Simulation Free Radiotherapy (SimLess) Using Surface Guided Radiotherapy (SGRT)

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What is SimLess?

SimLess RT allows a patient to be planned and treated without the need for a specific CT appointment performed in the RT department.

- Less hospital Visits
- Increased Quality of Life
- Decreased Workload
- Quicker Turn Around times

GenesisCare

The Challenge

Setup Reproducibility in SimLess RT

- Diagnostic imaging ≠ Treatment position
- Limited immobilisation
- Increased uncertainty in setup
- Potential need for reimaging

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SGRT in Our Department

01 AlignRT used as a standard of Care

02 Routine for setup and monitoring

03 High Staff familiarity

04 Improves positioning confidence

05 Intrafractional monitoring

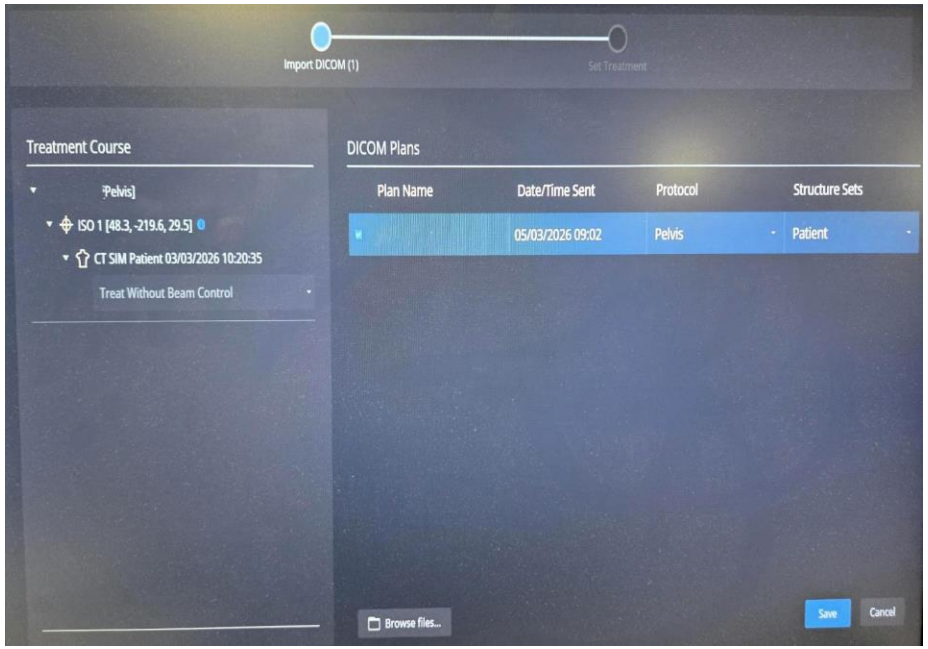
06 Reduces set up time

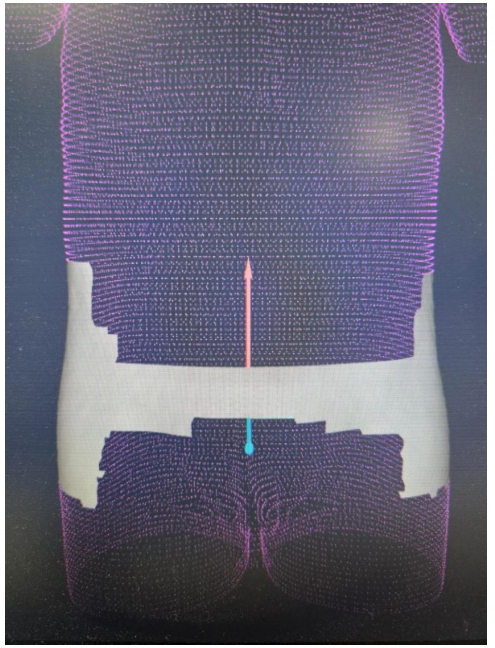
07 Potential in decreasing re-imaging

08 Real-time surface Matching

AlignRT Preparation for SimLess Treatment

Import Structures	Select Protocol	Define ROI	Verification
• Approved Plans Structure set sent to AlignRT	• Choose Protocol (Usually Pelvis) • Tolerance 0.5cm	• Region of interest set for patient set up	• Check during final plan & Pre-treatment check





