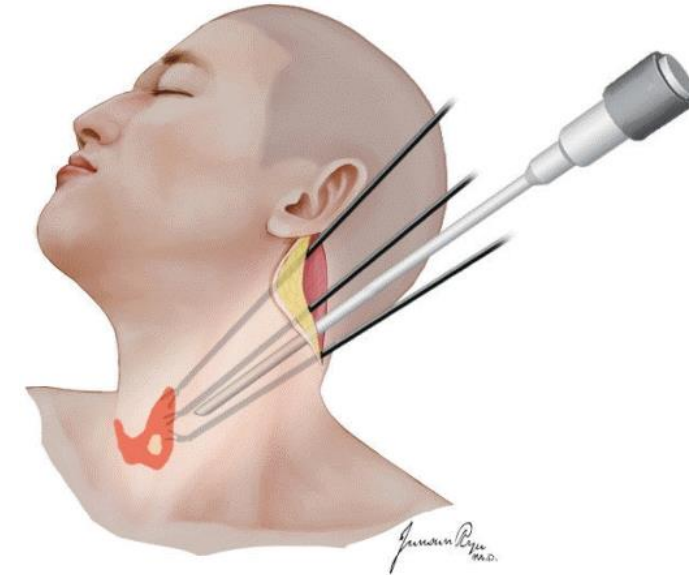
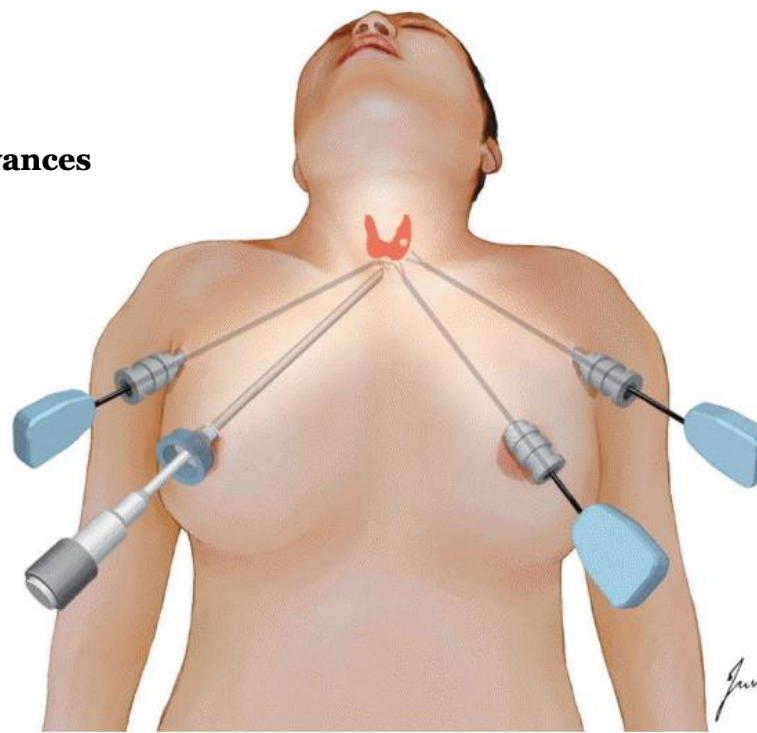
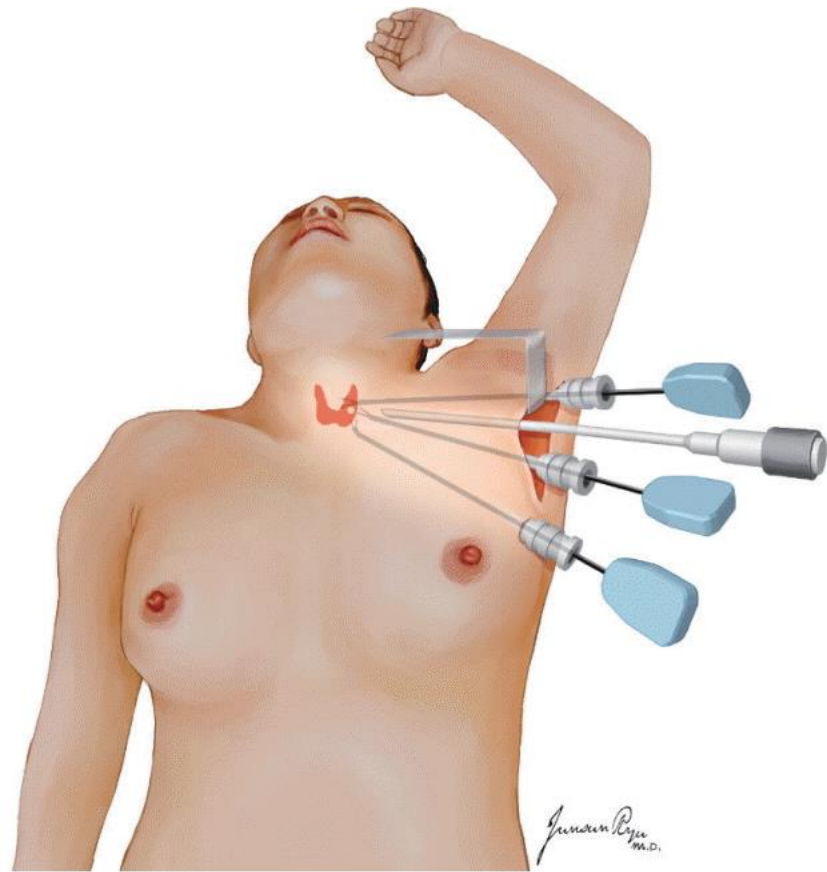


