

Rectal reproducibility in Prostate Cancer Radiotherapy: Are micro enemas an effective tool?

Hannah Dyer

Research and Development

Radiographer

Raigmore Hospital, Inverness

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Agenda

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Introduction



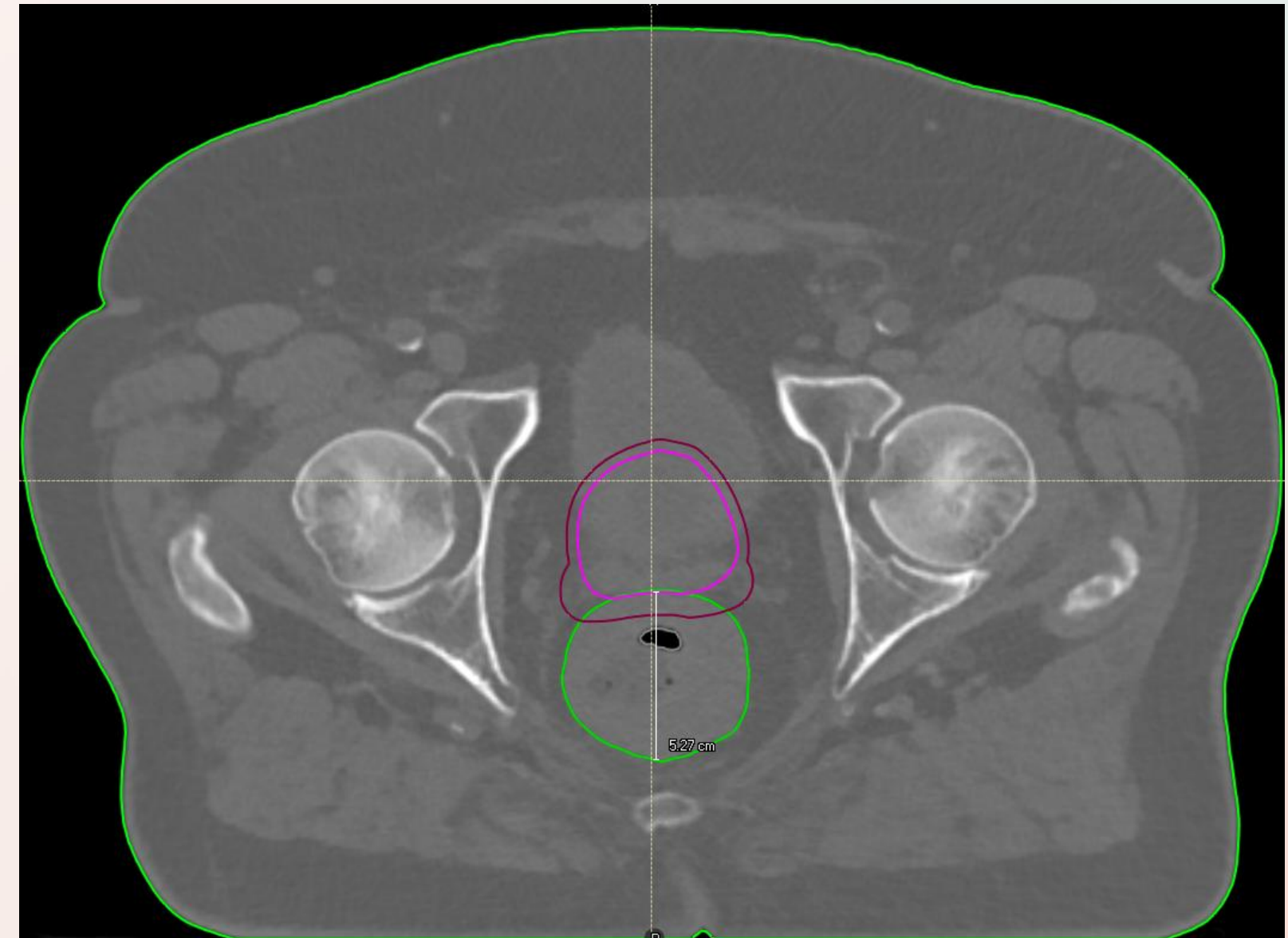
- Two Truebeam linear accelerators
- Siemens CT Scanner
- Raystation Planning
- Raycare Patient Management System
- AlignRT Advance
- SimRT
- MapRT

I had no conflicts of interest when carrying out this study. The work carried out was part of a service development agreed upon as a department.



