Local Therapy Issues

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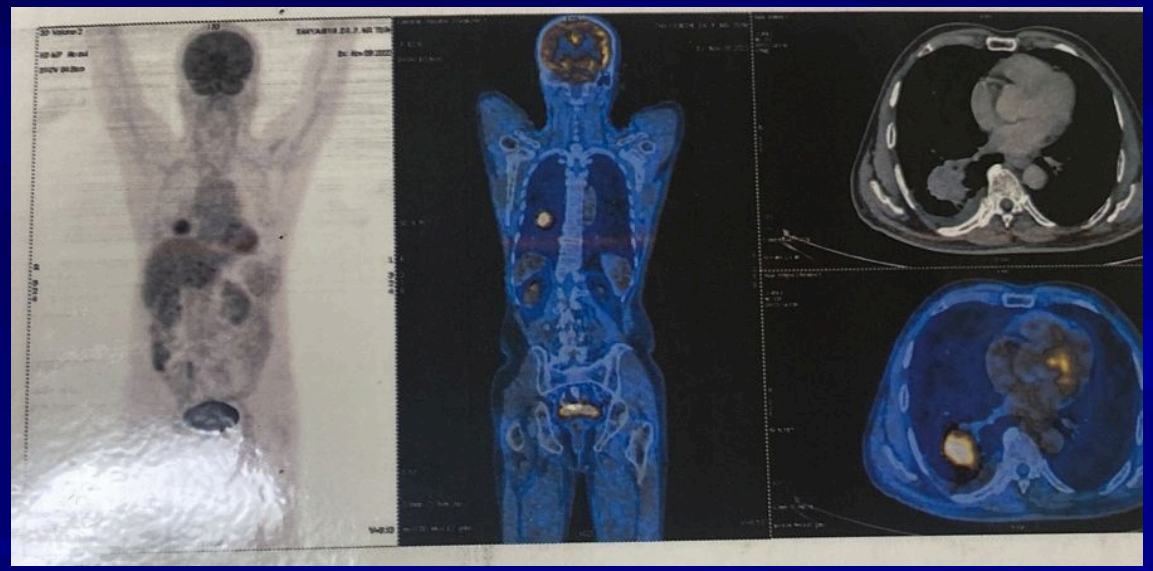
Early-Stage versus Surgery consideration

T/M	Label	N0	N1	N2	N3
T1	T1a ≤1	IA1	IIB	IIIA	IIIB
	T1b >1-2	IA2	IIB	IIIA	IIIB
	T1c >2-3	IA3	IIB	IIIA	IIIB
T2	T2a *Cent, Visc Pl*	IB	IIB	IIIA	IIIB
	T2a >3-4	IB	IIB	IIIA	IIIB
	T2b >4-5	IIA	IIB	IIIA	IIIB
T3	T3 >5-7	IIB	IIIA	IIIB	IIIC
	T3 *Inv*	IIB	IIIA	IIIB	IIIC
	T3 *Satell*	IIB	IIIA	IIIB	IIIC
T4	T4 >7	IIIA	IIIA	IIIB	IIIC
	T4 *Inv*	IIIA	IIIA	IIIB	IIIC
	T4 *Ipsi Nod*	IIIA	IIIA	IIIB	IIIC
M1	M1a *Contr Nod*	IVA	IVA	IVA	IVA
	M1a *Pl Dissem*	IVA	IVA	IVA	IVA
	M1b *Single*	IVA	IVA	IVA	IVA
	M1c *Multi*	IVB	IVB	IVB	IVB

All Panellists

- What Proportion?
- Fit and Operable?

75 year old PET-CT: cT1cN0M0



MANAGEMENT?

Choices of Approaches?

- SBRT
- RFA/IGTA

- Surgery

- Role of Neoadjuvant Systemic therapies (?Checkmate 816)

FUNCTIONAL EVALUATION?

SBRT vs RFA

Original Article

Comparison of stereotactic body radiotherapy and radiofrequency ablation for early-stage non-small cell lung cancer: a systematic review and meta-analysis

Ran Zhang[1,2#], Jingjing Kang[1#], Shengxiang Ren[2], Ligang Xing[3], Yaping Xu[1]

[1]Department of Radiation Oncology, Shanghai Pulmonary Hospital, School of Medicine, Tongji University, Shanghai, China; [2]Department of

SBRT vs RFA

- 87 SBRT studies (12,811 patients) and 18 RFA studies (1,535 patients)
- Compared with RFA, SBRT has superior LC and long-term OS rates but similar short-term OS rates
- Prospective randomized trials with large sample sizes comparing the efficacy of SBRT and RFA are warranted

- End of the Road for RFA/ IGTA ?
- Addition of Immunotherpy?