23.02.2012 11:35



Robotic and Endoscopic Thyroid Surgery: Evolution and Advances

Kyung Tae¹, Yong Bae Ji¹, Chang Myeon Song¹, Junsun Ryu²



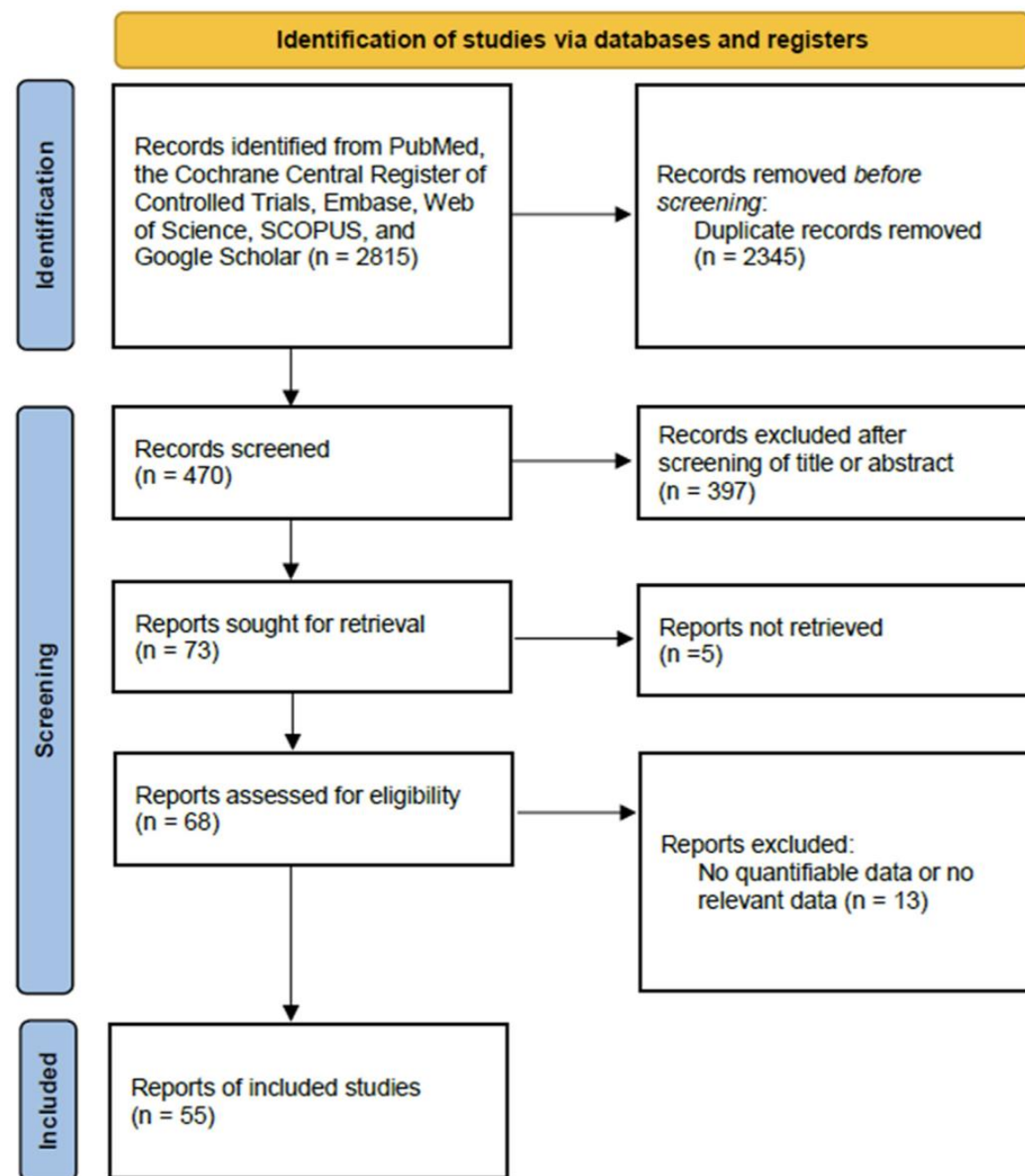
Surgical completeness and safety of minimally invasive thyroidectomy in patients with thyroid cancer: A network meta-analysis

