

Binyremetastaser stereotaktisk strålebehandling



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- **Oligometastatisk sygdom (*OMD*)**

- De novo
- Induced
- Oligometastatisk recidiv
- Oligopressiv sygdom

Systemisk behandling >< lokal behandling

- Cerebrum
- Lever
- Lunger
- Lymfeknuder
- C. colo-rectal
- C. mammae
- C. testes
- C. renis
- C. pulm

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Stereotactic Ablative Radiotherapy for the Comprehensive Treatment of Oligometastatic Cancers: Long-Term Results of the SABR-COMET Phase II Randomized Trial

D Palma et al

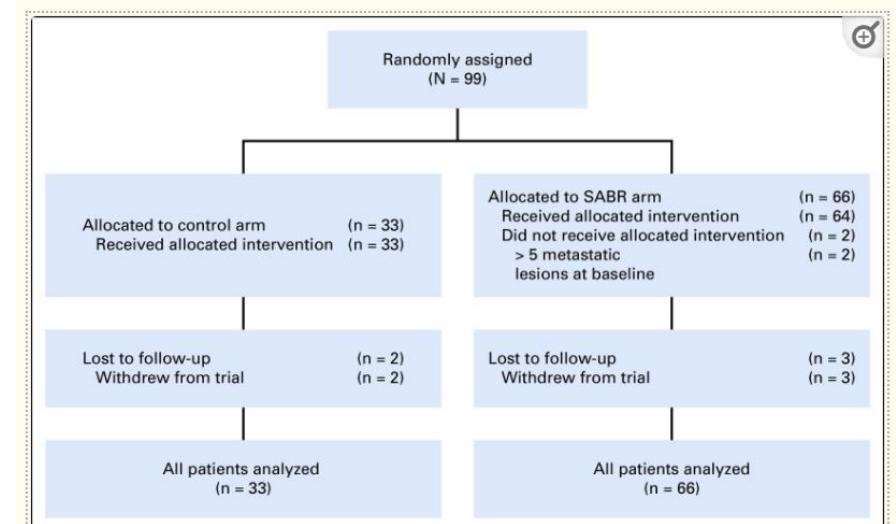
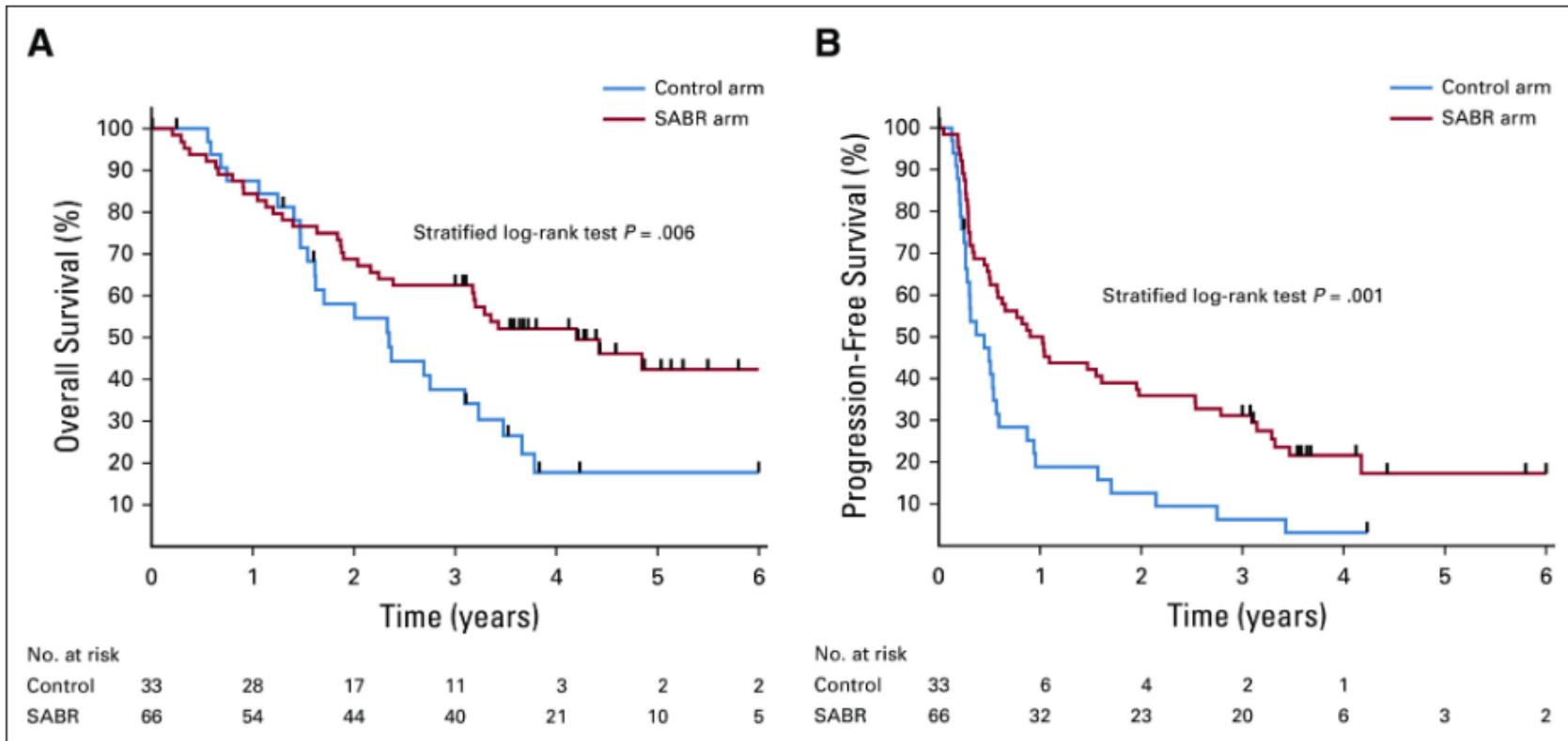
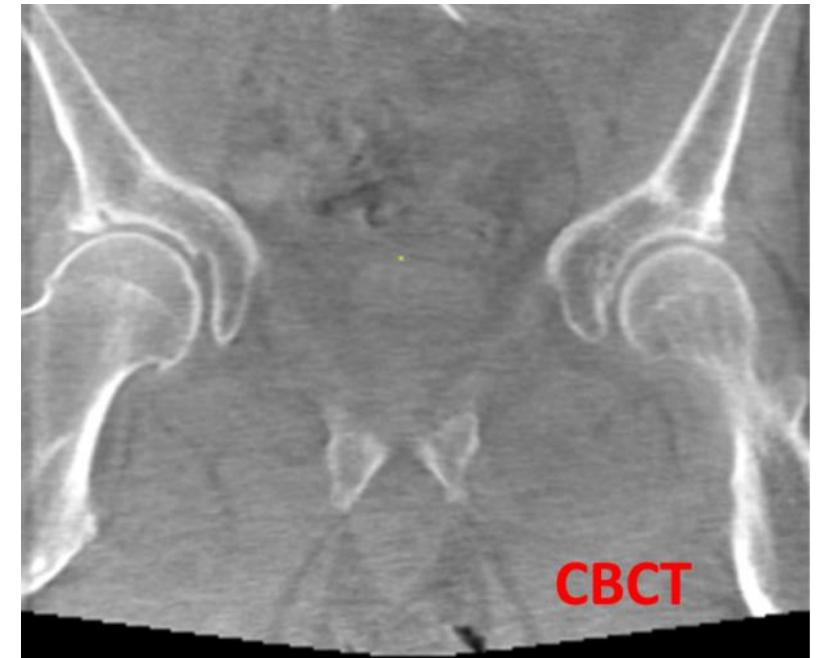


