

# **Pre-treatment preparation of the pelvic patient**

---

# **Who we are...**

- Amy Warlow– Deputy Lead Therapy Radiographer, Rutherford South Wales
- James Snell – Lead Therapy Radiographer, Rutherford North East

We work with a team of Radiographers, Oncologists, Physics and Dosimetry staff to deliver Radiotherapy and Proton Beam therapy treatments.

# Our network of centres

## South Wales



- Open for Conventional Radiotherapy, Proton Beam Therapy, Chemotherapy and Immunotherapy

## North East



- Open for Conventional Radiotherapy, Proton Beam Therapy, Chemotherapy and Immunotherapy

## Thames Valley



- Open for Conventional Radiotherapy, Proton Beam Therapy, Chemotherapy and Immunotherapy

## North West



- In Build – Open late 2020

- Each Rutherford Site is equipped with:
  - Phillips Big Bore CT Scanner
  - Phillips Ingenia MRI-RT Sim Scanner
  - ELEKTA Linear Accelerator
  - IBA Proteus ONE
  - CUBE Scan Bladder Scanners



# Preparing the Pelvic Patient for Radiotherapy/Proton Beam Therapy

- Preparation of pelvic patients for treatment is common practice and is not new
- However it does differ from department to department
- Suitable preparation can help to reduce dose to organs at risk (OARs) and thus reduce side effects for patients
- Preparation also helps with accuracy and reproducibility of patient set ups
- Mainstay of pelvic preparation is prostate patients
- Bladder, Gynae and rectum patients can also be prepared for treatment
- So what do we do ....



# Rectal Preparation

- Micro enema prior to pre treatment planning and every treatment
- Set protocol on acceptable rectal volumes
- Bowel preparation MUST be completed prior to starting bladder preparation

Diameter <3.5cm	Continue with scan
Diameter >4.5cm	Do not scan – patient to empty and re prepare
Diameter 3.5-4.5cm	Radiographer clinical judgment on reproducibility, may discuss with dosimetry

- Gas of any diameter:
  - Consider treatment reproducibility
  - Consider additional bowel prep if gas is present throughout rectum and bowels
  - Re prepare

- Examples are included in our written procedures to aid staff in clinical decision making



Figure 1: Large Rectum with a gas pocket at prostate level- not appropriate for treatment

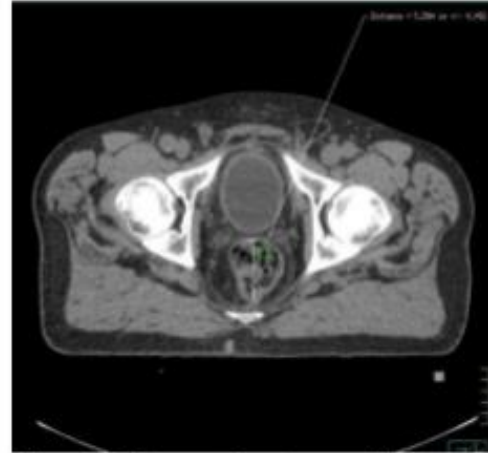


Figure 2: Large Rectum with faeces- not appropriate for treatment

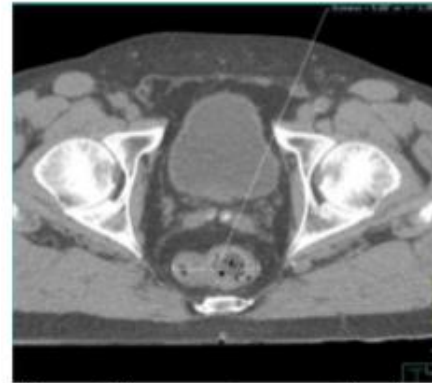


Figure 3: large rectum rectal volume made up of loops, in the L-R direction so not impinging on prostate/vesicles

# Bladder Preparation

- General hydration is encouraged
- Pelvic patients (Prostate, Gynae, Rectum) are asked to prepare their bladder for treatment following a set bladder protocol

350ml of Water with a 30 minute wait

*Ideal volume 200-350ml*

*Minimum accepted at planning 150ml*

- Use the bladder scanner to assess bladder volume prior to radiation exposure – this has helped us reduce re CTs significantly (and re CBCTs)
- The aim is to achieve a ‘comfortably full’ bladder that provides a consistent size (well as consistent as a bladder can be!)
- *Bladder patients may be asked to follow this same preparation, or may be asked to ensure an empty bladder*



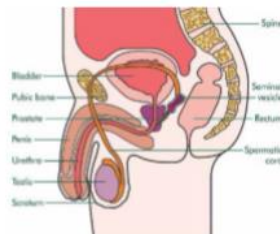
## Preparation for Radiotherapy to the Prostate

Rutherford  
Cancer Centres

Please read this leaflet carefully before you start your treatment. Your radiographers will guide you along each process, but it is important to follow the instructions outlined below.

