

15th MADRID
on **Lung** CONGRESS
CANCER
23&24
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#15CongressGeCP

Radiotherapy in early stages: only in unfit patients?

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CLINICAL GUIDELINES

NCCN National Comprehensive Cancer Network®

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

Non-Small Cell Lung Cancer

Version 5.2023 — November 8, 2023

ESMO GOOD SCIENCE BETTER MEDICINE BEST PRACTICE

ESMO > Guidelines

Guidelines News

WJCO World Journal of Clinical Oncology

Submit a Manuscript: <https://www.f6publishing.com> World J Clin Oncol 2022 April 24; 13(4): 237-266

DOI: 10.5306/wjco.v13.i4.237 ISSN 2218-4333 (online)

GUIDELINES

GOECP/SEOR radiotherapy guidelines for non-small-cell lung cancer

Clinical and Translational Oncology (2019) 21:3-17
<https://doi.org/10.1007/s12094-018-1978-1>

CLINICAL GUIDES IN ONCOLOGY

CrossMark

SEOM clinical guidelines for the treatment of non-small cell lung cancer (2018)

SBRT is recommended for medically inoperable NSCLC patients with node negative tumors ≤ 5 cm

Stereotactic body radiotherapy for early-stage non-small cell lung cancer: a multicentre study by the Oncologic Group for the Study of Lung Cancer (Spanish Radiation Oncology Society)

Abstract

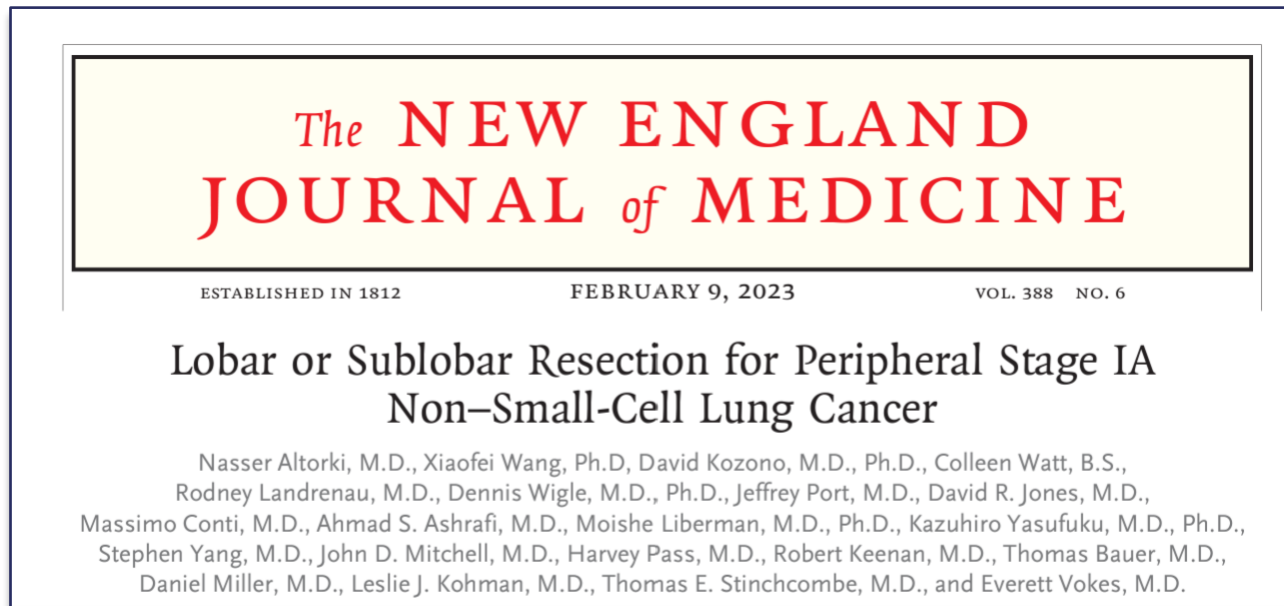
Purpose/objective(s) Stereotactic body radiotherapy (SBRT) has become the standard of care for patients with medically inoperable early-stage non-small cell lung cancer (NSCLC) and for patients who refuse surgery. The aim of this study was to evaluate the effectiveness and safety of primary SBRT in patients with early-stage NSCLC.

Materials/methods Retrospective multicenter study of 397 patients (416 primary lung tumours) treated with SBRT at 18 centres in Spain. 83.2% were men. The median age was 74.4 years. In 94.4% of cases, the tumour was inoperable. The pathological report was available in 54.6% of cases. SPSS vs 22.0. was used to perform all statistical analyses.

