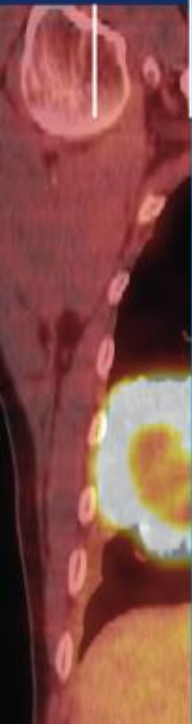




A novel method to predict *a priori*
the toxicity reduction of a prostate rectum spacer:

Virtual Rectum Spacer

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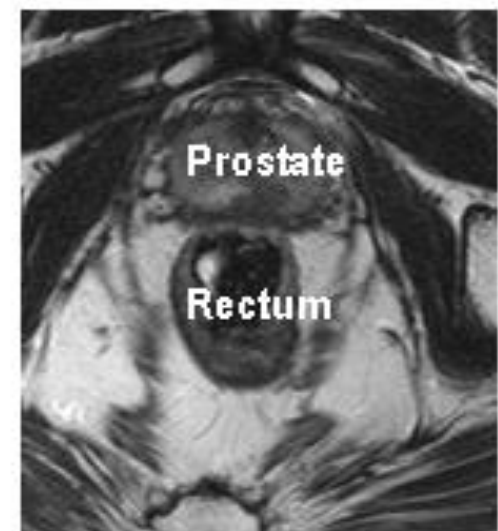


Disclosure

The technology has been licensed to
ptTheragnostic.

Introduction

- Chronic Radiation Proctitis: late side effect (5-20%)
- Aim RECTUM SPACER (RS)
= ↑ distance prostate – rectum



Introduction

Implantation of a RS =
Expensive
Invasive

AIM:

- Decision Support System
to identify *a priori* the benefit
- Predictions gain of dose + toxicity ↓

Materials & Methods

- N= 16 pts
- CT prior + after a RS implantation (SpaceOAR™)
- Median volume = 10.5 cc

- Training set
 - Spatial deformation model: Virtual RS
- Validation set
 - Compare Virtual RS – Actual RS

Materials & Methods

- Proof of concept:

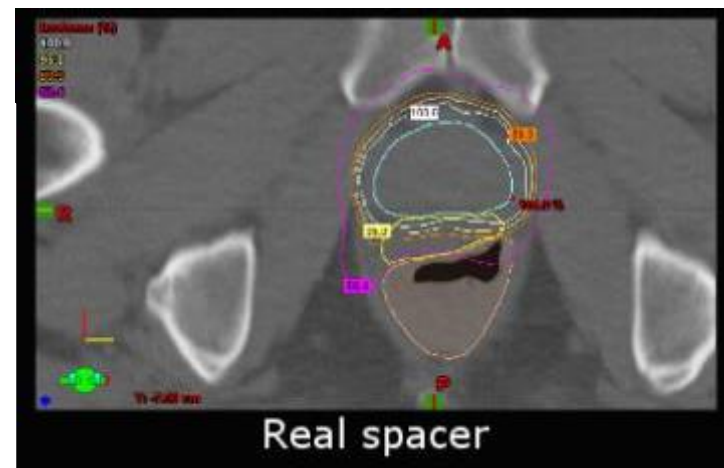
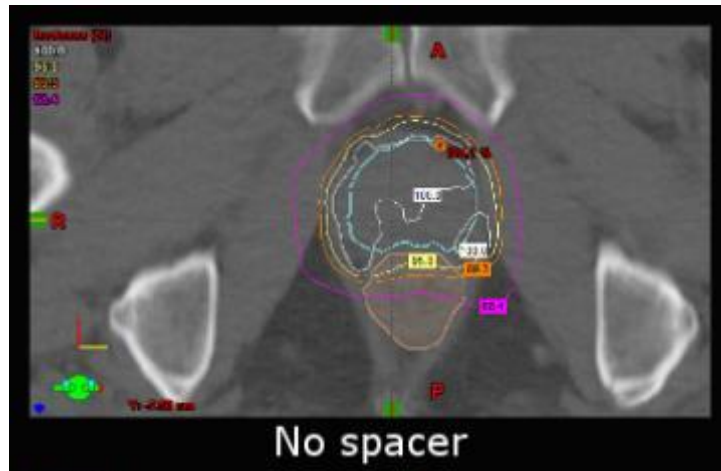
1 pt: 70 Gy, 28x : No RS – VRS – ARS

