

Complex treatments Physician perspective

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PARDISNOOR IMAGING
AND CANCER CENTER

Re-Irradiation

SRS
PARDISNOOR IMAGING
AND CANCER CENTER
SBRT

Re-Irradiation

- Never think it's impossible
- Review the dose distribution slice by slice
- Balance risks of treatment and its potential benefit
- Always think what will happen if you do nothing
- In many cases systemic tx is sentence to death

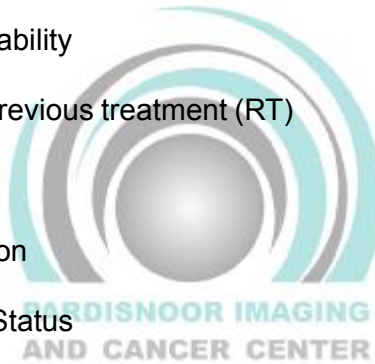
The Process

- Assess the patient fully. Like always.
- Seek for every detail you can acquire.
 - Detail of the current tumour.
 - Try your best to get the volume as small as reasonably possible.
 - MRI - PET - CT - Ph/E
 - Details of previous plan.
 - **Fight for it! :)**



Analyze the information

- Chance of curability
 - Time from previous treatment (RT)
 - ≥ 1 year
- Dissemination
- Performance Status
- Review other options/ tx
- Informed Consent



Information Analysis

Time from Previous RT < 2 years	<input checked="" type="checkbox"/>
Good Performance Status	<input checked="" type="checkbox"/>
Relatively limited disease	<input checked="" type="checkbox"/>
Expertise and Technique	<input checked="" type="checkbox"/>



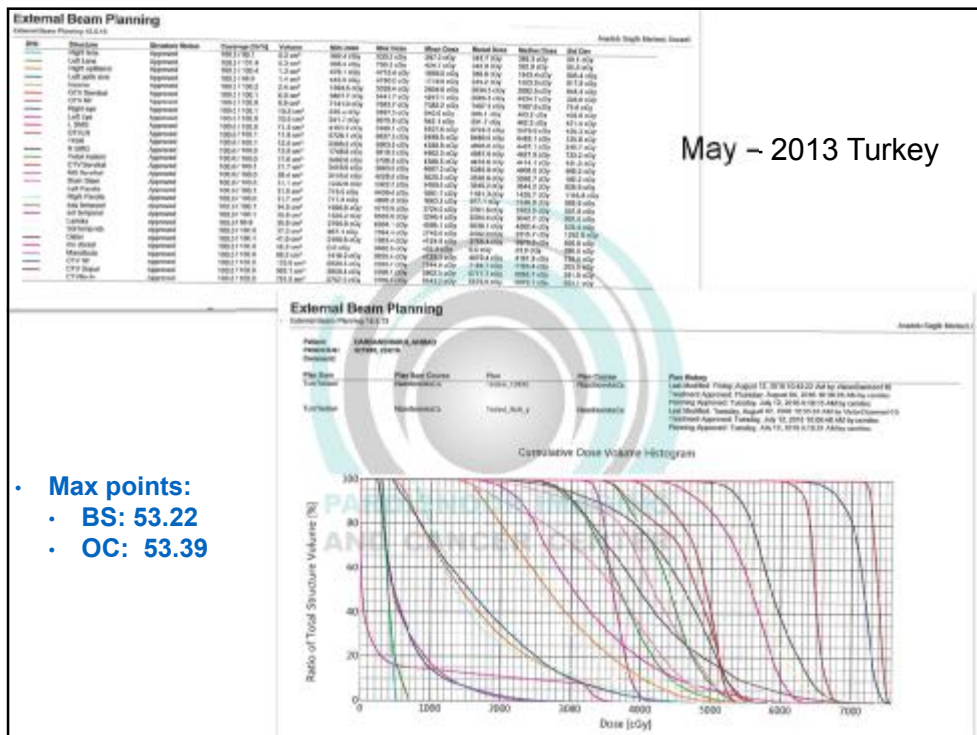
Review every slice of the previous plan.
 Turn on/ draw/ calculate the important and key isodoses.
 Key isodoses are those that can help you predict the rest of the plan.
 Re-draw these isodoses or import them from the previous plan.
 Start to think of your reasonable goals.