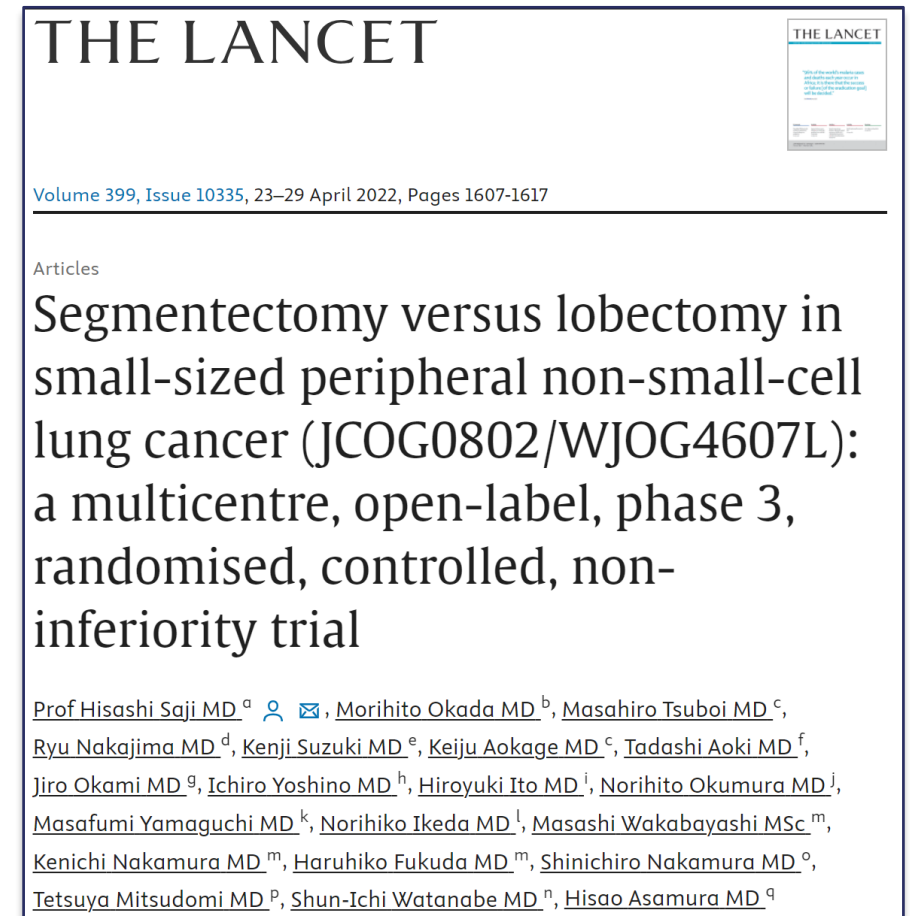
Results Complete response was obtained in 53.6% of cases. Significant prognostic factors were standard CT planning ($p=0.014$) and 4D cone beam CT ($p=0.000$). Acute and chronic toxicity \geq grade 3 was observed in 1.2% of cases. At a median follow-up of 30 months, local relapse was 9.6%, lymph node relapse 12.8%, distant metastasis 16.6%, and another lung tumour 11.5%. Complete response was the only significant prognostic factor for local relapse ($p=0.012$) and distant metastasis ($p=0.001$). The local relapse-free survival was 88.7%. The overall survival was 75.7%. The cancer-specific survival was 92.7%. The disease-free survival was 78.7%.

Conclusion SBRT is an effective and well-tolerated treatment option for patients with early-stage lung cancer who are not suitable for surgery. The most important prognostic factor for local and distant recurrence was complete response, which in our sample depended on the type of CT planning and the IGRT technique.

Both trials reported non-inferiority of the surgical procedures



Altorki N. N Engl J Med.2023



Saji H. Lancet. 2022

Operable stage I NSCLC: ¿Surgery is better than SBRT?

ORIGINAL ARTICLE



Prospective Cohort Study to Compare Long-Term Lung Cancer-Specific and All-Cause Survival of Clinical Early Stage (T1a-b; ≤ 20 mm) NSCLC Treated by Stereotactic Body Radiation Therapy and Surgery

Claudia I. Henschke, PhD, MD,^{a,b,*} Rowena Yip, PhD, MPH,^a Qi Sun, MD,^{a,c} Pengfei Li, MD,^{a,c} Andrew Kaufman, MD,^d Robert Samstein, MD,^e Cliff Connery, MD,^f Leslie Kohman, MD,^g Paul Lee, MD,^h Henry Tannous, MD,ⁱ David F. Yankelevitz, MD,^a Emanuela Taioli, MD, PhD,^j Kenneth Rosenzweig, MD,^e Raja M. Flores, MD, MPH^d; for the I-ELCAP and IELCART Investigators**

Henschke CI. J Thorac Oncol. 2023



Stereotactic ablative radiotherapy for operable stage I non-small-cell lung cancer (revised STARS): long-term results of a single-arm, prospective trial with prespecified comparison to surgery

Joe Y Chang, Reza J Mehran, Lei Feng, Vivek Verma, Zhongxing Liao, James W Welsh, Steven H Lin, Michael S O'Reilly, Melenda D Jeter, Peter A Balter, Stephen E McRae, Donald Berry, John V Heymach, Jack A Roth, on behalf of The STARS Lung Cancer Trials Group*

Chang JY. Lancet Oncol. 2021

Two prospective studies have been published, with long follow-up, comparing SBRT Vs. Surgery