Local Recurrence after SBRT

Review > Int J Radiat Oncol Biol Phys. 2022 May 1;113(1):40-59. doi: 10.1016/j.ijrobp.2021.11.027. Epub 2021 Dec 5.

A Systematic Review Into the Radiologic Features Predicting Local Recurrence After Stereotactic Ablative Body Radiotherapy (SABR) in Patients With Non-Small Cell Lung Cancer (NSCLC)

Katherine Lee [1], Tue Le [2], Eric Hau [3], Gerard G Hanna [4], Harriet Gee [5], Shalini Vinod [6], Salma Dammak [7], David Palma [8], Anselm Ong [9], Roland Yeghiaian-Alvandi [10], Jacqueline Buck [11], Rebecca Lim [12]

Affiliations + expand

PMID: 34879247 DOI: 10.1016/j.ijrobp.2021.11.027

Abstract

Purpose: Posttreatment surveillance for local recurrence (LR) after stereotactic ablative body radiotherapy (SABR) can include both fluorodeoxyglucose-positron emission tomography (FDG-PET) and computed tomography (CT). Radiation-induced lung injury shares a similar appearance to LR after treatment, making the detection of LR on imaging difficult for clinicians. We aimed to summarize

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Evidence for SBRT

- STARS trial
- ROSEL trial
- ACOSOG Z4099 trial

- All were closed early because of slow accrual
- Major Flaws: SBRT an alternative even in medically fit patients

Sx vs SBRT

- Large Databases/Propensity matched studies/MA
- Surgery Preferred

- SBRT/RFA/IGTA for those not suitable for surgery due to comorbid diseases or in patients who refuse surgery

Ongoing RCTs

- STAGE trial (NCT02997449)
- Toronto trial (NCT01786590)
- MD Anderson trial

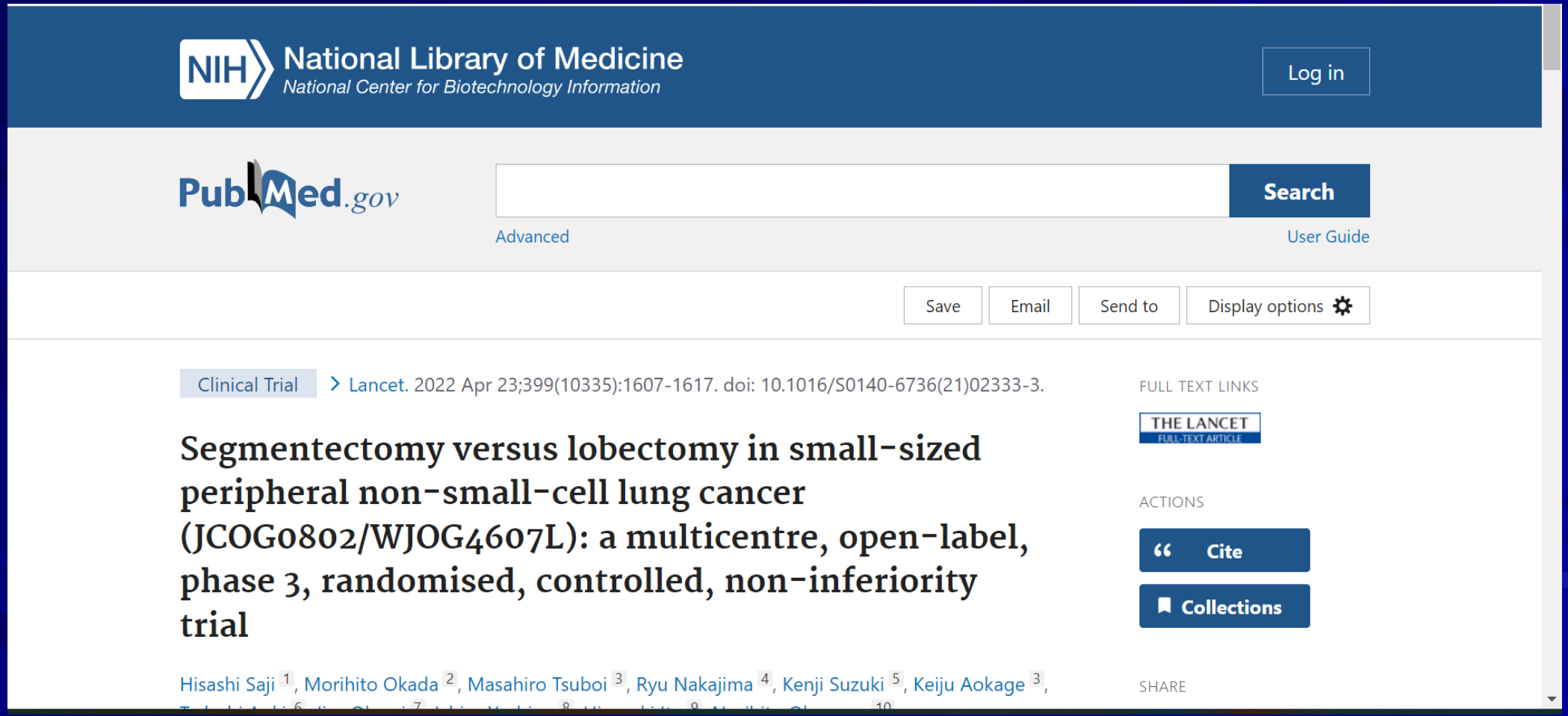
- VALOR (NCT02984761)
- STABLE-MATES (NCT02468024)