FIG 1.

CONSORT diagram. SABR, stereotactic ablative radiotherapy.

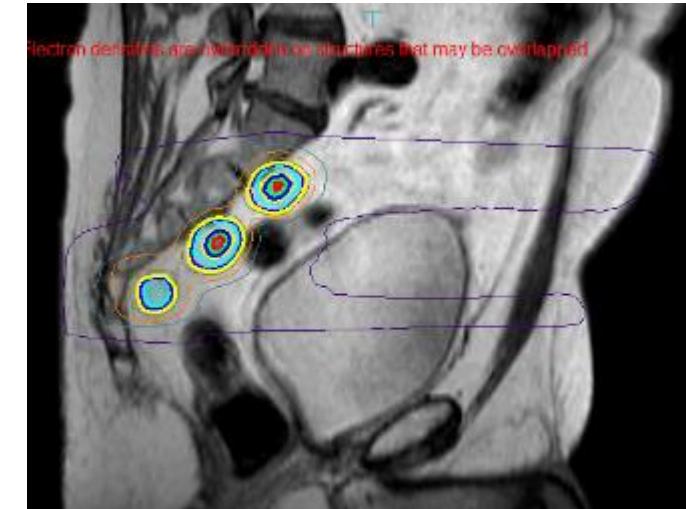


Kaplan-Meier plots for (A) overall survival and (B) progression-free survival. SABR, stereotactic ablative radiotherapy.