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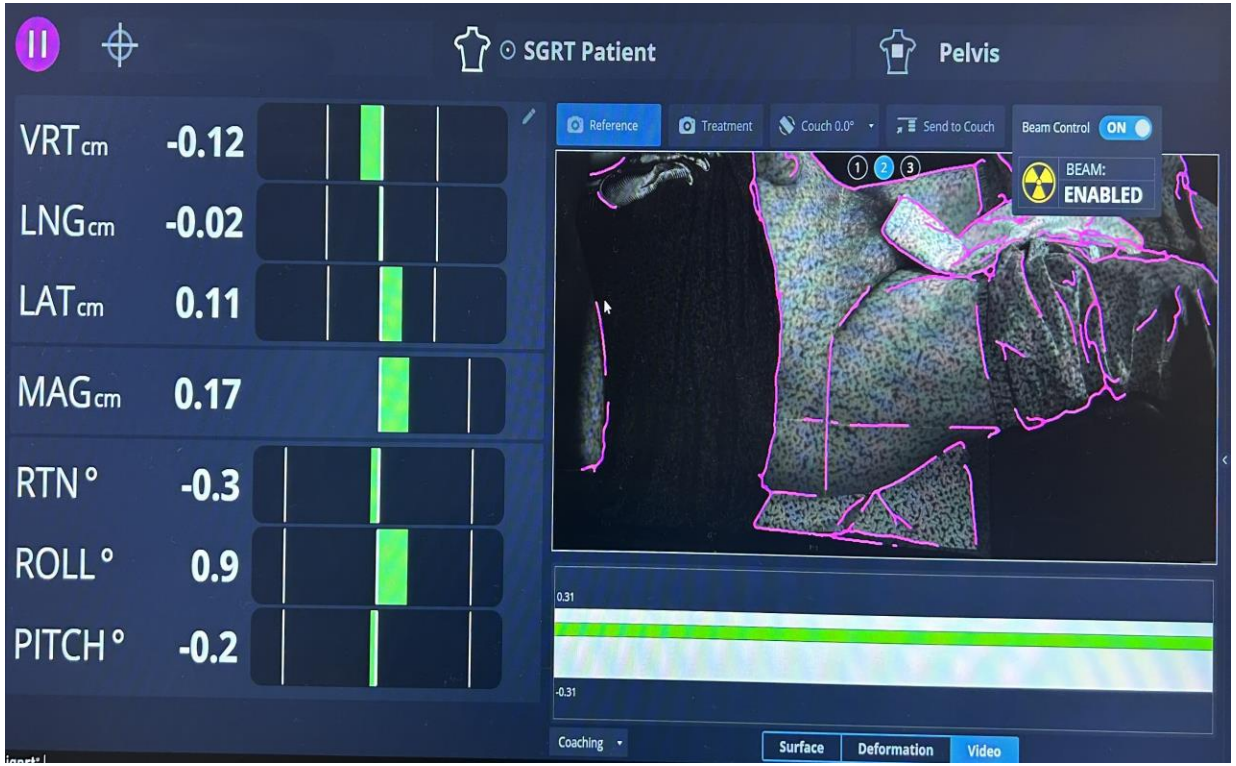
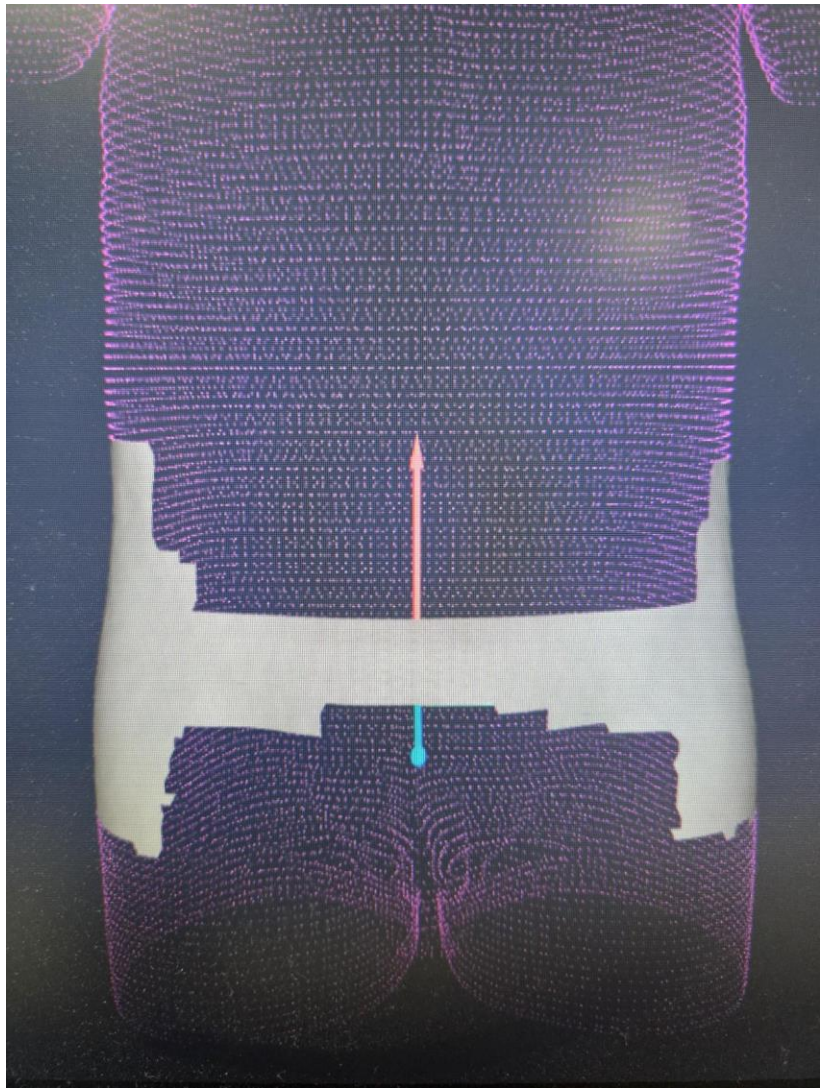
AlignRT Workflow on Treatment