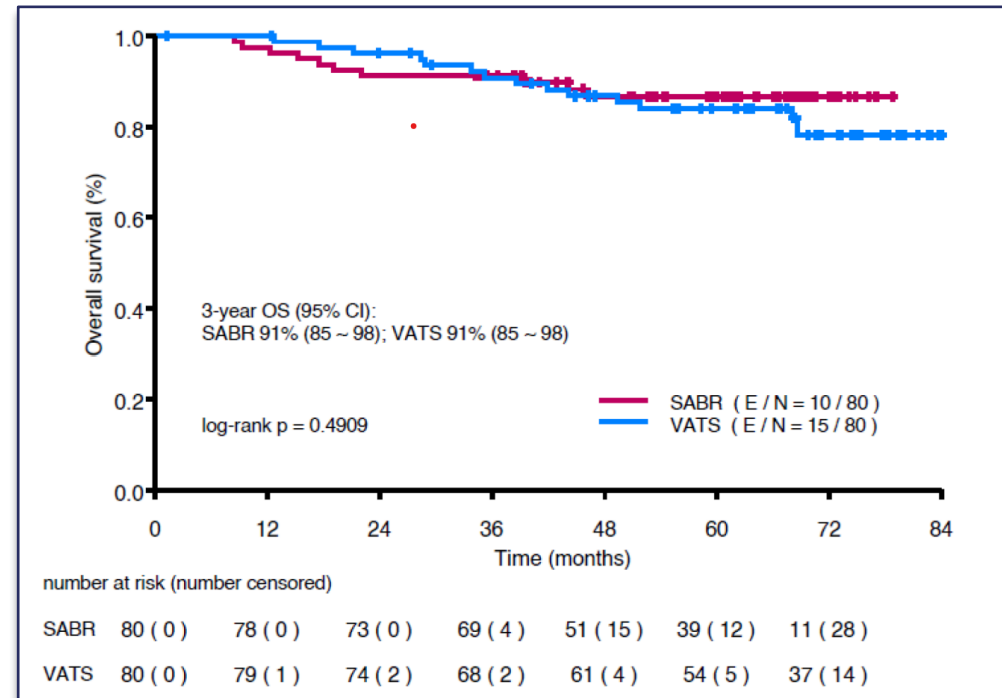


Operable stage I NSCLC: ¿Surgery is better than SBRT?

Tumors ≤ 3 cm

5y-OS:
SBRT 87% ; VATS 84%

5y-CSS:
SBRT 92% ; VATS 93%



No difference in NSCLC-specific survival and OS



Operable stage I NSCLC: ¿Surgery is better than SBRT?

