

Tumour Length as a Practical Marker

Lessons learnt from a case of oesophageal cancer treated with concurrent chemo-radiotherapy

DR G K RAVEENDRAN



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Summary of the Case

A 64 year old retired economics teacher, ECOG 2 , presented with worsening dysphagia and progressive weight loss.

At gastroscopy, he was found to have an obstructing tumour histologically proven to be a squamous cell carcinoma of the thoracic oesophagus.

He was discussed at the CMJAH GIT MDT for concurrent chemo-radiotherapy



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

History of Presenting Complaint

- Mr WML presented with a four-month history of progressive dysphagia-initially to solids. First noted when he choked on his morning porridge. He reported some vague chest tightness and a sensation that “food was getting stuck”.
- He lost 15kg over the last 3 months. Only able to tolerate a semi-solid/liquid diet.
- Referred for Gastroscopy. At G-scope (31/7/24) a circumferential, fungating, partially obstructing tumour at 25-30 cm from teeth was noted.
- Due worsening difficulty in swallowing he required multiple dilations (8/8/2024, 20/09/2024) He was subsequently stented at his last visit to surgical OPD.



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Background History

Past medical history: No notable past medical history. Not on any chronic medications. No prior history of reflux, caustic ingestion or iron deficiency anaemia. No family history of malignancy.

Current medication: .
Paracetamol 1g po qid, Tramal
50 mg po tds, PPI

Past surgical history: Cholecystectomy 2012

Allergies: Nil known

Social: Retired grade 8 economic teachers. Lives with his wife and daughter. Occasional alcohol use- 3-4 times a month. Smoker- 4 / day for 10 years (2 pack year history) stopped 2001.



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Physical Examination

- ECOG 2, temporal wasting noted.
- Height: 167cm
- Weight: 48 kg
- BMI: 17.2
- No pallor. Adequate hydration status. No oedema noted.
- Nil palpable cervical or axillary nodes palpable
- Noted to have increased upper airway secretions- requiring constant spit up.
- No oral lesions noted. Fair dentition
- Examination of Central Nervous system: Alert and oriented. No focal deficits noted.
- Examination of respiratory system: Good air entry bilaterally. Added transmitted sounds from upper airway secretions.
- Examination of Gastrointestinal system: Abdomen scaphoid, prior laparoscopic scars noted. No palpable masses, no tenderness elicited. Normal bowel sounds.
- Calves : soft, non-tender



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Investigations - Radiological

- CT Chest + Abdomen: 3/9/24 Oesophageal mass extending from T3 to T8- length of 17cm. Thickness- 1.79cm. Stent noted in place from T3 to T8.
- Lymphadenopathy: R Hilar node 1.4 x 1.66 cm. R Paratracheal node 1.4 x 1.66 and 1.44 x 1.33 cm
- Normal appearance of gastroesophageal junction
- No lung or liver metastases



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Staging

Histology: 31/07/2024 biopsy of oesophageal stricture at 30cm. Invasive moderately differentiated squamous cell carcinoma. (+) superficial ulceration (-) LVSI (-) PNI

Stage: c.T3N1Mo Stage 3, AJCC 8th ed.

Site: Thoracic oesophagus



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG



Management Plan

As per MDT discussion, Mr WML was for definitive concurrent chemo-radiotherapy.

He was seen, counselled and consented for treatment. Given his troubles with swallowing, he was noted to have a stent in situ at his first oncology clinic visit. This was requested to be removed prior to CT Simulation date.

Holding chemo: Cisplatin 70mg/m² ivi and capecitabine 825mg/m² for 14 days, q3weekly- same prescription for concurrent

Ancillary management: Dietician referral for counselling and supplementation given significant weight loss history.

Transport department referral to his nearest hospital to facilitate daily hospital visits for radiotherapy.



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Treatment Planning

- Date of CT Simulation: 17/10/2024
- Position and immobilisation: Supine, arms extended above head, on a wingboard. Head neutral. Chin to suprasternal notch (SSN) = 7.5cm. Knee rest used.
- Scan length: angle of mandible to L5, 5mm slices
- Slice thickness: 5 mm axial slices
- IV + oral contrast.
- Data acquisition: Pre- + Post- contrast CT scans