Yun Jin Kang, PhD^a, Gulnaz Stybayeva, PhD^b, Se Hwan Hwang, PhD^{c,*}

^a *Department of Otorhinolaryngology-Head and Neck Surgery, Soonchunhyang University College of Medicine, Cheonan, Republic of Korea*

^b *Department of Physiology and Biomedical Engineering, Mayo Clinic, Rochester, MN*

^c *Department of Otorhinolaryngology-Head and Neck Surgery, Bucheon St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Seoul, Republic of Korea*



¿PROGRESO O MALABARISMO QUIRÚRGICO?

- MIVAT: Minimally Invasive Video Assisted Thyroidectomy
- eBABA: Endoscopic Bilateral Axillo-Breast Approach
- rBABA: Robotic Bilateral Axillo-Breast Approach
- ePAT: Endoscopic Post Auricular Thyroidectomy
- rPAT: Robotic Post Auricular Thyroidectomy
- Eax: Endoscopic Axillary Thyroidectomy
- Rax: Robotic Axillary Thyroidectomy
- TOETVA: Trans Oral Endoscopic Thyroidectomy Vestibular Approach
- TORT: Trans Oral Robotic Thyroidectomy

Table II
Ranked probabilities of odd ratios for network meta-analysis

Treatment	Accidental parathyroidectomy		Chyle leak		Hematoma	
	SUCRA (%)	Rank	SUCRA (%)	Rank	SUCRA (%)	Rank
Control	0.3233	5	0.5538	3	0.4805	4
Eax	Na		0.6389	2	0.3269	6
Endoscopic BABA	0.3877	3	0.8082	1	0.5026	3
TOETVA	0.7823	1	0.1506	6	0.4026	5
Rax	Na		0.4978	4	0.7708	1
Robotic BABA	0.6452	2	0.3508	5	0.7053	2
Tort	0.3615	4	Na		0.3113	7

Treatment	Permanent hypoparathyroidism		Permanent vocal cord palsy		Seroma	
	SUCRA (%)	Rank	SUCRA (%)	Rank	SUCRA (%)	Rank
Control	0.2725	7	0.4280	4	0.6092	3
Eax	0.6670	1	0.4463	3	0.3260	7
Endoscopic BABA	0.5275	6	0.7236	2	Na	
TOETVA	0.6634	2	0.3933	5	0.3945	5
MIVATT	0.5763	4	Na		Na	
Rax	0.1161	8	0.2600	6	0.6185	2
Robotic BABA	0.5311	5	0.7487	1	0.4007	4
Tort	0.6461	3	Na		0.8175	1
RPA	Na		Na		0.3336	6