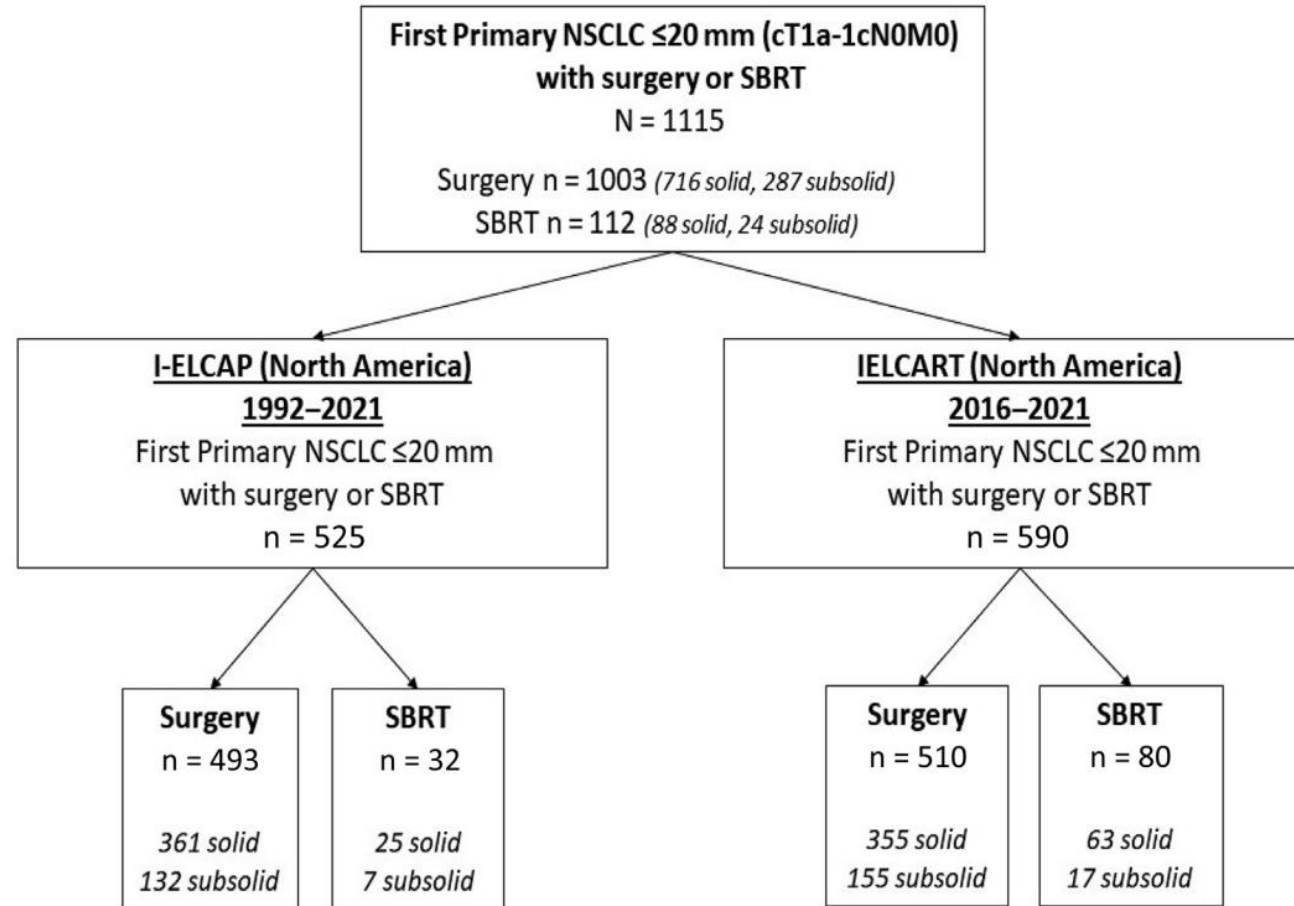
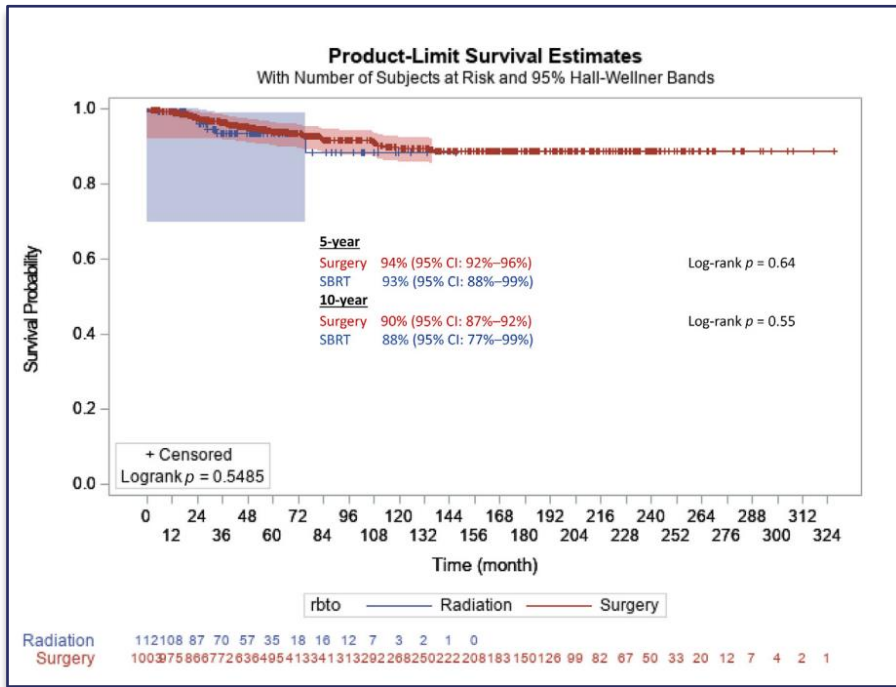


Figure 1. Flow diagram of the study participants. I-ELCAP, International Early Lung Cancer Action Program; IELCART, Initiative for Early Lung Cancer Research on Treatment; SBRT, stereotactic body radiation therapy.



Operable stage I NSCLC: ¿Surgery is better than SBRT?