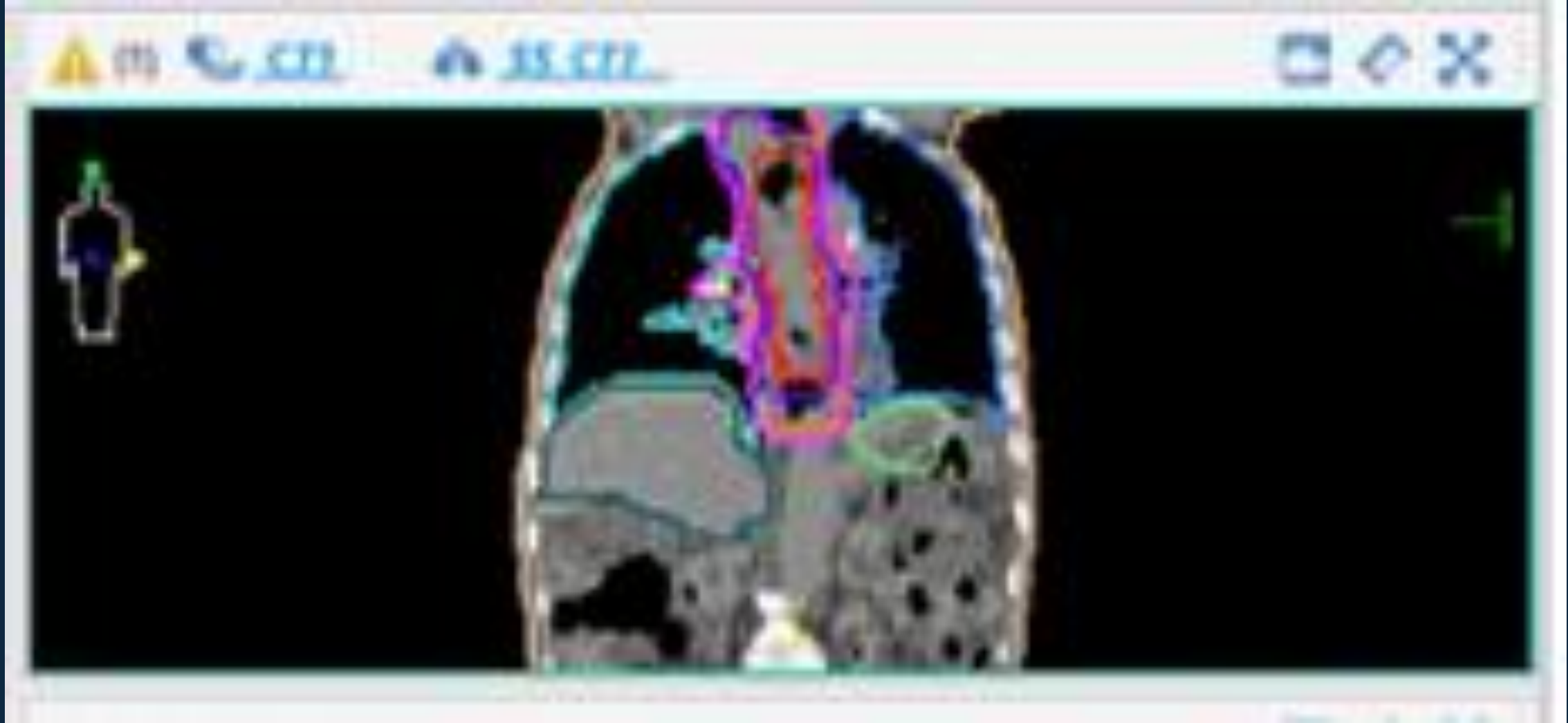


WITS

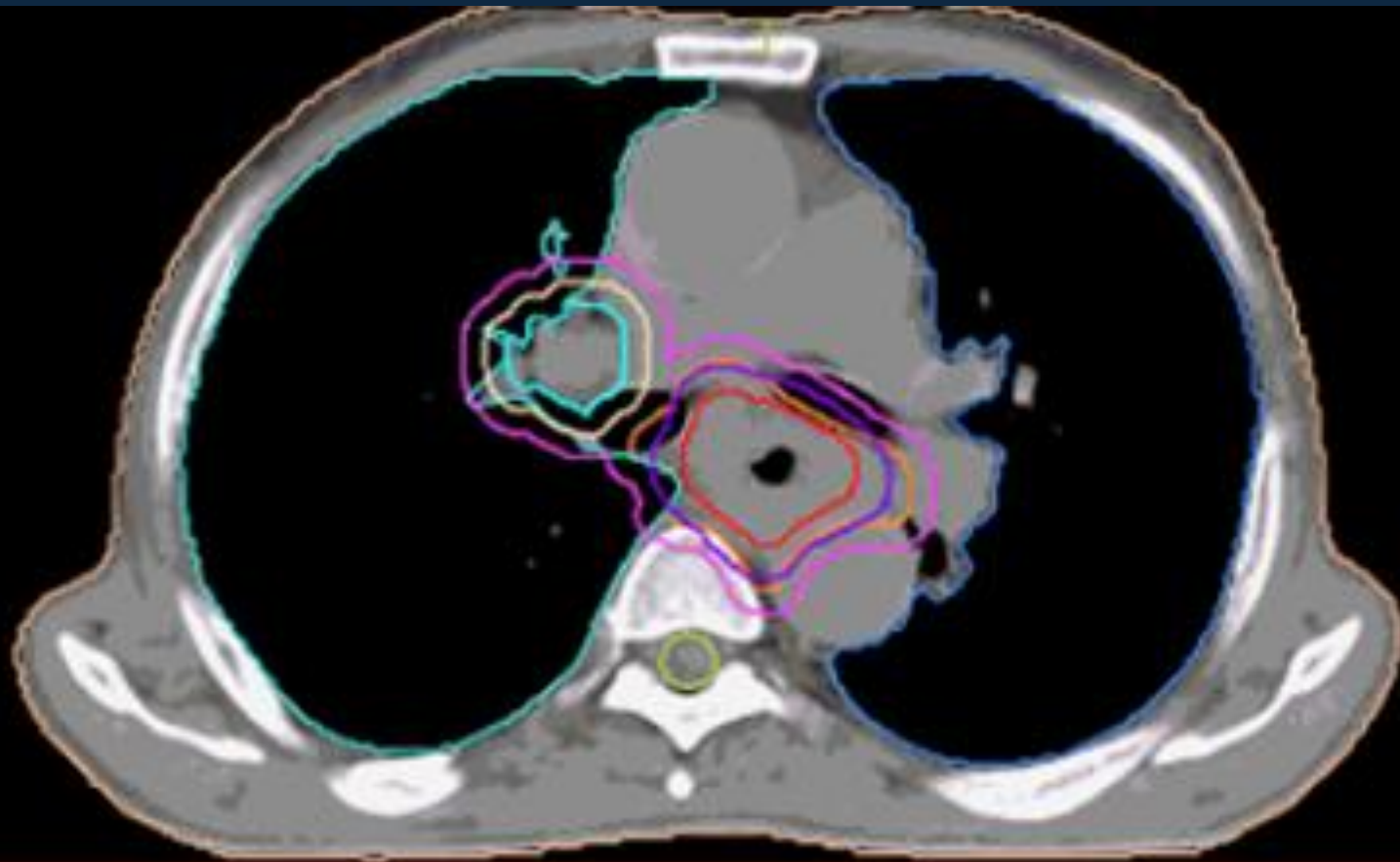
**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