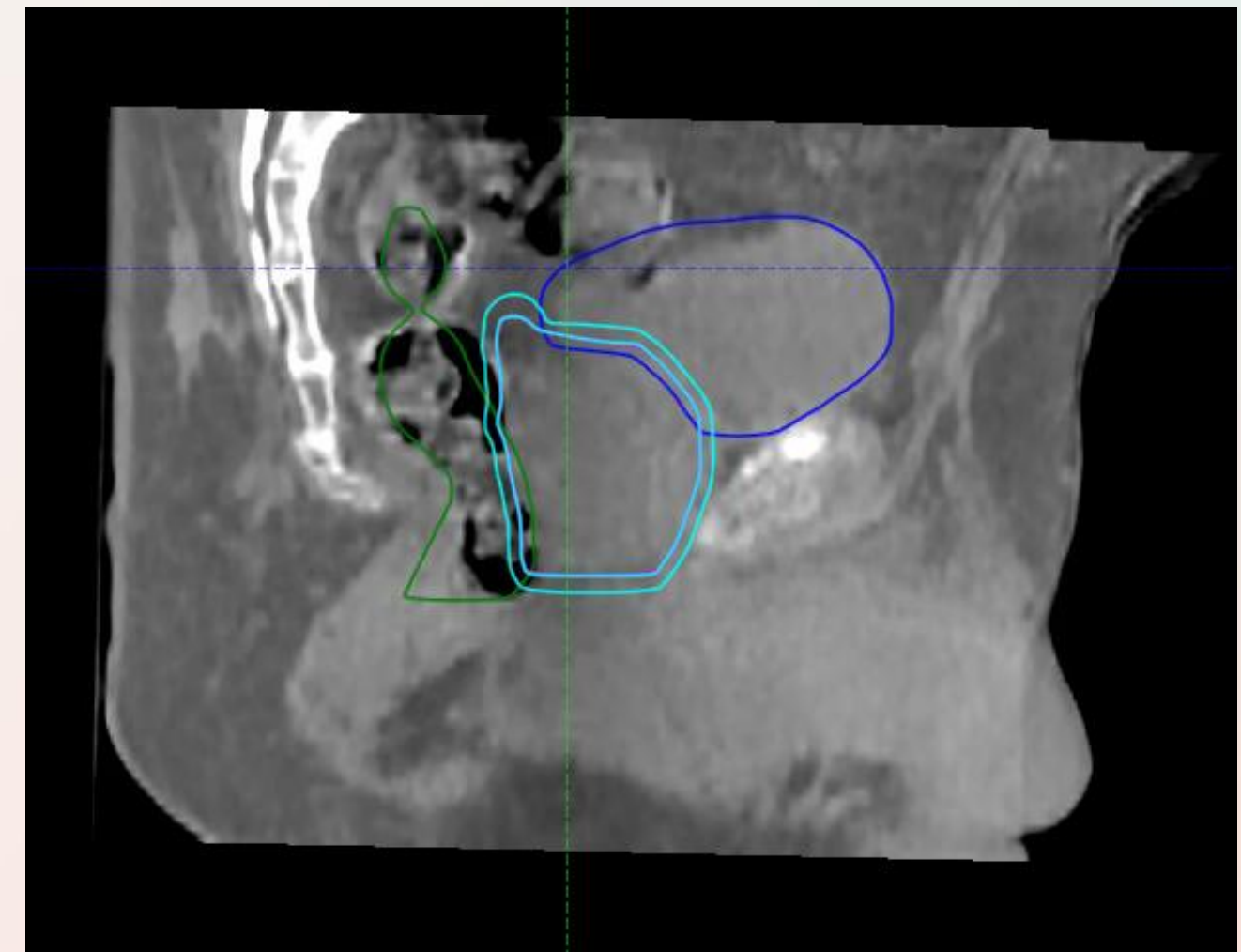
Micro Enemas

- All prostate patients
 - CT planning scan
 - First 7 fractions
- 30 mins prior to starting water drinking protocol
- All patients have mini rectal scans to assess bladder and rectum size (Max 3 per appointment)
- Rectum must not exceed 4cm AP or LR



Changes in practice

- 2024 change in standard practice of ADT timings (Ma et al, 2023. RCR, 2024)
 - Predicted spike in patient numbers
 - Solutions required to streamline departmental procedures
 - Query benefit of micro enemas
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- Patients unsure on correct use
 - Patient refusal
 - Minimal effect
 - Inflammation of rectal wall
 - Patient reported anxiety
 - Similar to issues reported by Alexander et al., 2025



Study

- All patients had diagnostic MRI
 - Rectal size compared between MRI and planning CT at mid prostate level
 - Rectal measurements retrospectively analysed by two radiographers
 - Study patients given enema after 1st rectal scan if it exceeded tolerance and couldn't pass naturally
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- Aim to assess effect of micro enema on rectal size
 - Compare departmental resources used
 - Assess level of concomitant imaging