### Why do I need to prepare for treatment?

- The organs in the pelvis are all close together
- Ensuring they are the same position each day can increase the accuracy of your treatment
- It can also reduce the risk of long-term side effects by moving these organs away from the treatment area



### What do I need to do?

- Have a comfortably full bladder
- A small rectum with minimal gas
- Ensure that you are well hydrated in preparation for your scans, and throughout treatment. Aim to **drink 1.5-2 litres** of water a day.
- Sipping fluid is better to maintain hydration than taking a large quantity all at once
- If you drink a lot of caffeine, then you should cut down on this or replace with a decaffeinated alternative (do not cut it out altogether)
- Reduce your intake of fizzy drinks, alcoholic drinks or fruit juices

### When do I need to do it?

To help plan your radiotherapy treatment you will have a **CT scan** and may also have an **MRI scan**. You will be asked to attend the centre 1 hour prior to your CT and MRI scan appointments and a radiographer will run through the below preparation steps with you, on your appointment list this will be called a "prep appointment".

For your treatments the same preparation will be required, but only on your treatment days.

### Bowel preparation

To help ensure that your rectum (back passage) is empty, the radiographers will ask you to use a micro-enema, which is a laxative solution that you insert into your back passage. It causes the urge to open your bowels soon after using it. It is important to use the micro enema as instructed by your radiographers even if you have regular bowel movements as it may help to remove residual matter and gas.

You will be asked to use your enema **1 hour** prior to your scan/treatment appointments, empty your bowels after using the enema and ensure you empty your bladder as well.

If appropriate your radiographers may provide you with additional, or alternative products to help prepare your bowels.

### Bladder preparation

In addition to ensuring you are generally well hydrated, we also need you have a comfortably full bladder for your scans and treatment.

You will be asked to **drink 350ml** of water **30 minutes** before your appointment time. Please drink the water quite quickly and do not empty your bladder within this time. You should NOT drink your water until after you have used your enema and emptied both your bowels and bladder.

**After you have followed these steps you will be ready for your scans/treatment. If you have any questions, please ask a radiographer who will be happy to guide you through each step.**

CORP-RT-PI22 v1

Rutherford  
Cancer Centres

1 hour before  
appointment

EMPTY BOWELS  
& BLADDER

USE YOUR MICRO ENEMA  
You will be given these when you see your  
doctor or when you come for your planning scan

It may take up to 15 minutes for it to take effect.  
After this time empty your bowels and your bladder  
if haven't already.

30 minutes  
before  
appointment

FILL  
BLADDER

Drink 350mls of water quickly to fill your bladder and  
wait 30 minutes. Do NOT empty your bladder.

Appointment  
time

READY FOR  
TREATMENT

The radiographers will call you for your treatment.  
You may have an ultrasound scan of your bladder to  
measure the volume.

CORP-RT-PI23 v1

# Patient Information

Rutherford  
Cancer Centres

# How do we check compliance..

- We do use MRI....Philips MRI!
  - Unless contraindicated MRI planning scans are carried out on all pelvic patients, we do the MRI first, CT second but in the same session
- Bladder Scanners for volume checks
- Low dose “mini” scans on CT to confirm no changes have occurred between MRI and CT and for when MRI is contraindicated to ensure we are keeping dose low as possible

# CT Protocol – mini scan

Surview (Dual)	
mA	50
kV	120
DLP	Average 4.1
Mini Scan	
mA	74
kV	120
DLP	Average 30
Thickness	5mm
Increment	5mm

Dose Averages from last audit – CT Dose  
audit and protocol optimisation under review

# CT Protocol – planning scan

Surview (Dual)	
mA	50
kV	120
DLP	Average 4.1
Planning Scan	
mA	163
kV	120
DLP	Average 490
Thickness	2mm
Increment	2mm

Dose Averages from last audit – CT Dose  
audit and protocol optimisation under review