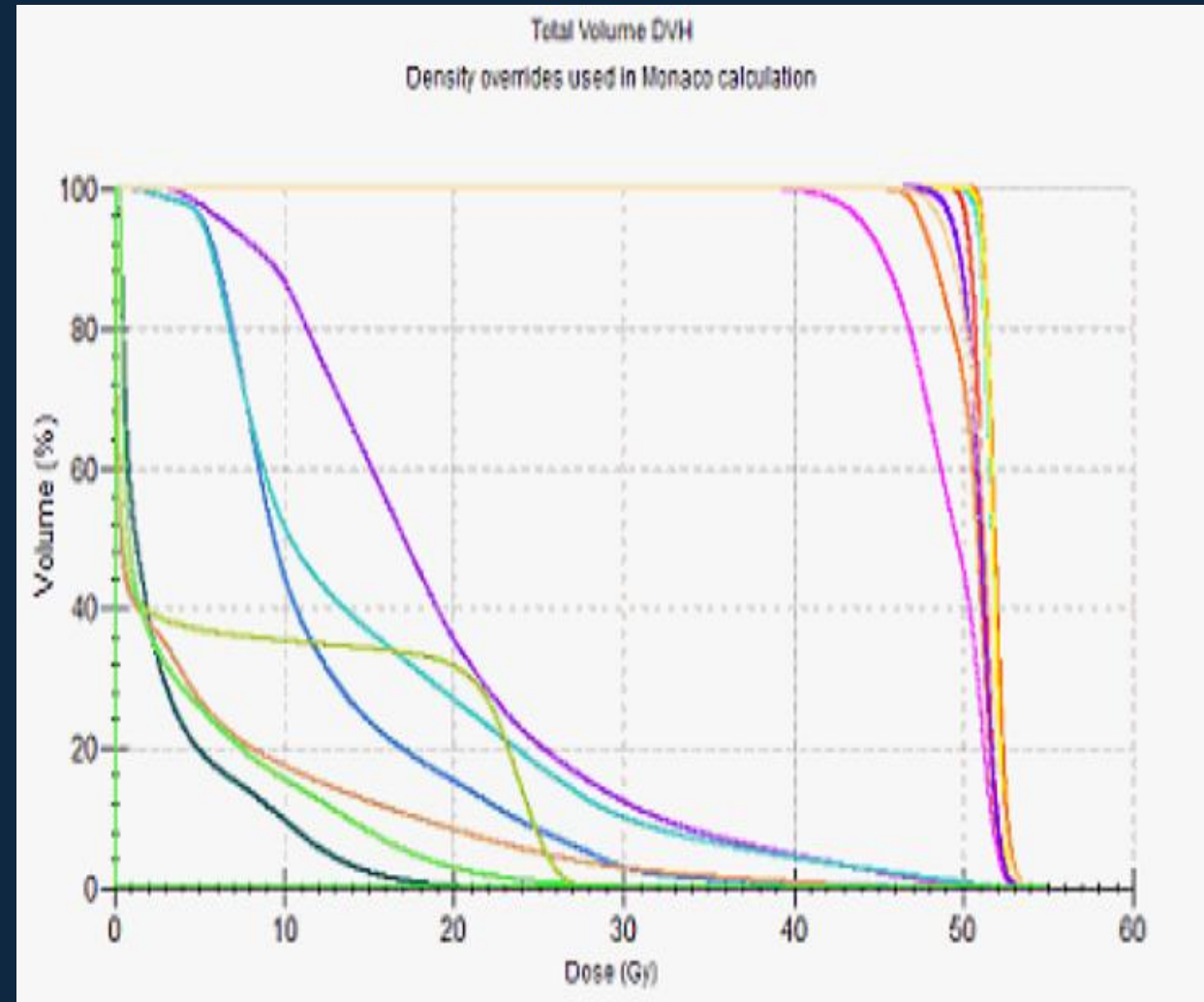


UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG



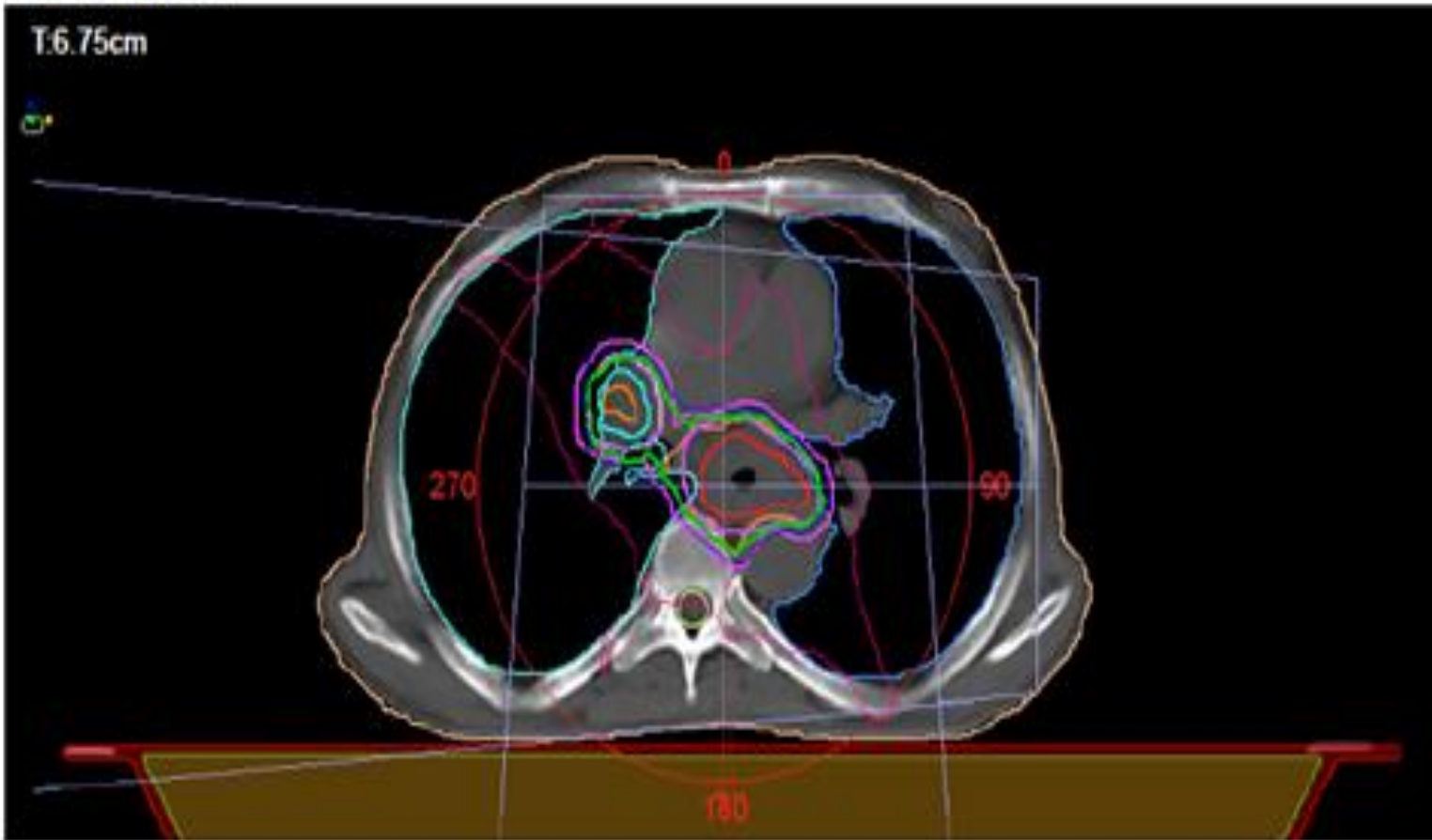
UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Organ at Risk	Constraints	Achieved
Spine	Dmax < 45Gy	Dmax = 31Gy
Heart	V30<30%;	V30=12.2%;
	Dmean<26-30Gy	Dmean= 18.9Gy
Lungs	V40 < 10%	V 40 = 4.2%
	V30 < 15%	V30 = 12.6%
	V20<20%	V20 = 26.8%
	V10 < 40%	V10 = 52%
	MD < 20Gy	MD = 15
Liver	V30<33%	V30 = 12.2
	MD< 25Gy	MD = 3.2
Stomach	Dmax < 54Gy	Dmax = 38Gy
	MD <45Gy	MD =4



Transverse View

T:6.75cm



Color	Relative (%)
Orange	108.00
Green	95.00
Blue	90.00
Pink	50.00
100.00 (%) = 50.500 (Gy)	

Color	Structure Name
Light Blue	patient
Red	GTV
Orange	CTV
Cyan	Lung R
Blue	Lung L
Purple	Heart
Light Green	Spinalcord
Green	Stomach
Dark Green	Liver
Yellow	GTV NODE
Orange	GTV HILAR NODE
Cyan	CTV HILAR NODE
Pink	PTV45
Purple	PTV50.5
Light Orange	PTV50.5 NODE
Green	Foam Core
Red	Carbon Fiber
Purple	COMBINED



Treatment details

2024	M	T	W	Th	F	Sat	Sun
November	25	26	27	28	29	30	1
December	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
2025 January	30	31	1	2	3	4	5
	6	7	8	9	10	11	12



WITS

**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Chemotherapy details

2 cycles of chemotherapy received:
1 cycle holding chemotherapy and
1 cycle concurrent.

Prescription:

Cisplatin 60mg/m² ivi q3
weekly

Capecitabine 825mg/m²
po bd (on every day of RT)