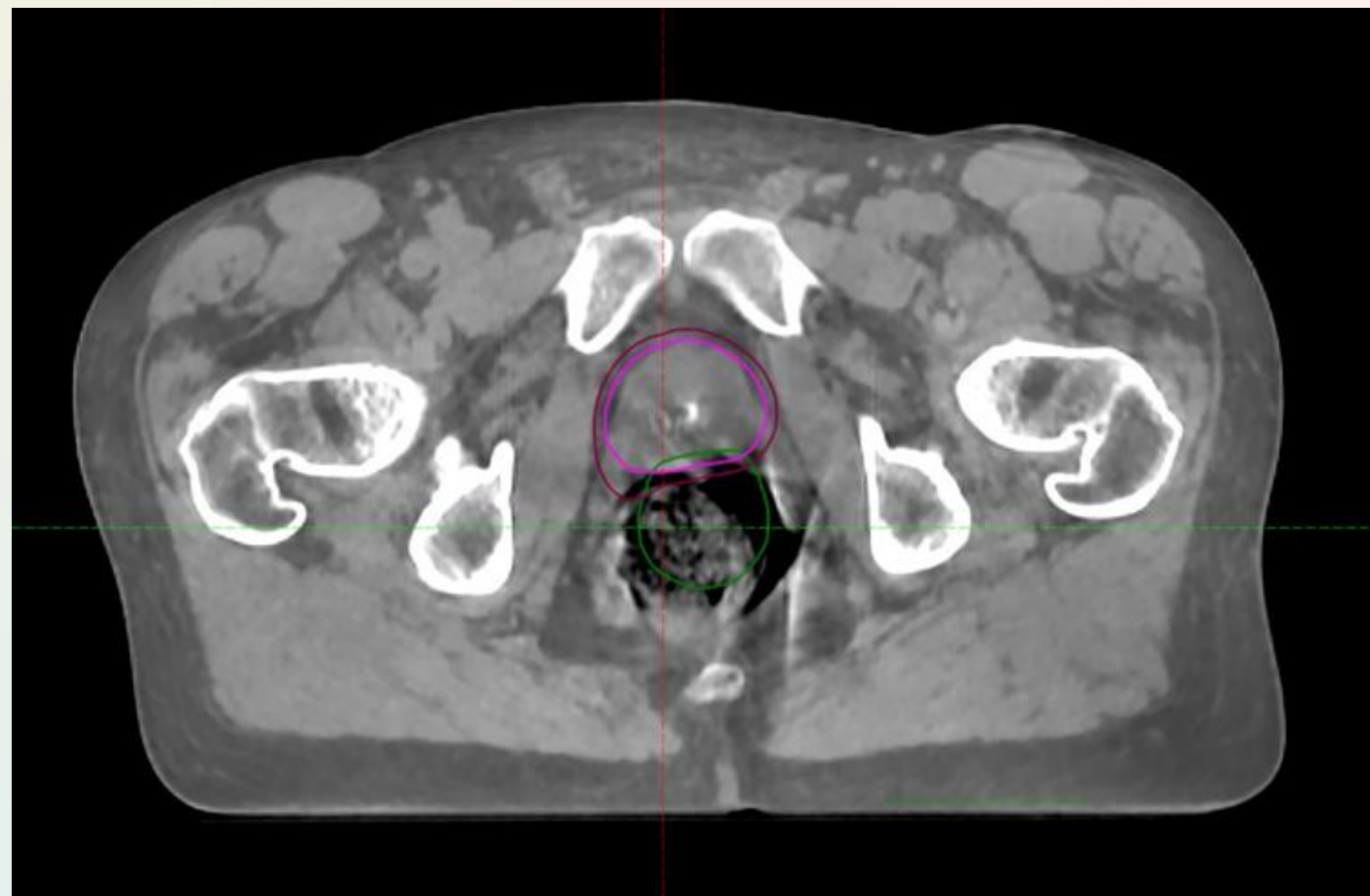
Demographics

- November 2024 - February 2025
- Scanned 42 prostate patients
- 7 patients not included in analysis
- First 21 patients used as control group – all used enemas prior to 1st scan

Patient Cohort	Control	Study	
Median Age (Range)	74 (51-80)	75 (61-82)	
Risk group (n) High Intermediate N/A	18 2 1	16 5 0	
PSA on presentation (median)	11.2	9.7	
Gleason Score (mean)	7	8	
Average rectal diameter at MRI cm (Range)	3.52 (1.6-5.2)	3.4 (2.3-5.1)	p value 0.75
Average rectal diameter at planning CT cm (Range)	3.56 (2.1-5.5)	3.2 (1.9-4.3)	p value 0.12

Pre-treatment

- $\frac{1}{3}$ of study patients required enemas
- Study cohort required fewer appointments



Patient Cohort	Control	Study
Number of Patients	17	18
Number of patients given enemas	17	6
Number of CT Appointments	24	21
Number of Rectal Scans	37	37