FOLLOW UP PROTOCOL AFTER SBRT/IGTA

Surgical Considerations

- Lobectomy
- Segmentectomy
- Wedge resection

Segmentectomy versus Lobectomy



Results

- More locoregional relapses (11 versus 5 percent).
- Improved five-year survival rates relative to the lobectomy group (94.3 versus 91.1 percent; hazard ratio 0.66, 95% CI 0.47-0.93)

Caveats of JCOG0802

- Patients were selected very carefully - < 2cm tumors
- Meticulous mediastinal lymph nodal staging (not just radiological) ruling out nodal metastases
- Clear 2 cm margins
- N1 nodes?
- Segmentectomies only in the JCOG trial; almost 60% wedge resections in the CALGB trial

Lobar versus Sub-lobar

- Lobar versus Sublobar Resection in the Elderly for Early Lung Cancer: A Meta-Analysis
- Ng J et al, Thorac Cardiovasc Surg. 2022 Apr;70(3):217-232.
- Twelve studies (*n* = 5834)
- Sublobar resection group showed better 30-day operative mortality
- Stage 1A: no difference in 5-year OS
- Stage 1B: 5-year overall survival favored lobectomy.

APPROACH: OPEN VS VATS VS RATS

RAL/RATS vs VATS/VAL

- Robotic-assisted Versus Video-assisted Thoracoscopic Lobectomy: Short-term Results of a Randomized Clinical Trial (RVlob Trial): 320 patients
- Jin R, et al. Ann Surg. 2022 Feb 1;275(2):295-302

- RAL achieved similar perioperative outcomes, together with higher LN yield
- Chest tube drainage, Costs

CURRENT AND FUTURE IMPLICATIONS OF RATS

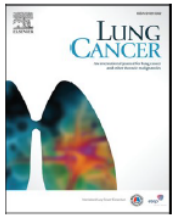
Vascular Invasion

Lung Cancer 171 (2022) 82–89

Contents lists available at ScienceDirect

Lung Cancer

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



Vascular invasion identifies the most aggressive histologic subset of stage I lung adenocarcinoma: Implications for adjuvant therapy

Ilyas Yambayev [a], Travis B. Sullivan [b], Kimberly M. Rieger-Christ [b], Elliot L. Servais [c], Cameron T. Stock [c], Syed M. Quadri [c], Jacob M. Sands [d], Kei Suzuki [e], Eric J. Burks [a,b,*]