# Proton Specific Requirements

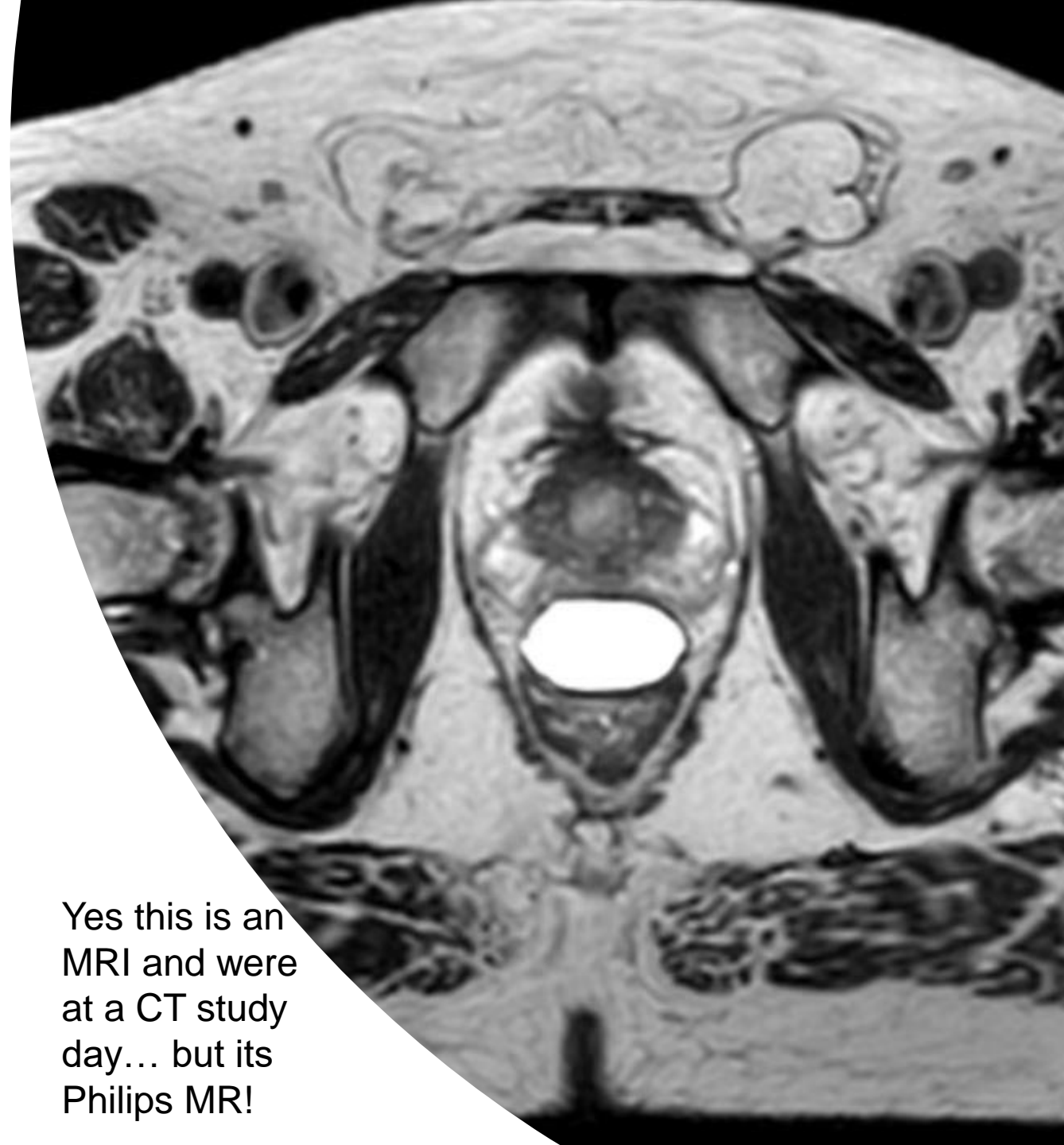
- Endo Rectal Balloons (ERB)
- Rectal Spacer – mandatory for PBT but offered to all
- Additional bowel preparation for hypo fractionated prostate regimens – 7#