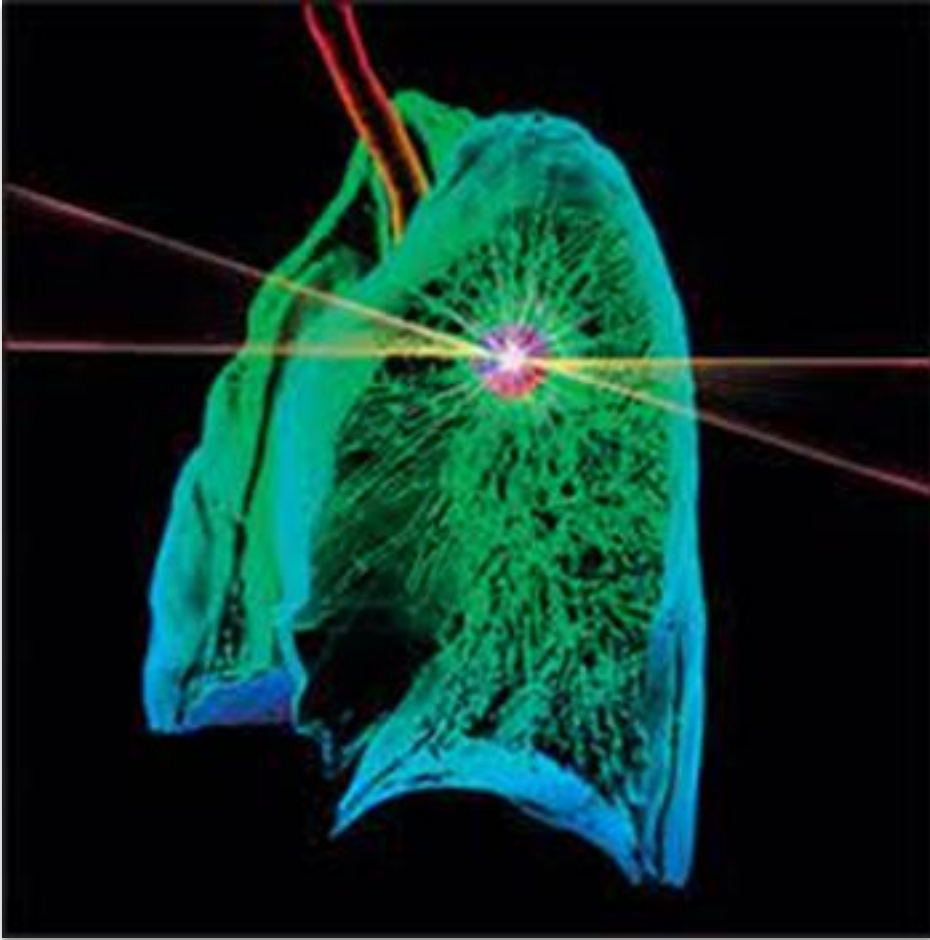
Tumors ≤ 2 cm



Cohorts	SBRT vs. Surgery		
	1:1		
Lung cancer mortality	n	Hazard Ratio (95% CI)	p Value
Combined (I-ELCAP + IELCART)			
Unadjusted	1115	1.27 (0.58-2.78)	0.55
Matching	220 or 110 pairs	0.60 (0.14-2.51)	0.48
I-ELCAP			
Unadjusted	525	1.48 (0.54-4.10)	0.45
Matching	64 or 32 pairs	1.00 (0.20-4.96)	1.00
IELCART			
Unadjusted	590	1.56 (0.44-5.46)	0.49
Matching	156 or 78 pairs	0.00 (0.00-)	1.00
Overall	n	Hazard Ratio (95% CI)	p Value
Combined (I-ELCAP + IELCART)			
Unadjusted	1115	2.38 (1.62-3.49)	<0.0001
Matching	220 or 110 pairs	1.12 (0.58-2.15)	0.74
I-ELCAP			
Unadjusted	525	2.60 (1.54-4.38)	0.0003
Matching	64 or 32 pairs	1.00 (0.42-2.40)	1.00
IELCART			
Unadjusted	590	2.59 (1.45-4.62)	0.001
Matching	156 or 78 pairs	1.29 (0.48-3.45)	0.62

No difference in NSCLC-specific survival and OS

Toxicity of SBRT



	Grade 2	Grade 3
Dyspnoea	0	1 (1%)
Pneumonitis	1 (1%)	0
Pulmonary fibrosis	1 (1%)	0

All adverse events of any grade except for grade 1 are shown. There were no grade 4 or 5 adverse events. SABR=stereotactic ablative radiotherapy.

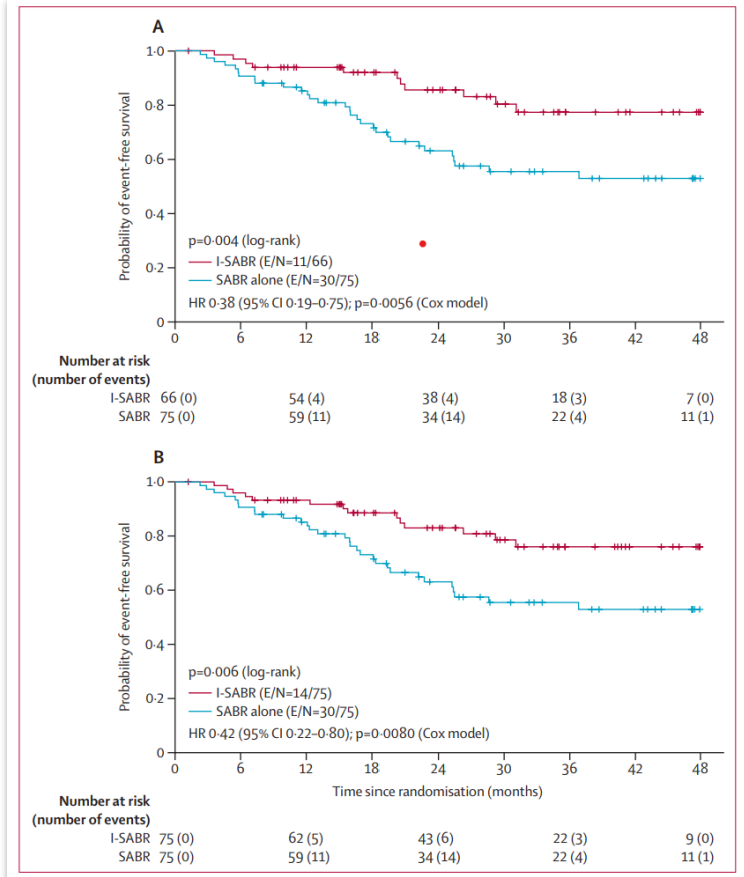
Table 2: Toxicity of SABR in the 80 evaluable patients