Treatment	Wound infection		Multiplicity of cancer		Bilaterality of cancer	
	SUCRA (%)	Rank	SUCRA (%)	Rank	SUCRA (%)	Rank
Control	0.6902	2	0.6603	3	0.7825	1
Eax	Na		0.2957	7	0.4599	5
Endoscopic BABA	0.4675	3	0.5868	4	Na	
TOETVA	0.2625	6	0.3584	6	0.5859	3
Rax	0.8515	1	0.5254	5	0.5118	4
Robotic BABA	0.4648	4	0.7193	2	0.7729	2
Tort	0.2635	5	0.7383	1	0.2213	6
RPA	Na		0.1158	8	0.1657	7

Treatment	Extrathyroidal extension		Coincidence of thyroiditis		Low postoperative serum Tg	
	SUCRA (%)	Rank	SUCRA (%)	Rank	SUCRA (%)	Rank
Control	0.8016	1	0.3729	6	0.8140	1
Eax	0.2776	8	Na		0.1742	6
Endoscopic BABA	0.5140	4	0.5638	2	0.4403	5
TOETVA	0.3202	7	0.3830	5	0.4455	4
Rax	0.6148	2	0.4467	4	0.6242	2
Robotic BABA	0.4112	6	0.6769	1	0.5020	3
Tort	0.4966	5	0.5568	3	Na	
RPA	0.5639	3	Na		Na	

En ninguno de los rangos el CONTROL está entre los peores y en los importantes, el CONTROL es el mejor

COMPARACIÓN ENTRE TIROIDECTOMÍA CONVENCIONAL Y ALTERNATIVAS

Table II
Ranked probabilities of odd ratios for network meta-analysis

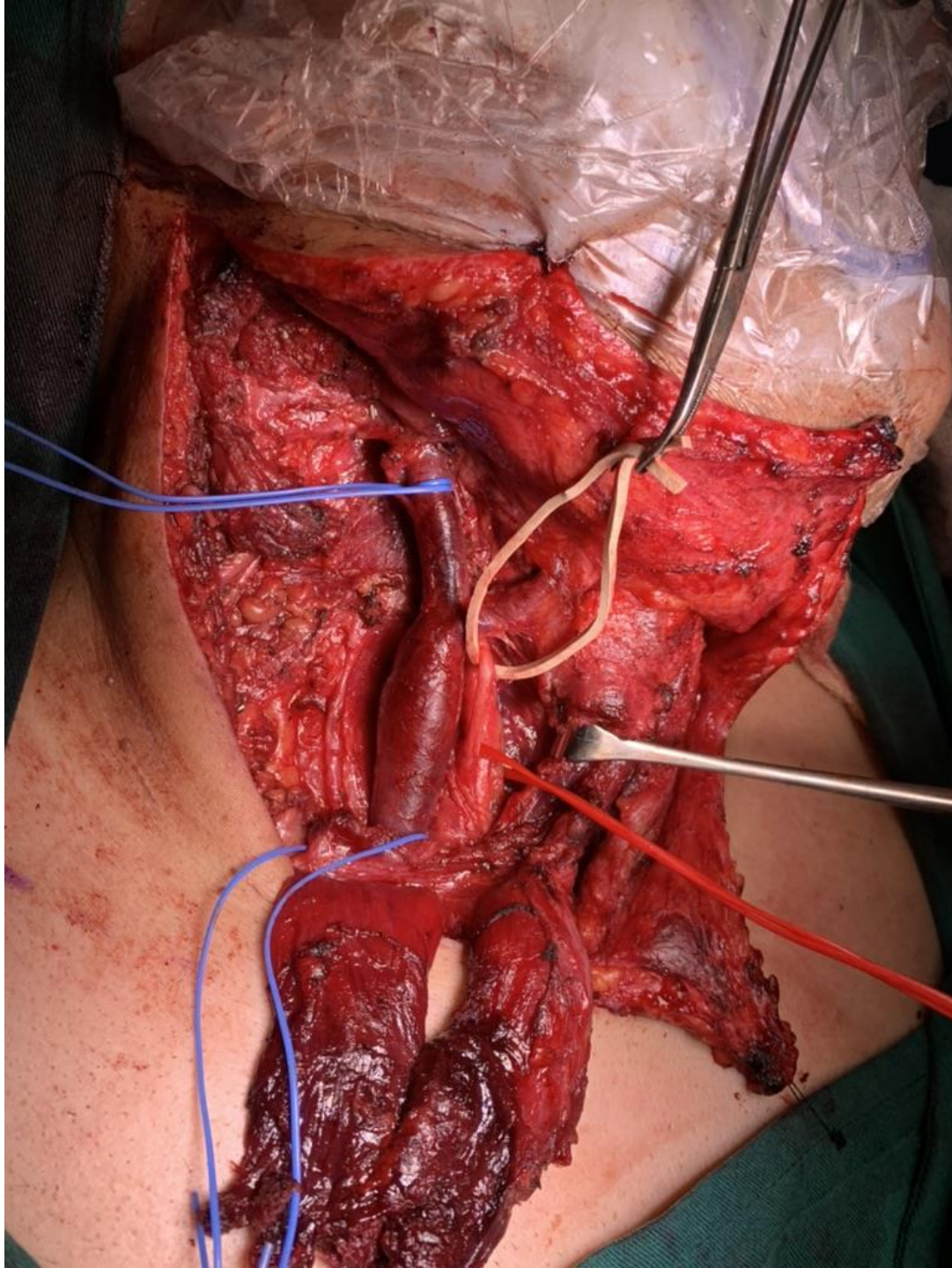
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	SUCRA (%)	Rank	SUCRA (%)	Rank	SUCRA (%)	Rank
Control	0.3233	5	0.5538	3	0.4805	4
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Endoscopic BABA	0.3877	3	0.8082	1	0.5026	3
TOETVA	0.7823	1	0.1506	6	0.4026	5
Rax	Na		0.4978	4	0.7708	1
Robotic BABA	0.6452	2	0.3508	5	0.7053	2
Tort	0.3615	4	Na		0.3113	7

