
XXXIII CONGRESSO NAZIONALE AIRO
AIRO2023
BOLOGNA,
27-29 OTTOBRE 2023
PALAZZO DEI CONGRESSI
Radioterapia Oncologica: l'evoluzione al servizio dei pazienti
Associazione Italiana
Radioterapia e Oncologia clinica

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STEREOTACTIC BODY RADIATION THERAPY (SBRT) WITH MRI-DEFINED FOCAL SIMULTANEOUS INTEGRATED BOOST FOR PATIENTS WITH LOCALIZED PROSTATE CANCER: ACUTE TOXICITY AND DOSIMETRY RESULTS FROM A PROSPECTIVE OBSERVATIONAL STUDY

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Associazione Italiana Radioterapia e Oncologia clinica

CONFLICT OF INTEREST

Nothing to declare

PROSTATE SBRT

- ✓ Stereotactic body radiotherapy (SBRT) represents an effective curative option for localized prostate cancer

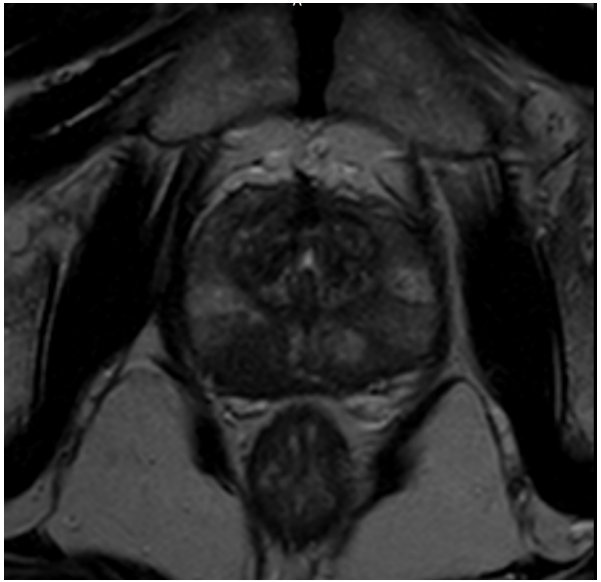
  Van As, *ASTRO*, 2023

- ✓ After prostate SBRT, local recurrence typically occurs in the pre-treatment multiparametric magnetic resonance imaging (mpMRI) region of a PI-RADS 4 or 5 dominant intra-prostatic lesion (DIL)

  Gorovets, *EurUrol Oncol.* 2022

- ✓ The addition of a focal boost to the DIL is an emerging strategy to potentially improve tumor control in patients with organ-confined prostate cancer

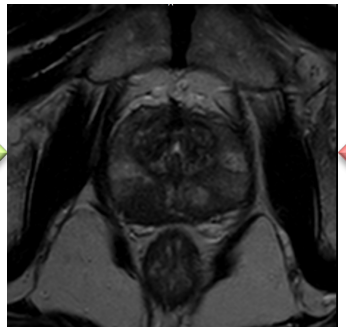
  Kerkmeijer, *J Clin Oncol*. 2021
  Draulans, *Radiother Oncol.* 2020



STUDY DESIGN & AIM

- ✓ IRB-approved prospective observational study of 5-fraction prostate SBRT with a SIB to the DIL, starting in January 2022
- ✓ Subset data cut off December 2022, statistical analisys October 2023