Stereotactic ablative radiotherapy with or without immunotherapy for early-stage or isolated lung parenchymal recurrent

N=141

Tumour size, cm	I-SABR (E/N=11/66)	SABR alone (E/N=30/75)
Median	1.7 (1.3-2.2)	2.0 (1.4-2.6)
≤2 cm	51 (68%)	35 (53%)
>2 to ≤3 cm	16 (21%)	22 (33%)
>3 to ≤5 cm	8 (11%)	9 (14%)
Volume of gross tumour volume, mL	4.2 (2.4-9.1)	6.4 (2.5-15.1)
Lung cancer history	I-SABR (E/N=11/66)	SABR alone (E/N=30/75)
Newly diagnosed	63 (84%)	50 (76%)
Recurrent	12 (16%)	16 (24%)
Single lesion	74 (99%)	62 (94%)
Two lesions	1 (1%)	4 (6%)



	Grade 2		Grade 3	
	SABR	I-SABR	SABR	I-SABR
Acute kidney injury	1
Adrenal insufficiency	1
Anorexia	1	..	..	..
Arthralgia	..	2	..	..
Blurred vision	..	1	..	..
Conjunctivitis	1
Diarrhoea	..	1	..	..
Dyspnoea	1
Fatigue	1	7	..	2
Hyperthyroidism	..	1	..	1
Hypoxia	1
Hepatitis (acute)	1
Myalgia	..	1	..	..
Oral mucositis	..	1	..	..
Oral dysesthesia	..	1	..	..
Pneumonia (infectious)	1
Pneumonitis	1	2	..	..
Pruritus	..	2	..	..
Rash	..	2	..	1
Xerophthalmia	..	1	..	..
Xerostomia	..	1	..	..

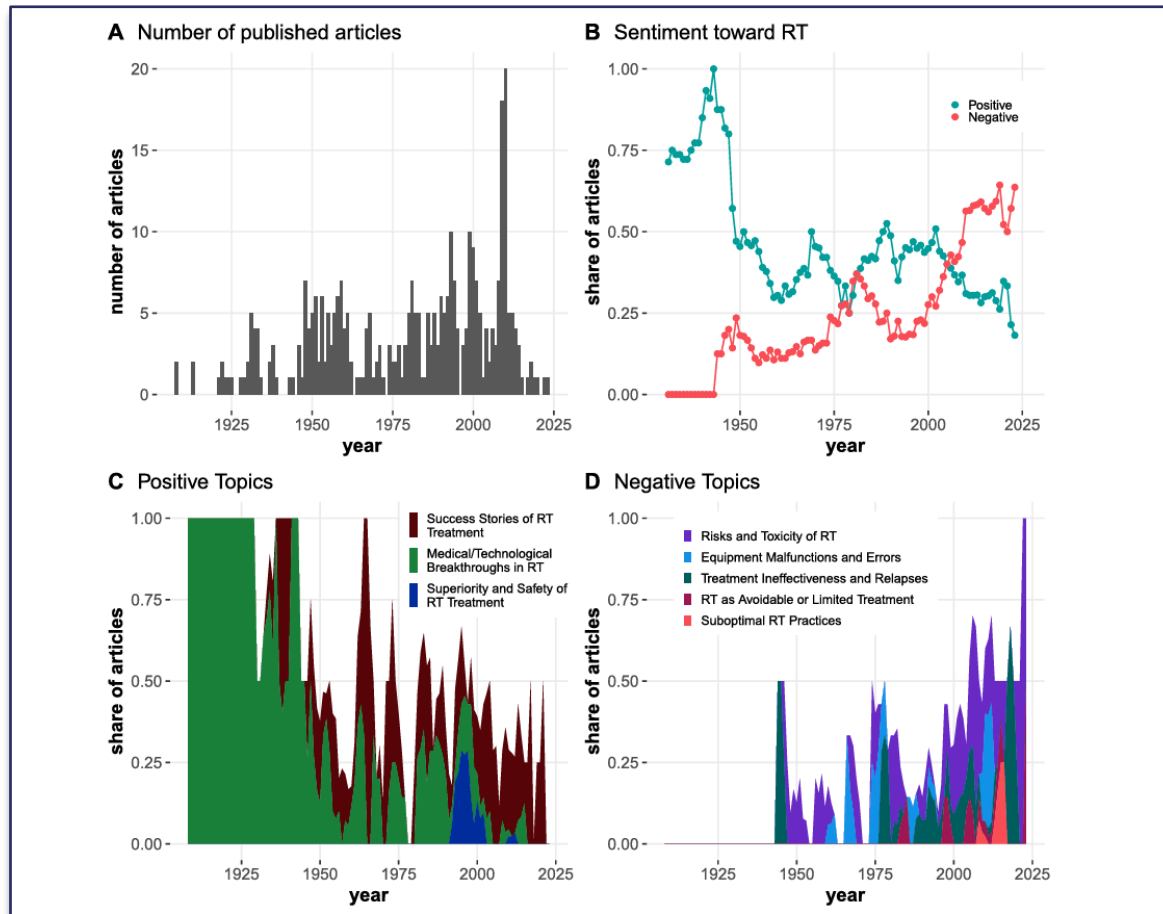
Data are number of events. No grade 4-5 adverse events occurred.
 I-SABR=stereotactic ablative radiotherapy with immunotherapy.
 SABR=stereotactic ablative radiotherapy.