- AlignRT integrated with Linac
- Set-up with video and Postural Alignment features
- Full CBCT taken for every treatment
- Re-image is shifts larger then 2cm
- Recapture taken and Monitoring enabled



Evaluation of Workflow

- 10 palliative patients
- Pelvic or Spine Bone Metastases
- Planned using a recent Diagnostic Image
- No dedicated CT simulation
- All patients in room set up with AlignRT & Intrafractional Monitoring



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Results- Feasibility & Efficiency

- ✅ 10/10 patients treated successfully using SimLess + SGRT
- ✅ Average treatment time 19 minutes (Within standard 20 min slot)
- ✅ No cases reverted to traditional CT simulation workflow (More then 10 CT hours Saved)
- ✅ Reduced need for reimaging
- ✅ Less then 3% PTV Dmax Difference

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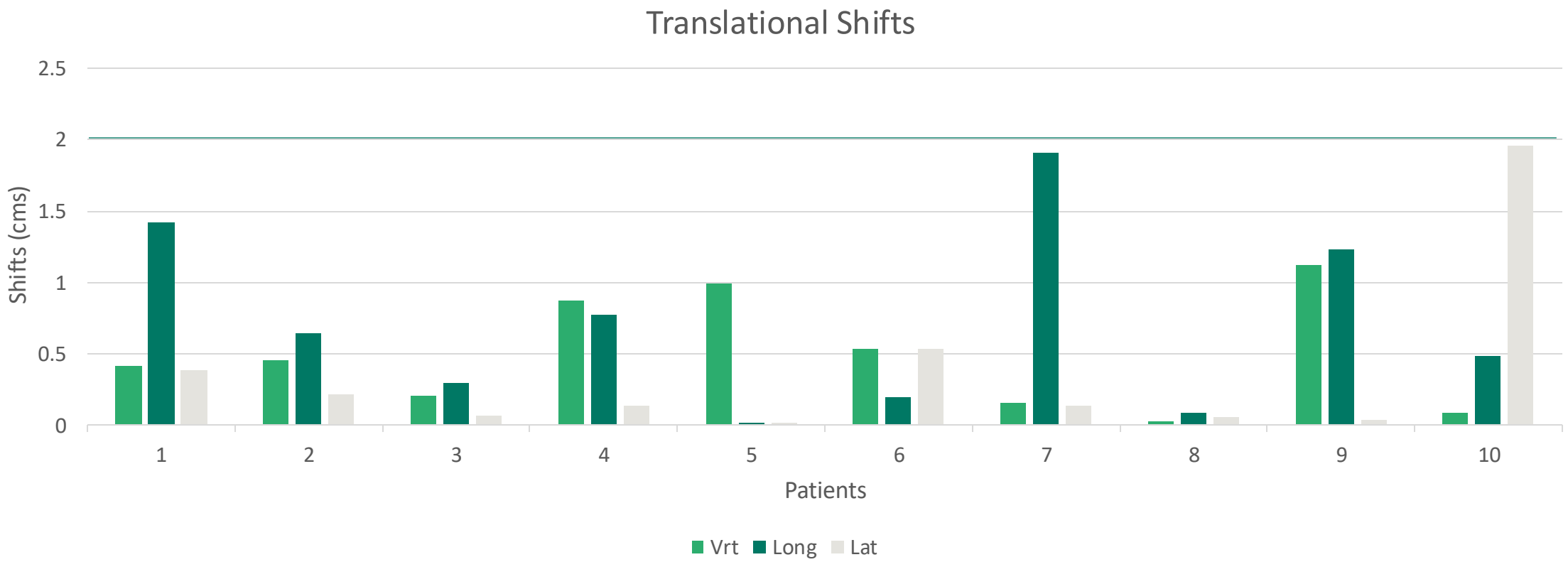
Results- Setup Accuracy



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Retrospective Dose Analysis

- ☑ Physics team analysed dose evaluations on SimLess treated patients
- ☑ Original plans are calculated onto the treated CBCT using fixed MUs
- ☑ This showed a mean PTV difference of Less then 3%
- ☑ Further validating the SimLess technique

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Clinical Impact

Positioning Confidence	Improved confidence in setup without dedicated planning CT
Efficiency	Delivered within standard 20-minute appointment slots
Streamlined Pathway	Simplified palliative workflow from planning to treatment
Patient & Staff Experience	Positive informal feedback from both groups

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Limitations

- Small Cohort (n=10 patients)
- Single Centre Clinical Experience
- Limited Tumour Sites
- No direct comparison with CT-simulation Workflow

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Supporting SimLess Radiotherapy Using SGRT

- SGRT integrates seamlessly into the SimLess pathway
- Accurate positioning achieved without planning CT
- Delivered within standard clinical timeframes
- Supports efficient, patient-centred palliative care

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Questions and answers

Sally Evill

Speaker

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Thank you

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