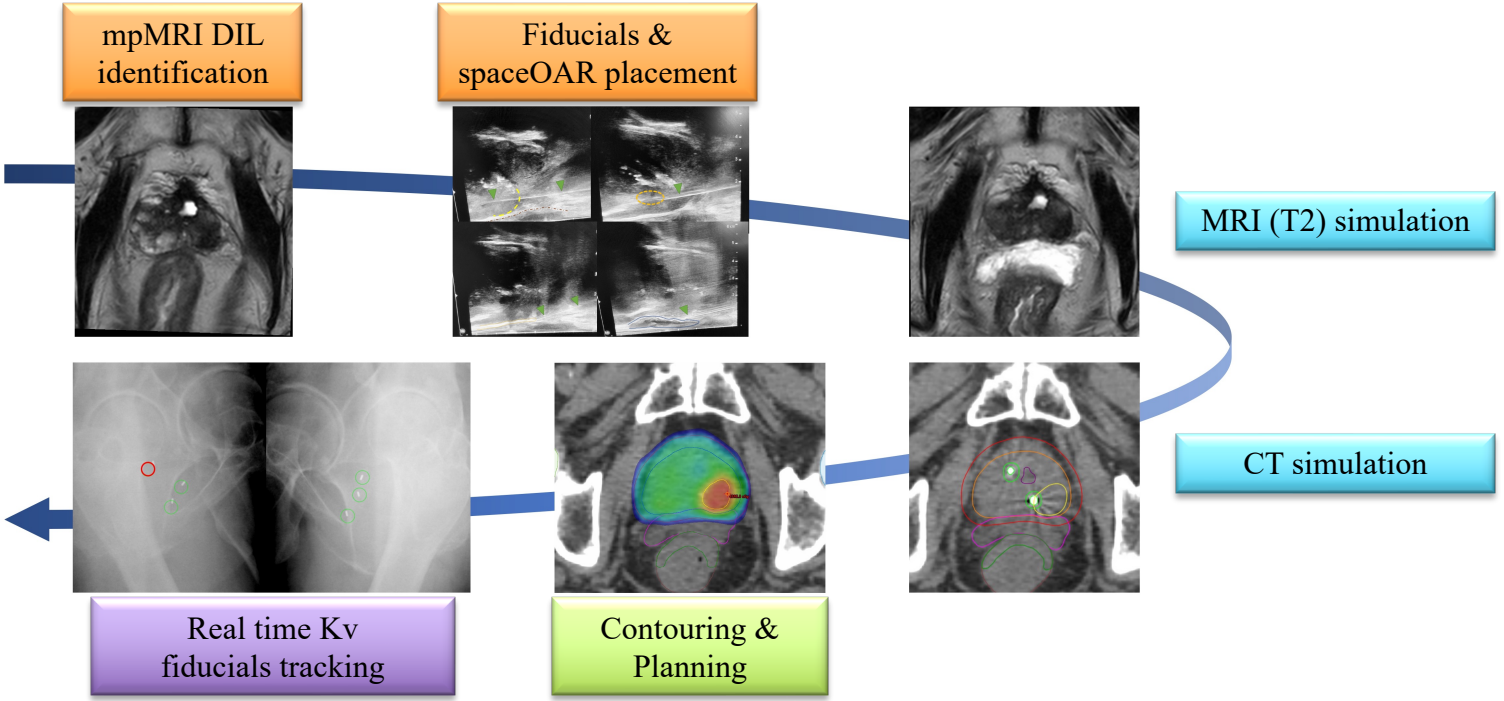
INCLUSION CRITERIA
- ➢ cT1-T2c
- ➢ Gleason score ≤ 8
- ➢ PSA < 20 ng/ml
- ➢ mpMRI-defined DIL, confirmed by targeted biopsy (max 2 lesions)



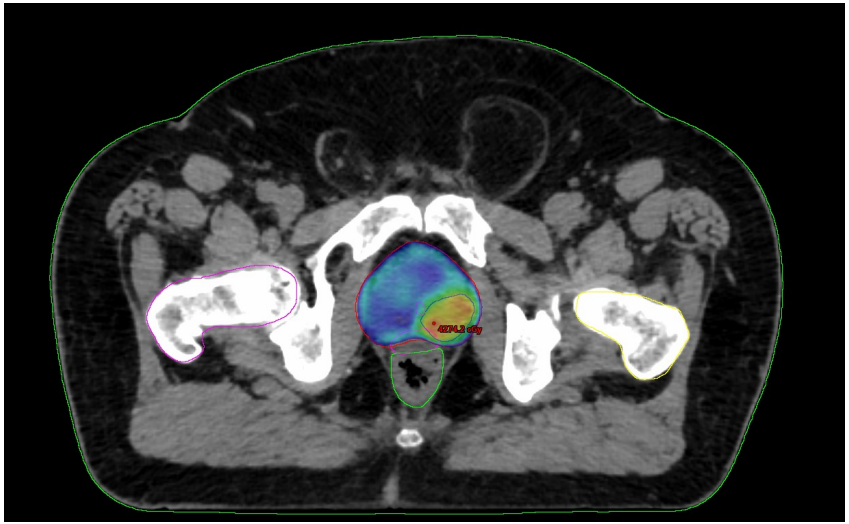
EXCLUSION CRITERIA
- ➢ Prostate volume > 90 cc
- ➢ TURP < 6 months
- ➢ Active IBD
- ➢ Prior pelvic RT

- ✓ Assess the early toxicity and dosimetry results of prostate SBRT-SIB$_{DIL}$
- ✓ Results, in terms of toxicity and dosimetry, were compared with a group of patients treated with prostate SBRT without boost in the same period