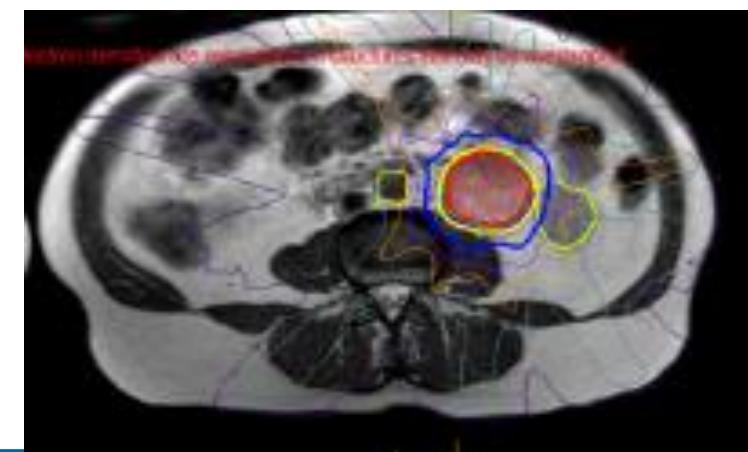


MR accelerator at OUH

Oktober 2018

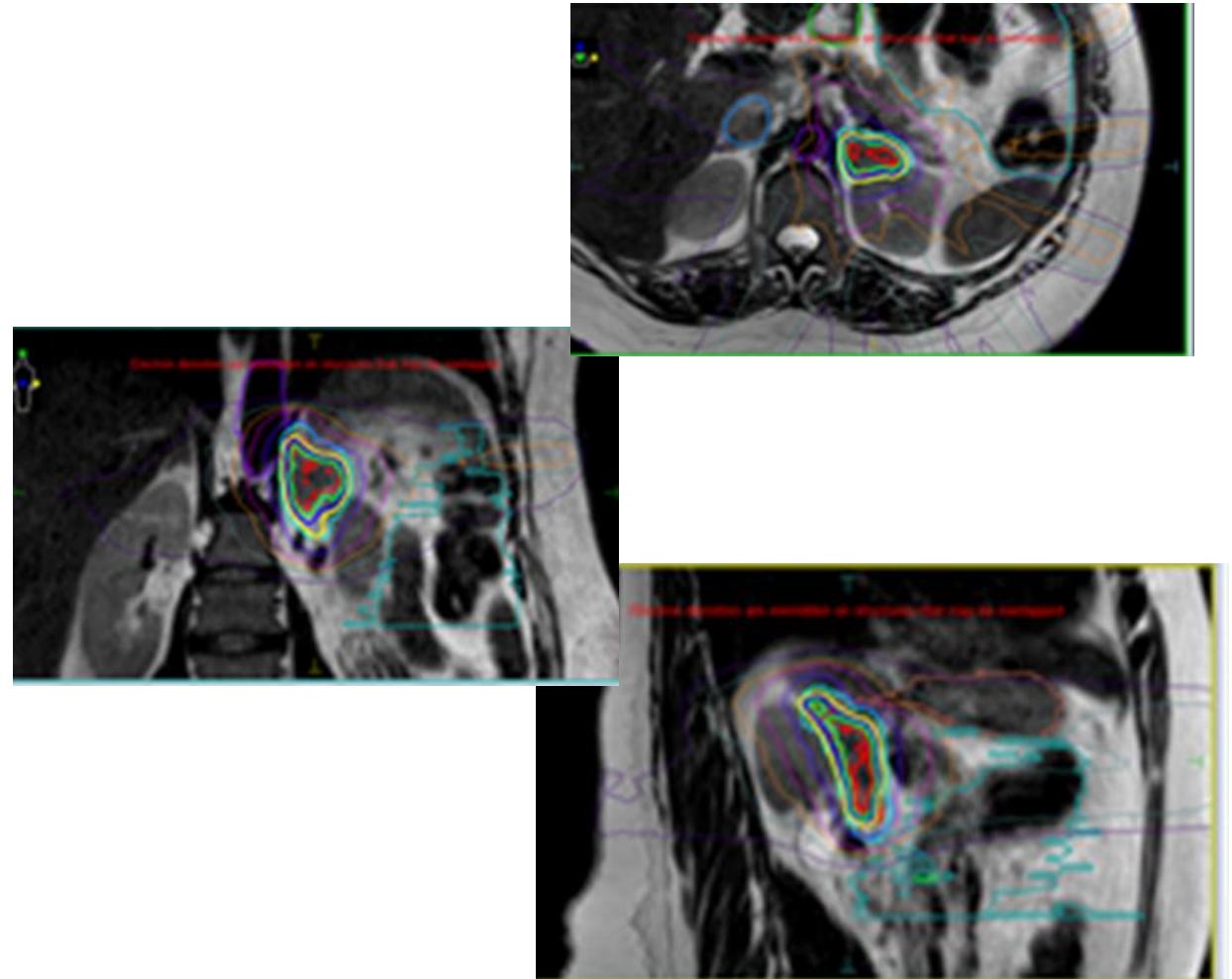


Tilpasser stråleplanen til
“dagens anatomi”



Binyre metastaser

- Impossible to identify on CBCT
 - markers?
- Moving target
- Surgery
- Systemic treatment



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Dosis

- 45 Gy / 3 F
- 50 Gy / 5 F
- Afhængig af normalt væv

9 patienter
PR NC after 3 måneder

Stereotactic ablation of metastases in the adrenal glands using MR guided external radiotherapy

Schytte T, Møller PK, Berntsen U, Agersøgaard SN, Blenck C, Dysager L, Gottlieb K, Hansen D, Lorenzen EL, Nyborg C, Veldhuisen E, Mahmood F, Bertelsen AS.

Department of Oncology, Odense University Hospital, Odense, Denmark

OUH Odense University Hospital 

PURPOSE/OBJECTIVE(S)

Adrenal metastasis from patients with oligometastatic disease is increasingly used for selected pts. With treatment are magnetic resonance imaging linear accelerators (MRI-Linac). It is possible to deliver radiation dose directly to the metastasis with a few fractions. Furthermore, it is still to be shown whether the side effects are acceptable. This study is aiming at defining the actual side effects without compromising the effect on the target. Also, cost-effectiveness relates to the site and management consumed in one case.

Adrenal glands are often in the location of metastases, especially from lung cancer. The adrenal gland is a common site for metastases. The most common are the RCC, since it is possible to visualize the adrenal gland and the metastasis and surrounding organs as well (CT/MRI) or SPECT and, hence, it is possible to find the metastasis of adrenal gland only.

The current study measures the fraction of treated metastases, the dose delivered to the MRI, local tumor response, the number of treatment sites, toxicity rate, and, ultimately, result durability in a single institution cohort.

MATERIAL & METHODS

MR treatment of targets in the upper abdomen was initiated at our institution in June 2018. Each session was planned for a single site of interest, prior to each image acquisition, and four sessions after each CT/EEV or 3D-RT scan. A report on *in vivo* analysis, RT treatment planning and delivery were based on free-breathing MRI imaging using the average position of the target in the respiratory cycle. The absolute position of the PVN was determined by the mean position of the peak movement of the adrenal gland measured on a 4D-CT performed prior to treatment. Pre-treatment, we chose and defined workflow to use different software. Different descriptions includes: 103 (Ref) 8.1, 20.2 Gy, 1.5-10.2 Gy/Fraction on interventional doses on SDF and target coverage.

Tumor evaluation every 3rd month.

Clinical metadata is described in the additional section and in publication by J. Bertelsen et al.