COMPARACIÓN ENTRE TIROIDECTOMÍA CONVENCIONAL Y ALTERNATIVAS

Treatment	Permanent hypoparathyroidism		Permanent vocal cord palsy	
	SUCRA (%)	Rank	SUCRA (%)	Rank
Control	0.2725	7	0.4280	4
Eax	0.6670	1	0.4463	3
Endoscopic BABA	0.5275	6	0.7236	2
TOETVA	0.6634	2	0.3933	5
MIVATT	0.5763	4	Na	
Rax	0.1161	8	0.2600	6
Robotic BABA	0.5311	5	0.7487	1
Tort	0.6461	3	Na	
RPA	Na		Na	

COMPARACIÓN ENTRE TIROIDECTOMÍA CONVENCIONAL Y ALTERNATIVAS

<u>Low postoperative serum Tg</u>	
	<u>SUCRA (%)</u>
	<u>Rank</u>
CONTROL 	0.8140
	1
	0.1742
	6
	0.4403
	5
	0.4455
	4
	0.6242
	2
	0.5020
	3
	Na
	Na



DRDC DERECHA
RESECCIÓN DE ECM POR
COMPROMISO Y PARA
COMPLETAR
LINFADENECTOMÍA

ud/a.



ESPÉCIMEN, grupos
II-V + VI

uol/a.



- Primero la vida,
segundo la función,
tercero la estética

uol/a.