# Rectal Spacer

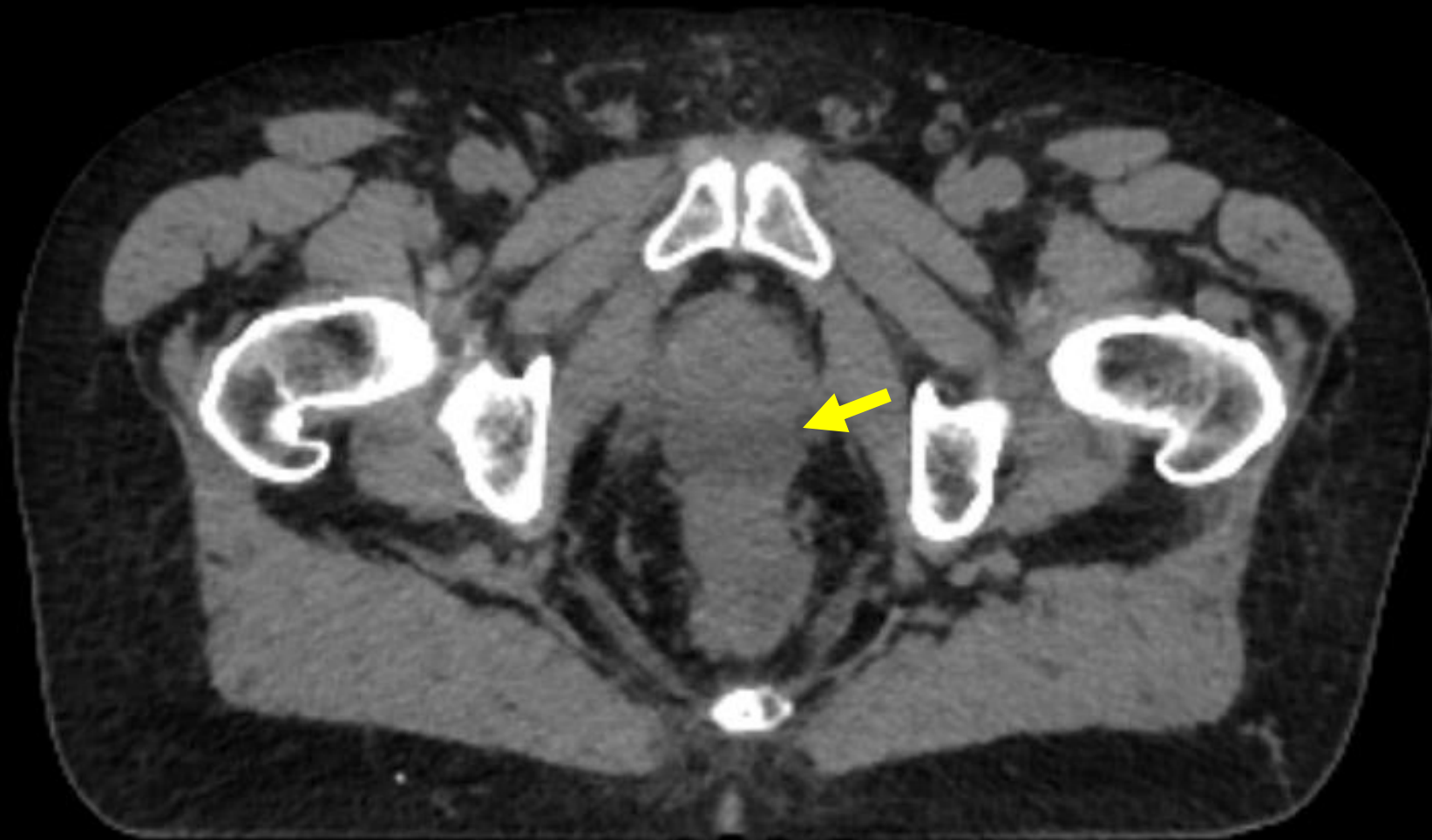
---

- Biodegradable rectal spacer inserted by a urologist before treatment planning begins
- Creates a space between the prostate and the rectum to help minimise dose to the rectum by pushing the rectum away
- A lower dose to the rectum is associated with fewer side effects both on treatment and later in life
- Position is confirmed using a short MRI scan upon discharge from the performing hospital
- The body reabsorbs the balloon within 6 months of it being placed

