Hospital Vall d'Hebron Pulmonary Sessions: Progress and Perspectives, featuring leading experts in the field

Actualización en el diagnóstico broncoscópico del cáncer de pulmón en estadios iniciales

23/10/2026

Dr. Antoni **Rosell**
Servei de Pneumologia
Direcció Clínica del Tòrax
Hospital Germans Trias i Pujol
Email: arosellg.germanstrias@gencat.cat

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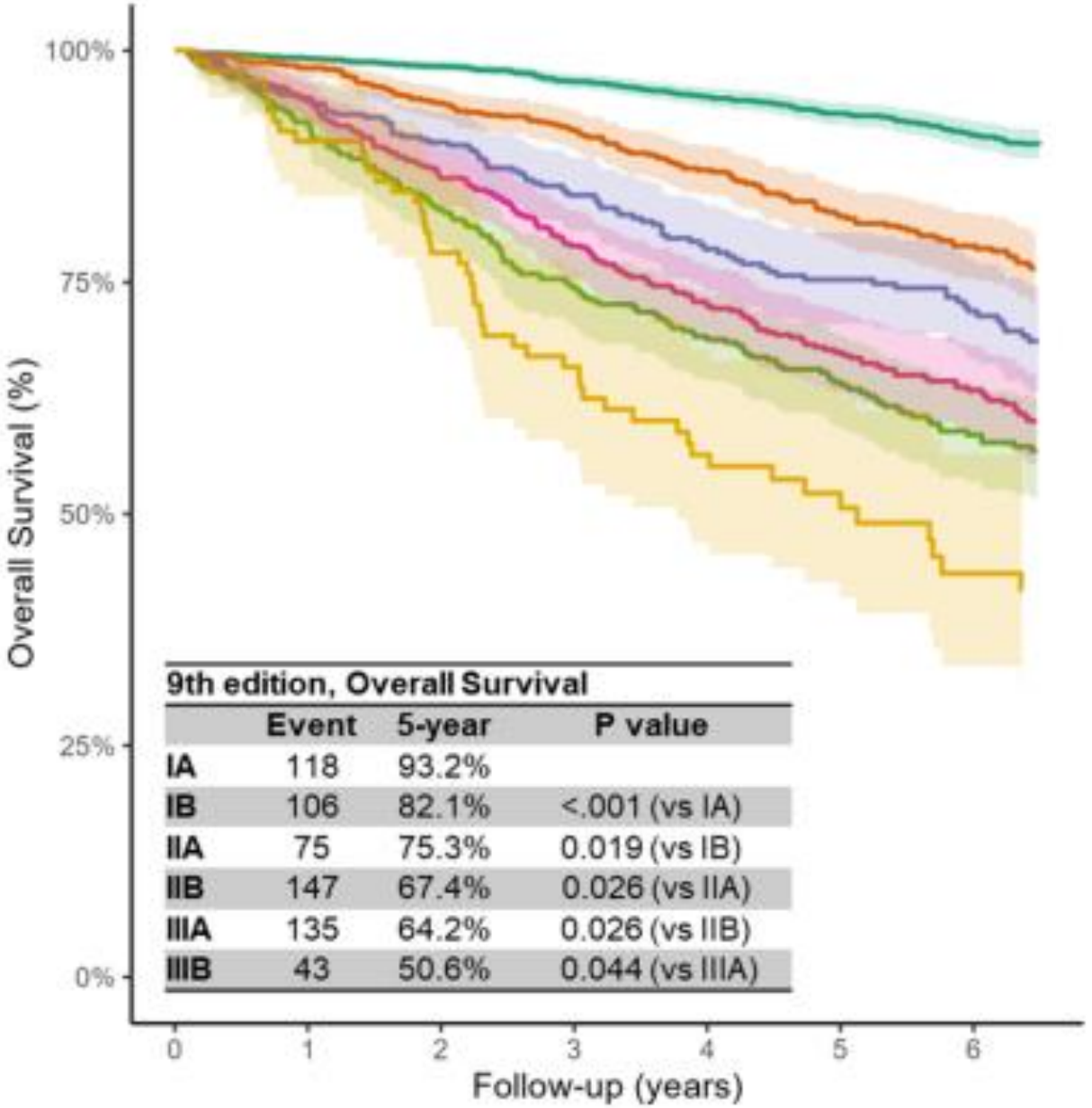
IASLC

INTERNATIONAL ASSOCIATION FOR THE STUDY OF LUNG CANCER

Lung Cancer TNM Stages–9th Edition

Stage Groups of the 9th Edition of the Tumor, Node, Metastasis (TNM) Classification of Lung Cancer

9th Edition TNM Descriptors and Stages						
T/M	Categories and Descriptors	N0	N1	N2		N3
				N2a	N2b	
T1	T1a ≤1 cm	IA1	IIA	IIB	IIIA	IIIB
	T1b >1 to ≤2 cm	IA2	IIA	IIB	IIIA	IIIB
	T1c >2 to ≤3 cm	IA3	IIA	IIB	IIIA	IIIB



9th edition, Overall Survival			
	Event	5-year	P value
IA	118	93.2%	
IB	106	82.1%	<.001 (vs IA)
IIA	75	75.3%	0.019 (vs IB)
IIB	147	67.4%	0.026 (vs IIA)
IIIA	135	64.2%	0.026 (vs IIB)
IIIB	43	50.6%	0.044 (vs IIIA)

IASLC 10TH edition: TNMB

Current pulmonary nodules size

SCREENING	Malbasa et al (2025)	3,479 nodules detected in a LDCT LCS program	Lung RADS + 2,866	8.45 mm (SD 7.9)

Current pulmonary nodules size

SCREENING	Malbasa et al (2025)	3,479 nodules detected in a LDCT LCS program	Lung RADS + 2,866	8.45 mm (SD 7.9)
INCIDENTAL	Grolleau et al (2024)	NLP in 101,703 CT reports	1,999 nodules (2%)	8 mm (SD 5)

(CHEST 2007; 132:131S–148S)

Initial Diagnosis of Lung Cancer*

ACCP Evidence-Based Clinical Practice Guidelines (2nd Edition)

M. Patricia Rivera, MD, FCCP; and Atul C. Mehta, MB, FCCP

Recommendation 10:

In patients suspected of having lung cancer who have a small (<2 cm) peripheral lesion, and who require tissue diagnosis before further management can be planned, TTNA is recommended.

Grade of Recommendation, 1B

CHEST 2013; 143(5)(Suppl):e93S–e120S

Procedure	Potential Benefits		Potential Harms	
	Outcome	% Frequency	Outcome	% Frequency
Bronchoscopy with biopsy	• Definitive preoperative cancer diagnosis in many cases		• Physical complications	
	Fluoroscope-guided	~ 30	Bleeding	2-5
	EBUS, ENB ± VBN guided	60-90	Any pneumothorax	2-4
	• Reassurance if specific benign diagnosis established		Death	<<1
	• Acquisition of tissue for molecular testing		• May still require surgery if biopsy result is nondiagnostic or shows cancer	
			• False negative biopsy results	30-70
			• False positive biopsy results	Rare

Clinical Review & Education

JAMA. 2022;327(3):264-273. doi:10.1001/jama.2021.24287

JAMA | Review

Evaluating the Patient With a Pulmonary Nodule
A Review

Peter J. Mazzone, MD, MPH; Louis Lam, MD

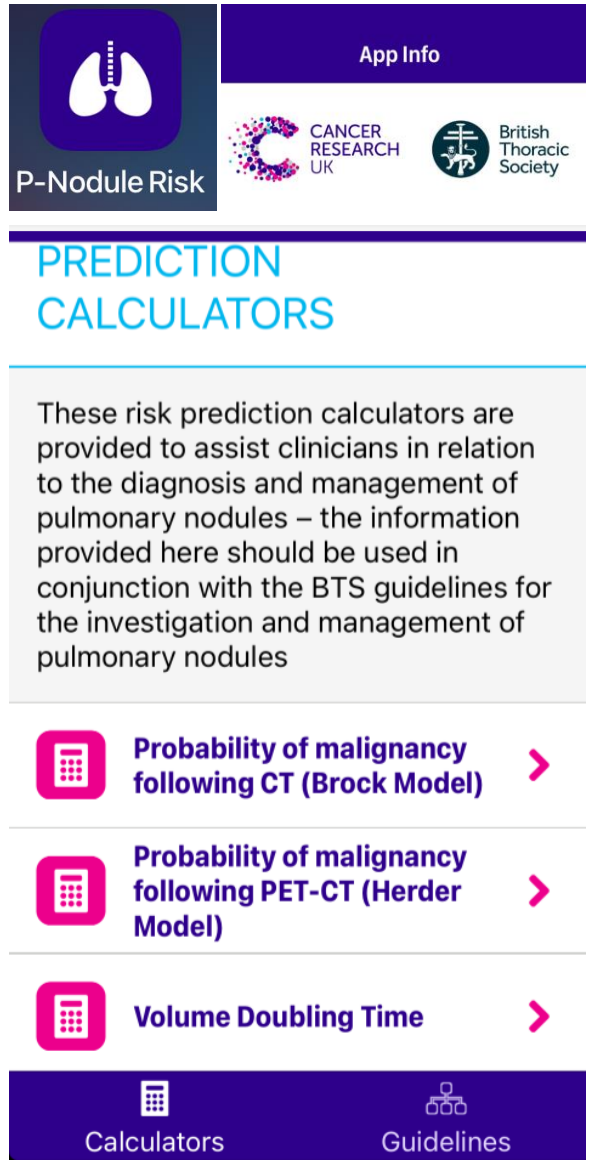
IMPORTANCE Pulmonary nodules are identified in approximately 1.6 million patients per year in the US and are detected on approximately 30% of computed tomographic (CT) images of the chest. Optimal treatment of an individual with a pulmonary nodule can lead to early detection of cancer while minimizing testing for a benign nodule.

Multimedia

CME Quiz at jamacmelookup.com

Individualized Pulmonary Nodule Management Based on Probability of Malignancy

Probability of malignancy*		Actions				
		Nil	CT	PET-CT	Non-surgical bx	Surgery/ SBRT
<1%	No risk	✓				
1-5%	Very low		✓			
5-30%	Low		✓	✓	✓	
30-65%	Moderate			✓	✓	
65-90%	High			✓	✓	✓
> 90%	Very high					✓



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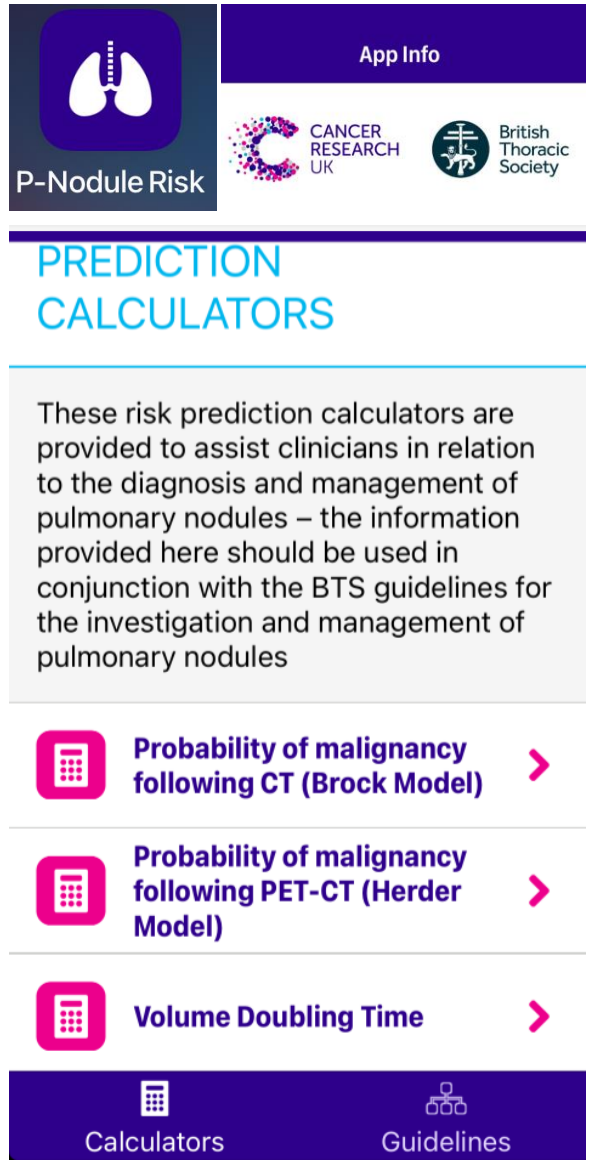
30-65%	Moderate			✓	✓	
65-90%	High			✓	✓	
> 90%	Very high					✓