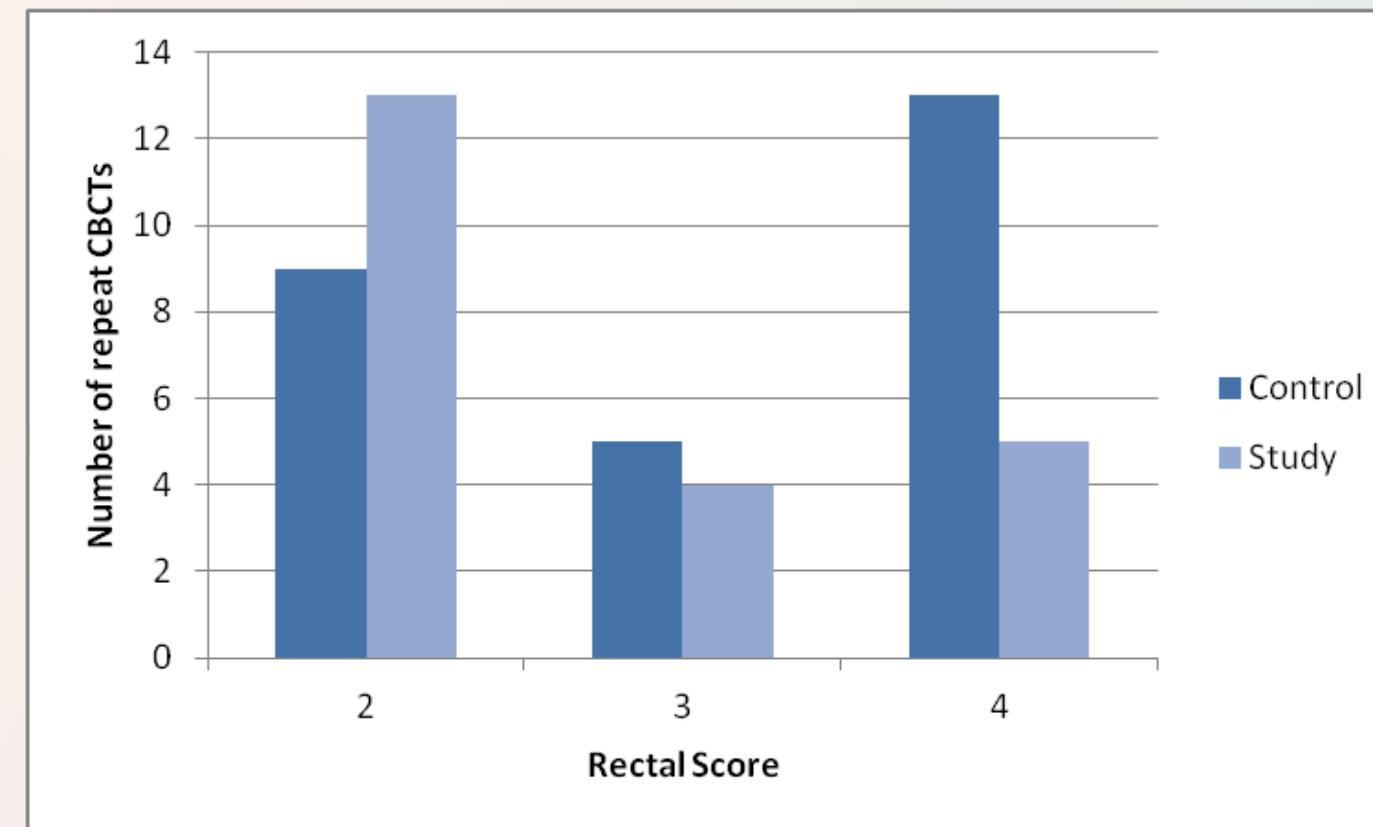
Treatment

- All patients have CBCT prior to treatment delivery
- Soft tissue match to prostate and SVs
- OAR size/filling compared to planned volumes
- CBCT repeated max 2x per day
- Study cohort required less repeat imaging

Patient Cohort	Control	Study	
Number of patients completed treatment	17	18	
Total number of fractions	340	360	
Number of repeat CBCT	39 (11.5%)	31 (8.6%)	p value 0.21
Number of repeats due to:			
Bladder	5	6	
Positioning or machine faults	5	3	
Rectum	27	23	
Rectum in first 7 treatments	11	8	