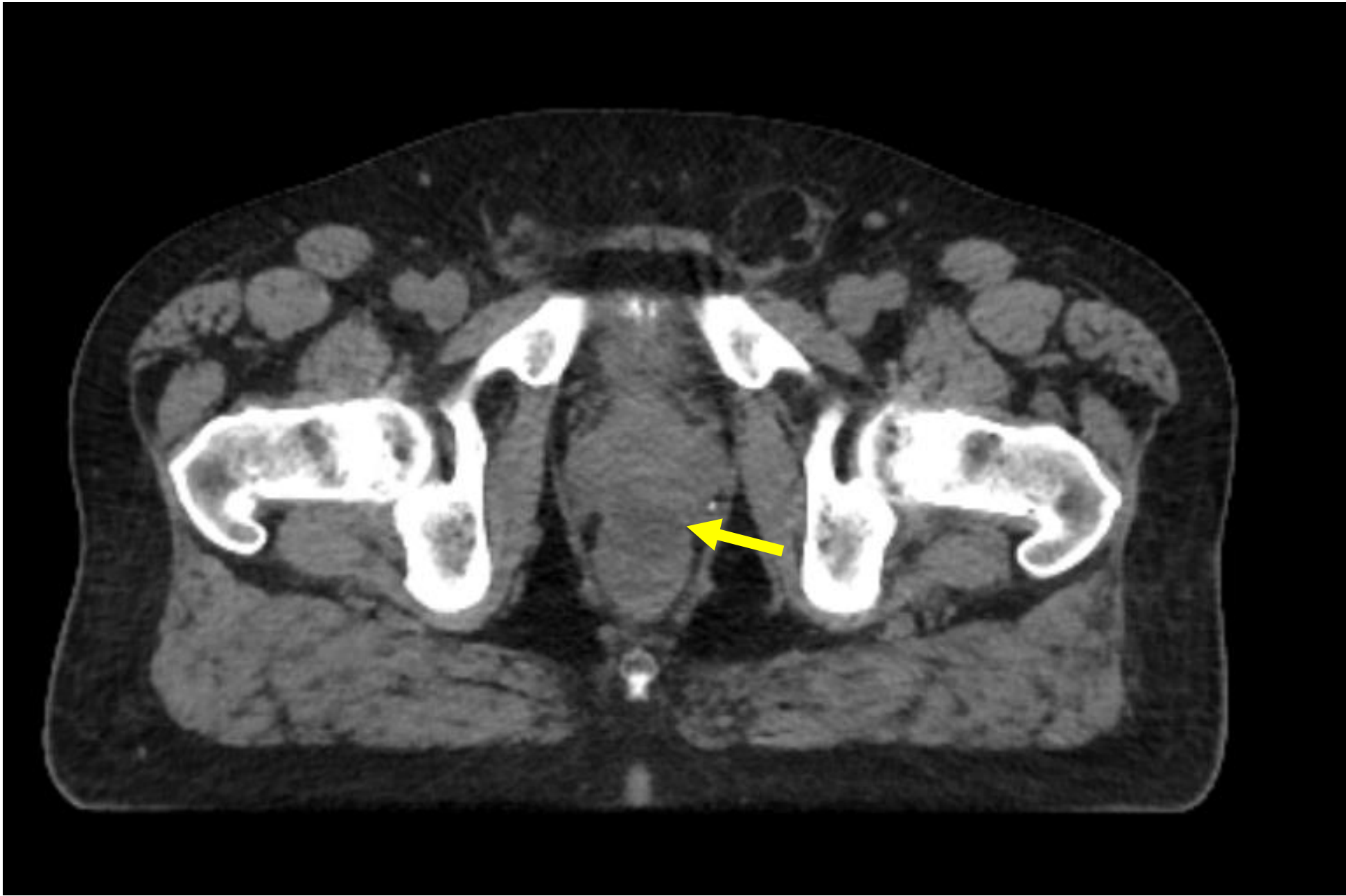


Yes this is an MRI and were at a CT study day... but its Philips MR!

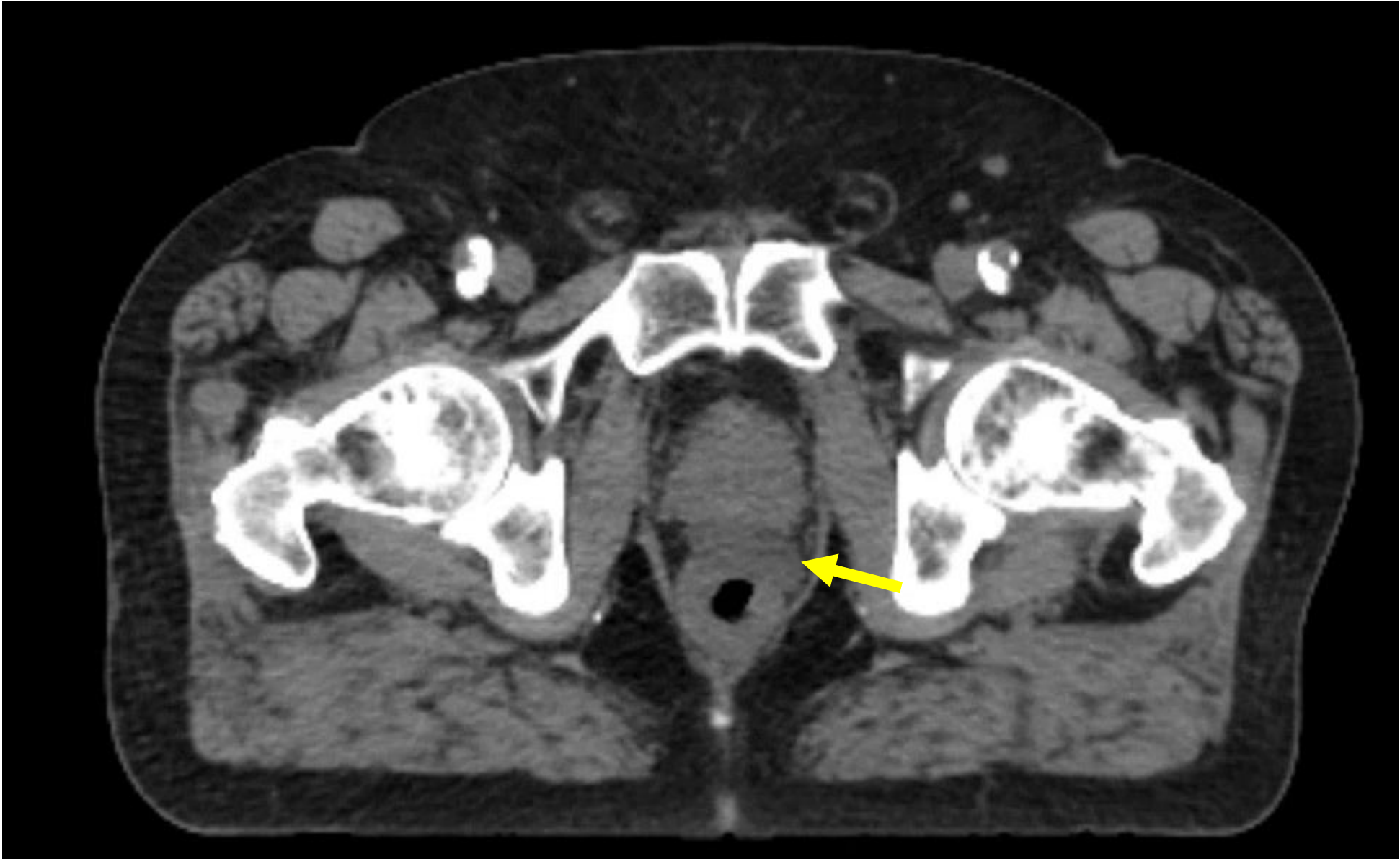




ProSpace -  
Bioprotect



ProSpace -  
Bioprotect



SpaceOAR

- Average space achieved...