RESULTS

Nine patients with metastases in adrenal gland have been treated on the MR Linac at our institution – the majority (7/9) of which had lung cancer as the primary disease. The median age was 70.5 years (range 57-78). Metastases in table 1 is the median size for each treatment at the 10-CT scan. There was considerable day-to-day motion of the SDF. Reshaping of the adjacent SDF was, therefore, necessary at each fraction, and daily plan adaptation was performed. The median (interquartile range) [IQR] fraction delivered to the primary tumor was 10.2 (4.0-16.0) Gy. The median (interquartile range) fraction delivered to the metastasis was 10.2 (4.0-16.0) Gy. The median (interquartile range) fraction delivered to the normal adrenal gland was 10.2 (4.0-16.0) Gy.

The local response after four weeks follow-up was evaluated on CT scan. Four patients had a partial response (PR). One had no change. Four months after, all four patients achieved PR.

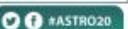
Two patients received second treatment due to local relapse and four weeks after RT treatment and before surgery. It was not considered related to the RT. No toxicity related death was observed.

Reference plan

REFERENCES/ACKNOWLEDGEMENTS

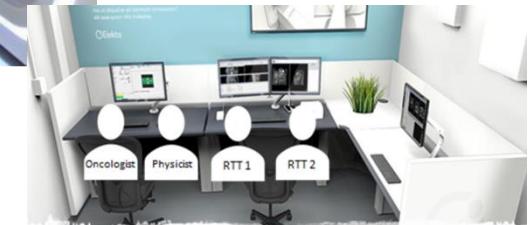
1. First clinical experiences with a high field 1.3 T MRI Linac. Bertelsen AS et al. *Acta Oncol*. 2019;Jul;58(7):1461-1466.

Acknowledgement for the MRI-Linac team at Odense University Hospital, Denmark.

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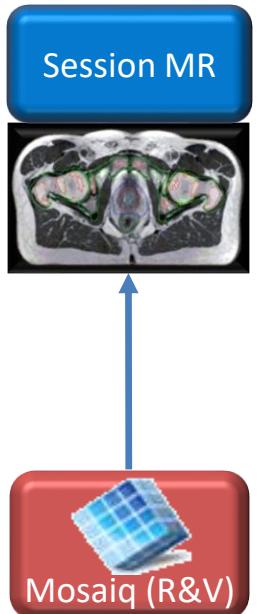
Forskel fra almindelig accelerator?