→ predicting acute + late rectal toxicities
nomograms Valdagni et al.

clinical +

dosimetric input

Results



Distances prostate-rectum:

NoRS $15,8 \pm 3,2$ mm

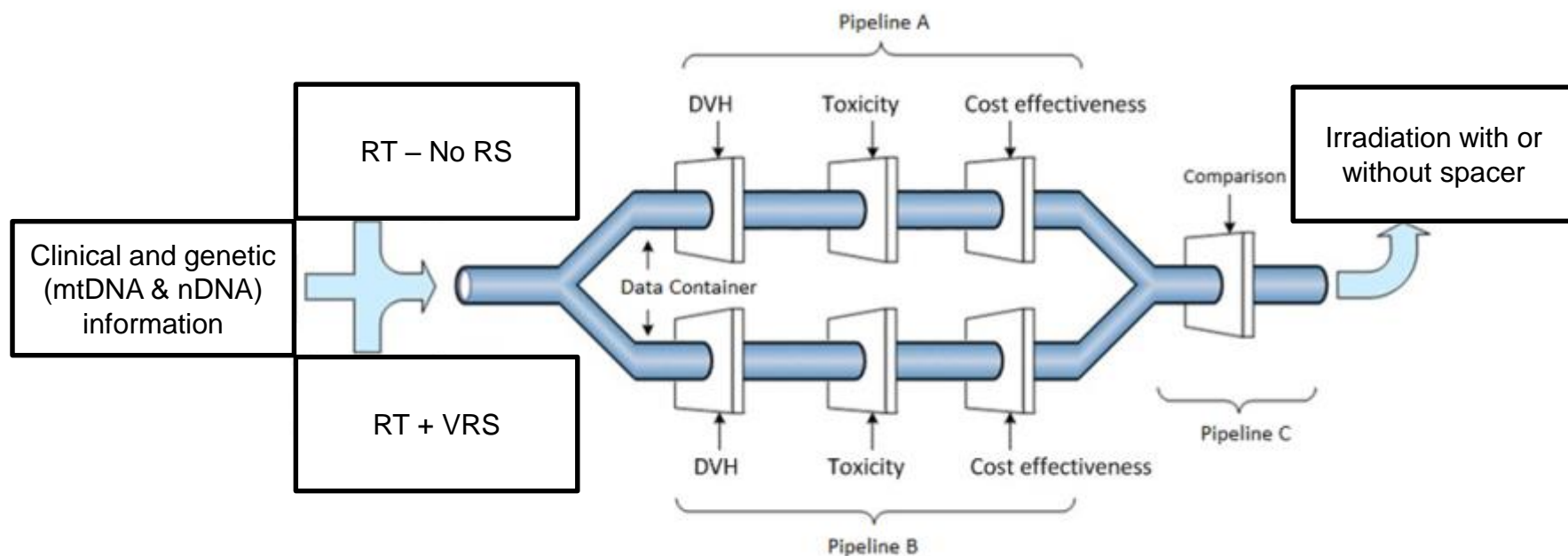
VRS $19,5 \pm 3,3$ mm

ARS $22,0 \pm 4,3$ mm

Results

- Proof of concept: 1 patient:
a planned dose on all 3 CT's
 - The VS revealed a large decrease in V65 Gy,
 - Using nomograms
 - No significant difference of predicted late toxicity
 - No candidate RS.

Decision for rectum spacer: the future: 3 steps



Conclusion

- Novel method: simulate a RS = Virtual RS
 - Predict dose + Outcome benefit
- Virtual Spacer–based decision support system to quantify *a priori* the potential benefit

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