	Ant/Post	Right/Left	Sup/Inf
Minimum (cm)	1.5	2.1	5.4
Average (cm)	1.9	3.0	4.5
Maximum (cm)	2.5	3.8	3.1

- As insertion technique has been refined particularly A/P separation has increased and become more stable
- Spacers degrade within the patient over 5-6 months from insertion
- Max Rectal toxicity recorded so far is Grade 2

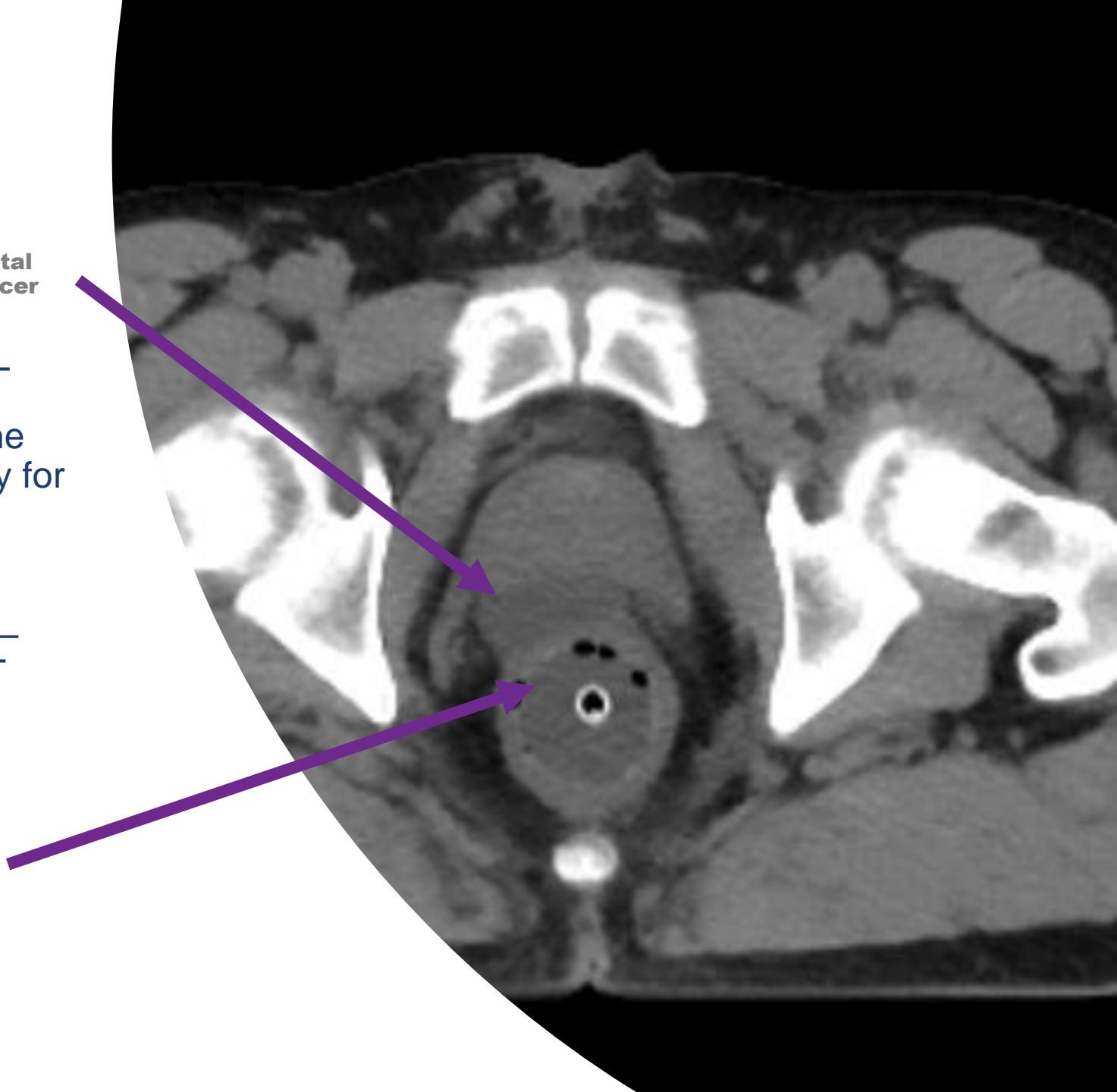
# Endorectal Balloon

---