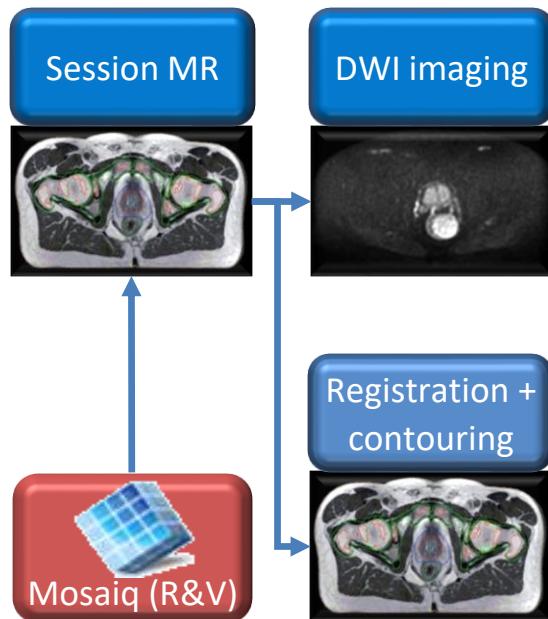
**Behandlingstid
30-55 min**

- ▲ Oncologist 1
- ▲ Physicist 1
- ▲ RTT 2

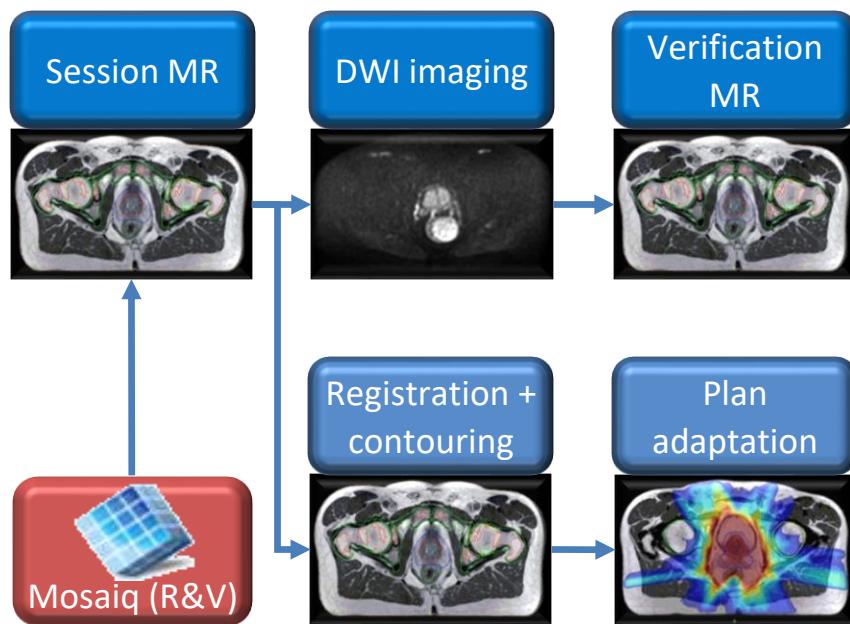