JAMA. 2022;327(3):264-273. doi:10.1001/jama.2021.24287

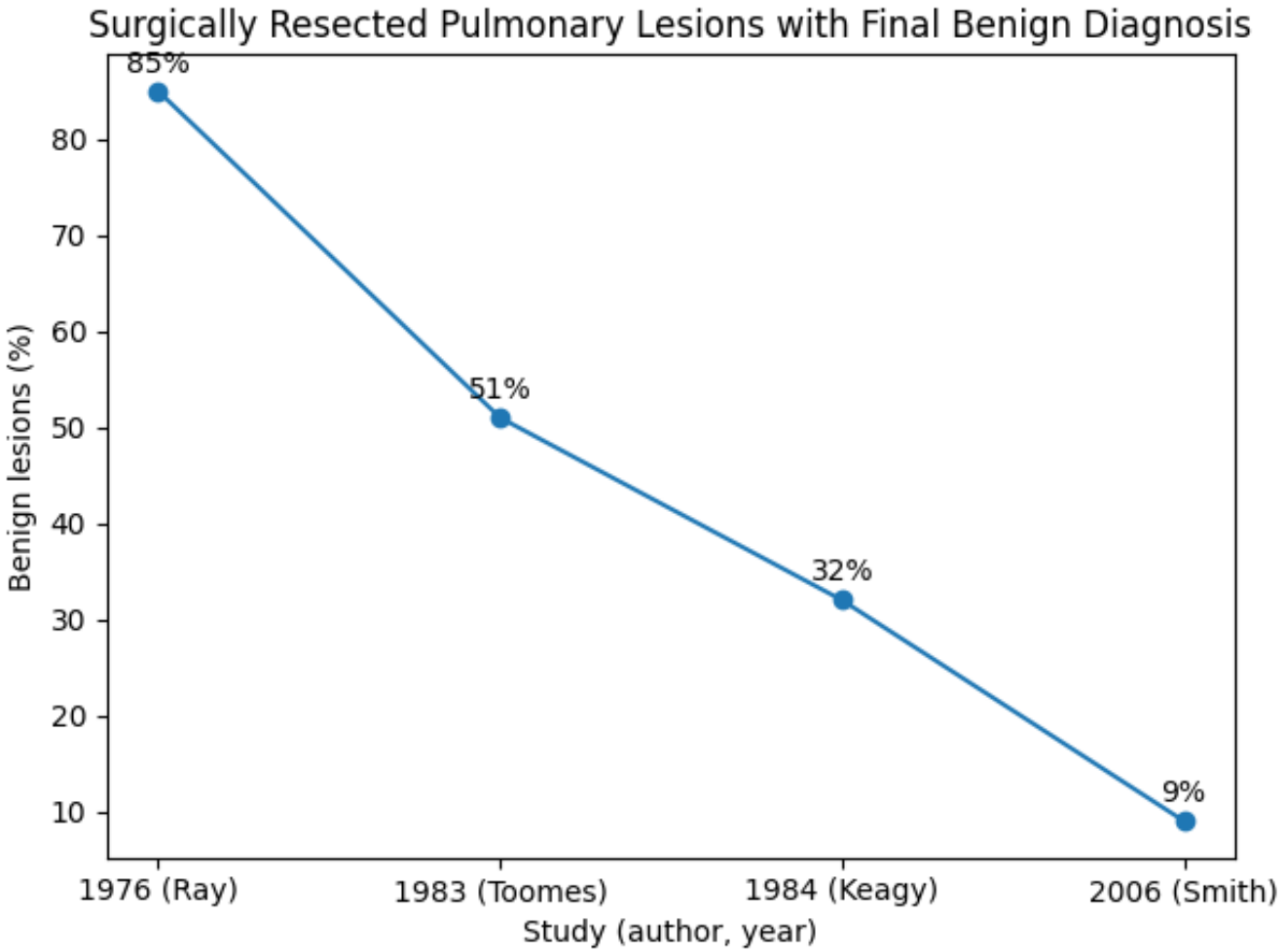
Canad. M. A. J.
July 15, 1959, vol. 81

SOLITARY PULMONARY NODULE*

G. H. C. JOYNT, M.D., F.R.C.S.[C] and
K. P. VASSAL, M.D., *Toronto*

THE DIAGNOSIS and management of the isolated pulmonary nodule present a challenge to the clinician. Mass x-ray surveys of the chest, originally intended to detect early pulmonary tuberculosis, have made it apparent that the solitary circumscribed pulmonary lesion is encountered rather frequently. Because the lesions are usually asymptomatic and because the radiologist can give little help, there is a tendency to delay the making of an exact diagnosis. Sharp and Kinsella[26] made exhaustive clinical studies in attempting to reach a correct diagnosis, but concluded that extensive investigations were not worth while. The high incidence of carcinoma in the reported series, along with the low mortality and morbidity associated with modern thoracic surgery, has changed the management and treatment of these lesions.

Percentage of Surgically Resected Pulmonary Lesions with Final Benign Diagnosis



Historical surgical series. Percentages indicate pulmonary lesions resected without preoperative diagnosis of malignancy and finally proven benign.

Ray et al., Chest 1976; Toomes et al., Cancer 1983; Keagy et al., Ann Thorac Surg 1984; Smith et al., Ann Thorac Surg 2006

JANUARY 23, 2025

Significant settlement for cancer misdiagnosis which led to the unnecessary loss of a lung.

Posted in Medical negligence

AUTHOR

Rosie Hodgetts
Associate
View Profile More Articles

Seeking legal support.

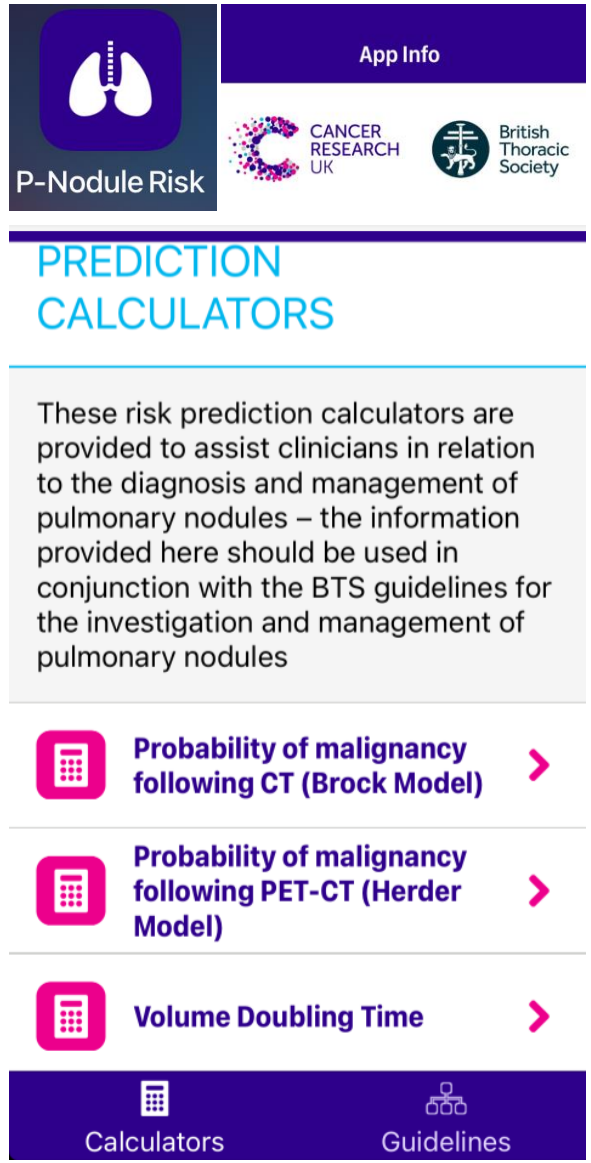
Different Generational Values/Different relationship patient-physician

•**Older generations (baby boomers and before)** acceptance of authority, more tolerant of suffering, and saw bad outcomes as part of life.

• **Younger generations (Gen X, Millennials, Gen Z)** value personal autonomy, quality of life, and transparency. They are more likely to question, challenge, and expect accountability when something goes wrong.

Individualized Pulmonary Nodule Management Based on Probability of Malignancy

Probability of malignancy*		Actions				
		Nil	CT	PET-CT	Non-surgical bx-**RAB?**	Surgery/ SBRT
<1%	No risk	✓				
1-5%	Very low		✓			
5-30%	Low			✓	✓	
30-65%	Moderate			✓	✓	
65-90%	High			✓	✓	
> 90%	Very high					✓



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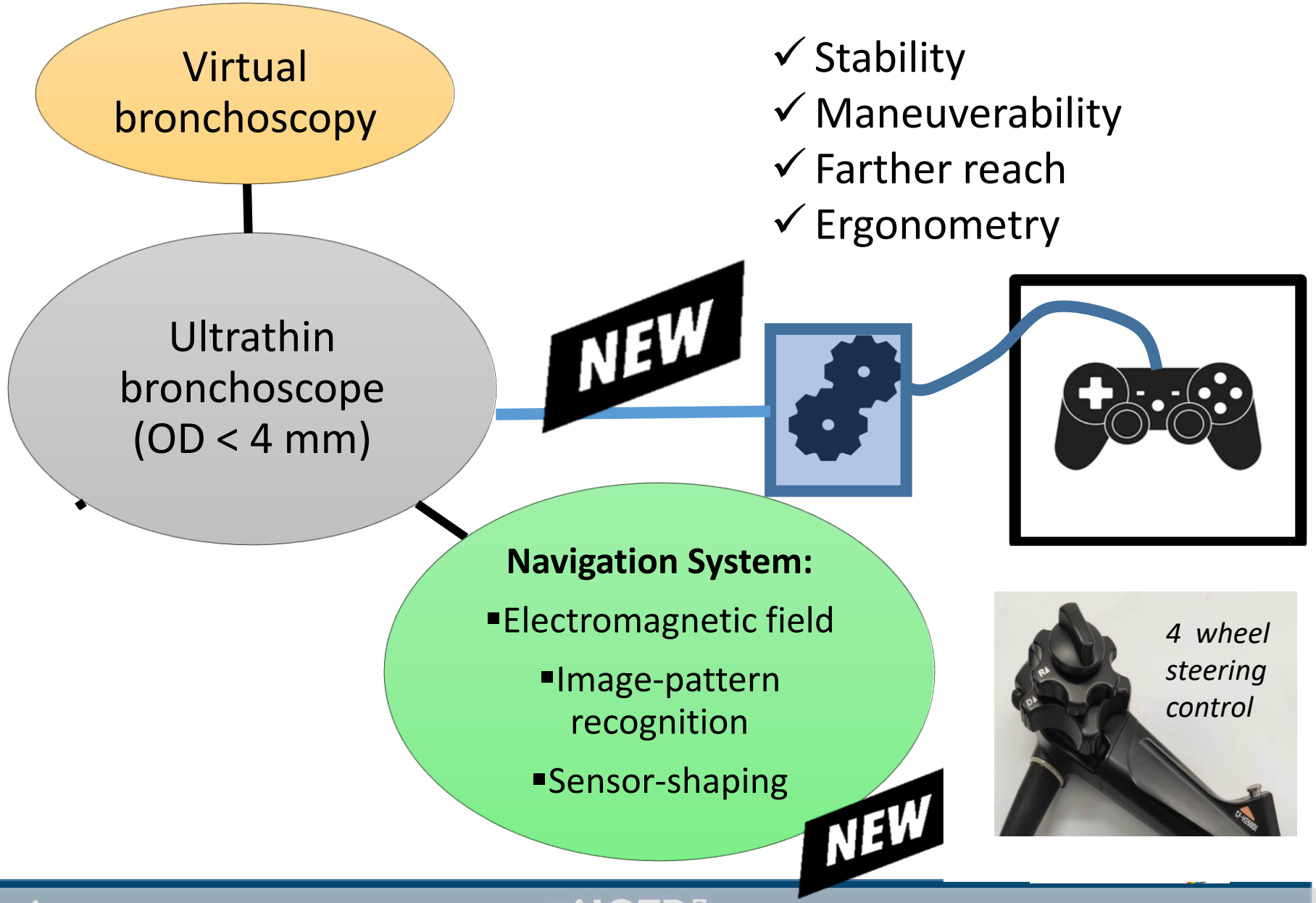
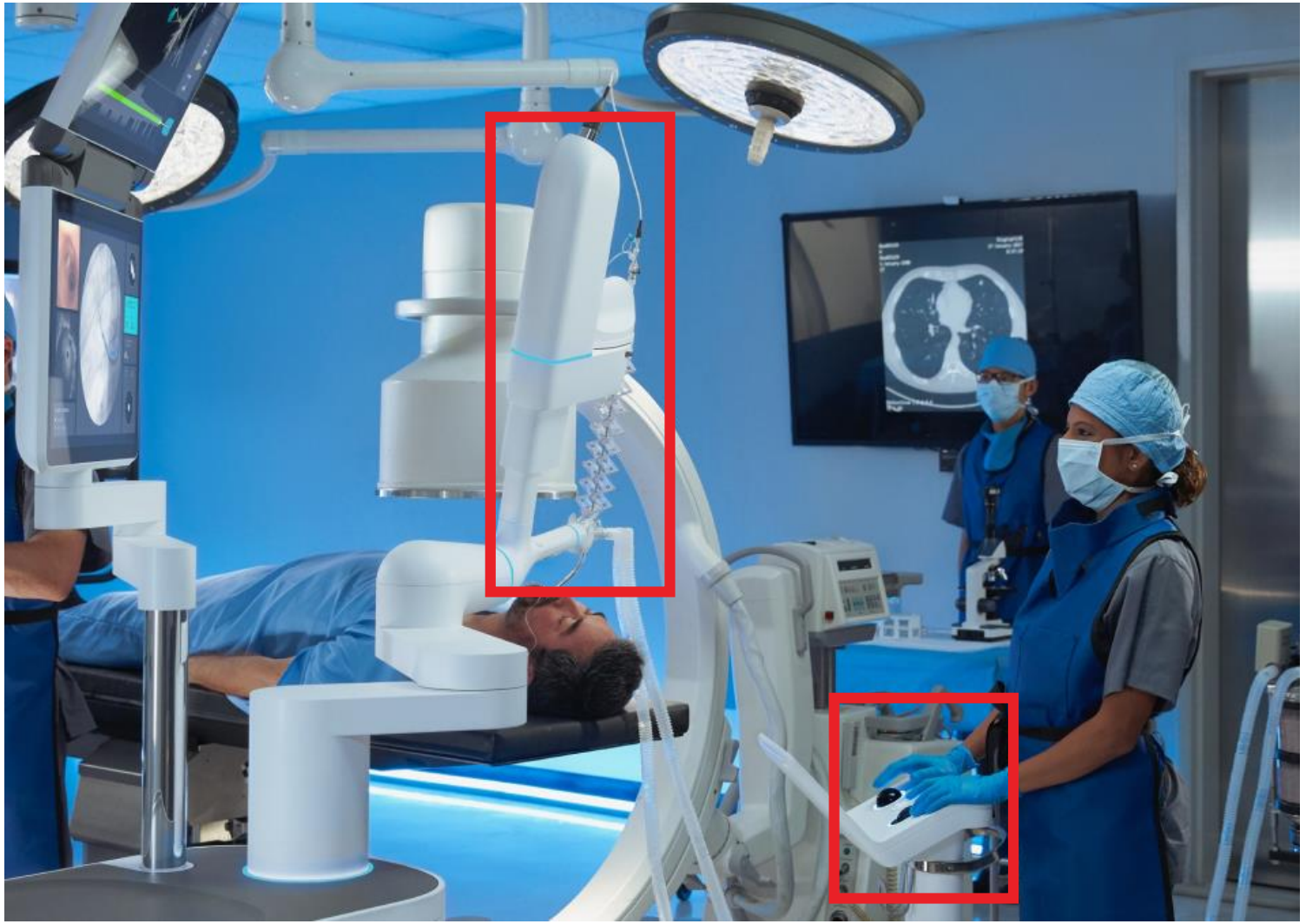
What is a RAB?