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Treatment Course

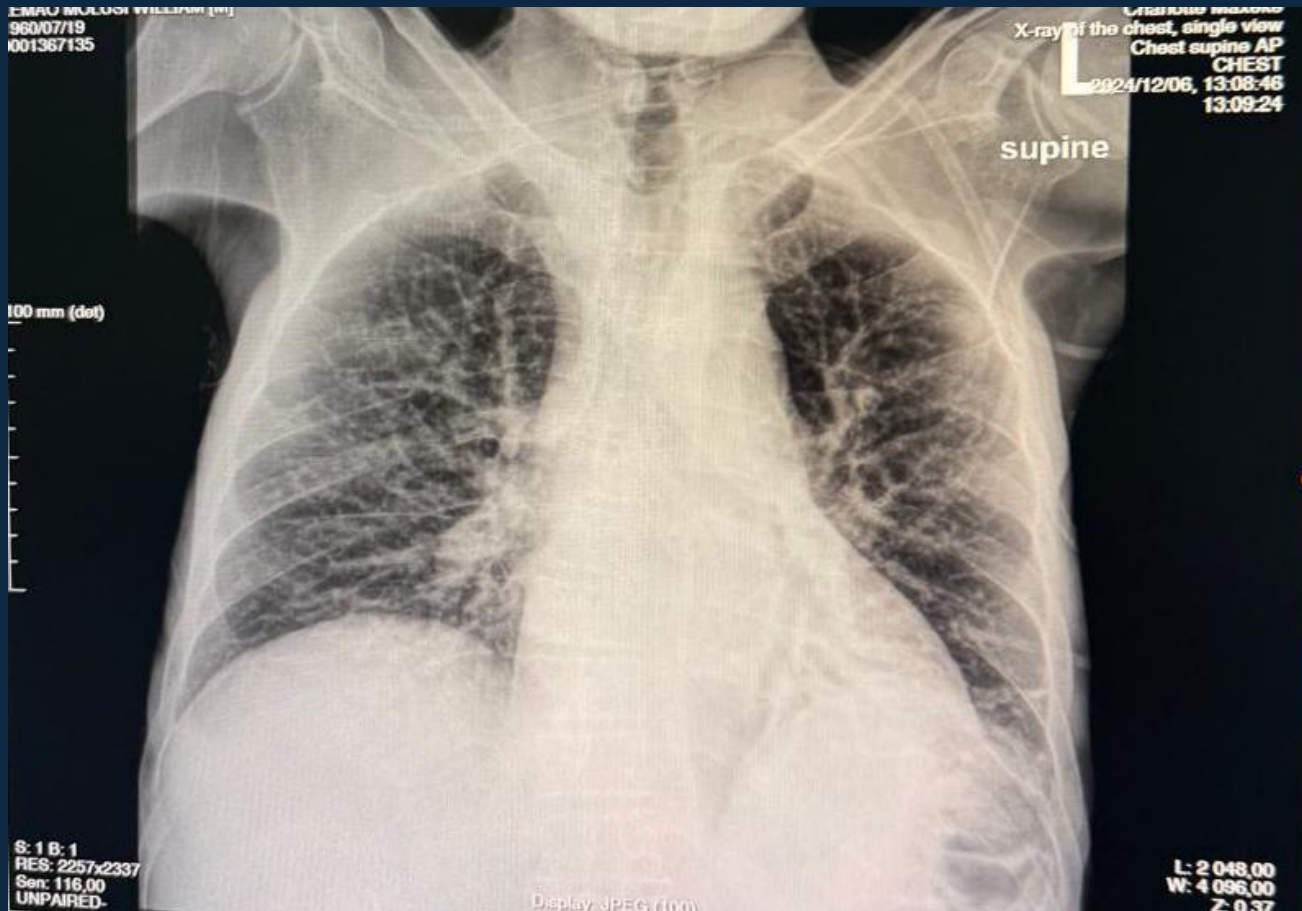
- At the start of therapy, he reported tolerating a soft diet. He had no pain and had maintained his weight from the first visit.
- At 8#, a week after concurrent chemotherapy, he developed a cough with associated shortness of breath and pyrexia. Clinically he was tachypneic, pyrexial at 38.4 oC and had a sats of 79%.
- Chest Xray done revealed a R lower lobe consolidation. He was admitted for iv antibiotics and general support -including supplemental O2.
- Blood cultures grew Streptococcus pyogenes, Sensitive to ampicillin
- He was discharged after 5 days with the diagnosis of a community acquired pneumonia- with no associated neutropenia.



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Treatment Course

- At 12#, he struggled to lie for his treatment due to increased upper airways secretions and mucus. He was prescribed buscopan and given some dietary advice.



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Treatment Course

- At 15#, he struggled with dysphagia to even liquids.
- Required dilation and a short course of steroids
- Noted to have symptomatic relief following this.



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Treatment Course

- Towards the end of treatment, he struggled with nausea and odynophagia which was relieved with pharmacological measures. He also lost 3kg during treatment and required support from the dietician.
- Upon completing treatment, he was given a referral back to the surgeons advising the completion of therapy as well as 6 week off treatment review date.