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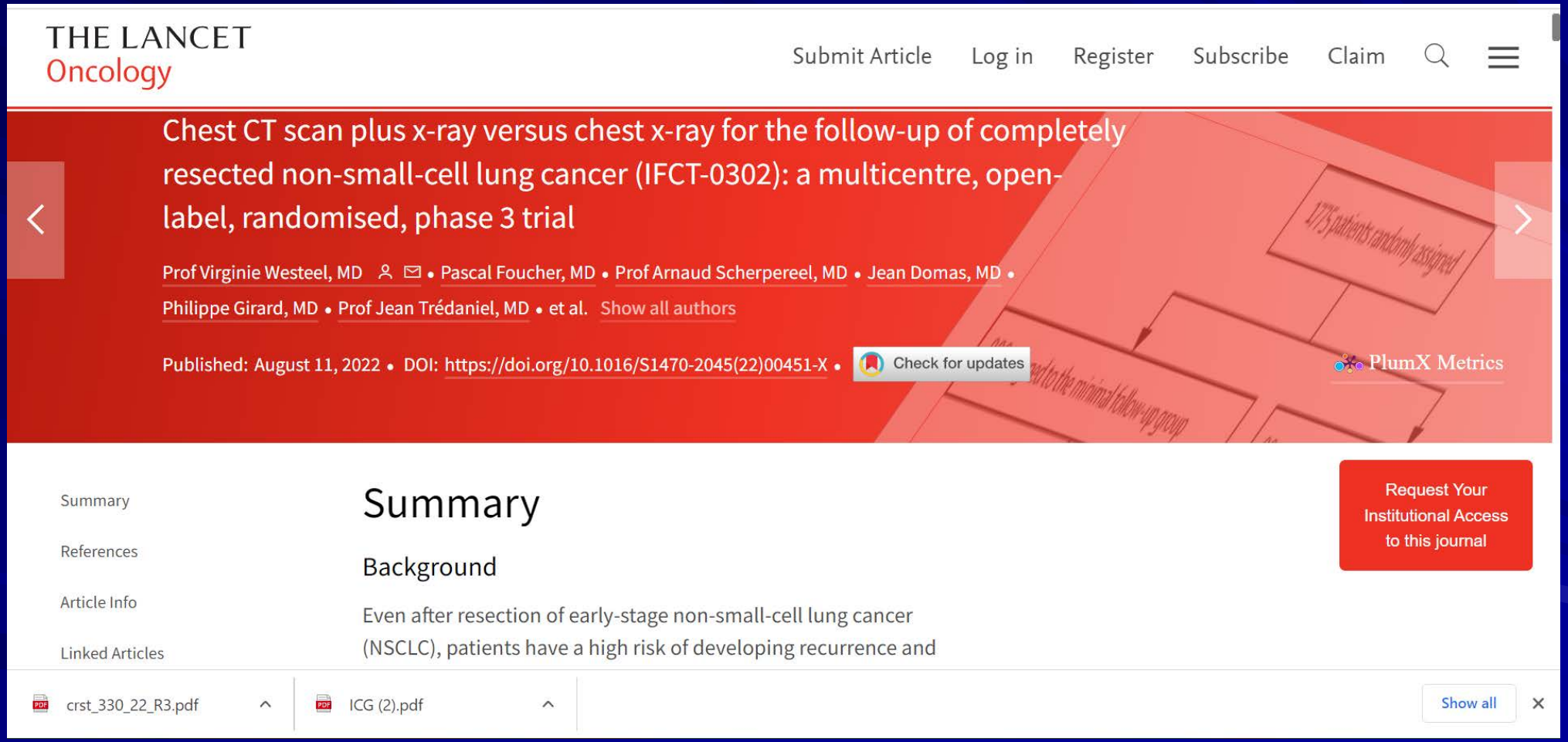
[b] Department of Translational Research, Ian C. Summerhayes Cell and Molecular Biology Laboratory, Lahey Hospital & Medical Center, Burlington, MA, USA
[c] Department of Surgery, Lahey Hospital & Medical Center, Burlington, MA, USA
[d] Department of Medical Oncology, Dana-Farber Cancer Institute, Boston, MA, USA
[e] Department of Surgery, Boston University School of Medicine, Boston Medical Center, Boston, MA, USA

Current and Future Implications?

- Vascular invasion was the most significant histologic feature on multivariate analysis for both RFS and DSS and nearly reached significance for OS
- Angio-Invasion in SCC
- Better Define the Vascular Invasion?
- Stage 1 AC with Vascular Invasion: Adjuvant?