Virtual bronchoscopy
Ultrathin bronchoscope (OD < 4 mm)
NEW
Navigation System:
▪Electromagnetic field
▪Image-pattern recognition
▪Sensor-shaping
NEW
✓ Stability
✓ Maneuverability
✓ Farther reach
✓ Ergonometry
4 wheel steering control



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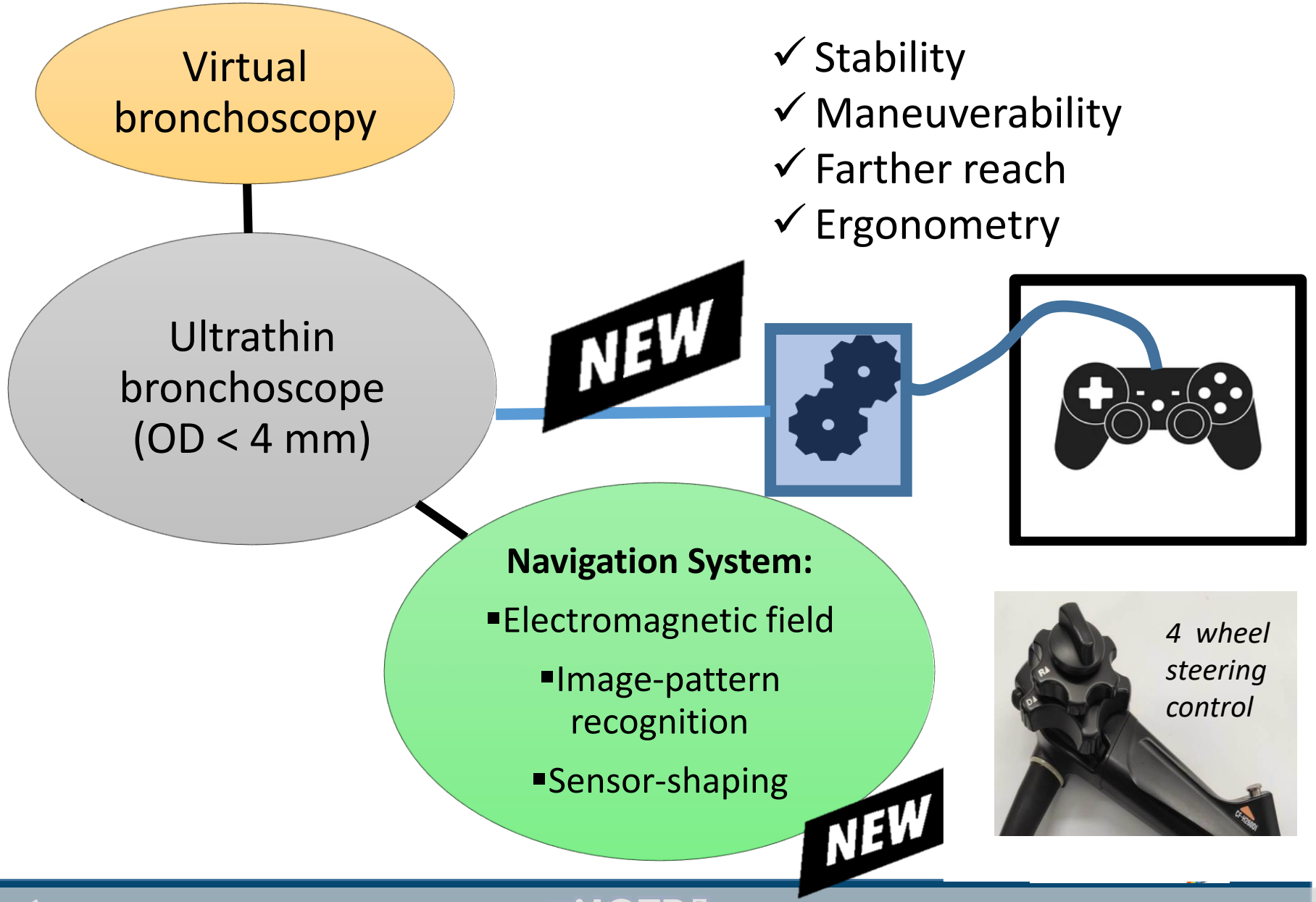
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NEW
✓ Stability
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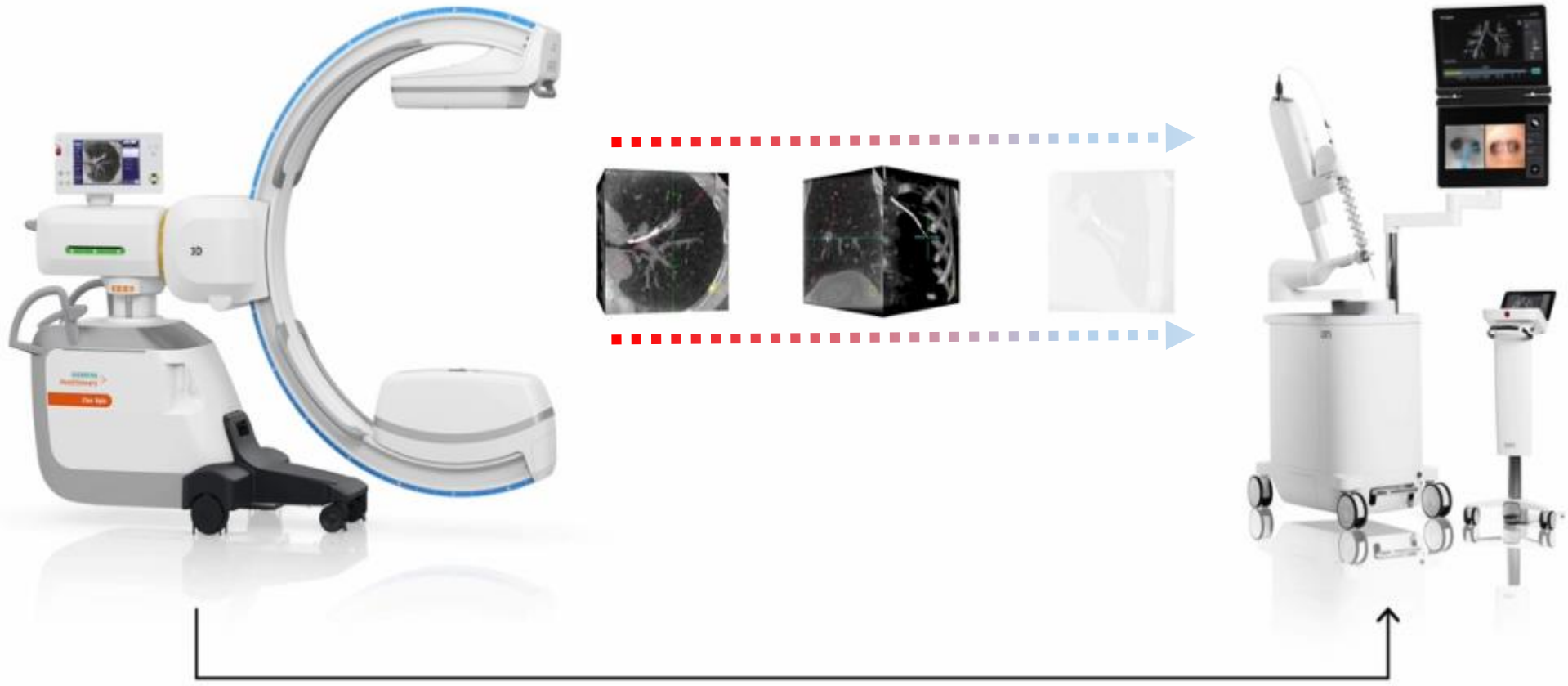
✓ Ergonometry
4 wheel steering control

CBCT imatge Integration to RAB



3D scan (CBCT)

Automated DICOM transfer

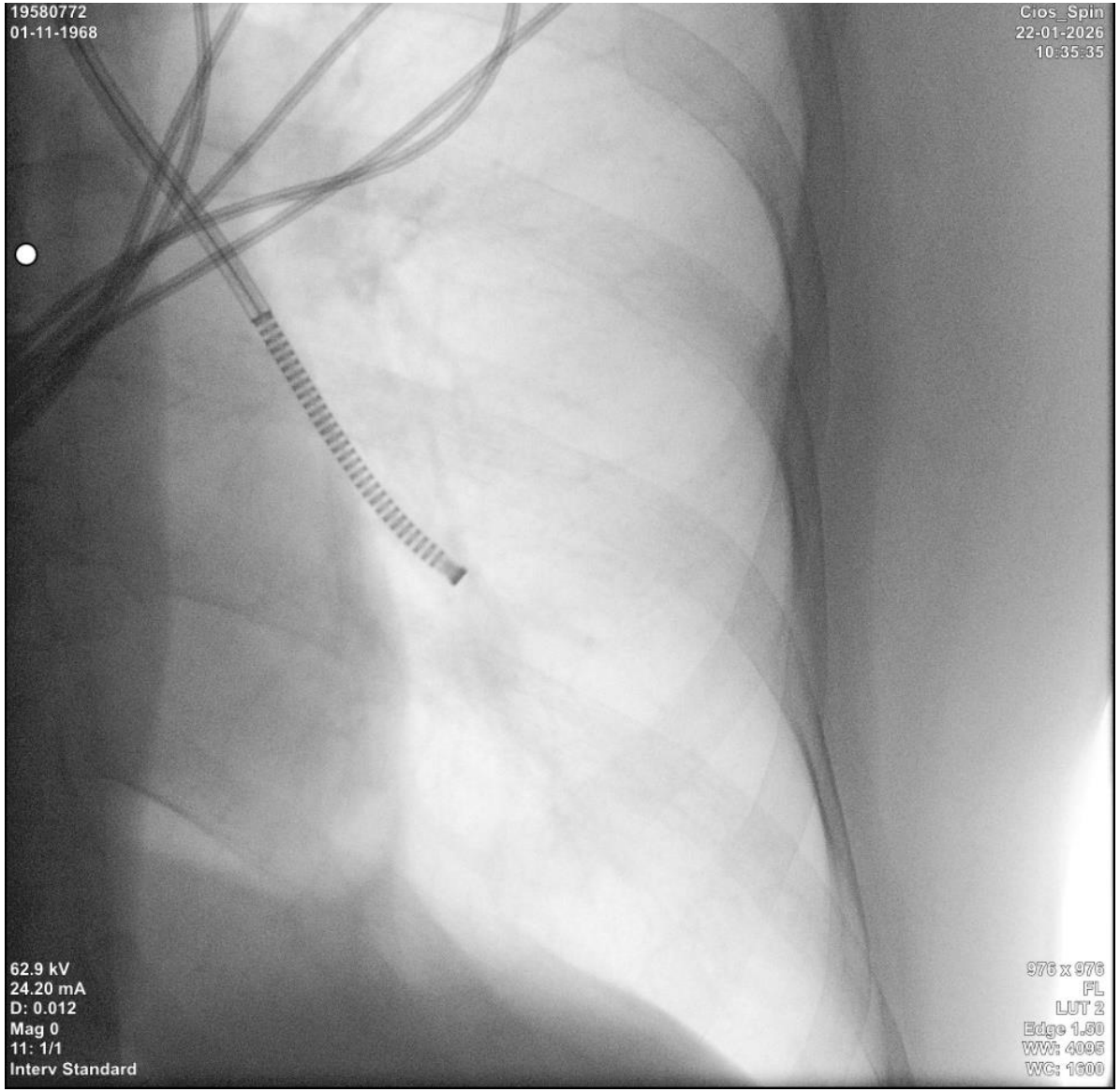
Update of targe location

3D

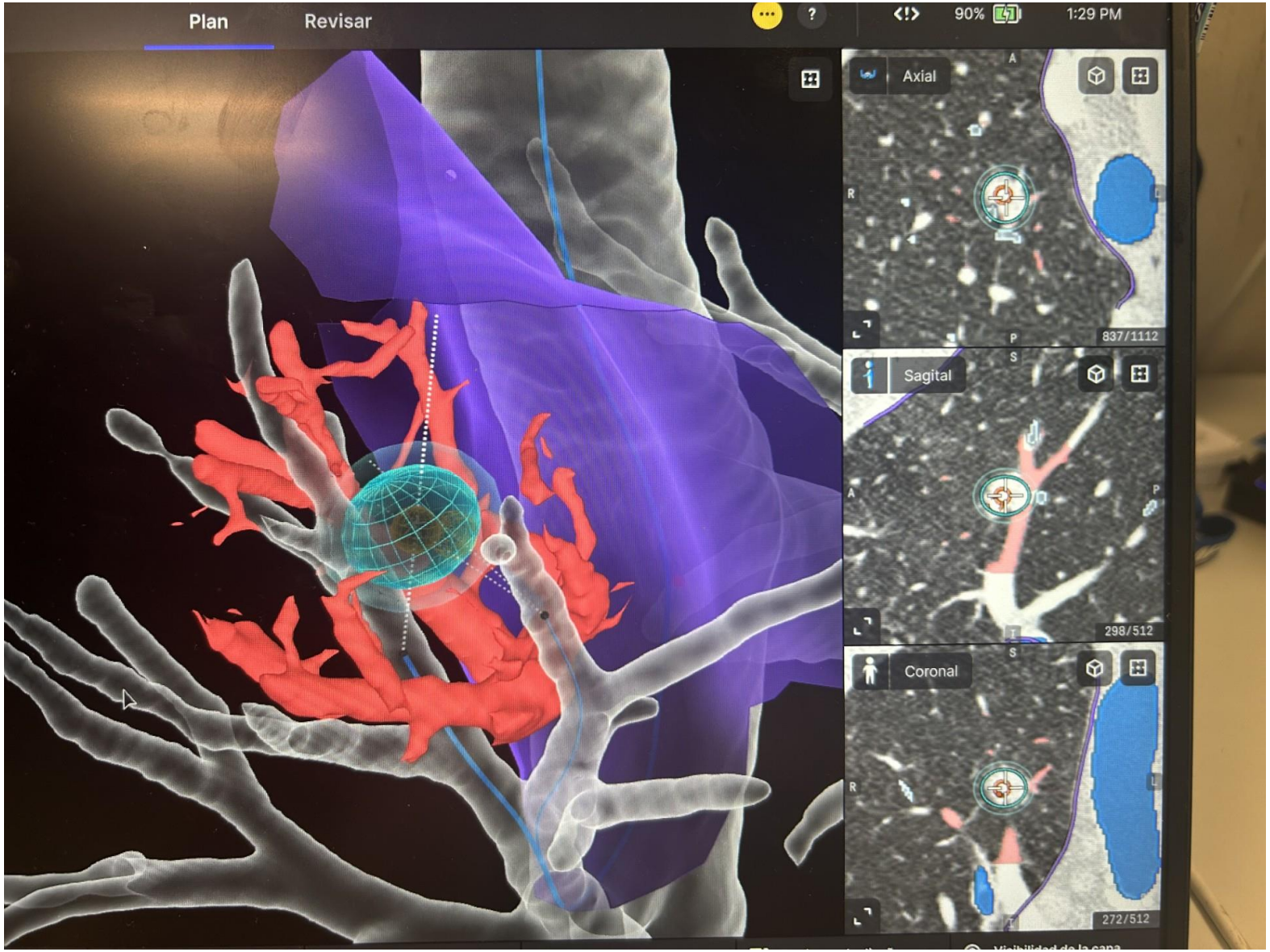
RAB (22/1/26)

Woman, 62 years old, smoker, incidental finding in Chest Xray.