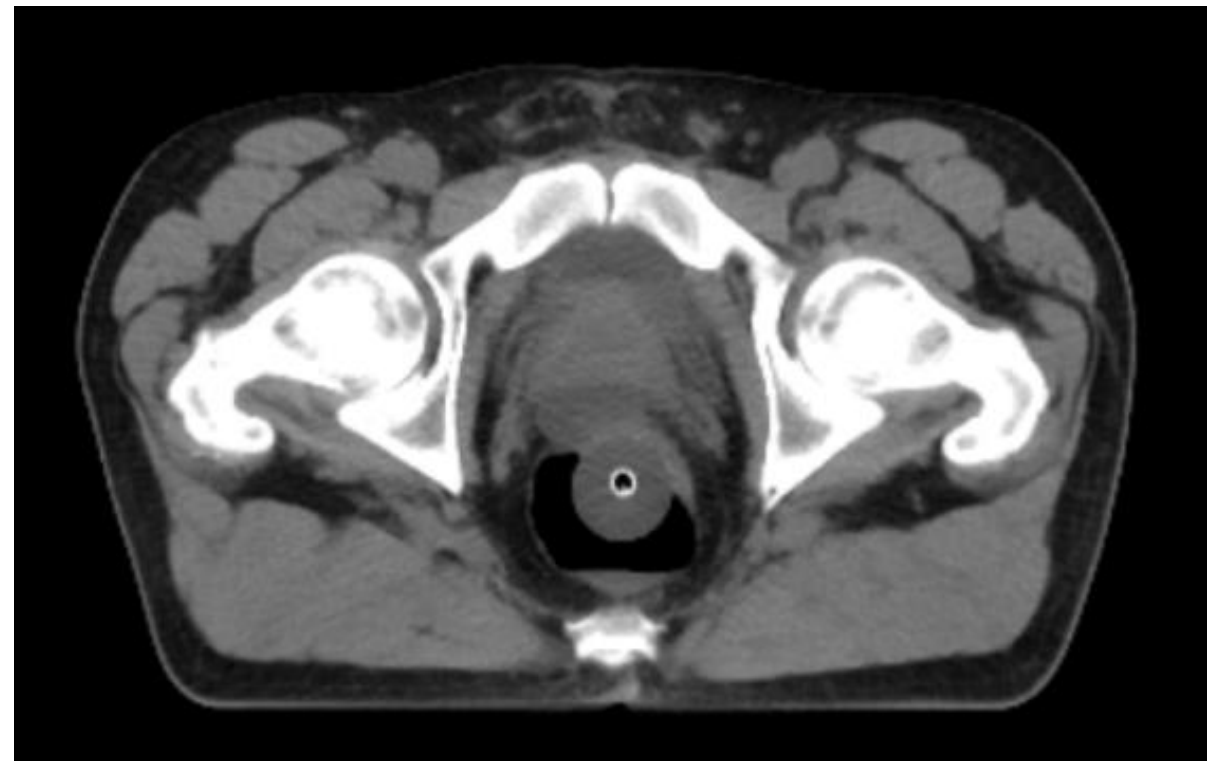
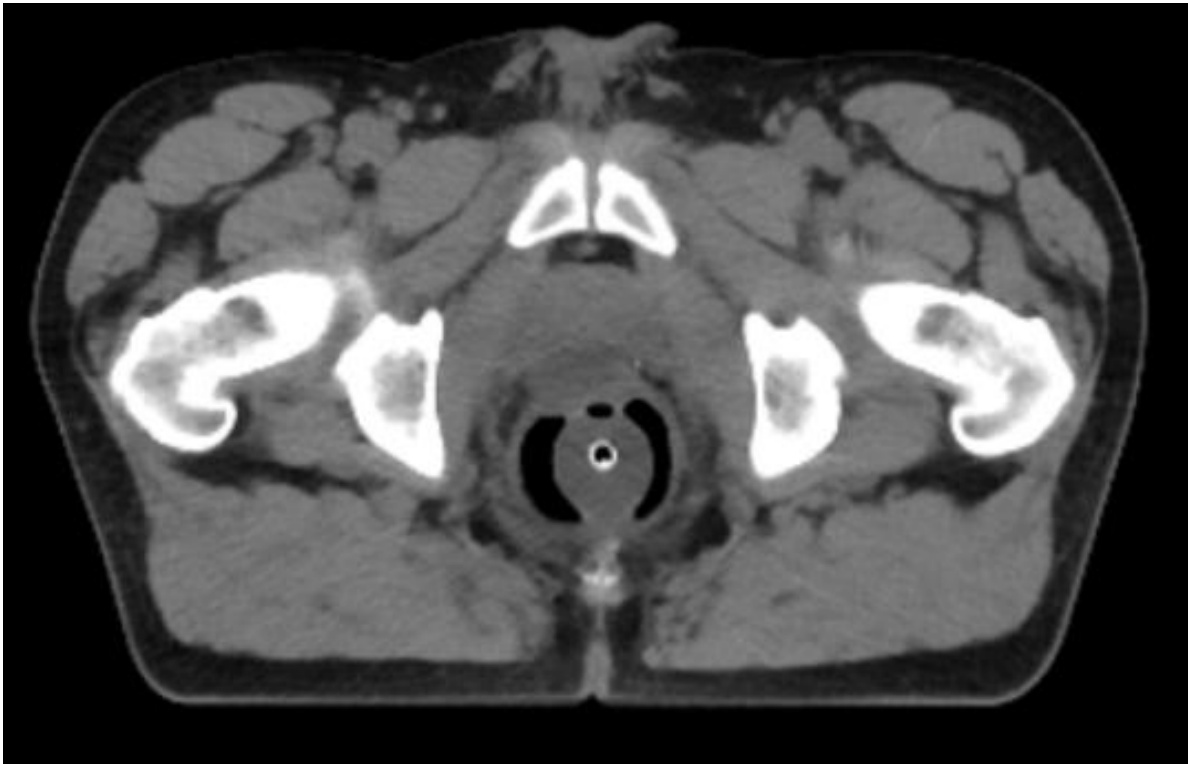
- Endorectal balloons are used to ensure the rectum is a consistent size and position daily for treatment
- Inserted by Therapy Radiographers
- Filled with a determined volume of saline – MRI used to determine fill to save repeat CT dose
- Not suitable for every patient – only a requirement to evaluate potential benefit for Proton