Repeat imaging

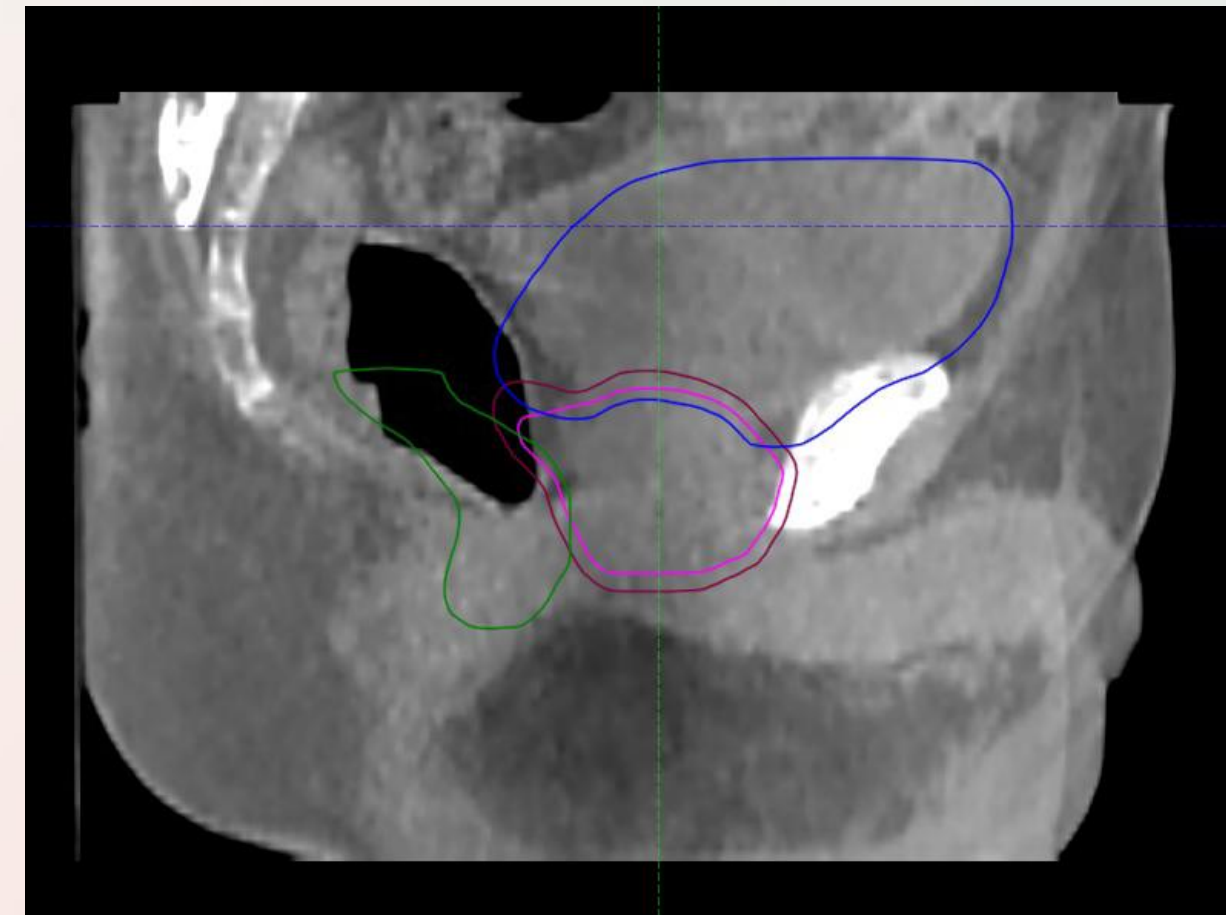
- Rectal issues account for majority of repeat imaging in both cohorts
- Gas + faeces main issue in control
- More repeat imaging due to gas in study cohort
- Repeat imaging required despite intervention in both cohorts



Rectal Scores, 2 = Gas, 3 = Faeces, 4 = Gas + faeces (Smitsmas et al., 2008)

Persistent Issues

- 1/3 of patients required enemas at CT in study cohort
 - 51% of repeat imaging
 - 68% of repeats on fractions when enema had already been administered
- Persistent issues despite intervention
- No conclusive evidence in literature of best practice (McNair et al., 2014, Yahya et al., 2013, Van der Walle et al., 2026)
- Dietary changes
- Hydration
- Laxatives



Conclusion

- Micro enemas not effective for all
- Selective enema use can be used in conjunction with short rectal scans
- No impact on repeat imaging
- Reduces patient and resource burden
- Further work required for those with persistent bowel issues and excess gas

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With thanks to all the team at Raigmore Hospital

Any further queries please email: hannah.dyer@nhs.scot