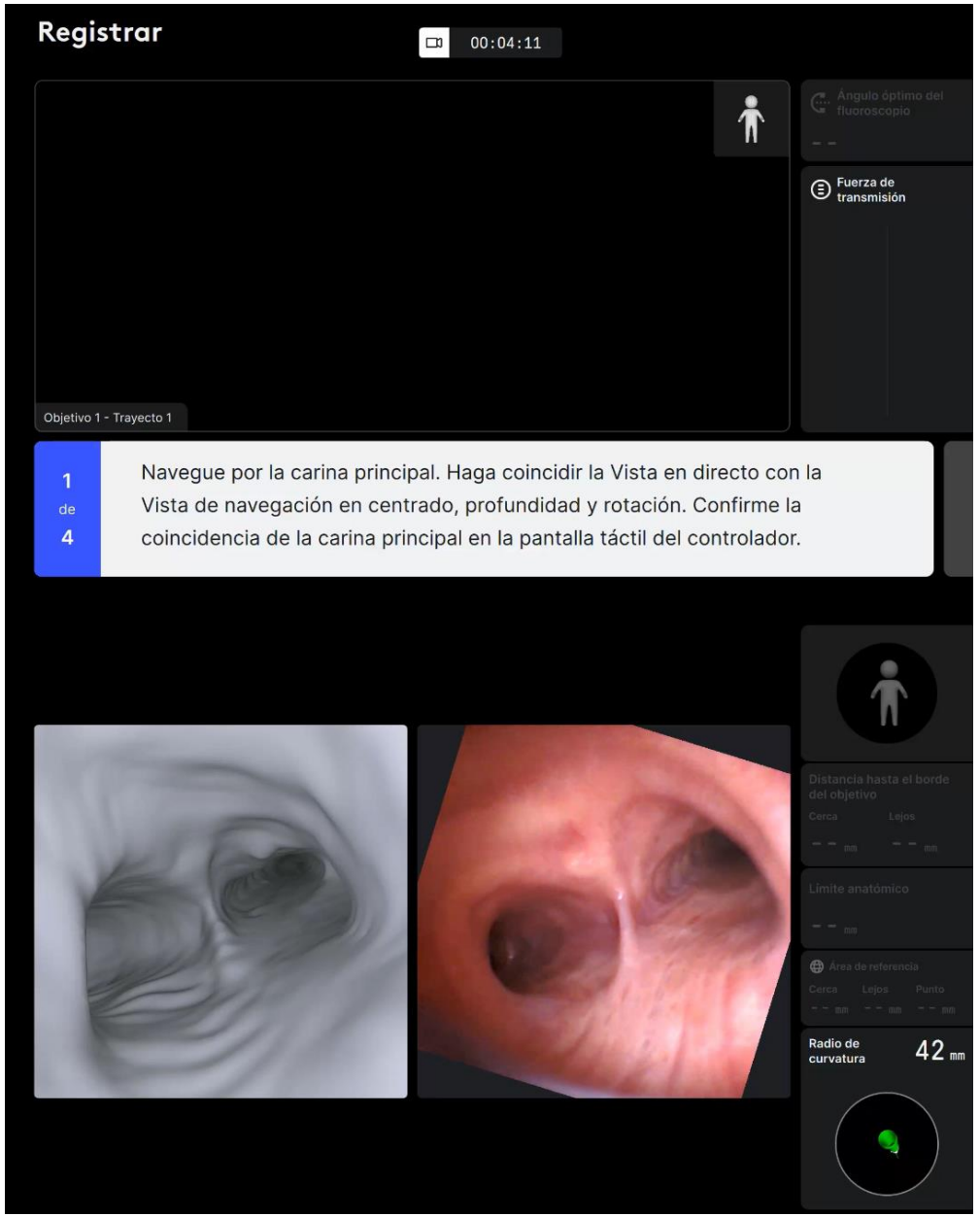
Thorax CT: solid nodule in LLL and subsolid nodule in URL