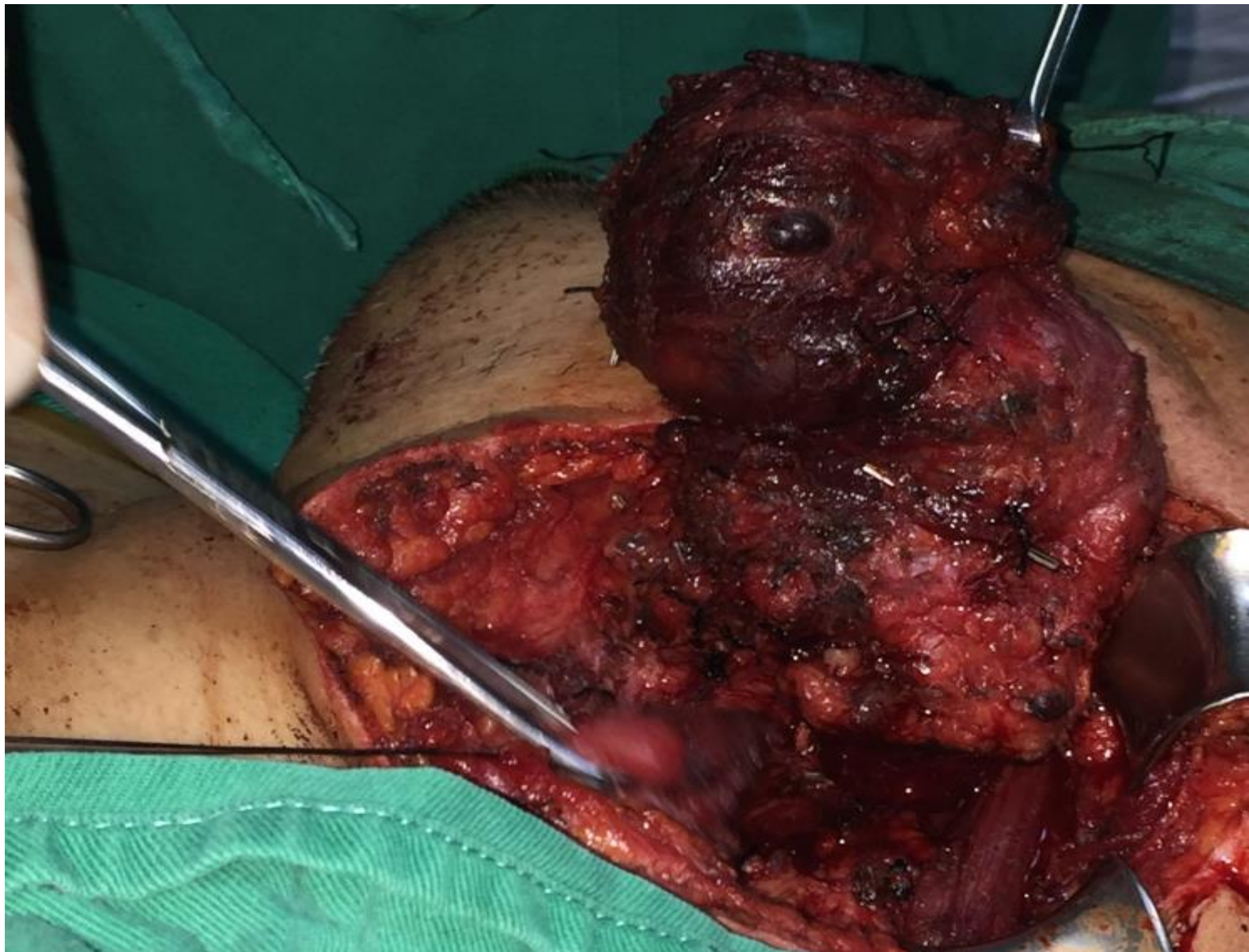
ASIMETRÍA CERVICAL
POR AUSENCIA DE ECM
DERECHO Y PARÁLISIS
DE TRAPECIO POR
SECCIÓN DE N. ESPINAL
ACCESORIO