PATIENT WORKFLOW



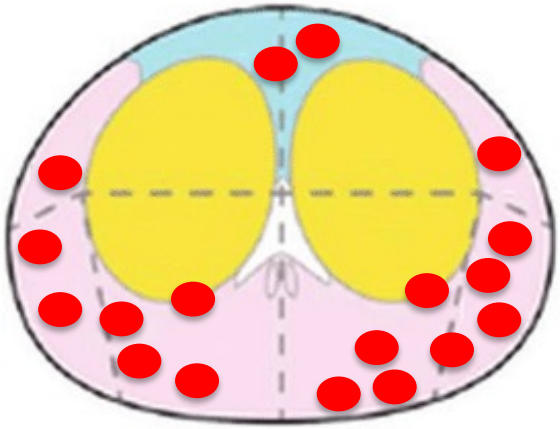
TREATMENT PLANNING



- ✓ DILs were defined using mpMRI T2-weighted, diffusion and perfusion images
- ✓ The prescribed dose was 36.25 Gy to the prostate with an isotoxic SIB_{DIL} of 40 Gy (dose range 100%-120%)

RESULTS (1)

- ✓ 18 patients treated with prostate SBRT from January 2022 to December 2022 with mpMRI-defined DIL received SBRT-SIB$_{DIL}$
- ✓ 83% had cT2 disease
- ✓ Median iPSA 7 ng/ml (range 3.6-19.2)
- ✓ Baseline IPSS score mild/moderate in 61%/39%
- ✓ Most patients had either 3+4 (39%) or 4+3 (33%) Gleason



The majority of DILs were in the peripheral zone (89%)

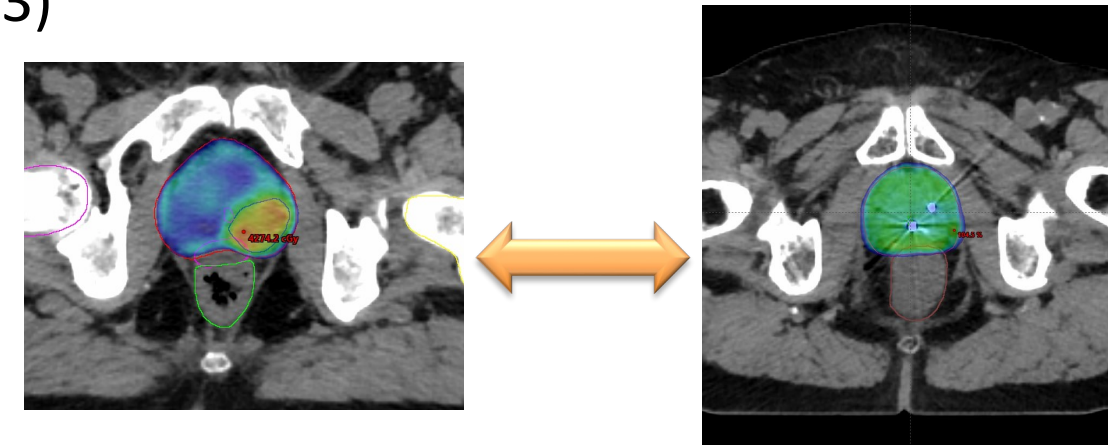
RESULTS (2)

- ✓ At a median follow up of 16.4 months (range 9.8-20.1), no G≥3 toxicity was observed
- ✓ Cumulative acute G1-2 GU and GI toxicity rates of 44.4% and 16.7%, respectively
- ✓ All patients experienced biochemical response

Table 1. SBRT-SIB treatment plan analysis for major organs at risk (OARs)

	Dosimetric parameters	Objectives	Results (mean ± SD)
Bladder	V40Gy	<2cc	0.64 cc ± 0.97 cc
	V37Gy	<10cc (optimal 5 cc)	6.15 cc ± 3.82 cc
	V18.1Gy	<40%	17.94% ± 8.49%
Rectum	V40Gy	<1cc	0.03 cc ± 0.10 cc
	V36Gy	<2cc (optimal 1 cc)	0.35 cc ± 0.68 cc
	V24Gy	<50%	11.09% ± 10.17%

RESULTS (3)



- ✓ In comparison with the non-boost SBRT group (25 patients) treated in the same period, rectal V40, 36 and 24Gy, and bladder V40, 37 and V18.1Gy did not significantly differ (all $p > 0.05$)
- ✓ No differences were found between groups in terms of acute G2 GU (16.7% boost vs 20.8% no-boost; $p = 0.74$) and GI toxicity (5.6% boost vs 4.2% no-boost; $p = 0.83$).

CONCLUSIONS

- ✓ Our results demonstrate that treating PCa with five-fractions mpMRI-defined SBRT-SIB$_{DIL}$ is safe and effective, with excellent adherence to the planning protocol
- ✓ Longer follow-up is needed to evaluate tumor control and late toxicity. In this respect, further enrollment of patients is ongoing

THANK YOU FOR THE ATTENTION

QUESTIONS?

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