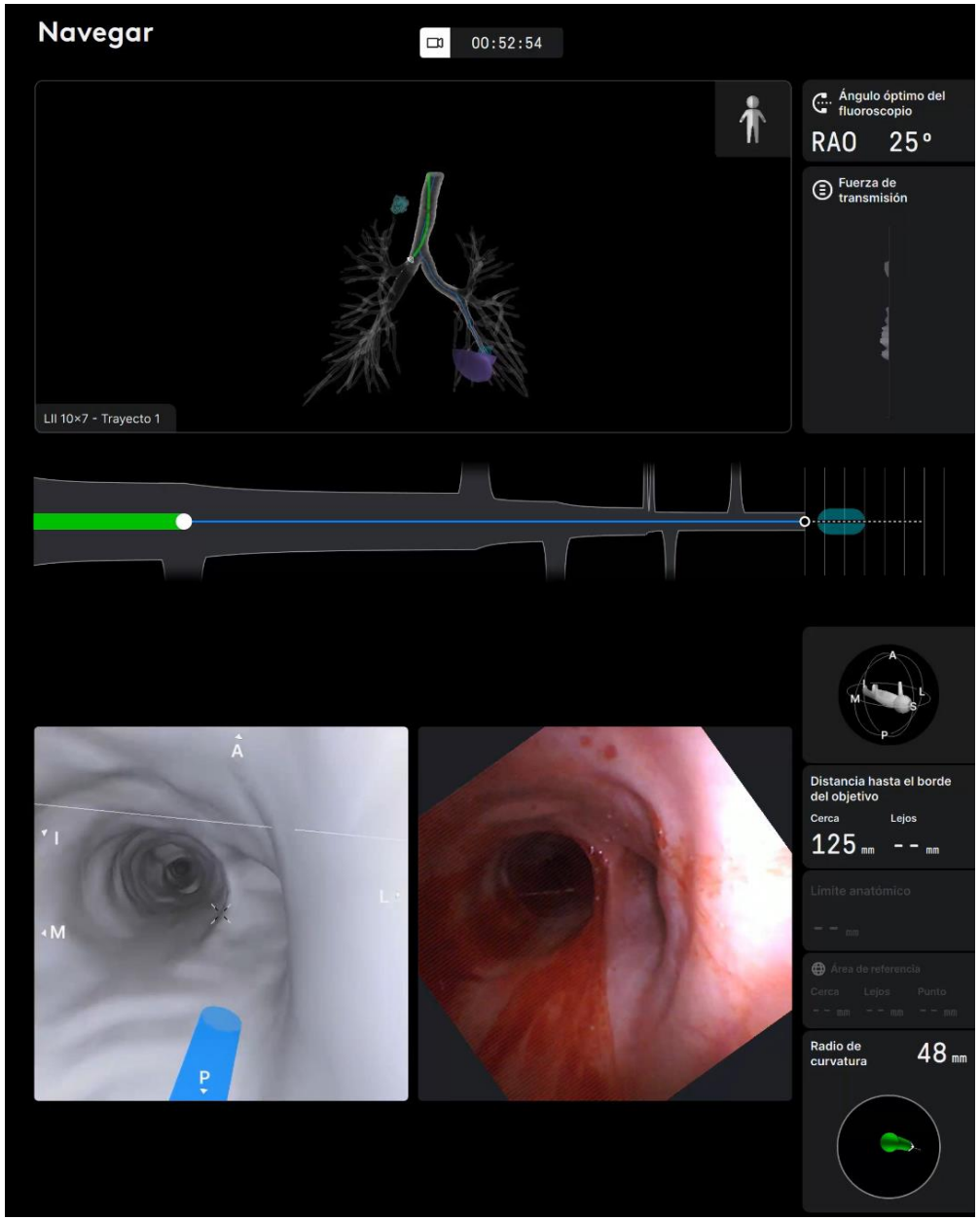
PLANNING


Plan
Revisar
90%
1:29 PM
Axial
837/1112
Sagital
298/512
Coronal
272/512

REGISTRATION

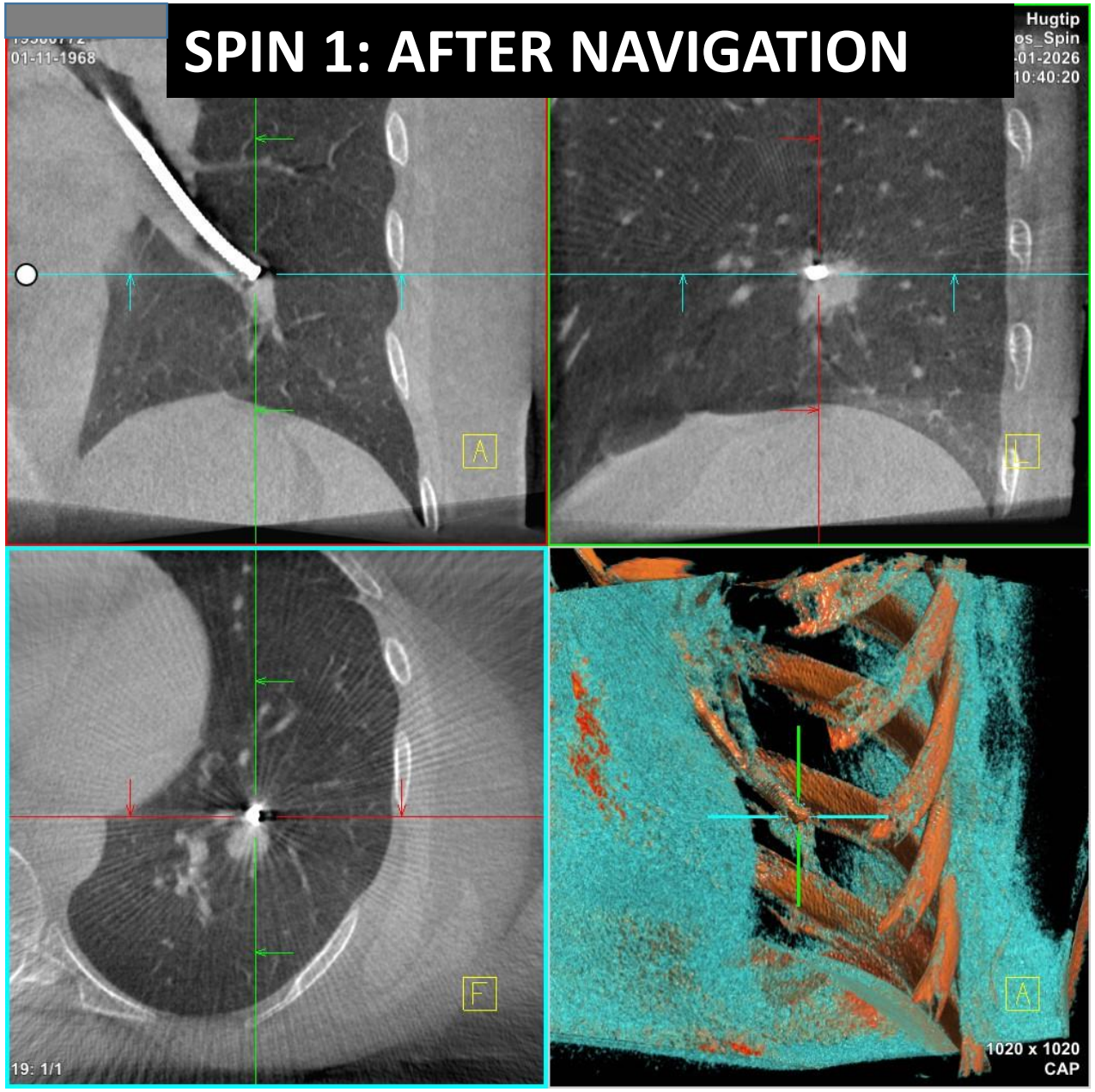


NAVIGATION

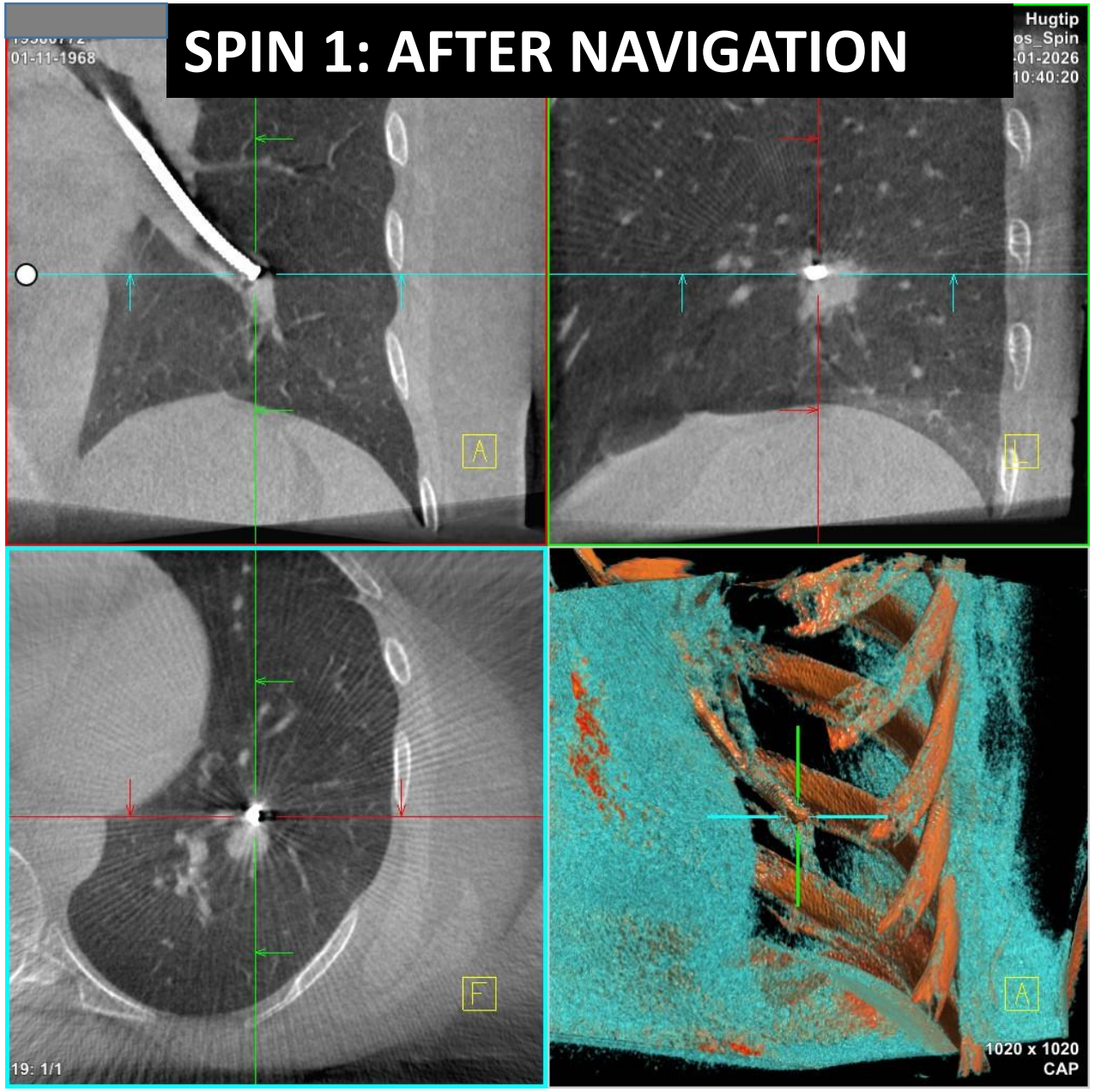

Navegar
00:52:54
Ángulo óptimo del fluoroscopio
RAO 25°
Fuerza de transmisión
LII 10×7 - Trayecto 1
A
I
M
L
P
Distancia hasta el borde del objetivo
Cerca
Lejos
125 mm
-- mm
Límite anatómico
-- mm
Área de referencia
Cerca
Lejos
Punto
-- mm
-- mm
-- mm
Radio de curvatura
48 mm

3D

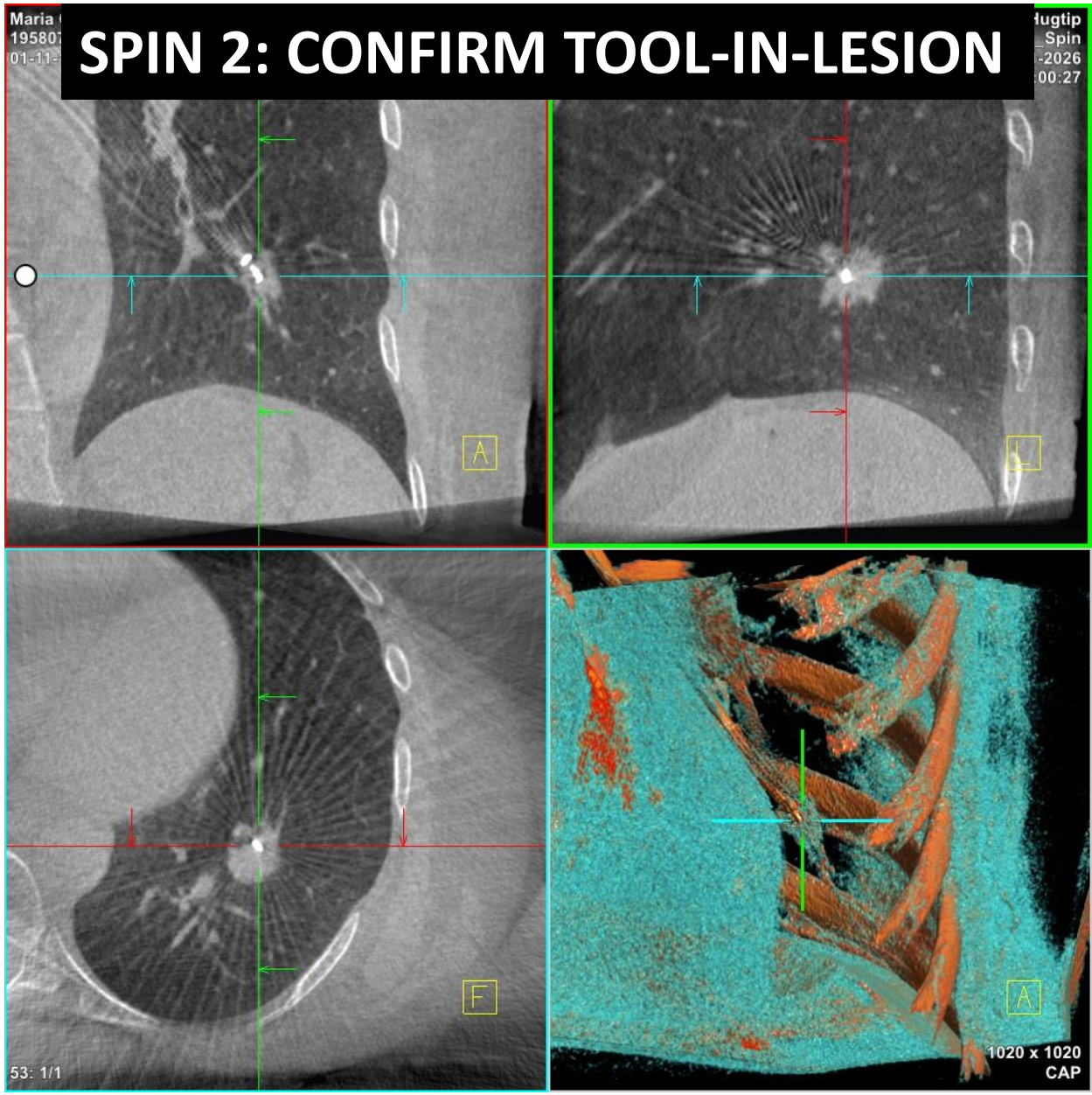
SPIN 1: AFTER NAVIGATION



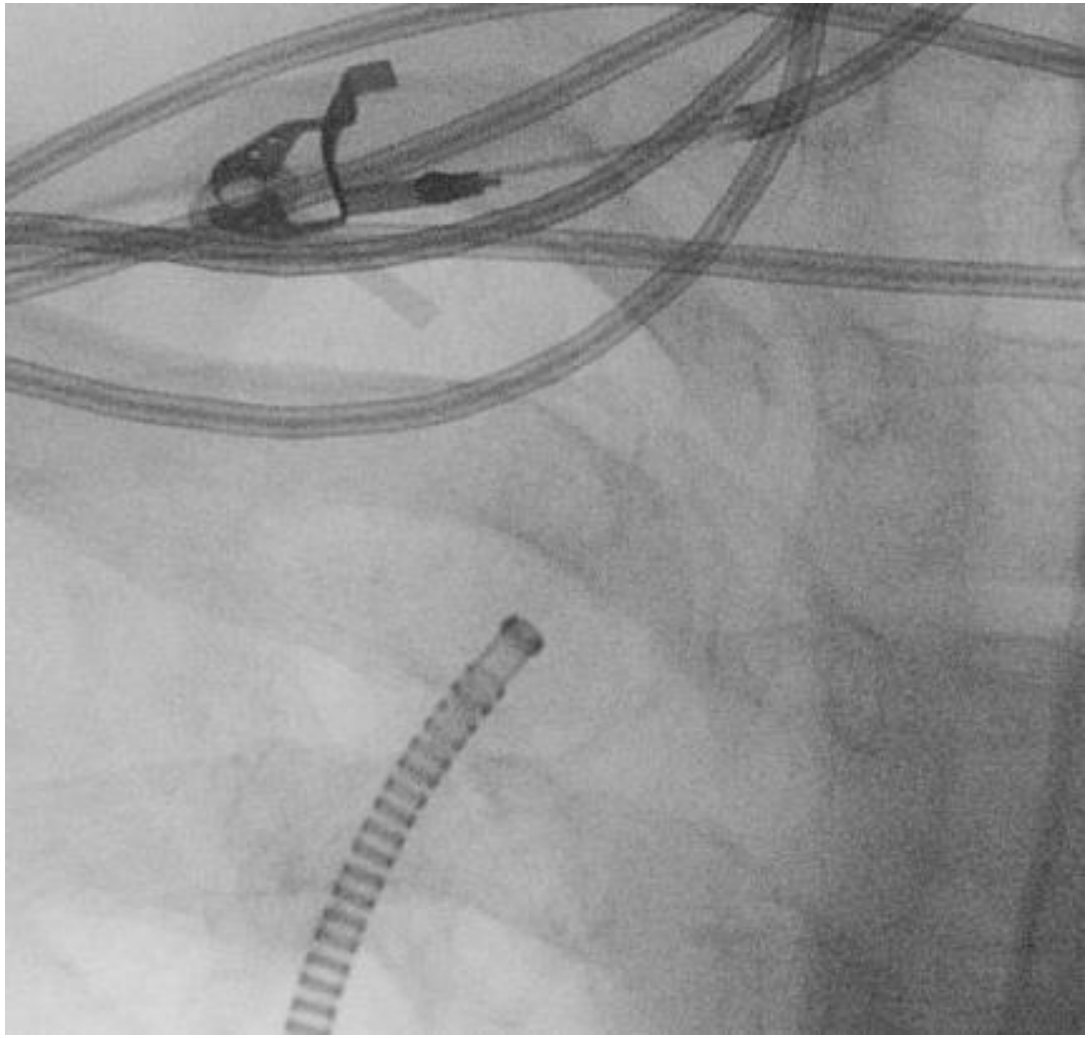
SPIN 1: AFTER NAVIGATION



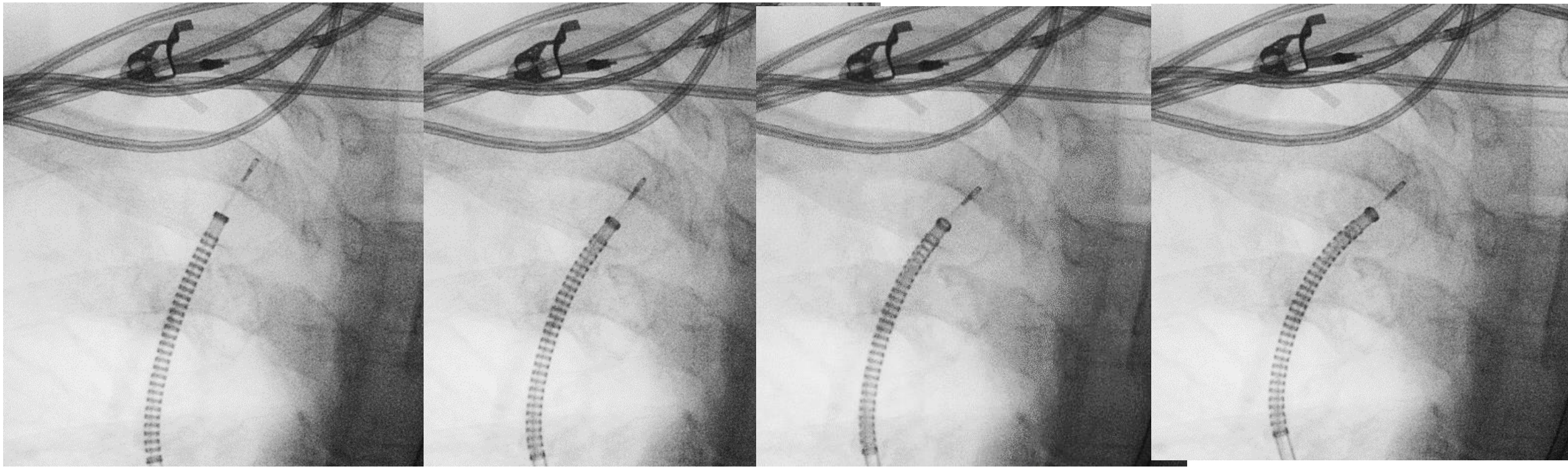
SPIN 2: CONFIRM TOOL-IN-LESION



BIOPSY

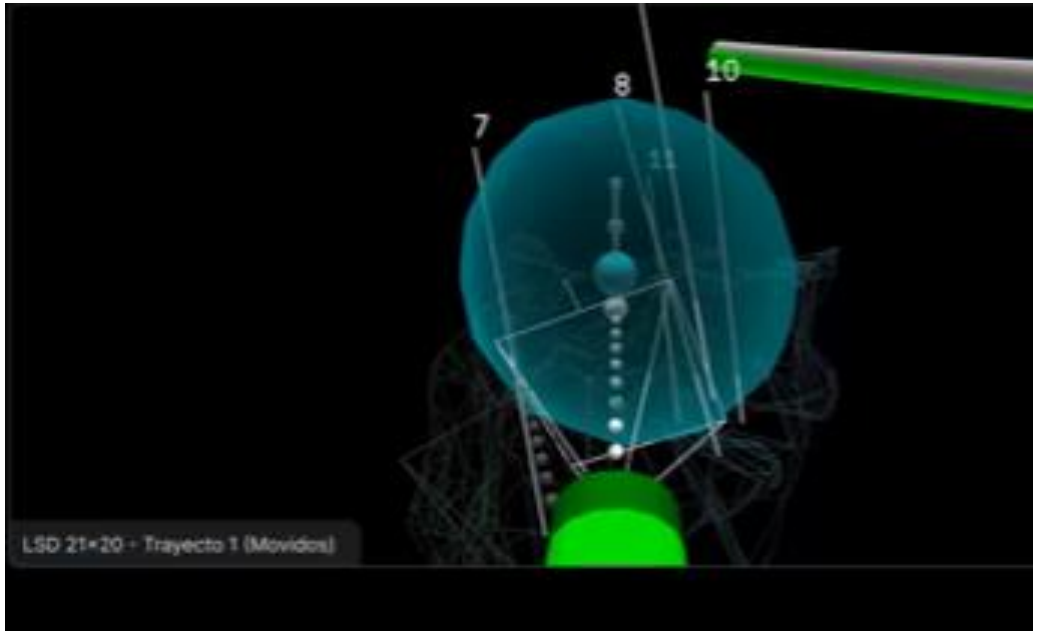


“CLOUDING”