CT Chest + Xray vs Chest X Ray



CT based follow up

- Recurrence was detected in 33 percent in the CT-based follow-up group and 28 percent in the radiograph group
- Second primary lung cancers were detected in 4.5 and 3.0 percent, respectively
- OS was not different

CURRENT AND FUTURE IMPLICATIONS? FOLLOW UP PROTOCOL OF STAGE 1

Summary to Approaches

- Stage I or II NSCLC and adequate pulmonary function, we suggest surgical resection as the initial treatment rather than radiation therapy (stereotactic body radiation therapy [SBRT]

- impaired pulmonary function or medical comorbidity that precludes surgical resection and for those who refuse surgery, we recommend treatment with SBRT

Summary for Surgery

- Lobectomy is the procedure of choice for patients with stages I and II NSCLC and is preferred over pneumonectomy.
- Segmentectomy for selected lesions < 2 cm
- Systematic Mediational LN Dissection

- There are no RCTs comparing open thoracotomy with VATS or RATS

Further Therapy

- Final Stage pT2bN1M0
- ADAURA trial: EGFR mutated Cancers
- IO after chemotherapy (IMpower010, Pearls, KeyNote 091)

ADJUVANT RADIOTHERAPY?

FOLLOW UP?

Follow Up

- History / Physical examination
- CT Chest imaging vs Chest X Ray

- IFCT-0302 : a multicentre, open-label, randomised, phase 3 trial.Lancet Oncol. 2022;23(9):1180

- Did not result in longer survival, enable the detection of more cases of early recurrence and second primary lung cancer

Prevention strategy

- Quitting tobacco will in time reduce a smoker’s risk of death from lung cancer as much as CT screening