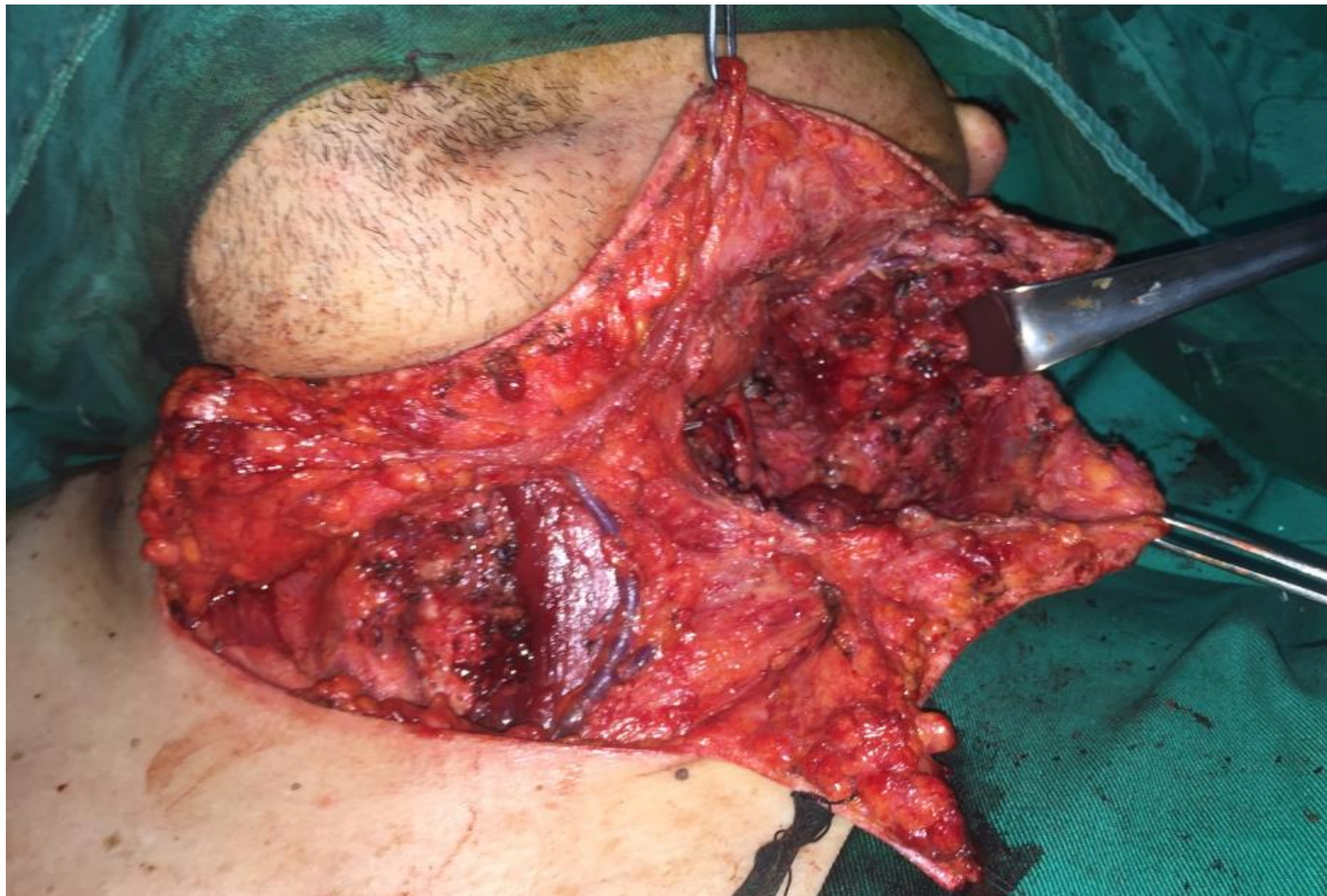
uol/a.