“CLOUDING”

A
L
S
M
P
No hay ninguna cámara conectada
Ref. fluoroscopio
Distancia hasta el borde del objetivo
Cerca
1 mm
Lejos
13 mm
Radio de curvatura
18 mm


7
8
10
11
LSD 21•20 - Trayecto 1 (Movidos)

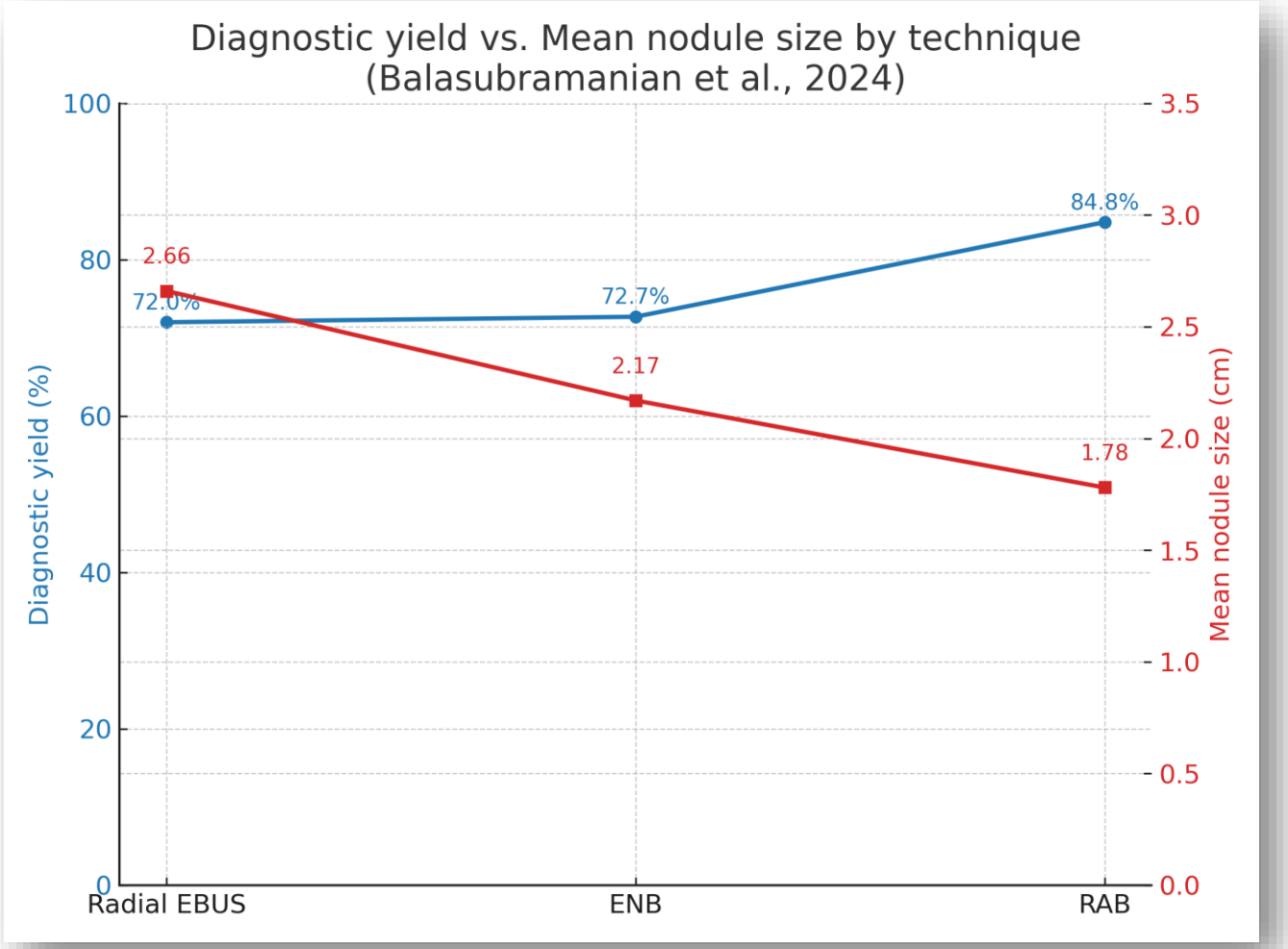
CRYOBIOPSY

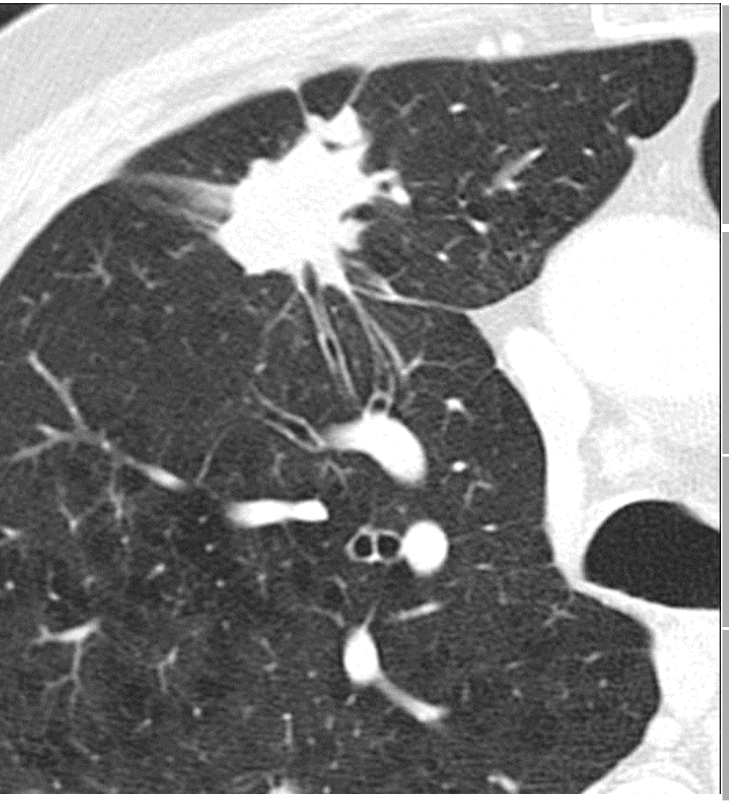
Courtesy form Thomas Gaisl (Zürich)

Diagnostic yield and safety of diagnostic techniques for pulmonary lesions: systematic review, meta-analysis and network meta-analysis

Prasanth Balasubramanian[1], David Abia-Trujillo[2], Alana Barrios-Ruiz[2], Ana Garza-Salas[2], Anoop Koratala[2], Nikitha C. Chandra[2], Alejandra Yu Lee-Mateus[2], Gonzalo Labarca[3,4] and Sebastian Fernandez-Bussy[2]

Eur Respir Rev 2024; 33: 240046





Technique	Diameter >2 cm	Solid	Bronchus sign +
Radial EBUS			
ENB			
RAB			

Technique	Diameter <2 cm	Sub-solid	Bronchus sign -
Radial EBUS			
ENB			
RAB			

	Tamaño de nódulo, mm (n= 48)			p
	< 10 (5)	10-19 (28)	20-30 (15)	
Tamaño lesión (mm), media (rango)	8,2 (7-9)	14,25 (10-19)	25,2 (21-30)	0,000
Tipo de nódulo, n (%)				0,697
Sólido	5 (100%)	25 (89%)	13 (87%)	
Subsólido/ Ground glass	0 (0%)	3 (11%)	2 (3%)	
Distancia de la pleura (mm), media (rango)	18,6 (0-35)	10,5 (0-34)	4,5 (0-29)	0,286
Localización axial, n (%)				0,042
Tercio interno	0 (0%)	4 (14,3%)	1 (6,7%)	
Tercio medio	4 (80%)	8 (28%)	2 (13,3%)	
Tercio externo	1 (20%)	16 (57,7%)	12 (80%)	
Signo del bronquio, n (%)				0,709
Si	4 (80%)	6 (21,4%)	5 (33,3%)	
No	1 (1%)	22 (78,6%)	10 (66,7%)	
Índice de Herder (%), media (rango)	13,3 (1,7-26,3)	60 (2,5-96,1)	71 (4,8-97,5)	0,176
Rendimiento diagnóstico	100% (3/3)	93% (26/28)	100% (14/14)	

Característica	N=48
Tipo de herramienta (%) Aguja de punción Aguja de punción + criosonda Aguja de punción + pinzas Criosonda	 1 (2,1%) 9 (18,7%) 1 (2,1%) 37 (77,1%)
TC con evidencia herramienta en lesión (tool-in-lesion) Si No	 47 (97,9%) 1 (2,1%)
Número de spin, media (rango)	1,76 (1-4)
EBUS radial Concéntrico Excéntrico No realizado	 5 (10,4%) 10 (20,8%) 33 (68,8%)
Complicaciones, n (%) Sangrado leve Sangrado moderado* Neumotórax	 7 (14,6%) 1 (2,1%) 1 (2,1%)

Diagnóstico por RAB	
Malignidad	34 (71%)
Adenocarcinoma	22 (64%)
Carcinoma escamoso	8 (24%)
Tumor carcinoide atípico	1 (3%)
Metástasis de neoplasia de colon	1 (3%)
Metástasis de neoplasia urotelial	1 (3%)
Metástasis de neoplasia de cérvix	1 (3%)
Benigno	10 (21%)
Silicosis	1 (10%)
Tuberculosis	1 (10%)
Inflamación granulomatosa	2 (20%)
Inflamación aguda/crónica	6 (60%)
No diagnóstico	4 (8,3%)

La rentabilidad diagnóstica (RD) global fue del **95%**, la sensibilidad del 95%, la especificidad del 100%, el valor predictivo positivo del 100% y el valor predictivo negativo del 81%.

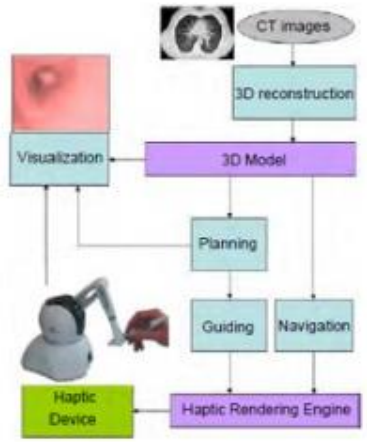
2011

2013

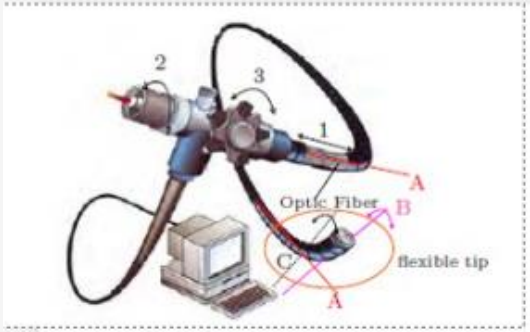
Vall d'Hebron
XXVII Curso de Avances Neumología Vall d'Hebron
18.45-19.05 Nuevas estrategias en el diagnóstico broncoscópico de la neoplasia pulmonar: navegación electromagnética
Dr. Luis Seijó
19.05-19.25 Utilización del broncoscopio ultrafino para el diagnóstico de neoplasia pulmonar
Dr. Antoni Rosell
AntoniRosell
Direcció Clínica de Malalties Respiratòries
Servei de Pneumologia
Hospital Universitari de Bellvitge
L'Hospitalet de Llobregat (Barcelona)
arosell@bellvitgehospital.cat
Generalitat de Catalunya
Departament de Salut
Institut Català de la Salut
Gerència Territorial
Metropolitana Sud
Bellvitge
Hospital Universitari

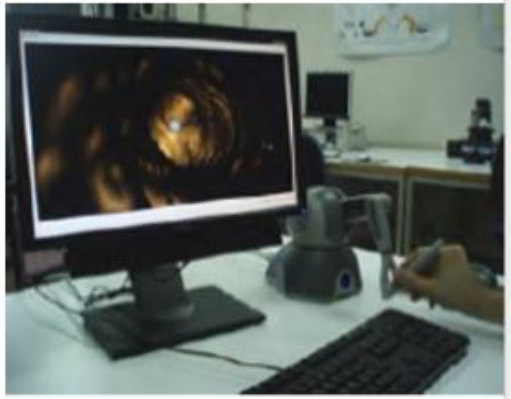
Haptic-based navigation for the virtual bronchoscopy ⋆

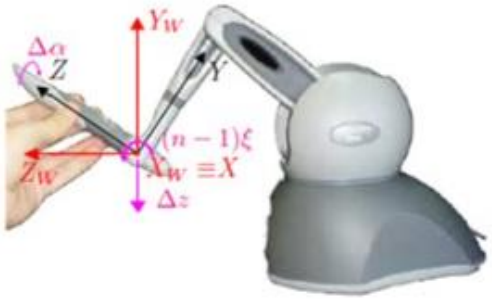
Paolo Cabras ⋆ Jan Rosell ⋆ Alexander Pérez ⋆,⋆⋆
Wilbert G. Aguilar ⋆ Antoni Rosell ⋆⋆⋆



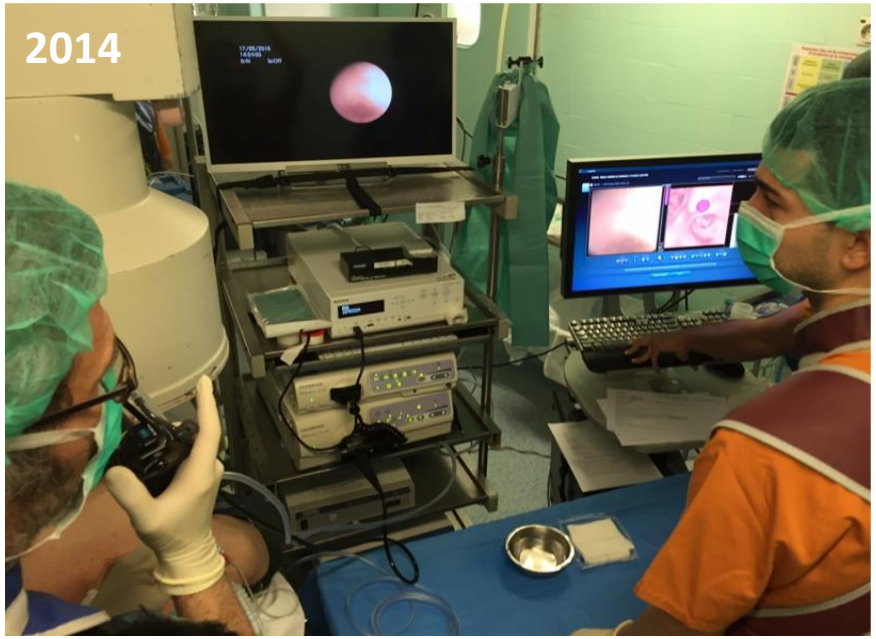
(www.ifac2011.org) ***International Federation for Authomatic Control***