**Rectal  
Spacer**

**Endorectal  
Balloon**



**It's still trial and error....**





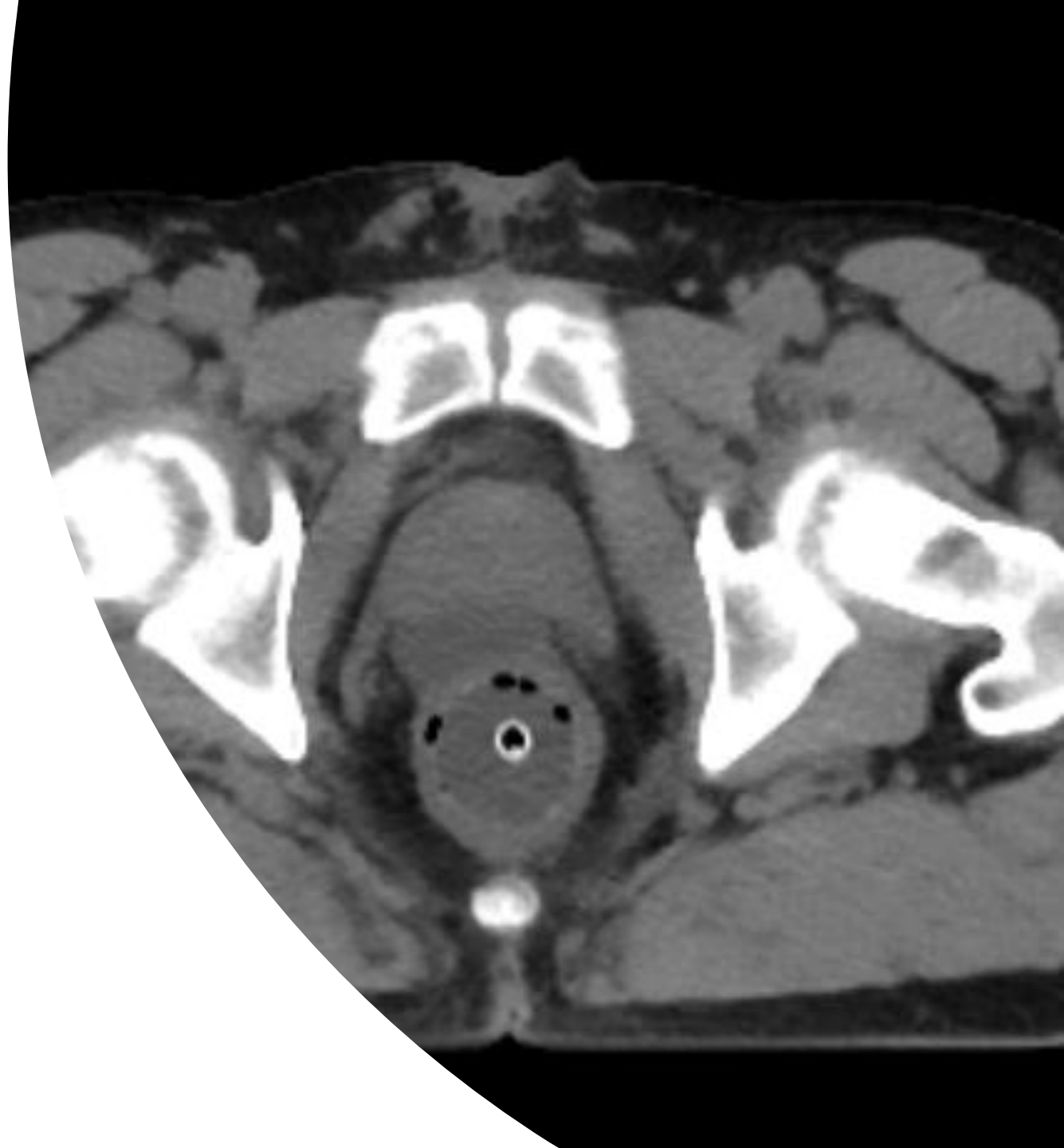
# Additional Bowel Prep

---

- Range uncertainty is increased with 'air' and a reproducible bowel with little gas is important
- Given Movicol (or Laxido) to start 3 days prior to pre treatment planning

1 sachet daily at night

- Continue throughout treatment
- Radiographers adjust dosage if required for side effects



# So does it all help....

- Short answer – Yes
  - Reduced doses to OARs
  - Reduced side effects
  - Easier to plan
- BUT its not easy...
  - Compliance is always going to be a hurdle
  - Its frustrating for patients and radiographers
  - Patient education is essential

[Amy.warlow@therutherford.com](mailto:Amy.warlow@therutherford.com)  
[James.snell@therutherford.com](mailto:James.snell@therutherford.com)

**therutherford.co.uk**