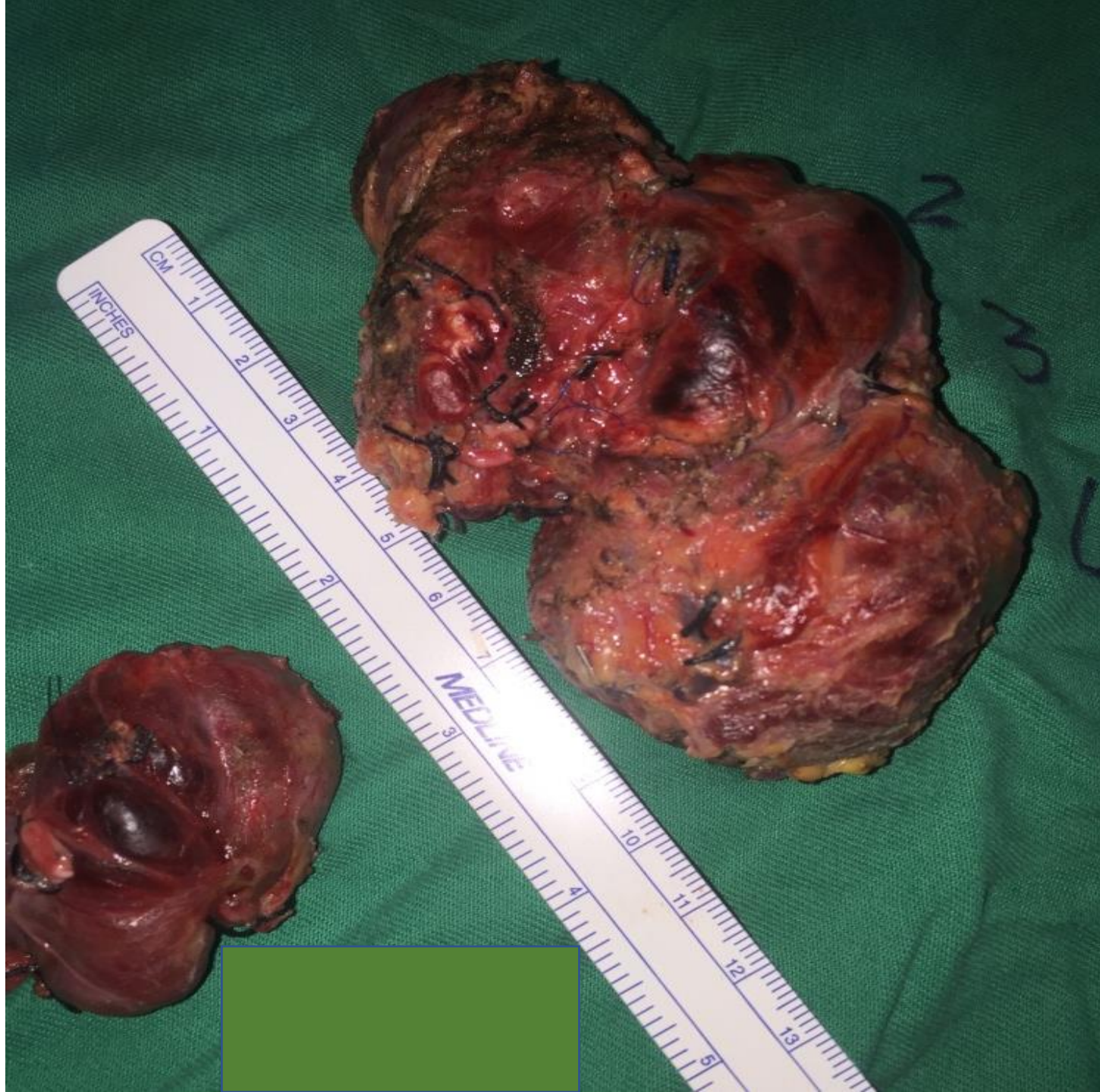














RESUMEN DE CONCLUSIONES

- **Vigilancia activa para MCP en vez de cirugía temprana:** Sí, con adherencia protocolos. Excelente en países desarrollados, dudoso en sistemas de salud precarios

RESUMEN DE CONCLUSIONES

- **Lobectomía o Tiroidectomía total en Ca. Papilar de 1 a 4 cm, de bajo riesgo:** Persiste la controversia y hay renuencia al cambio. La TT permite I^{131} , seguimiento con Tg, evitar la recurrencia por multifocalidad, evitar la reoperación si acaso la patología de lobectomía muestra sorpresas

RESUMEN DE CONCLUSIONES

- **Dissección profiláctica del compartimento central (grupo VI): ¡No!** Concluyentemente aumenta la morbilidad sin impacto positivo en lo oncológico.
- **Ablación por Radiofrecuencia en cáncer de tiroides: ¡Sí!** No como reemplazo a la cirugía pero ante el rechazo de ésta, en riesgo quirúrgico elevado, recurrencia o metástasis localizadas, como alternativa a cirugía.

RESUMEN DE CONCLUSIONES

- **Formas alternativas de cirugía:** Ninguna ha demostrado ser mejor que la cirugía abierta. Dudosamente, tan buena como la convencional. La única ventaja, evitar una cicatriz pero, a un costo mucho mayor. En CESQIP apenas el 2% de las cirugías son alternativas

› [Surg Endosc.](#) 1996 Sep;10(9):925-7. doi: 10.1007/BF00188485.

Laparoscopic surgery in a small animal model. A simplified technique of retroperitoneal dissection in the rat

[B A Sandoval](#)¹, [T T Sulaiman](#), [A V Robinson](#), [T A Stellato](#)

Affiliations – collapse

Affiliation

- ¹ Department of Surgery, University Hospitals of Cleveland, Case Western Reserve University, OH 44106, USA.



El mundo del hombre contemporáneo
se funda sobre los resultados de la
ciencia: el dato reemplaza al mito, la
teoría a la fantasía, la predicción a la
profecía

— Mario Bunge —