2011

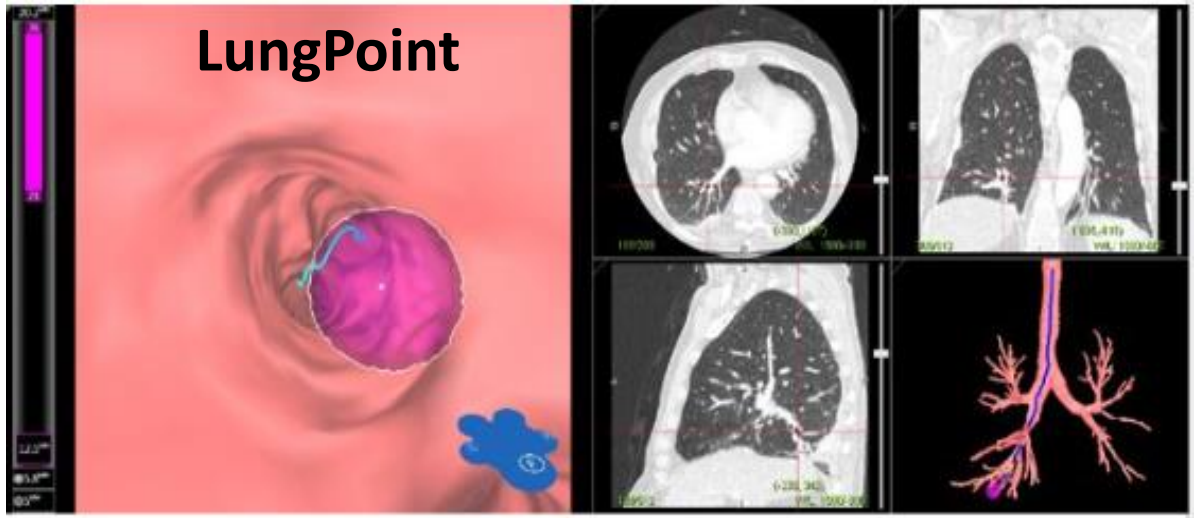

2014

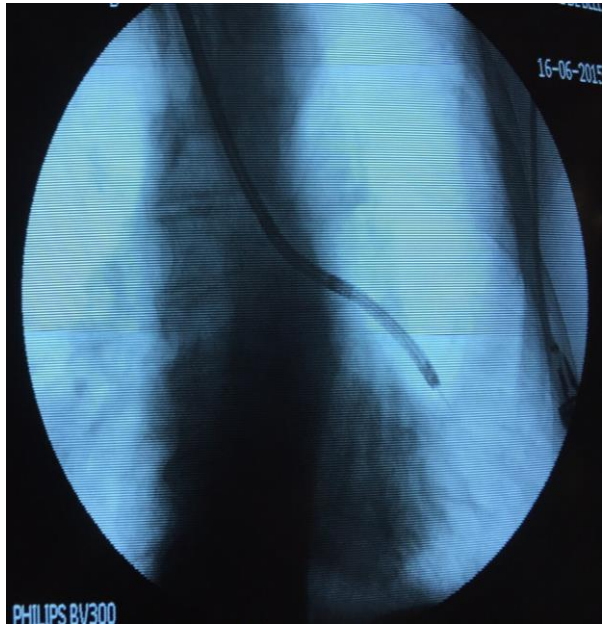
SESSIÓ HVH
27/4/2017

Estudi de la lesió pulmonar perifèrica

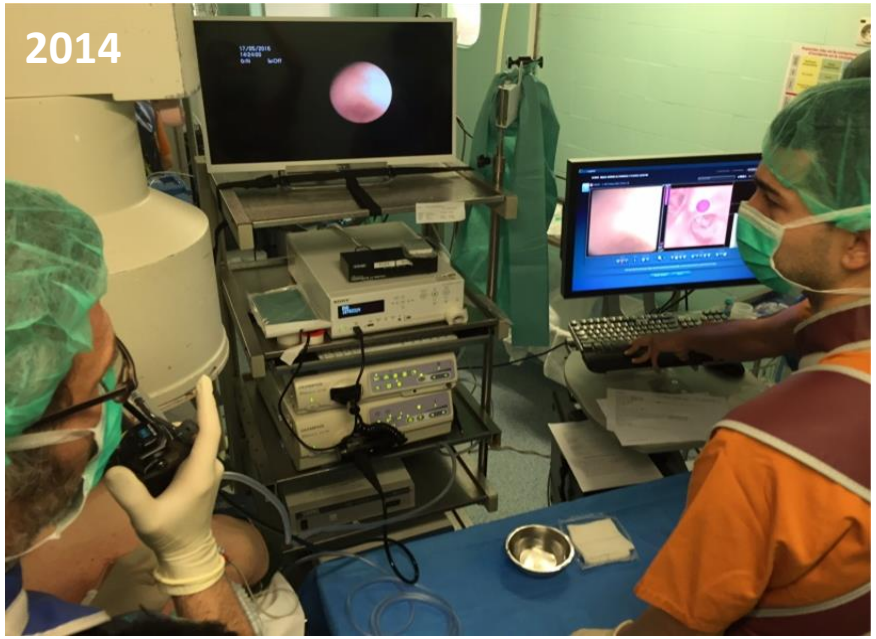
Antoni Rosell
Servei de Pneumologia
Hospital Universitari de Bellvitge

Generalitat de Catalunya Departament de Salut
Institut Català de la Salut Gerència Territorial Metropolitana Sud
Bellvitge Hospital Universitari



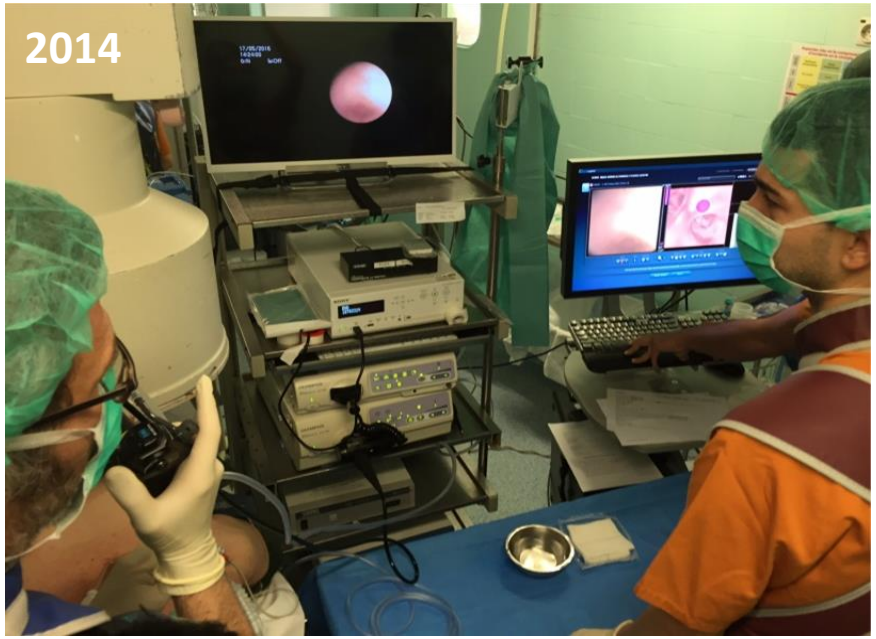


2011


2014

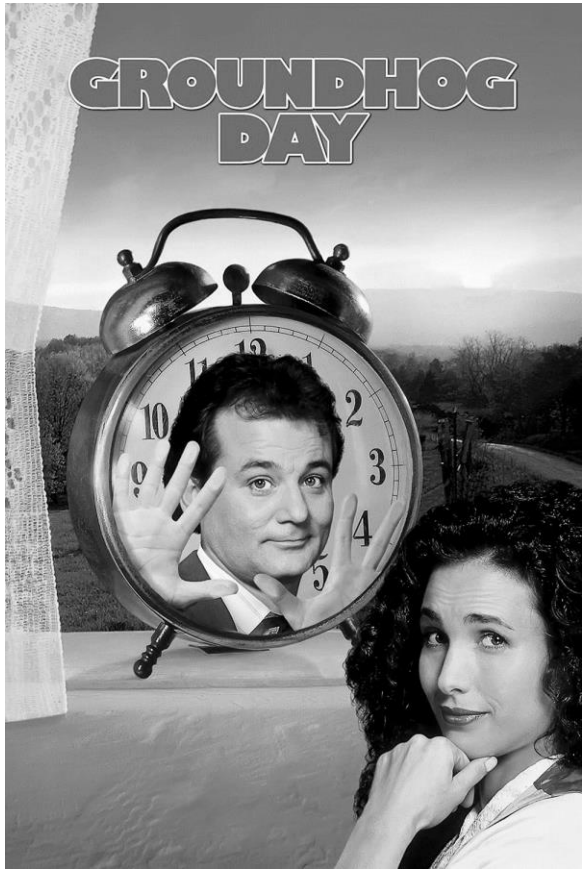
2019
REDMI NOTE 8 PRO
AI QUAD CAMERA

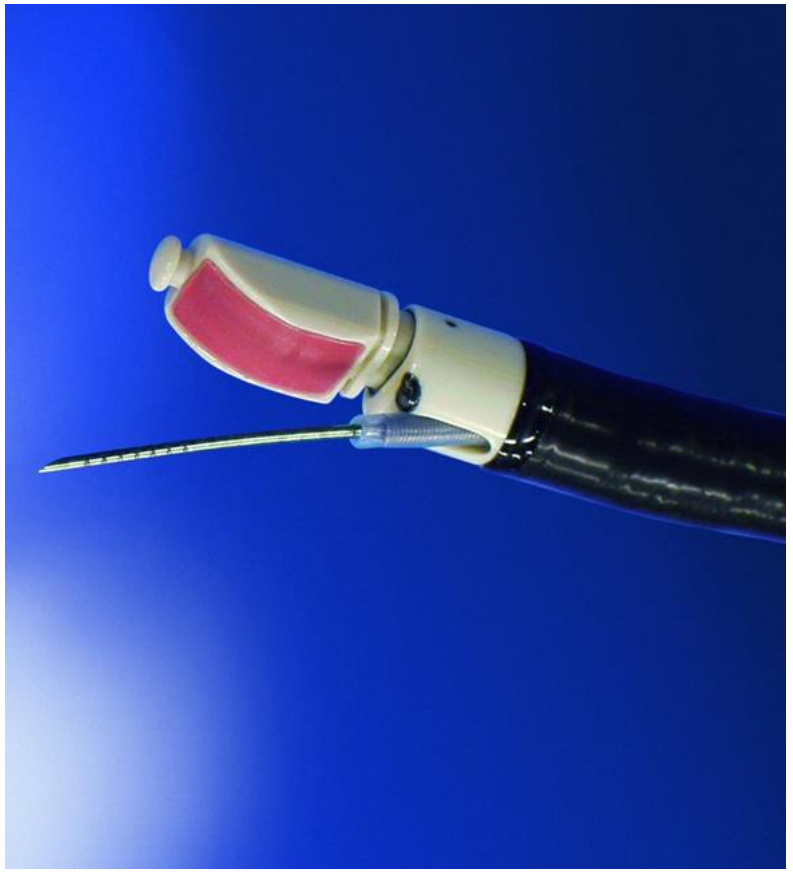
2011


2014

2019
REDMI NOTE 8 PRO
AI QUAD CAMERA

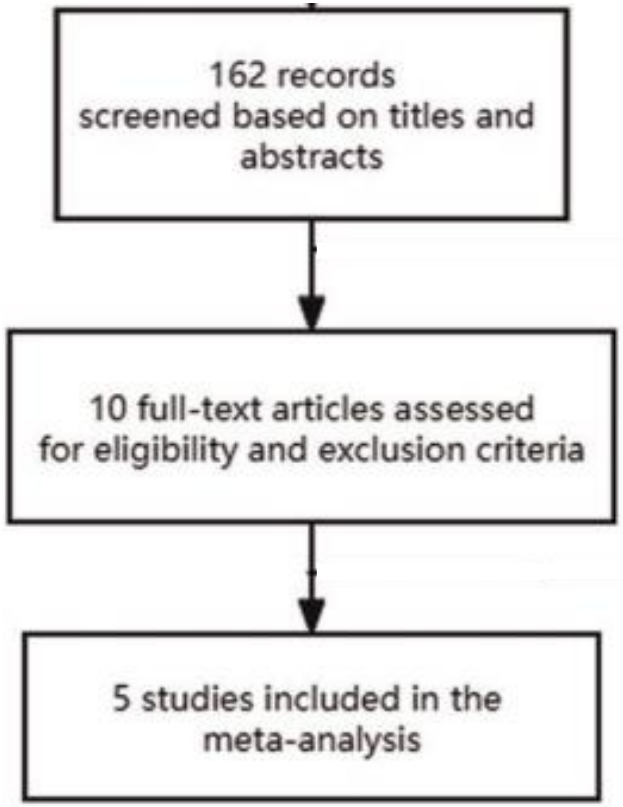
2025


GROUNDHOG
DAY



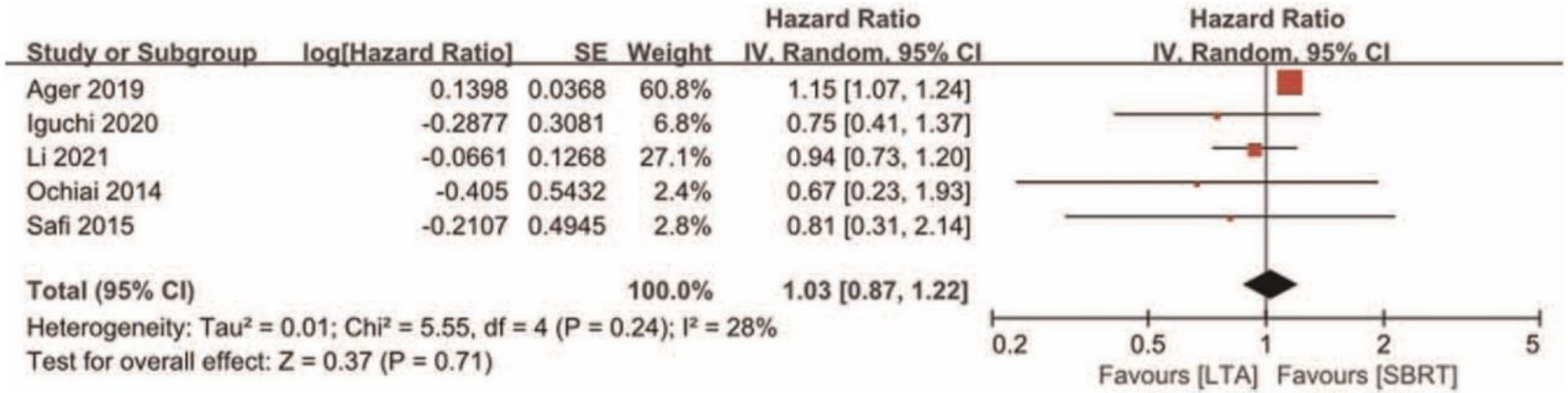
Therapeutic RAB

Percutaneous local tumor ablation *vs.* stereotactic body radiotherapy for early-stage non-small cell lung cancer: a systematic review and meta-analysis