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Follow up – 6 weeks

- At his 6-week visit, he complained of pain while eating. He had also lost a further 1kg
- Concern for inadequate oral intake required reinsertion of a stent by the surgical team post therapy (just over 3 weeks post last fraction of radiotherapy)
- Also noted to have a productive cough – given a course of antibiotics (WCC 6.4; CRP 144)
- Sputum: *Pseudomonas aeruginosa* Sensitive to ceftazidime



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG



WITS

**RADIATION
ONCOLOGY**



**UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG**

Follow up- 3 month

- At his 3 month follow up visit, he had a CT Staging done
- Findings: oesophageal mucosal thickening in cervical and thoracic oesophagus. Stent in-situ. No perforation no fistulae
- no mediastinal CT significant lymphnodes (disease response) or features of mediastinitis
- no evidence of disease progression
- it did however show a Left lower lobe pneumonia



WITS
RADIATION
ONCOLOGY



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Planned Follow up

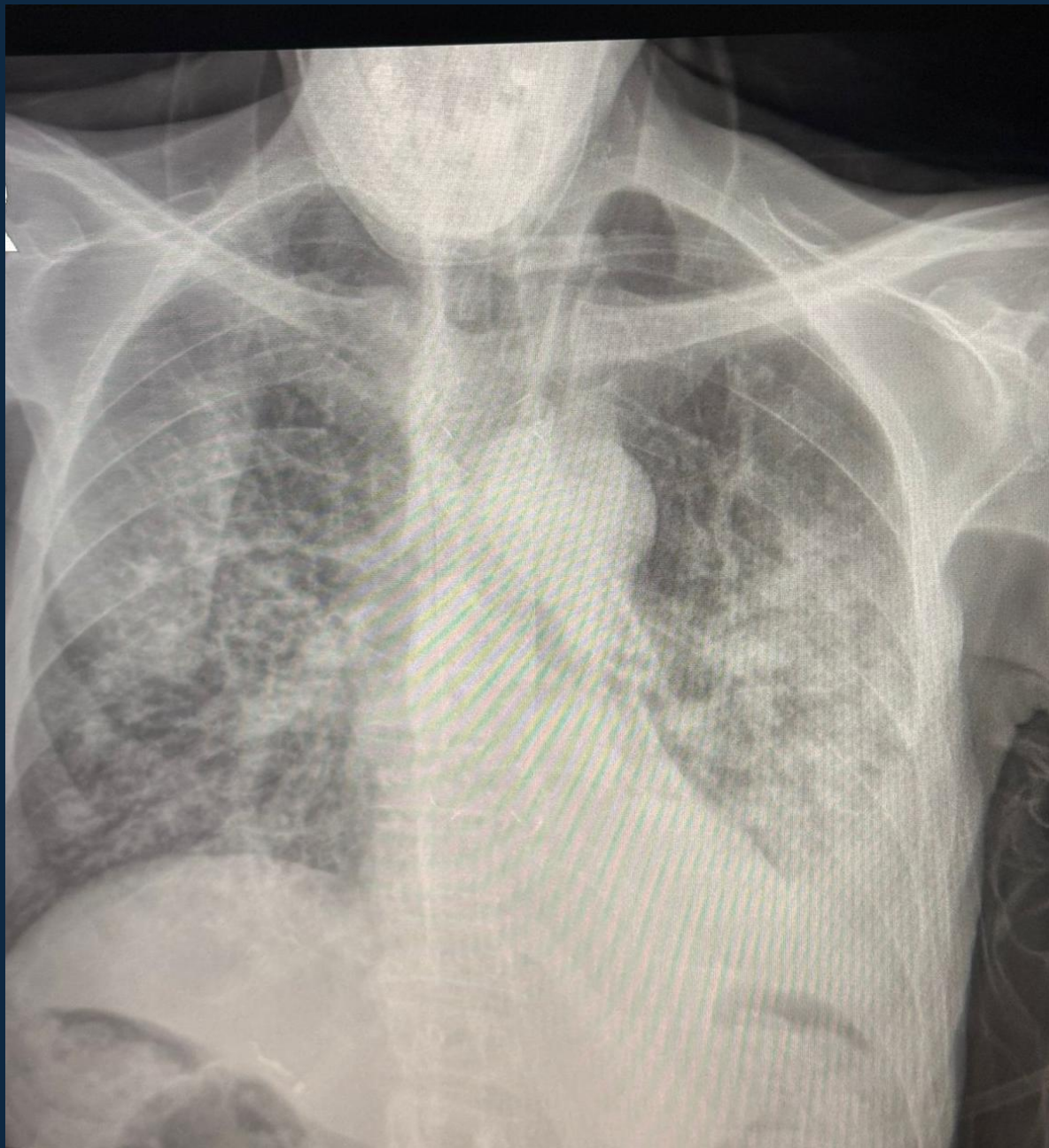
- He was evaluated by the surgical team and given his general performance status as well as upon review of CT and G scope findings, he was deemed not for surgical intervention
- Follow up going forward was planned for 3 monthly clinic visits, 3 monthly G scope and 6 monthly CT scans for at least the first two years.
- However, shortly after the 3 month follow up, Mr WML demised following a short hospital admission with a LRTI.