Table 2: Grade 2 or higher adverse events possibly, probably, or definitely related to therapy

I-SABR significantly improved PFS (53% vs. 77%) at 4 years in, with tolerable toxicity (Grade 3: 15%)



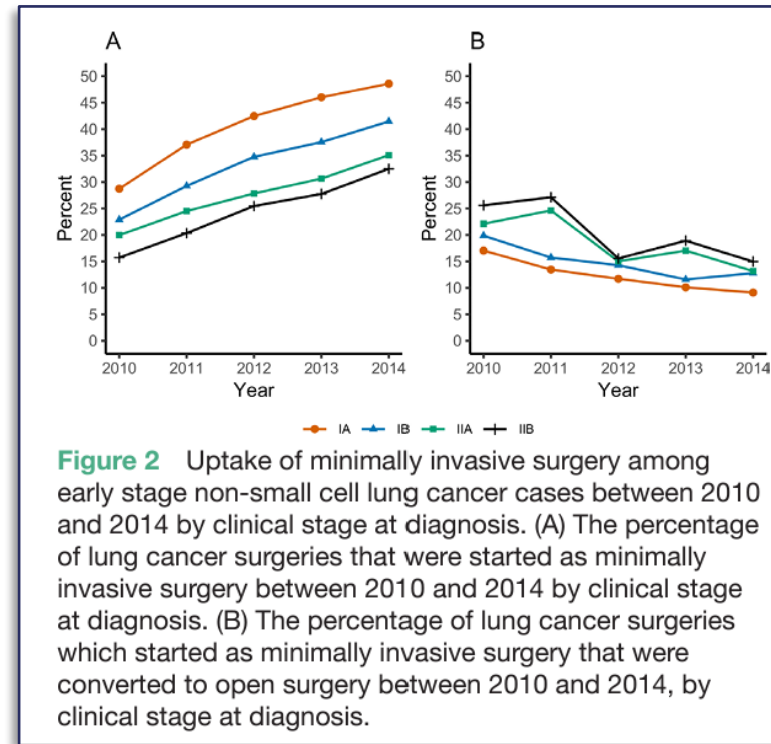
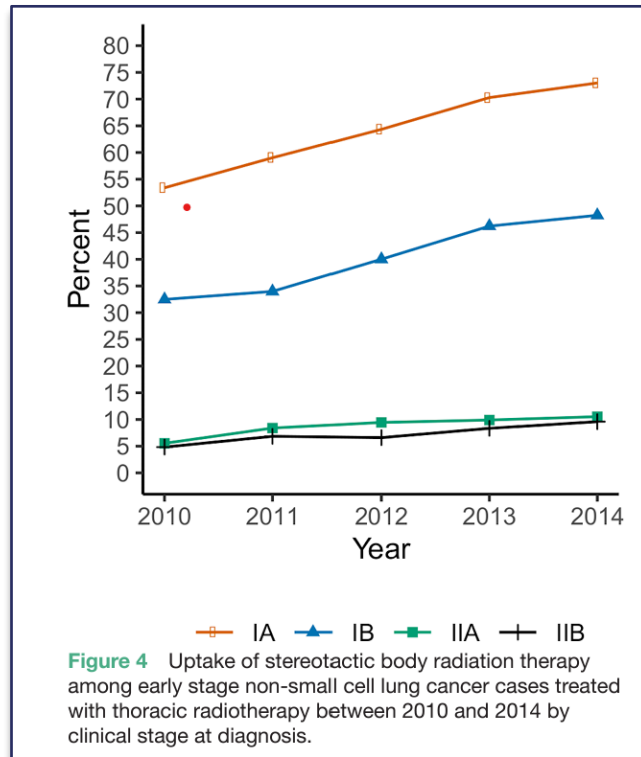
The rise of negative portrayals of radiation oncology: A textual analysis of media news



- Radiotherapy sentiment in @NYTimes is eye-opening.
- Since 2009, over half of articles show negative bias towards RT, while only 1/4 are positive.
- Despite major advancements in tech like MR-Linac, adaptive RT, & heavy ions, media celebration is scarce.



Uptake of minimally invasive surgery and stereotactic body radiation therapy for early stage non-small cell lung cancer in the USA



Between 2010 and 2014, uptake of MIS and SBRT among early stage NSCLC significantly increased, while the rate of conversions to open surgery significantly decreased



Can SBRT save the ?