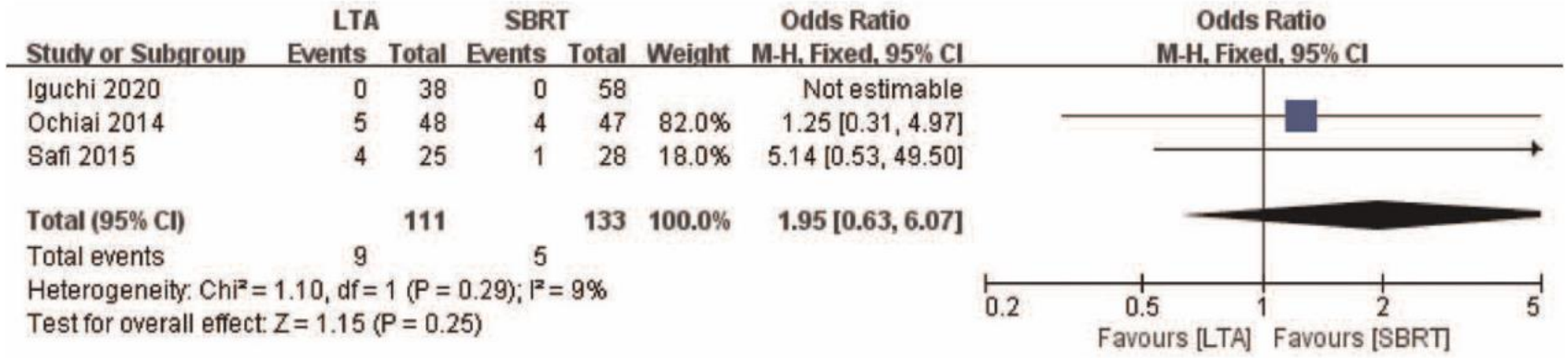


22,231 patients
in **RETROSPECTIVE COHORTS**

Overall Survival



Adverse effects

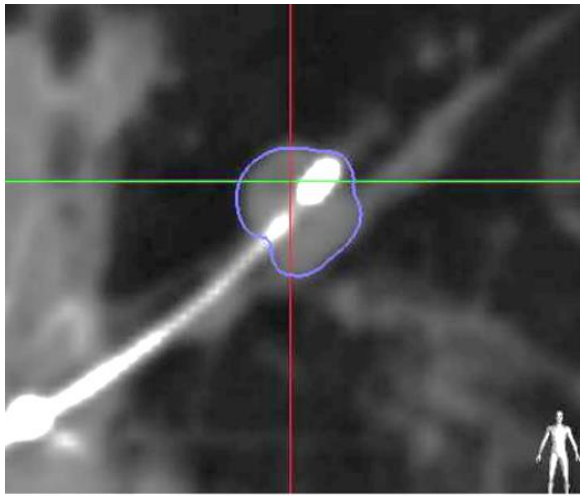


Transbronchial Microwave Ablation of Peripheral Lung Tumors

The NAVABLATE Study

J Bronchol Intervent Pulmonol
Volume 31, Number 2, April 2024

Lau K, et al.



Dessign: prospective, international, 2 centres

30 nodules:

- Diameter: 12.5 mm median
- Bronchus sign: 46.7%
- Location: periphery 63.3% and mid-zone 36.7%
- Not conntacting central airways, vessels, esophagus.. And 5 mm away from pleura

Navigation and tool-in-lesion confirmation: ENB (SD v7) + CBCT

Ablation:

- Cooled MW catheter with Thermosphere Technology (Medtronic)
- Number of ablations: 1 (73%), 2 (23%), 3 (4%)
- Power > 90%: 100W
- Time: mean 8 min

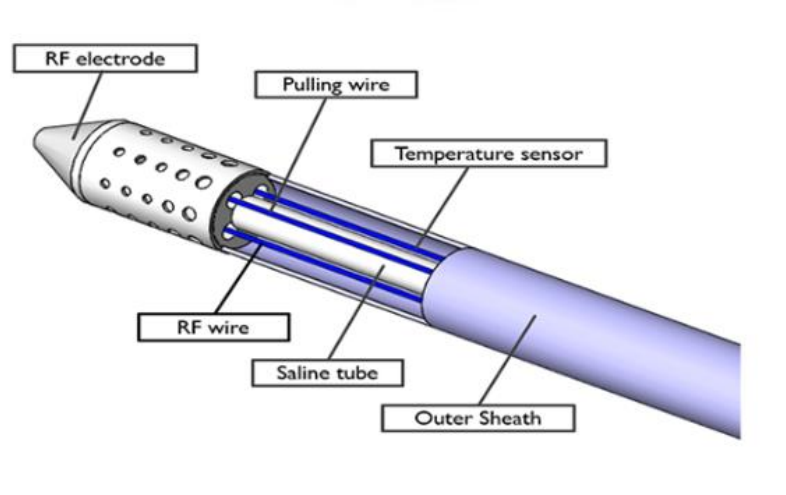
Results:

- AE (grade 3): 13.3%
- Technical success: 100%
- Technical efficacy: (CT at 1 month): 100%

Safety and efficacy of a novel transbronchial radiofrequency ablation system for lung tumours: One year follow-up from the first multi-centre large-scale clinical trial (BRONC-RFII)

Respirology. 2024;1–11

Zhong et al.



Dessign: prospective, national, multicenter (16)

130 nodules:

- Dimaeter: 18.7 mm median
- Vascular permeation (vessels > 3 mm in the PAZ): 40%
- Density: solid (45%), mixed (40%) and GGO (15%)

Navigation and tool-in-lesion confirmation: Archimedes + CBCT

Ablation:

- Cooled RF catheter (BroncAblate, Broncus Med)
- Number of ablations: + 27; 1 per session (1-6)
- Power: 20W (10-20W)
- Time: mean 19.4 min (10-96 min)

Results:

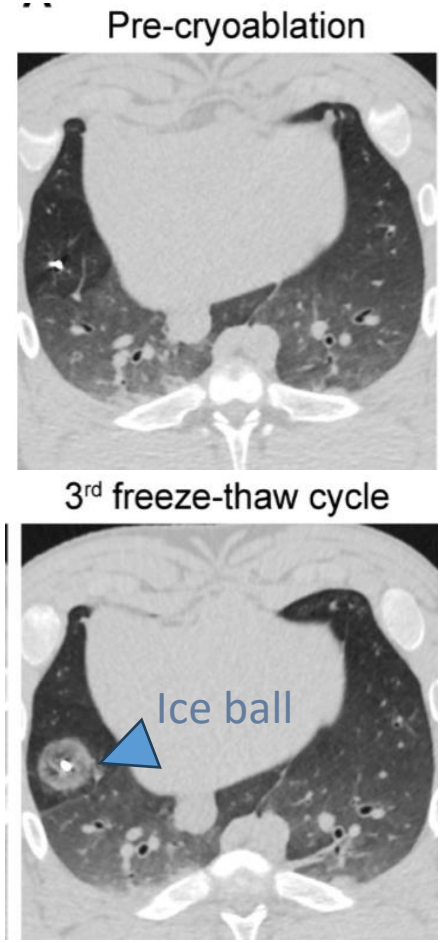
- AE: 13.3% (1 † haempotysis)
- Technical success: 99.35%
- Technical efficacy (CT/PET at 12 months): 90.5%

GGO 100%

Transbronchial cryoablation in peripheral lung parenchyma with a novel thin cryoprobe and initial clinical testing

Thorax 2024;79:633–643

Gu et al



Pig model

Dessign: Phase I Clinical Trial, feasibility and safety, 1 center

9 nodules:

- Diameter: 22.5 mm median
- Densitiy: solid (3), mixed (4), GGO (2)

Navigation and tool-in-lesion confirmation: ENB (SD) + r-EBUS + CBCT

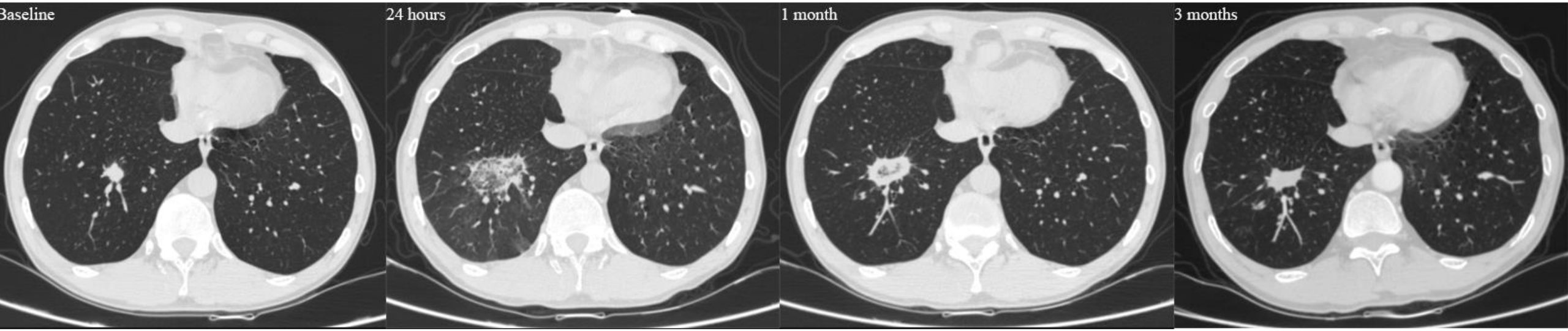
Ablation:

- Cryocatheter (Accutarget MediPharma, China): tip 8mm long, OD 1.9 mm
- Power: nitrogen (-150ºC in 2')
- Number of ablations: 10 +1 in the first patient
- Time: cicles of 7´freeze and 3´thaw

Results:

- AE: 1 mild (thrombocitopenia)
- Technical success: 100%
- Technical efficacy (TC at 3 m): 77%

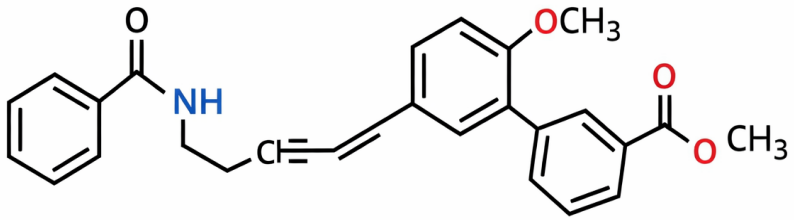
Imaging change——Solid nodule



Evolution of Targeted Therapies and Immunotherapy in NSCLC Guidelines (2000–2025)

Key milestones from American and European oncology guidelines, based on indexed medical literature (ESMO, NCCN/ASCO, NEJM, Annals of Oncology).

Year(s)	Key Guideline / Trial	Region	Stage	Systemic Therapy	Clinical Significance
2003–2005	Early EGFR-TKI trials (gefitinib, erlotinib)	Global	IV	Targeted therapy (EGFR-TKI)	First molecularly targeted treatments in metastatic NSCLC
2015–2016	NCCN / ESMO metastatic NSCLC updates	US / Europe	IV	EGFR/ALK inhibitors as first-line therapy	Targeted therapy becomes standard of care
2016–2018	ESMO / NCCN immunotherapy guidelines	US / Europe	IV	PD-1 / PD-L1 inhibitors	Immunotherapy replaces chemotherapy in selected patients
2017	PACIFIC trial (NEJM)	Global	III unresectable	Durvalumab consolidation	Immunotherapy enters potentially curable disease
2020	ADAURA trial (NEJM)	Global	IB–IIIA resected	Adjuvant osimertinib	Targeted therapy moves to early-stage NSCLC
2023–2025	ESMO / NCCN early-stage NSCLC updates	US / Europe	II–III (selected IB)	Perioperative immunotherapy	Progressive integration in early-stage disease



Nintedanib

Oral multikinase inhibitor targeting VEGFR 1–3, FGFR 1–3, and PDGFR α/β.

Pulmonary fibrosis:

- Approved for idiopathic pulmonary fibrosis (IPF) and progressive fibrosing interstitial lung disease.
- Slows the decline in forced vital capacity (FVC); does not reverse established fibrosis.

Conclusions

- **Robotic-assisted bronchoscopy (RAB) represents a paradigm shift**, comparable to the introduction of EBUS in 2004, redefining the diagnostic approach to peripheral pulmonary lesions.

- **When combined with cone-beam CT (CBCT)**, RAB achieves high precision, accuracy, and diagnostic yield, positioning it as a **reference technique for pulmonary nodules <15 mm** or located in anatomically challenging regions.

- **Endoscopic ablative therapies**, integrated with targeted therapies or immunotherapy, may offer a **cost-effective alternative to stereotactic body radiotherapy (SBRT)** for selected pulmonary nodules **<20 mm**, expanding minimally invasive treatment strategies in early lung cancer