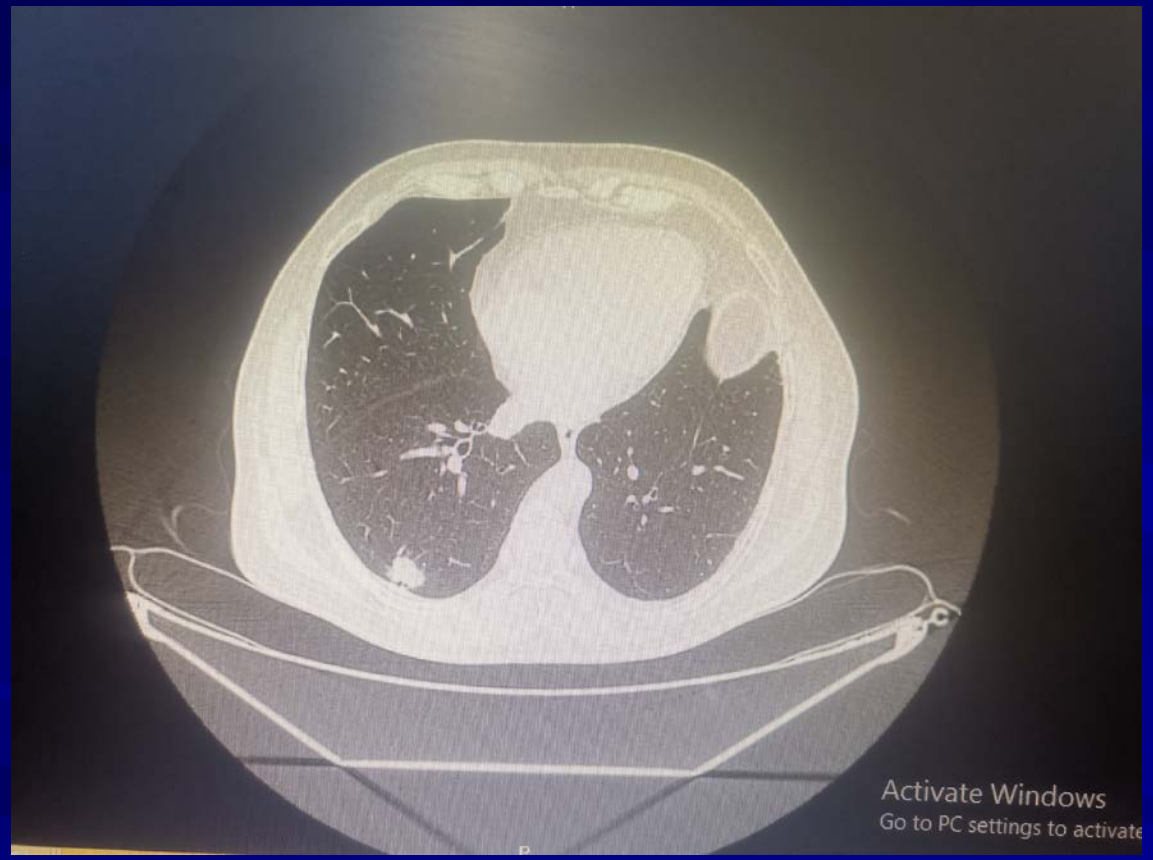
Case 2

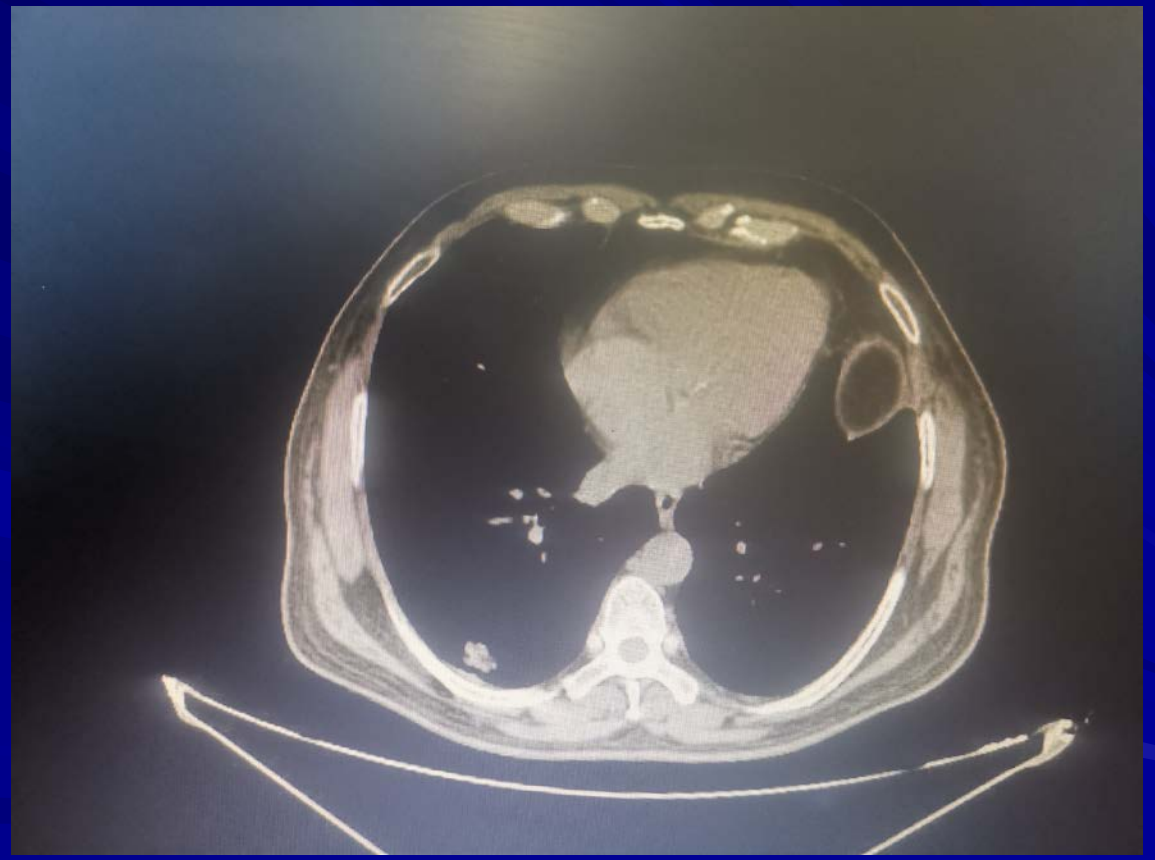
- 58 years, PS1
- Never Smoker

- Underwent a Left Upper Lobectomy with Systematic LN dissection in 2017 for Stage 1A adenocarcinoma lung

- Follow Up……After 5 years……

CT Chest





CT Chest

- 1.8 X 1.5 cm mass Right Lower Lobe lesion
- Sub cm Mediastinal Nodes

FURTHER EVALUATION….

Further Investigations

- PET-CT scan
- MRI Brain?
- Biopsy?

Mediastinal Staging

- Needed or Not
- EBUS/EUS approach
- Mediastinoscopy?

MDT Discussion

- Functional evaluation for Surgery
- SBRT (Proton/ Carbon Ion)
- Role of Neoadjuvant Systemic therapies ???? (Checkmate 816)

EXTENT OF SURGERY?...

Adjuvant Therapy

- pT1aN1M0, Adenocarcinoma
- Molecular Markers?
- Adjuvant Therapy?

Food for Thought

- Approximately 40 to 50 % of patients with stage IB, 55 to 70 percent of stage II and a greater percentage of those with stage IIIA NSCLC
- Eventually recur and die of their disease despite potentially curative surgery

Prevention strategy

- Quitting tobacco will in time reduce a smoker's risk of death from lung cancer as much as CT screening