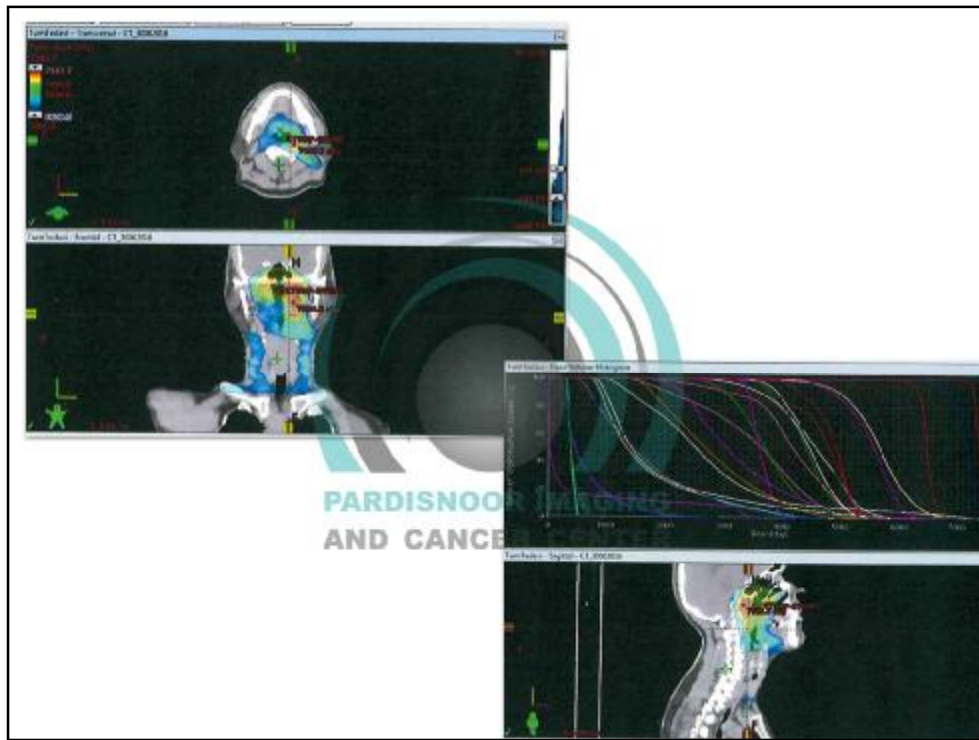
- Reasonable goal is a goal that is:
 - Feasible
 - Relatively safe
 - and Effective

Case 1

- 55 year old Nasopharyngeal Ca
- Treated in Turkey
 - IMRT 70Gy to high dose volume
- Recurrence presented by otalgia 6 years post tx
 - Brachytherapy 25Gy in Tehran
- Symptoms better
- Stable disease in imaging
- Now referred for consult

PARDISNOOR IMAGING AND CANCER CENTER





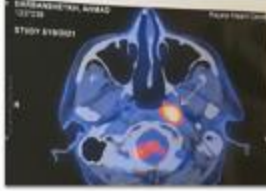
Brachytherapy
16Gy/4

AND CANCER CENTER

We defined the extra dose from brachy to BS and OC shall be negligible



My thought and questions:

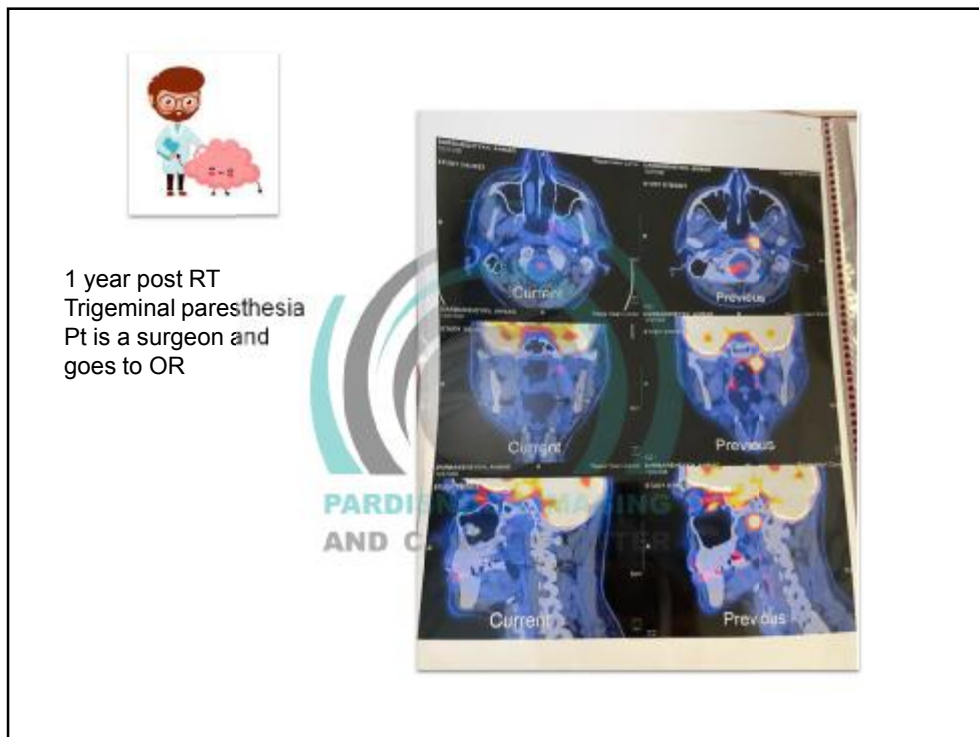
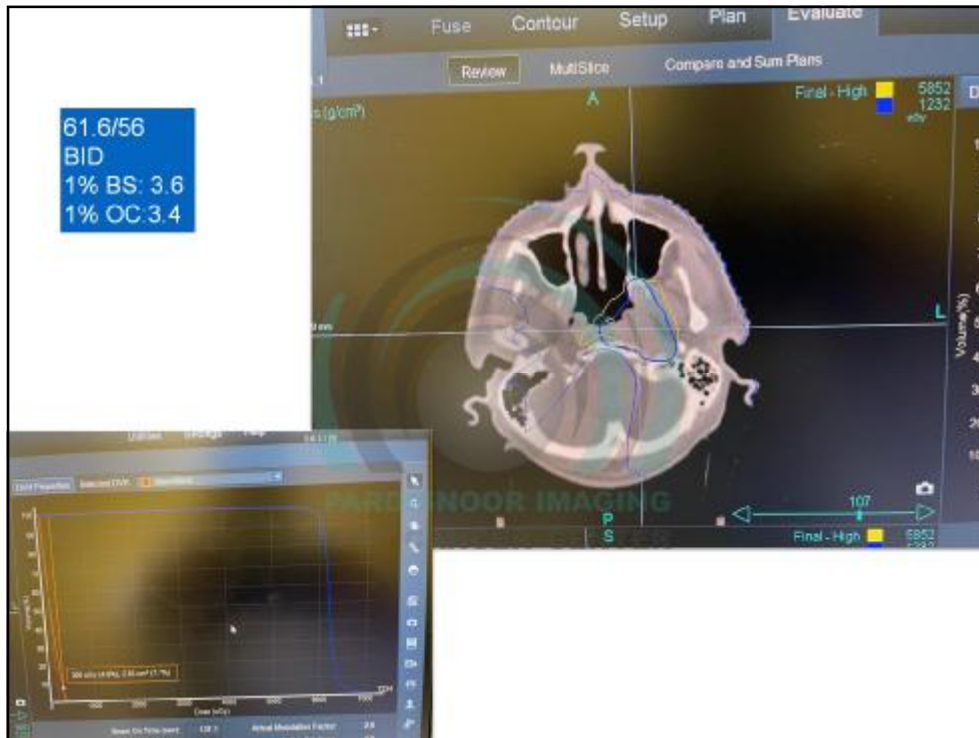
- Does this patient have another curative option?
 - 1. Surgery? Chemo? **No**
- Does this patient have an active disease or is it an adjuvant setting?
 - This is an active mass**
- If I have to use RT, what dose do I need to be reasonably effective?
 - >60Gy min**
- Based on the data I have, how possible is to cover a reasonable volume of the GTV with a reasonable dose?
 - Go by numbers**
- What would be the detorious risk?
 - Fatal necrosis and bleeding - BS, OC, SC damage**
- What happens if I do nothing?
 - Death ~100%**
 - ~20%**

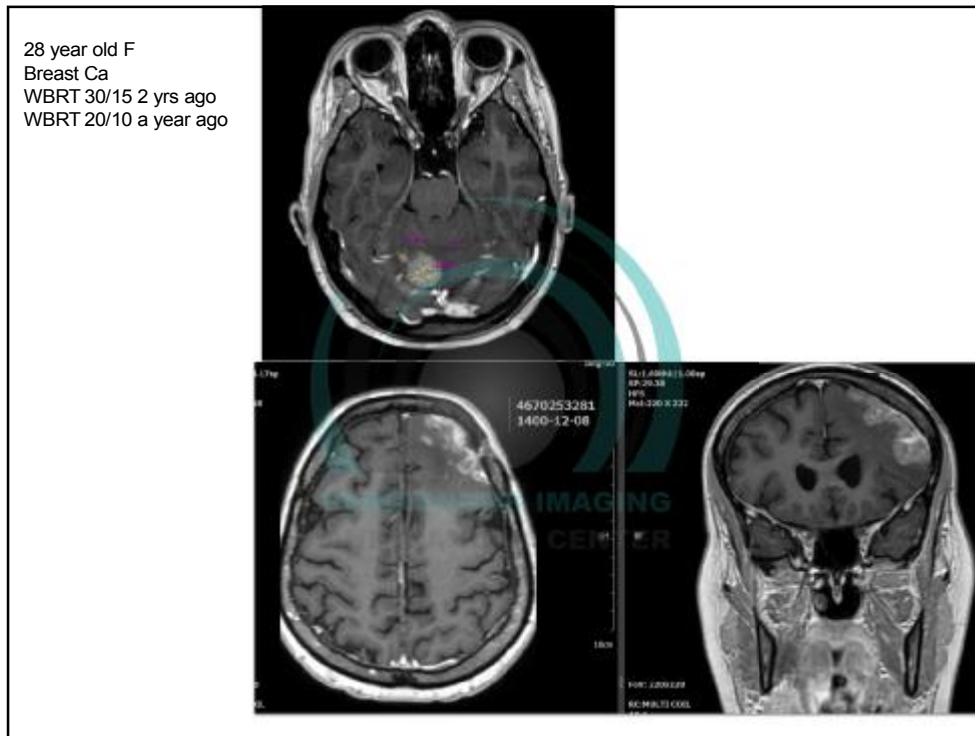


GTV
 Small CTV BS < 3
 Small PTV SC < 3
 No LN OC < 3

Go by numbers





1. Does this patient have another curative option?
 - 1.Surgery? Chemo? No and it's not curative already
2. Does this patient have an active disease or is it an adjuvant setting?
 - Active symptomatic dis
3. If I have to use RT, what dose do I need to be reasonably effective?
 - SRS/ pall dose
4. Based on the data I have, how possible is to cover a reasonable volume of the GTV with a reasonable dose?
 - I don't know!
5. What would be the detourious risk ?
 - ?<10%
6. What happens if I do nothing?
 - Radiation Necrosis
 - Neuro Signs and death 100%

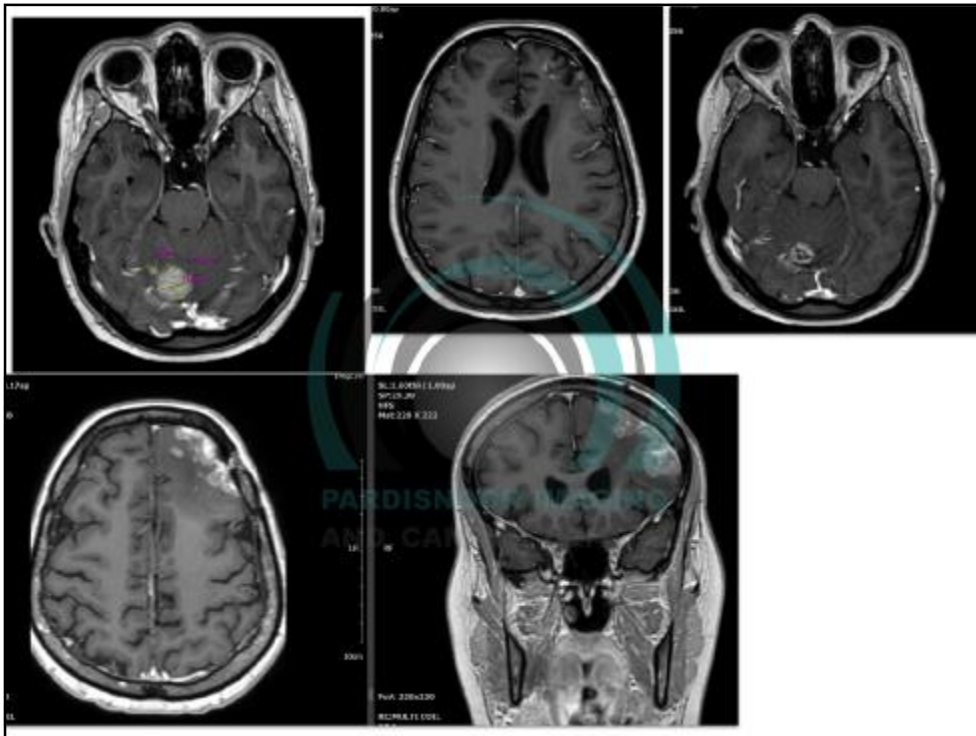


PARDISNOOR IMAGING AND CANCER CENTER

SRS
28/5
Max BS:8Gy

31.5/10
V30 Brain = 10cc
(<30cc)

A screenshot of a medical imaging software interface showing a treatment plan. It features a central axial CT scan with a red target area and a blue organ at risk (OAR) contour. The interface includes a menu bar (Evaluate, Utilities, Settings, Help), a toolbar, and a data panel on the left. The data panel shows a table of OARs and their constraints. The text below the screenshot provides summary statistics for the treatment plan.



Other cases:

- MM → Previous 50/20 to pelvis
 - Whole pelvic bone
- 8 year old girl → Medulloblastoma (CSI)
 - 1st recurrence
 - 2nd recurrence
 - Remission → Transplant
- 46 female, Pancreas Ca, → 45/25
 - T11 cord compression, SB < 4
- Maxillary sinus SCC
 - 35 years post, Max sinus SCC
- Hard palate and maxillary sinus SCC
 - two time treated each 30 sessions (30 years ago and 20 years ago)
 - Now upper lip and nasiolabial tumour with invasion into hard palate

SRS

- Select the patient
- Previous WBRT?
- Number of lesions
- Distribution of lesions
- Proximity to thalamus, brainstem and chiasma
- Size
- Decide on coverage versus selectivity versus conformity



30/5

27/3

28/5


24/3

21/3

Brain SRS

- Brainstem
- Optic pathways
- Thalamus
- Bone
- Skin / Hair

Treatment days



- Daily
- Every other day
 - Within certain number of days
- 27/3 (چهارشنبه -شنبه -دوشنبه)
 - 30/5 (consecutive days - every other day)
 - 50/5 (consecutive days - every other day)

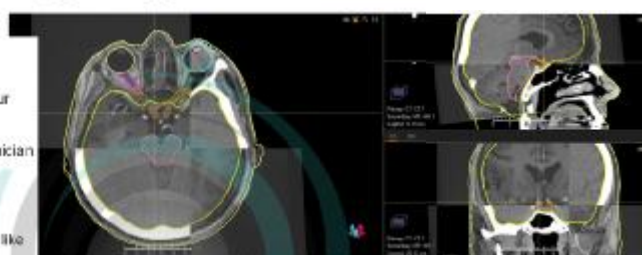
- Previous tx
- Proximity to OAR
- PS and cooperation
- Time of tx and hence your accuracy
- Simple vs Complex

Need to finish within certain days

2 weeks max

Order Imaging

We always contour and register on axial images

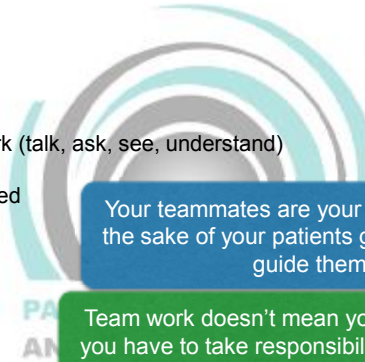


- SRS Brain
 - Make an institutional based protocol for your MRI
 - Talk to your Radiologist/ Radiology technician
 - Understand your own limitation and capabilities
 - 3D MRI → know which view you would like to focus on
 - axial, coronal, sagittal
- Fusion
 - Do or review the fusion yourself diligently
 - Know the landmarks that need to be fused correctly
 - Is it OC, BS or both?
 - In Skull bone is very helpful but doesn't suffice
 - If you are in doubt ask.

Stereotactic tx are impressively effective treatments that can cure but can be also very dangerous if are performed with our enough caution and attention

Order Imaging

- Lung
 - 4D MRI
 - Same homework (talk, ask, see, understand)
 - Respiratory gated
 - Fuse with CT
 - CT-sim
 - 1mm slices
 - Accessories
 - Stay with your team. Discuss. Know their issues. Be part of the team.



Your teammates are your extra eyes and ears for the sake of your patients good. If you let them and guide them to be so.

Team work doesn't mean your job is less daunting but you have to take responsibility to make sure that every single aspect of the plan is safe and sound

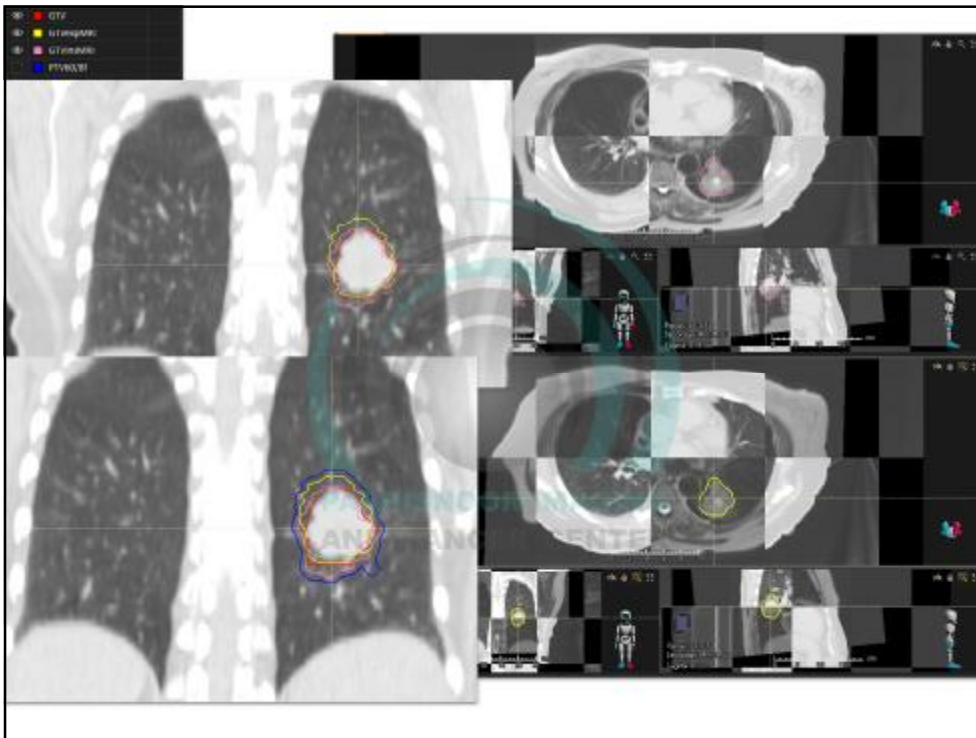
Contours

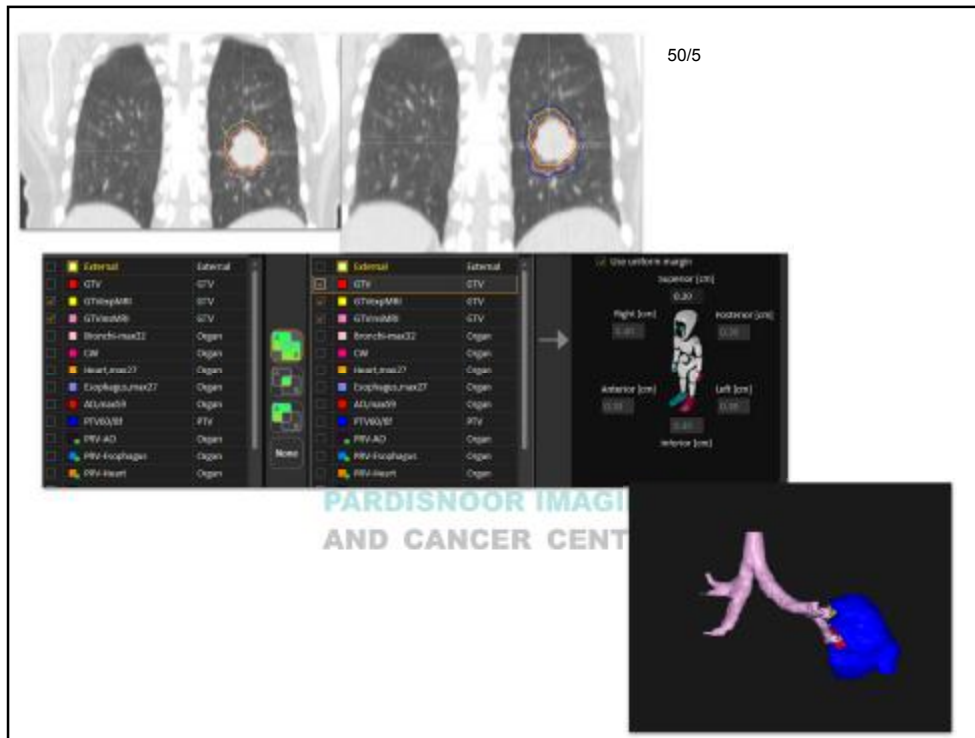
- Goes with the basic rules
- Technically no CTV
- Treat what you see
- PTV, nil or quite small
 - That requires a robust immobilization
- OAR contouring is more important specially BS, OT, bronchial airway
 - Check back and forth with MRI



A case on SBRT lung

- A touch on contouring; SBRT Lung
- 75 year old with stage I NSCL Ca
- Essential thrombo-cytosis
- Unfit for surgery or quite high risk
- SBRT is a standard treatment for stage I lung Ca when un-resectable, or refuse surgery





- Our target was within central zone
- Proximal bronchial airway
 - Shall be contoured one by one
- Chance of fistulae, hemoptysis and fatal hemorrhage goes up proportional to volume and dose

The image shows the cover of a journal article. At the top left, the word "Constraints" is written in a large, bold, black font. To its right is a red logo featuring a crown and the text "R2 MASTERCLASS". Further right, in smaller text, it says "INTERDISCIPLINARY JOURNAL OF RADIATION ONCOLOGY - BIOLOGY - PHYSICS" and "www.oxfordjournals.org". Below the main title, there is a sub-title "A Story of Hypofractionation and the Table on the Wall" and the author's name "Robert Tannirakis, MD". Below that, it says "Department of Radiation Oncology, University of Texas Southwestern Medical Center, Dallas, Texas" and "Received July 29, 2021; Revised September 7, 2021; Accepted for publication September 14, 2021". On the left side, there is a red-bordered box containing the text "Single and Hypo-fractionated Stereotactic Irradiation of Brain and Body Lesions" and the author's name "Curtis Miyamoto, M.D., Professor and Chairperson, Department of Radiation Oncology". In the center, there is a graphic of a target with concentric circles. At the bottom, it says "PARDISNOOR IMAGING" and "Radiation Therapy for Brain Metastases: An ASTRO Clinical Practice Guideline".

The slide contains two text boxes. The top one is grey and contains the text "List the priority - Predict the limitation and ask for a realistic goal". The bottom one is blue and contains the text "Review the plan". Below these boxes is a cartoon illustration of a person with a large question mark above their head, sitting at a desk with a clock and a coffee cup, looking stressed.

Review a plan

• I always start from the end!

1. Numerical constraints

2. Coverage

1. By number

2. DVH

3. Check slice by slice

3. Hot area

1. OAR

2. PTV

4. Turn on asides 50% —> It tells you a lot of secrets about the plan



Case Review

24/3
Kept Normal BS < 18
No PTV

• 56 year old male with lung ca diagnosed two years ago.

• EGFR +

• Bone met

• On Systemic

• Consulted

• Reported

• Ph/E —>

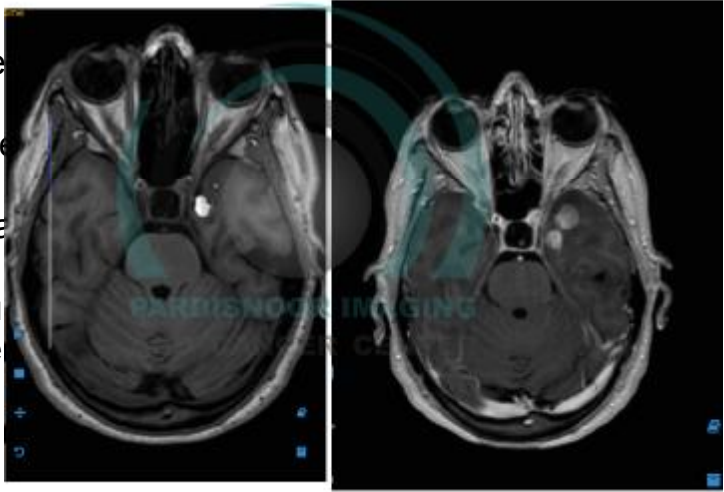
• MRI Brain



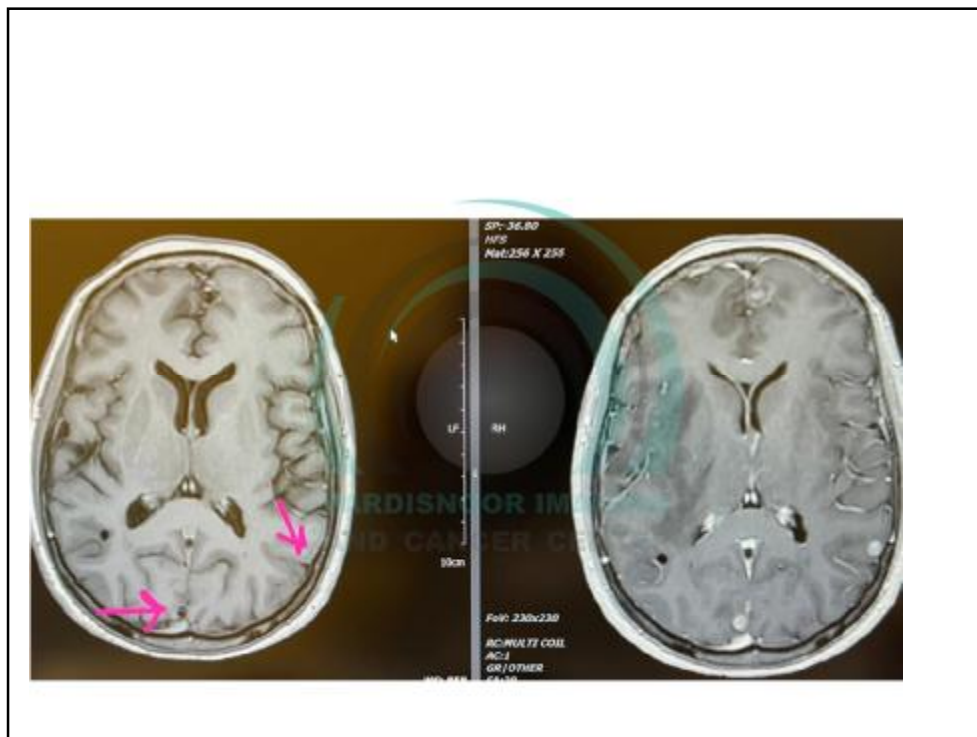
Case Review

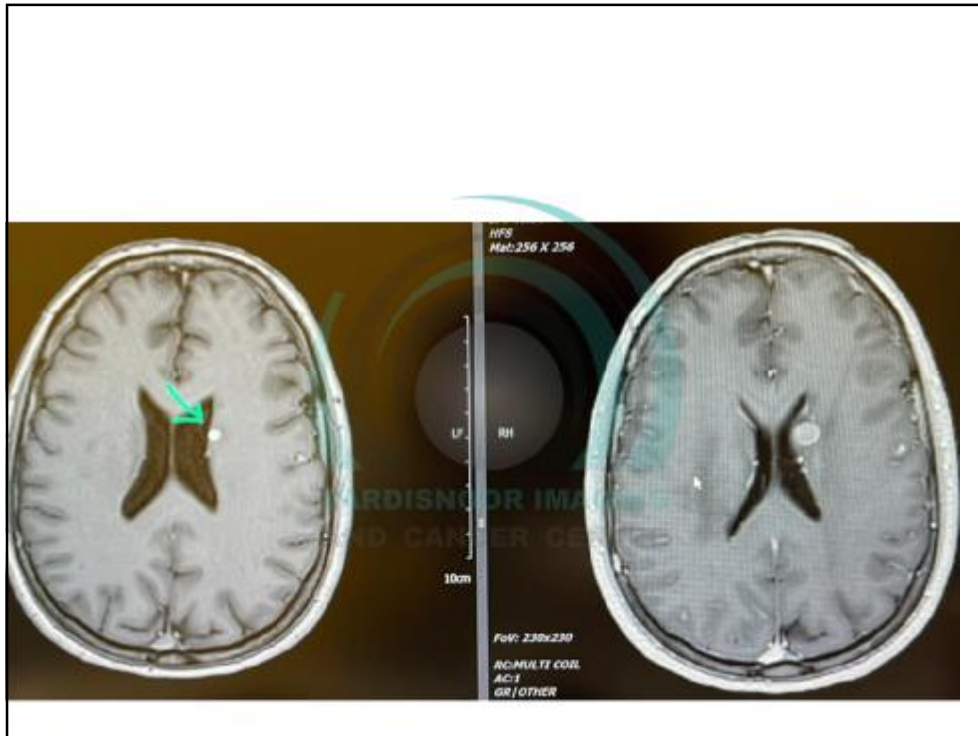
30/5
Brain V12
BS and OT

- 60 ye
- 12 me
- Prima
- Recu
- syste
- Only



The image displays two axial MRI brain scans. The left scan shows a hyperintense lesion in the posterior region, likely the occipital lobe. The right scan shows a similar view, possibly with a different contrast or sequence, highlighting the same area. A blue box in the top right corner contains the text '30/5 Brain V12 BS and OT'. A list of bullet points is on the left, partially obscured by the scans.





Questions?