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG



WITS

**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Things to consider:

- Extent of disease, in this case, length of disease and intent of treatment
- Difficult course of treatment and multiple hospital visits in the immediate post treatment period
- Multiple interventions to aid swallowing – including multiple stent insertions (before oncology first visit, whilst awaiting treatment and post treatment) as well as dilations
- Cause of recurrent pneumonia?
- Risk for tracheo-oesophageal fistula
- Role of Speech therapist

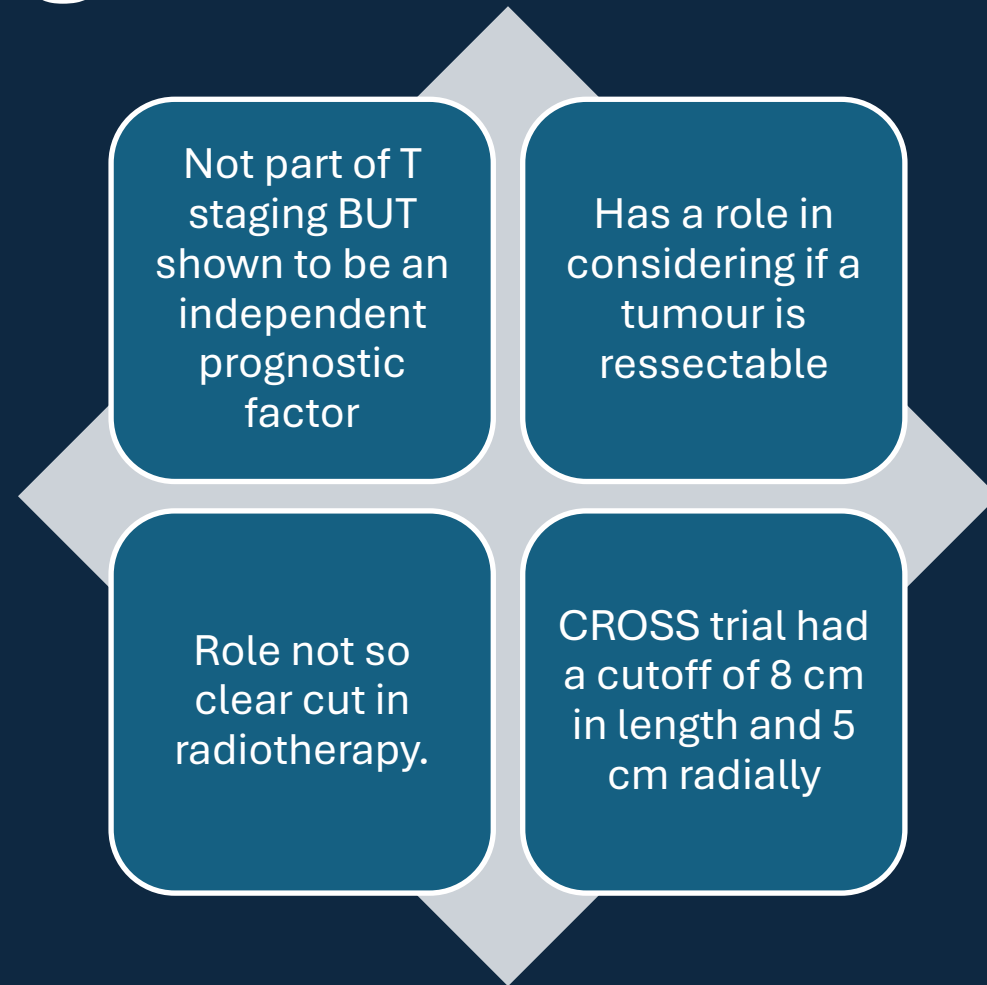


**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Tumour Length



WITS
RADIATION
ONCOLOGY



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

Longer Tumours in Radiotherapy

- => much larger treatment fields
 - Difficult to meet dose constraints
 - Increased risk of increased treatment-related side effects/toxicity
 - Prognostic- lower local control rates



**RADIATION
ONCOLOGY**



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

THANK YOU

www.wits.ac.za

Follow us on:



WITS

RADIATION

ONCOLOGY



UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG