

Curing Without Cutting: What your patients need to know about radiation treatment of prostate cancer

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● When is Radiation Therapy Used?

- As initial treatment for cancer that is confined to the prostate gland and is low or favorable intermediate grade. Cure rates for men with these types of cancers are about the same as those for men treated with prostatectomy.
- As part of the initial treatment (along with hormone therapy) for cancers that are more aggressive – unfavorable intermediate risk or high risk.
- Postoperative prostate bed radiation: high risk features or rising PSA.
- Palliative radiation to prevent or relieve symptoms of recurrent or metastatic disease.
- Oligometastases.

• Oligometastatic Disease

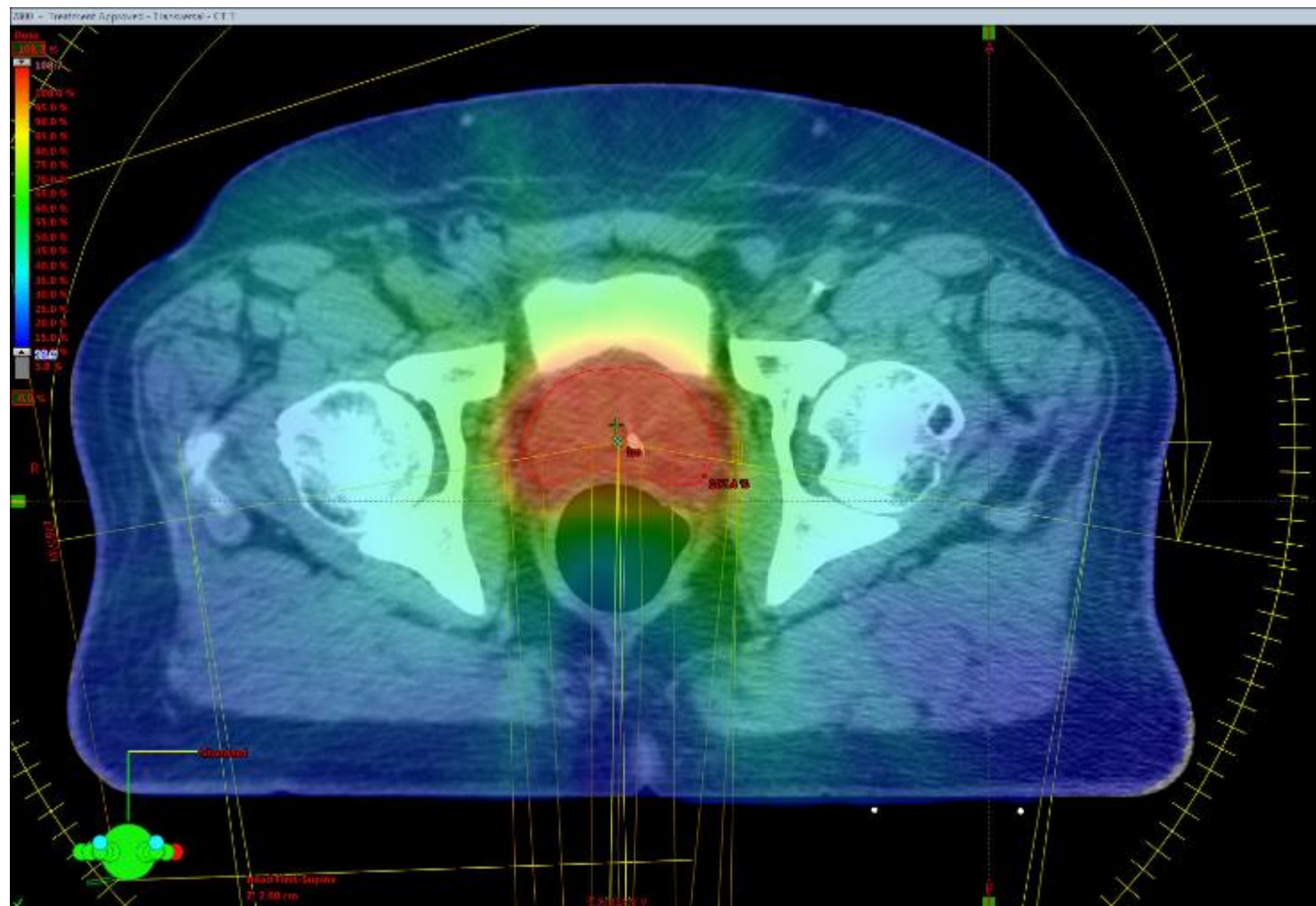
- Less than 3 to 5 metastases
- PET scan imaging
- Limited involvement of lymph nodes or bones
- Radiotherapy:
 - Improves local control
 - Improves survival
 - Reduce or delay systemic therapy – Hormone suppression or chemo
 - ? Cure

• Types of Radiation Therapy

- External Beam Radiation Therapy (**EBRT**)
 - **IMRT** (Intensity Modulated Radiotherapy)
 - **IGRT** (Image Guided Radiotherapy)
 - **VMAT** (Volumetric Modulated Arc Therapy)
 - **SBRT** (Stereotactic Body Radiation Therapy)
 - Proton Beam
- Brachytherapy (internal radiation – seed implantation)
- IV Therapy (Radium-223 –Xofigo)

Radiotherapy Process

- Consultation
- Fiducial marker placement
 - Transrectal
 - Transperineal
- CT Simulation
 - Positioning
 - Skin marks/tattoos
 - Rectal balloon/Space OAR
 - Bladder contrast
- Contouring/Prescription
- Dosimetry/Plan approval/Q/A
- Scheduling



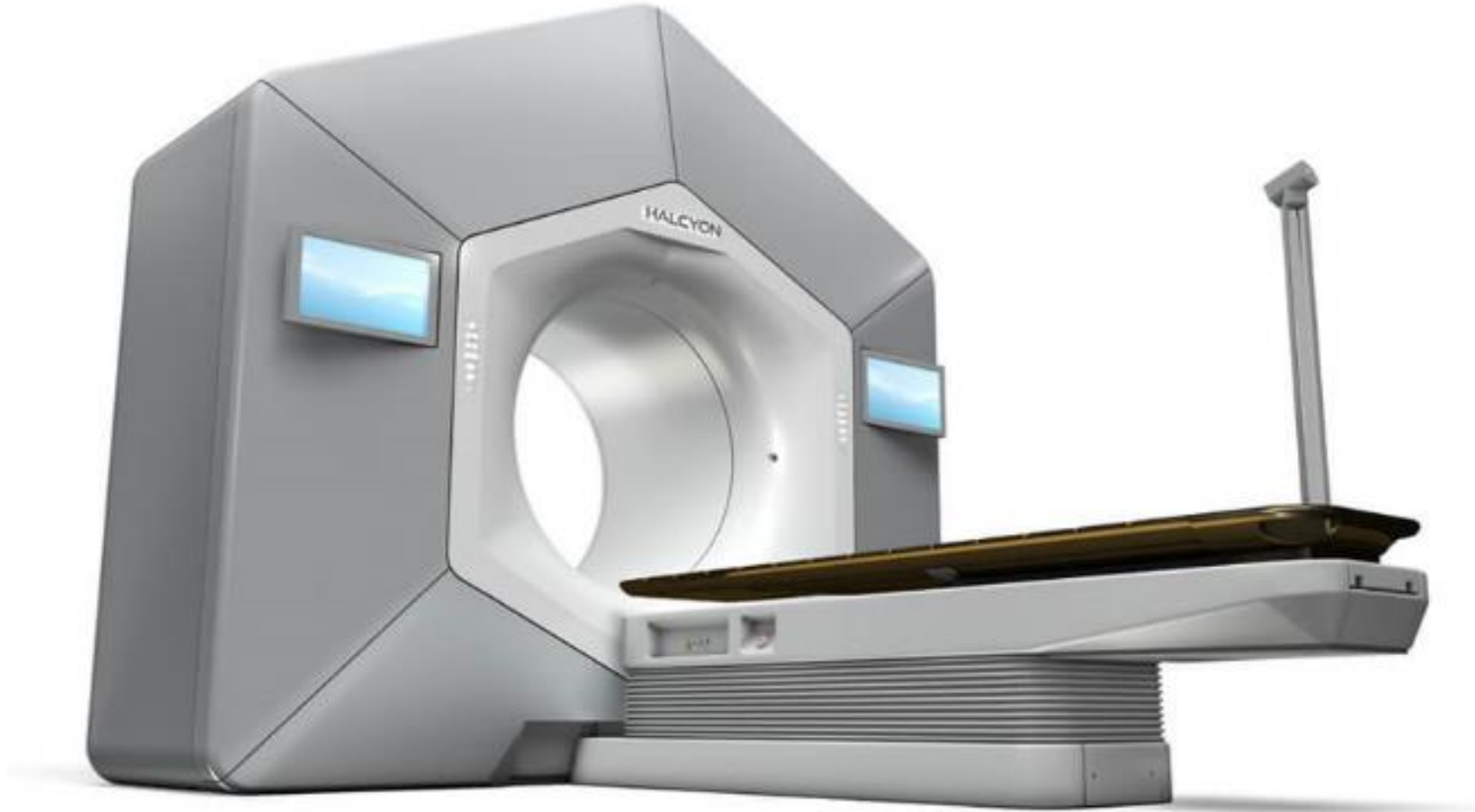
● Prostate Cancer - IMRT

- IMRT, an advanced form of 3D therapy, is the most common type of EBRT for prostate cancer.
- It uses a computer-driven linear accelerator that rotates around the patient as it delivers radiation.
- Along with shaping the beams and aiming them at the prostate from several angles, the intensity (strength) of the beams can be adjusted (modulated) to limit the doses reaching nearby normal tissues.
- This allows a higher dose to the cancer than previously possible.

Linear Accelerator



● Halcyon Linear Accelerator

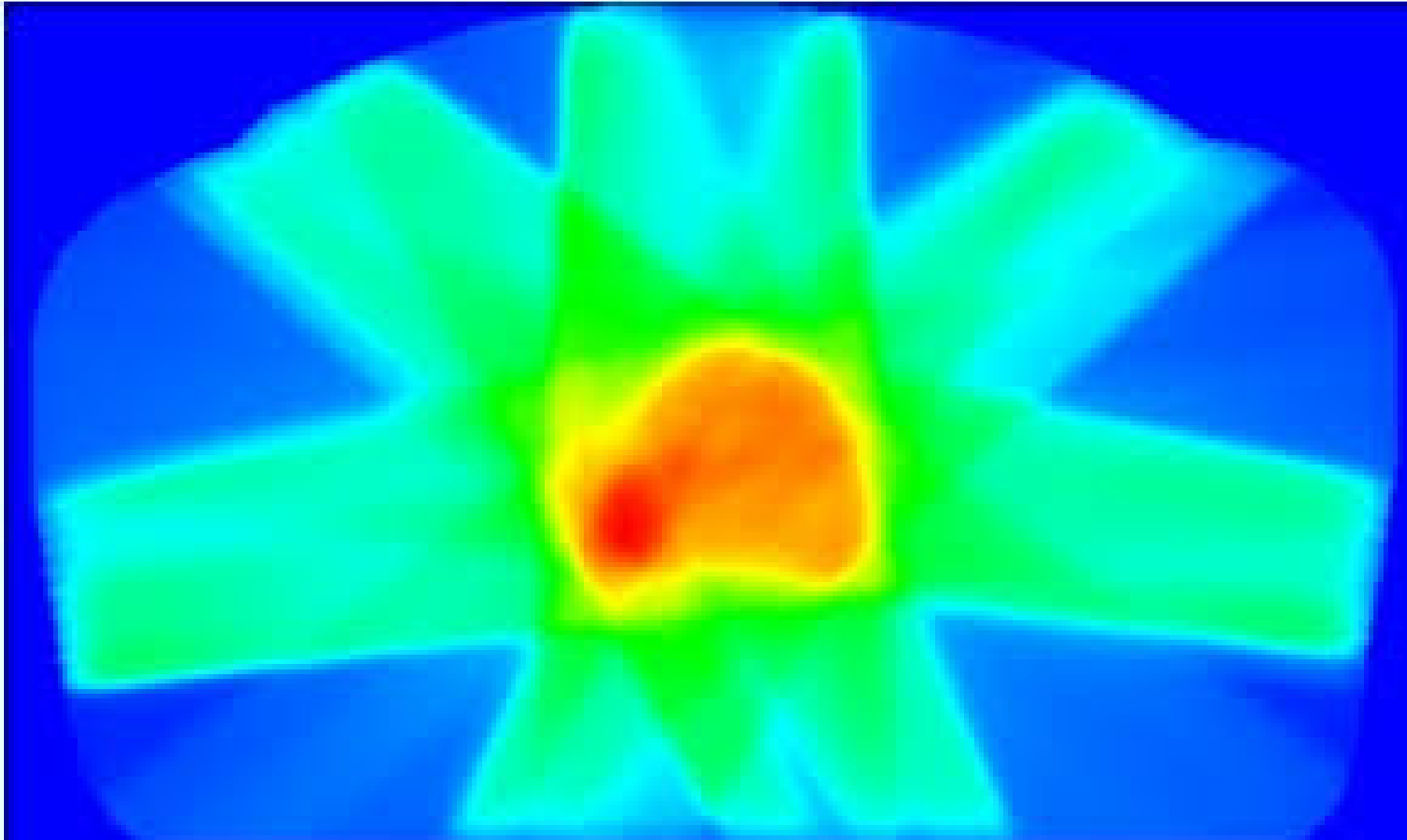


● Halcyon Linear Accelerator

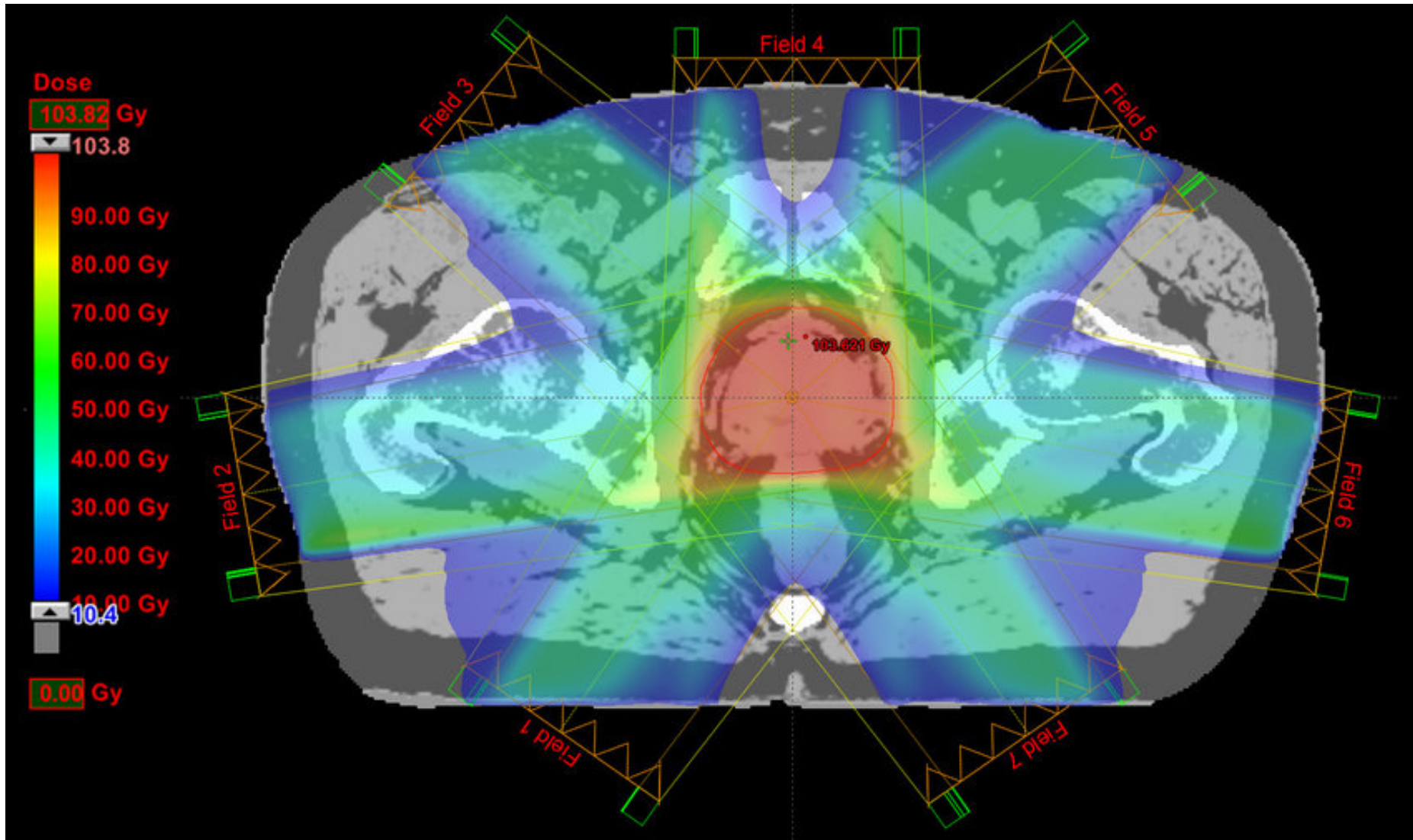
- The gantry rotates four times faster than a standard linac for fast IMRT treatments
- Allows clinicians to treat patients quickly and minimize intrafraction motion
- A unique dual-layer multileaf collimator that enables high modulation with low leakage for every field or arc.
- Designed to enhance patient comfort
- Multi point safety system
 - Patient Verification
 - Enclosed Gantry
 - Remote Servicing



● IMRT PROSTATE

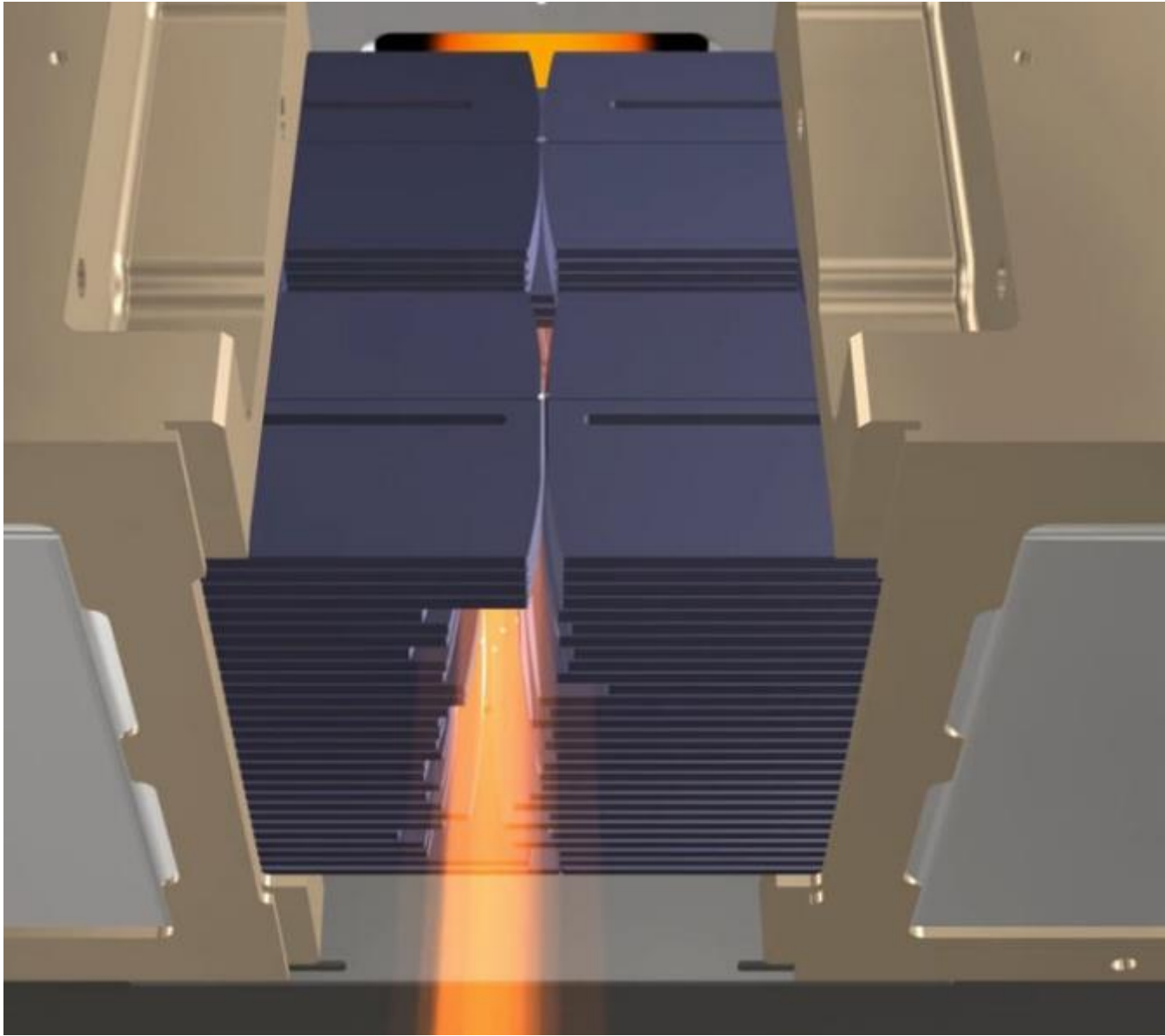


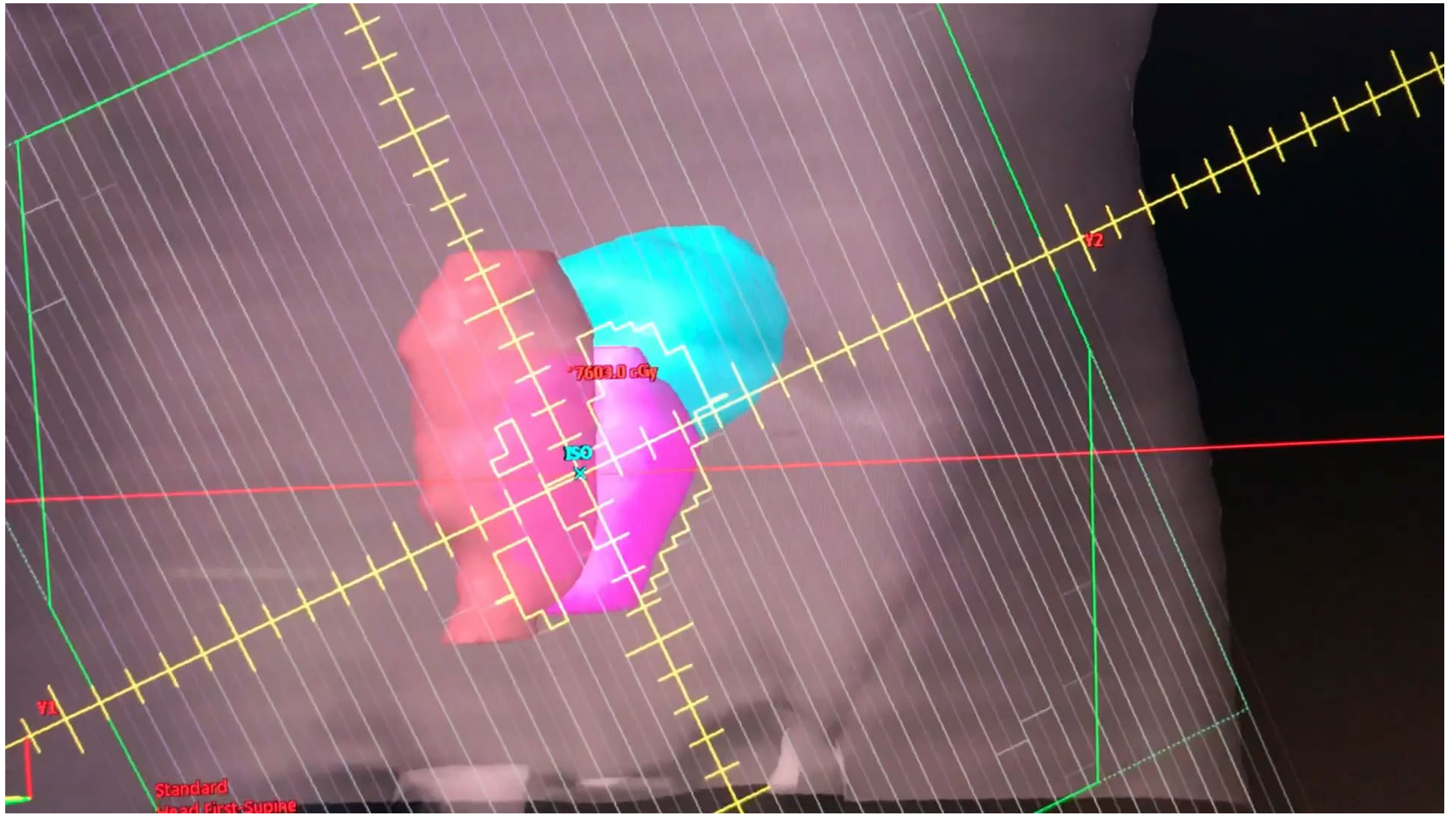
IMRT PROSTATE

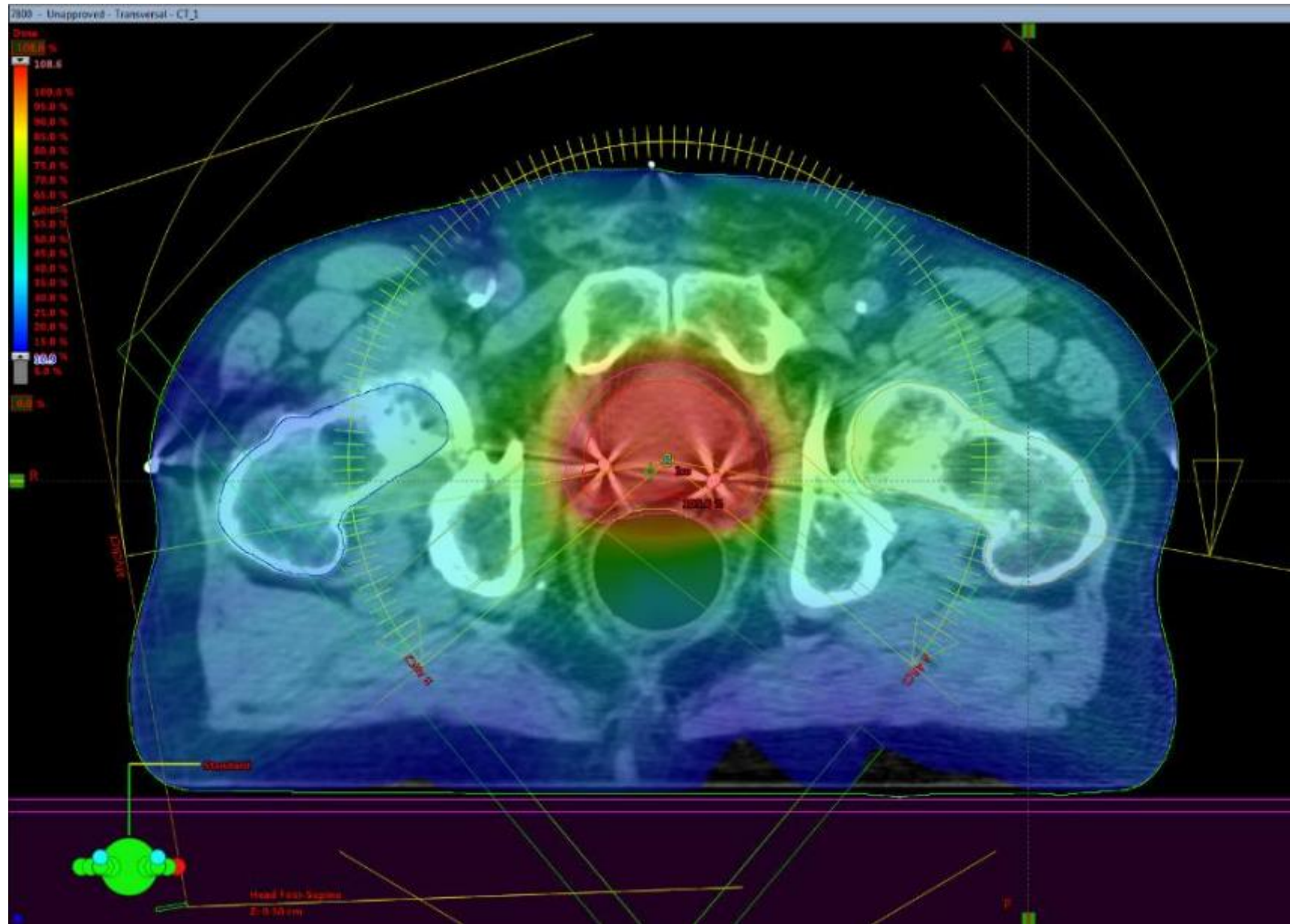


● Volumetric Modulated Arc Radiotherapy (VMAT)

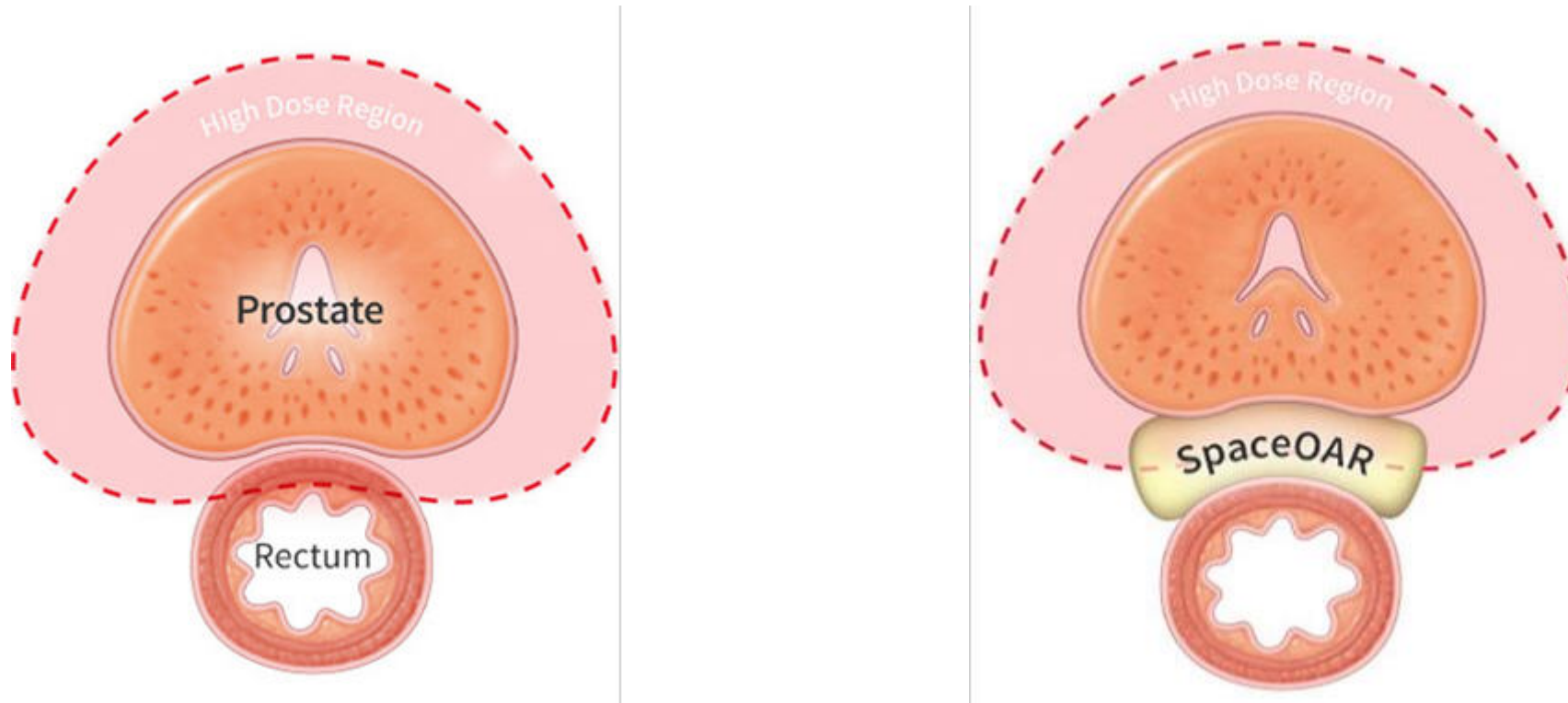
- VMAT is a type of IMRT technique.
- VMAT is different than normal IMRT in that the radiotherapy machine rotates around the patient during a radiation treatment in an arc.
- The machine continuously reshapes and changes the intensity of the radiation beam as it moves around the body.
- VMAT is very accurate, shortens the treatment time, and uses a lower overall dose of radiation.
- The treatment usually takes only several minutes.

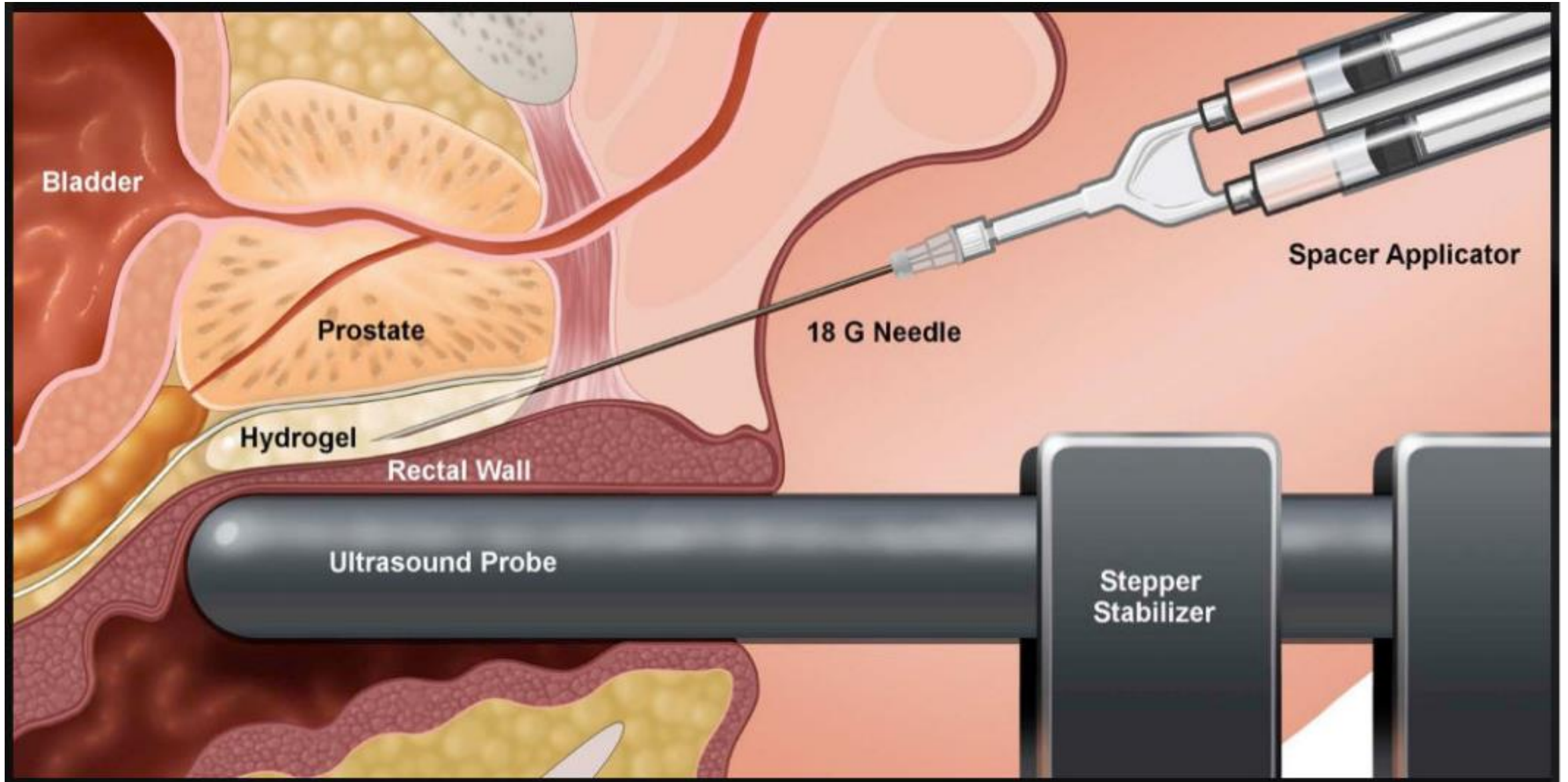




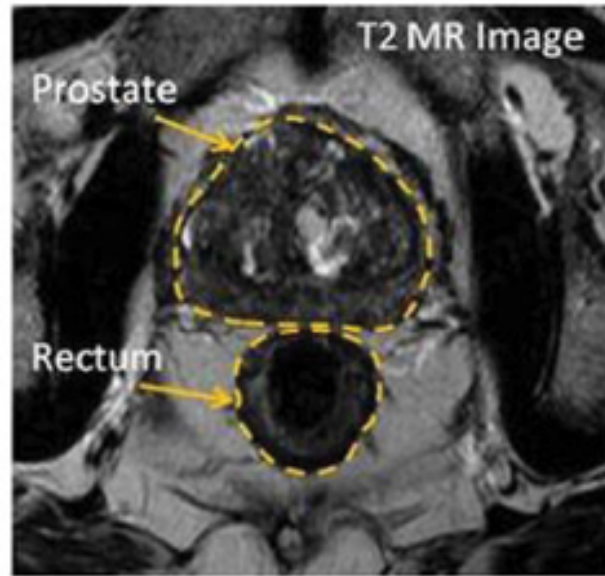


SPACE-OAR HYDROGEL





Pre-application



Post spaceOAR application

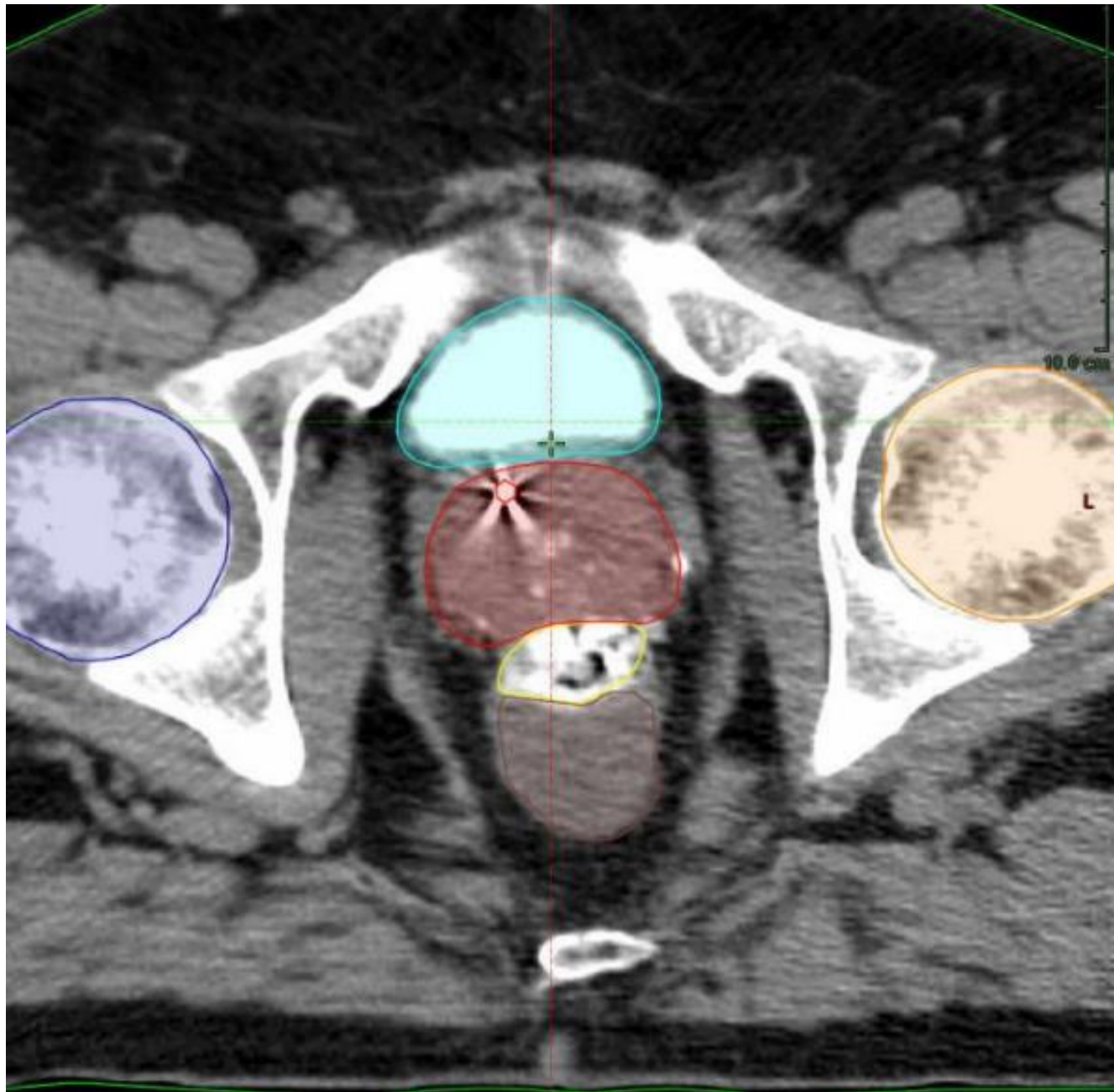


Post EBRT (3 months post-application)



6 months post-application



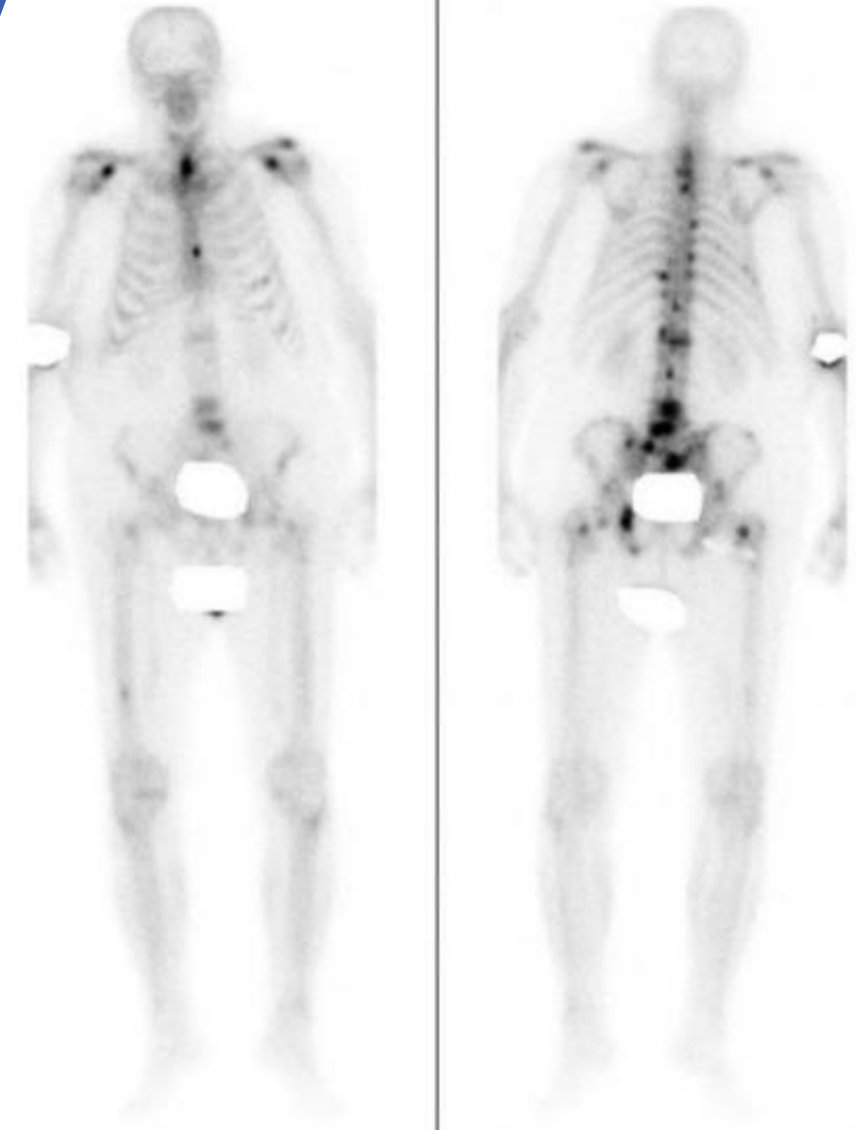


● Hypofractionation

- Radiation treatment in which the total dose of radiation is divided into large doses requiring fewer treatments given once a day or less often.
- Hypofractionated radiation therapy is given over a shorter period of time (fewer days or weeks) than standard radiation therapy.
 - **Moderate Hypofractionation:** 6 weeks of treatment vs. 8 weeks
 - Slightly increased side effects
 - **Extreme Hypofractionation** – 1-2 weeks of treatment
 - Cyberknife, Gamma Knife
 - SBRT (Stereotactic Body Radiation Therapy)

● Palliative Radiotherapy

- Painful bone metastases
- Prevention of pathologic fractures
- Local symptoms
 - Pain
 - Bleeding
 - Obstruction
- Short Course – often single fraction
- Improvement in quality of life



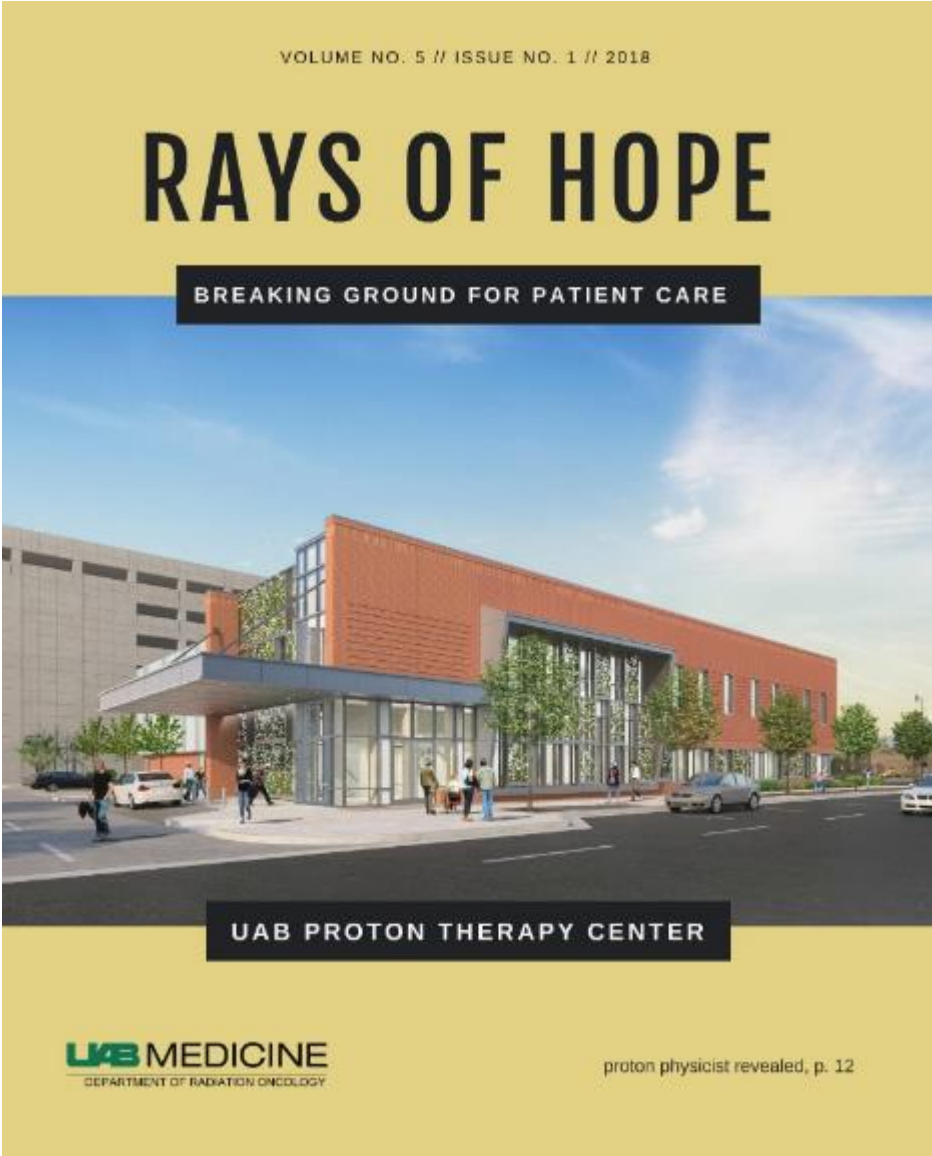


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RAY'S OF HOPE

BREAKING GROUND FOR PATIENT CARE

UAB PROTON THERAPY CENTER

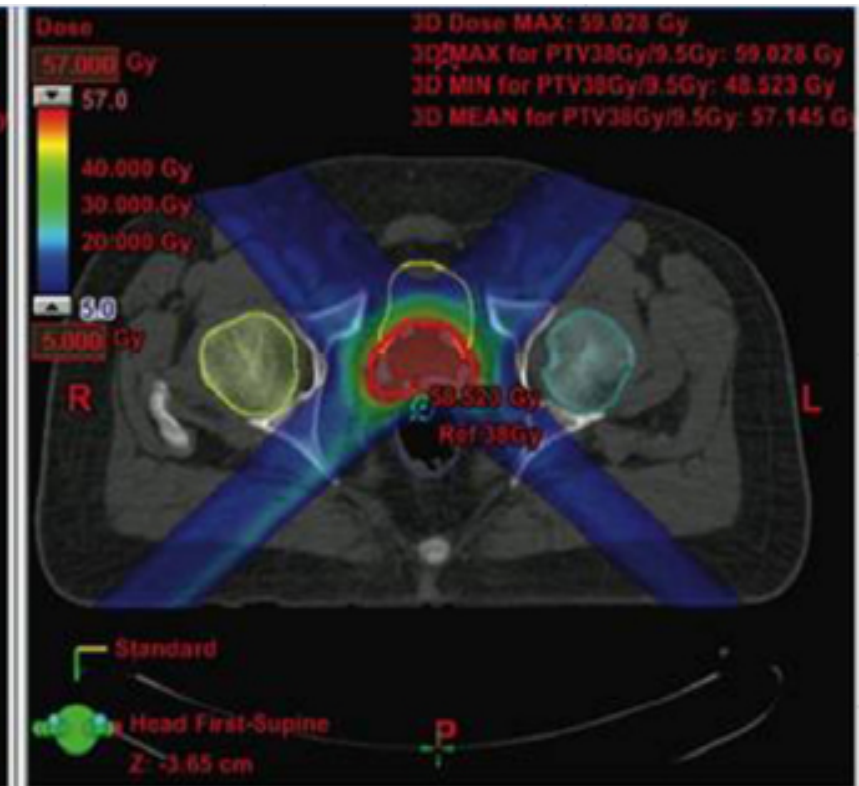
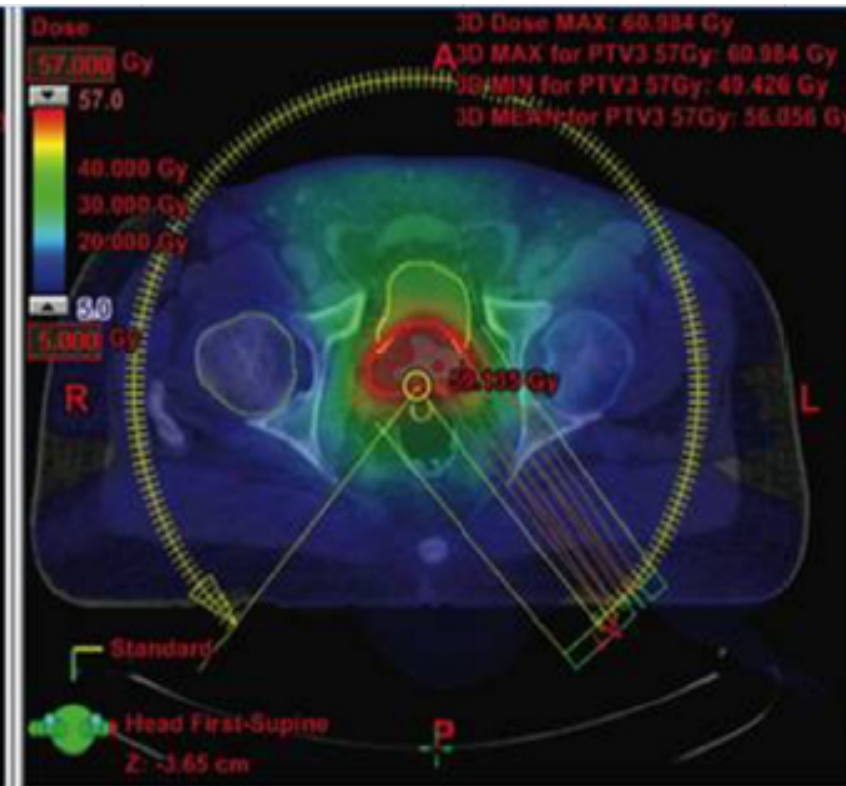
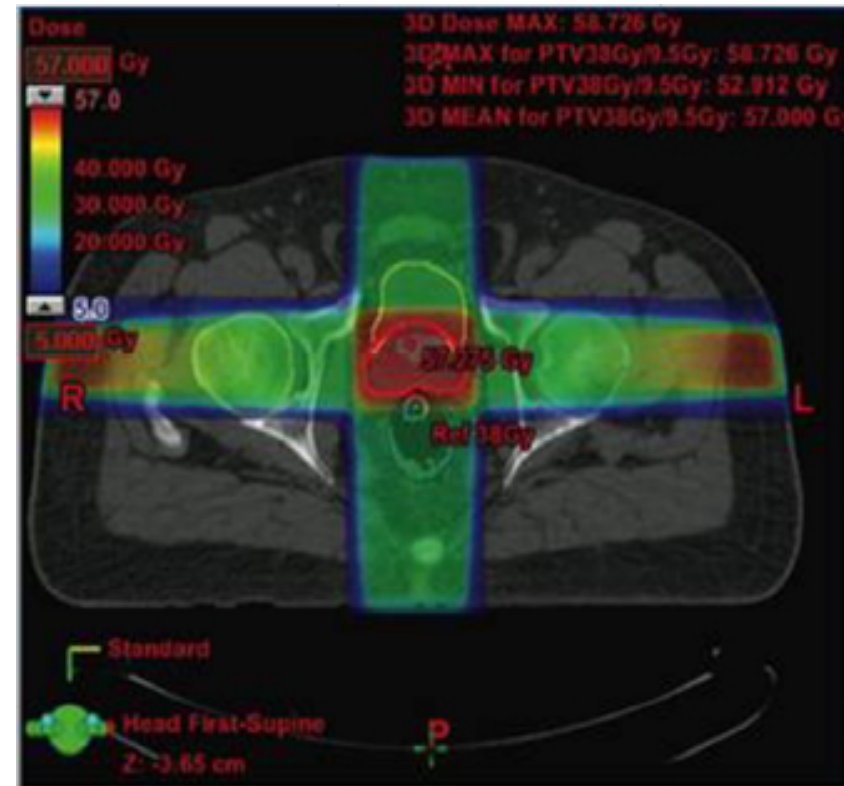
UAB MEDICINE
DEPARTMENT OF RADIATION ONCOLOGY

proton physicist revealed, p. 12



● Proton Therapy

- “Proton therapy delivers radiation with pinpoint accuracy, with little to no dose to tissues beyond the tumor, making treatment very effective and much gentler.”
- “Proton therapy decreases low-dose radiation exposure to uninvolved organs, which potentially translates into lower risks of treatment toxicity and second malignancy”
- “May offer dosimetric advantages as well as added complexity over conventional radiotherapy or intensity modulated radiation therapy (IMRT) under some circumstances.”
- “They call it a radiation vacation. There were temporary minor side effects and some initial discomfort. Our experience was wonderful.”
- Well-designed, randomized head-to-head comparative trials are still needed to justify its use — and its significant excess cost — over traditional radiotherapy modalities such as IMRT.

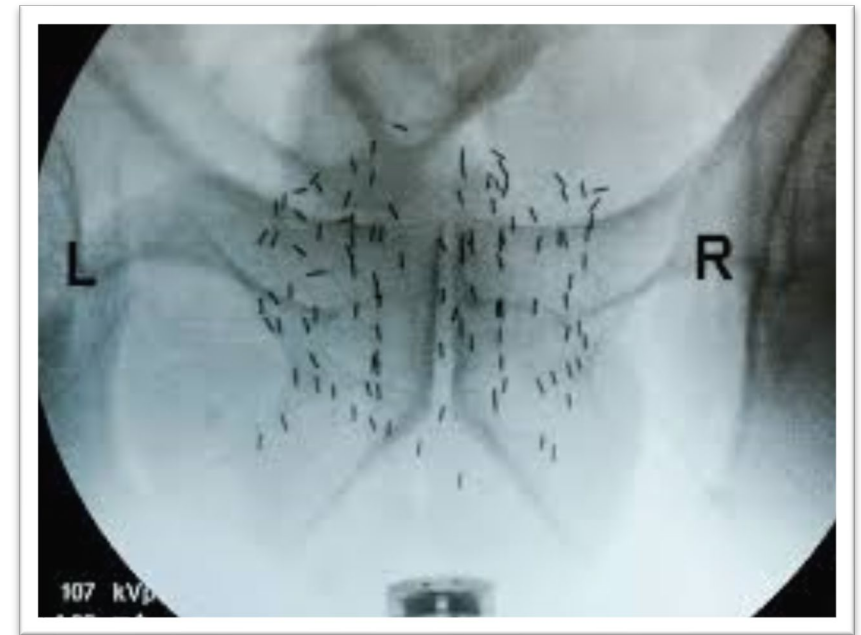
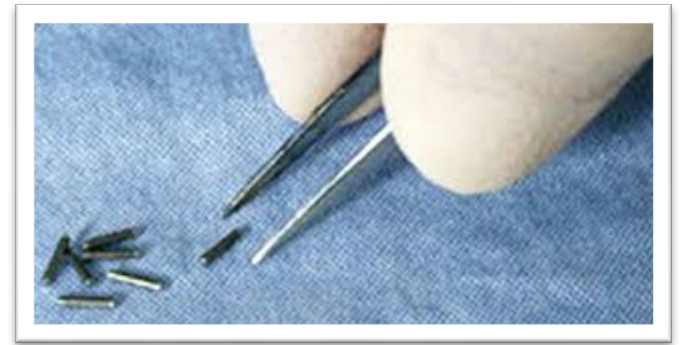


● Proton Therapy

- A controversial option, with some critics suggesting that its popularity may be driven by advertising rather than by sound scientific evidence of benefit over other therapies.
- there is no good evidence that protons are any better than photons in curing prostate cancer
- Proton beam therapy is significantly more expensive to perform than IMRT
- Proton therapy may not be covered by insurance, is not widely available, and has not yet been studied in larger trials comparing it to other types of radiation
- "I would never recommend that a patient relocate to go to a proton center for prostate cancer treatment. It's simply not worth the effort or expense."

● Brachytherapy

- Interstitial placement of radioactive seeds into the prostate gland
- I-125 (60 day half life) or Pd-103 (17 day half life)
- Single application – avoids daily external radiotherapy
- May be used in combination with external radiotherapy for more advanced disease
- Equal cancer control c/w surgery, IMRT
- Less costly

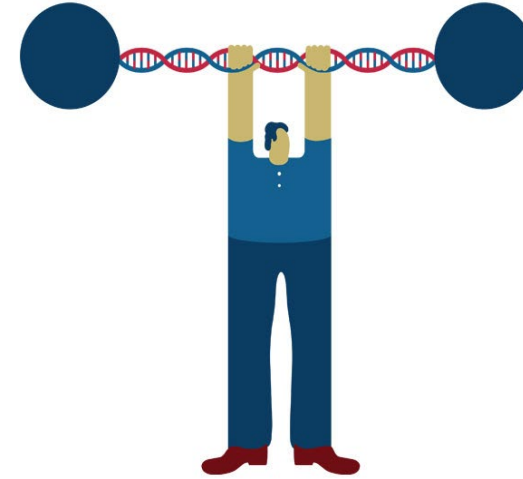


Xofigo

- Intravenous Radium-223
- For metastatic disease unresponsive to hormone suppression
- Bone involvement only
- 6 monthly infusions
- Prolongs survival
- Improves symptoms



Genetic Assays



- **Decipher**
- **Prolaris**
- **Oncotype DX**
- Measures the activity of certain genes in the tumor
- Predicts aggressiveness of the prostate cancer
- Results may lead to more aggressive treatment – e.g. addition of ADT to radiotherapy or postoperative radiation
- May support observation without treatment

THANK YOU



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CENTERS OF ALABAMA