Clinical Oncology 34 (2022) e105–e106

Contents lists available at [ScienceDirect](#)

 **Clinical Oncology** 

journal homepage: www.clinicaloncologyonline.net

Letter

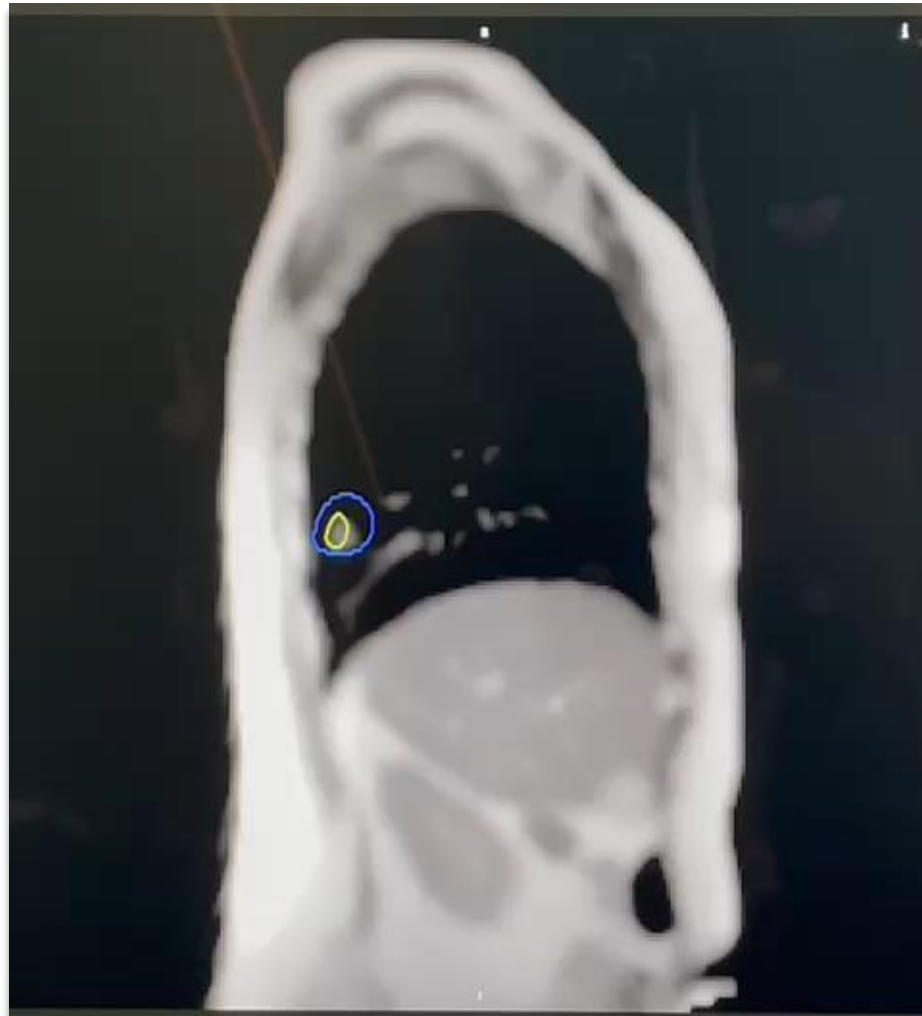
Creating a Sustainable Future of Radiotherapy Following COP26: A Case for Lung Stereotactic Ablative Radiotherapy Over Surgery? 

- This indicated that SABR is about 40% of the cost of lobectomy, comparable with findings in other countries of 50% or 80%.
- SABR treatments use about 1% of the energy of a 2 h theatre operation, reducing financial and environmental costs.
- Surgical operations also have additional consumables and single-use items, anaesthetic gases and high electricity usage
- **SABR as the cheaper option will probably have less environmental impact.**



**Mujer 74 años, nódulo pulmonar, 1,2 cm, que rechaza la cirugía:
SBRT, 30 Gy, sesión única**

Mujer 74 años, nódulo pulmonar, 1,2 cm, que rechaza la cirugía:
SBRT, 30 Gy, sesión única





Clinical Trials of SBRT Vs. Surgery

Ongoing randomized trials comparing surgery and SBRT for stage I NSCLC

Study title	Dose of SBRT	Surgical procedure	Follow-up period	Primary outcome
Surgery versus stereotactic body radiation therapy for stage up to IA2 (T1a or T1b) non-small cell lung cancer (RAXSIA)	Not described	Anatomical segmentectomy, lobectomy, or bilobectomy	5 years	Disease-free survival
Radical resection versus ablative stereotactic radiotherapy in patients with operable Stage I NSCLC (POSTILV)	55 Gy	Complete resection	2 years	Loco-regional control
SBRT (stereotactic body radiation therapy) versus surgery in high-risk patients with early-stage lung cancer	Not described	Not described	Not applicable	Treatment selection model for high-risk early-stage NSCLC patient population
JoLT-Ca sublobar resection (SR) versus stereotactic ablative radiotherapy (SAbR) for lung cancer (STABLE-MATES)	54 Gy	Sublobar resection	3 years	Overall survival
Veterans affairs lung cancer surgery or stereotactic radiotherapy (VALOR)	50–57.5 Gy	Anatomical resection	5 years	Overall survival



Conclusions

- In operable stage I (<3 cm) NSCLC patients, the process of treatment decision-making is very complex.
- The choice between these treatment modalities (Surgery Vs. SBRT) should be personalized and tailored to the unique circumstances of each patient.
- Involving a thorough consideration of various factors such as patient factors, tumor characteristics, location, patient comorbidities, preferences, and potential risks associated with each treatment.

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Muchas Gracias