Online Workflow



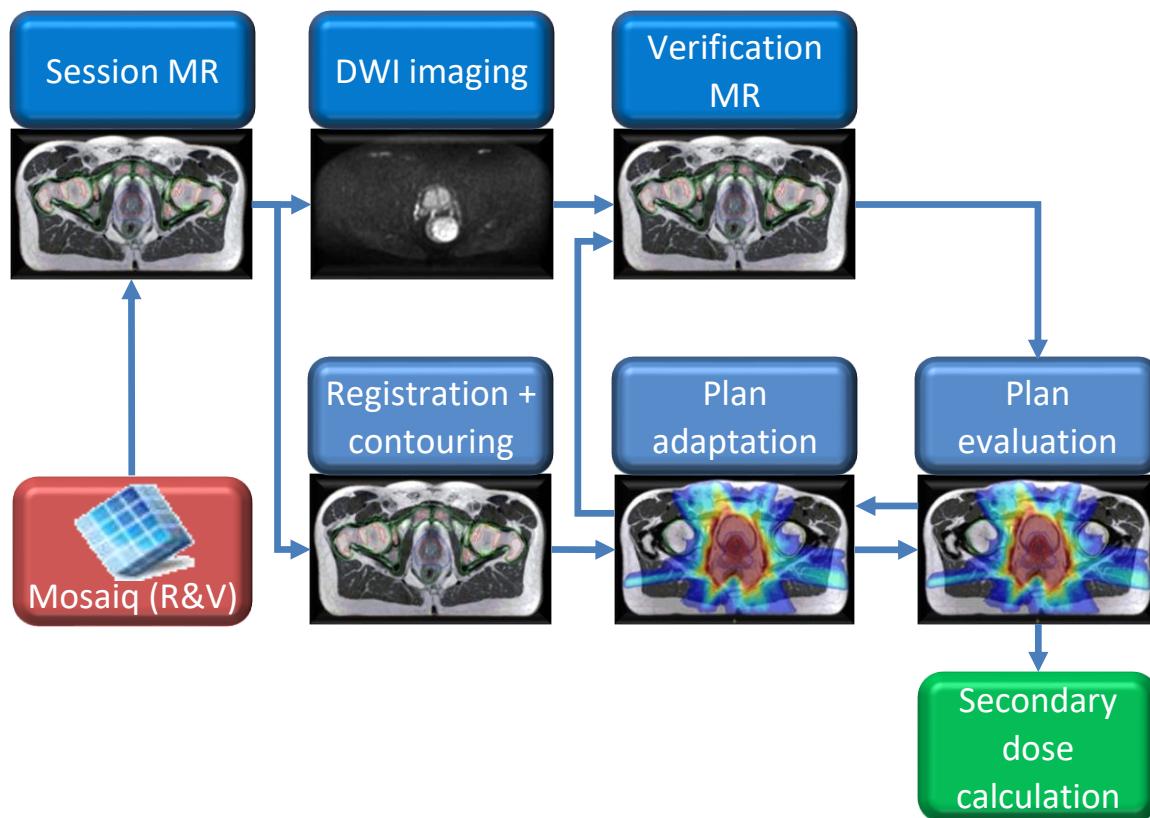
Online Workflow



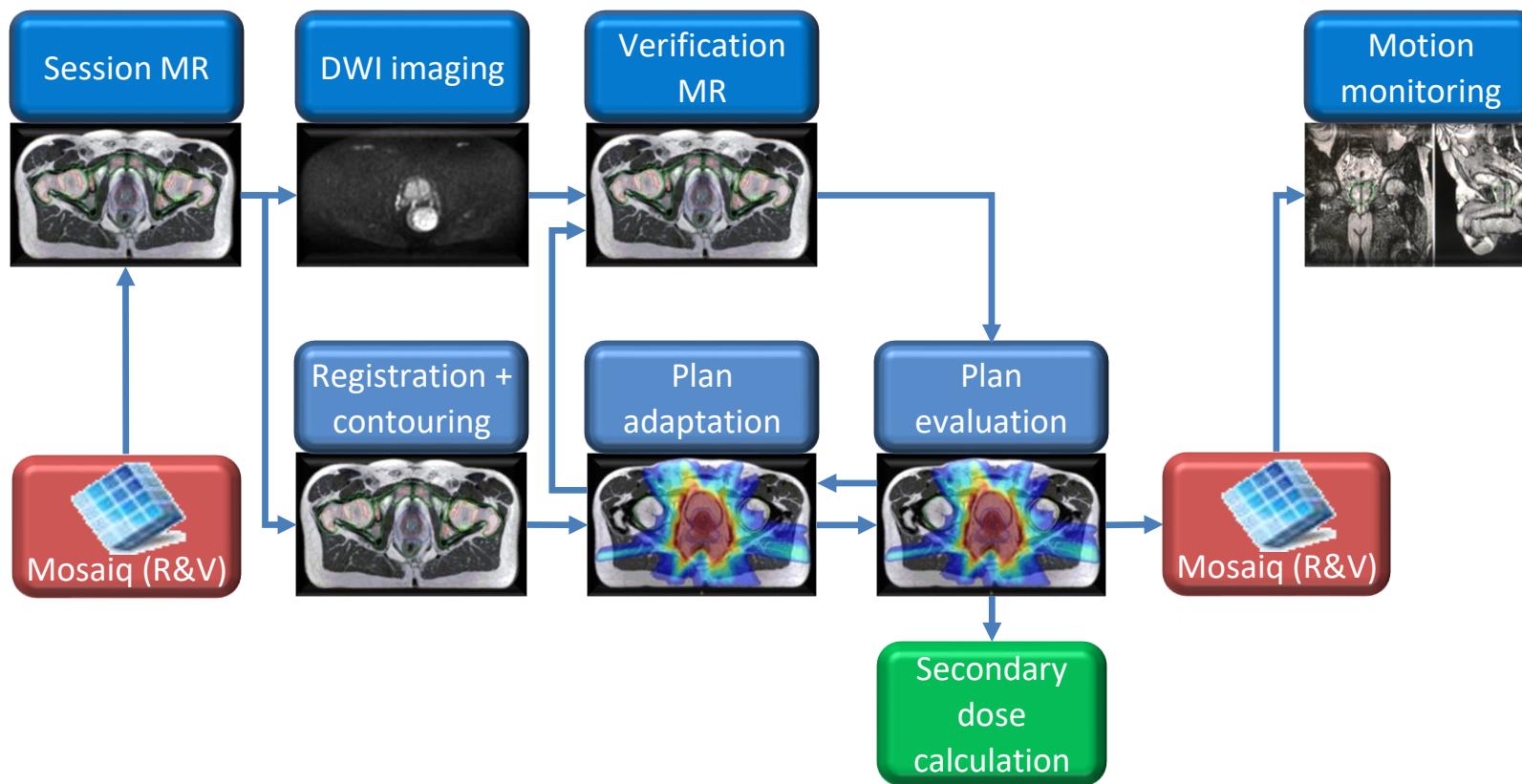
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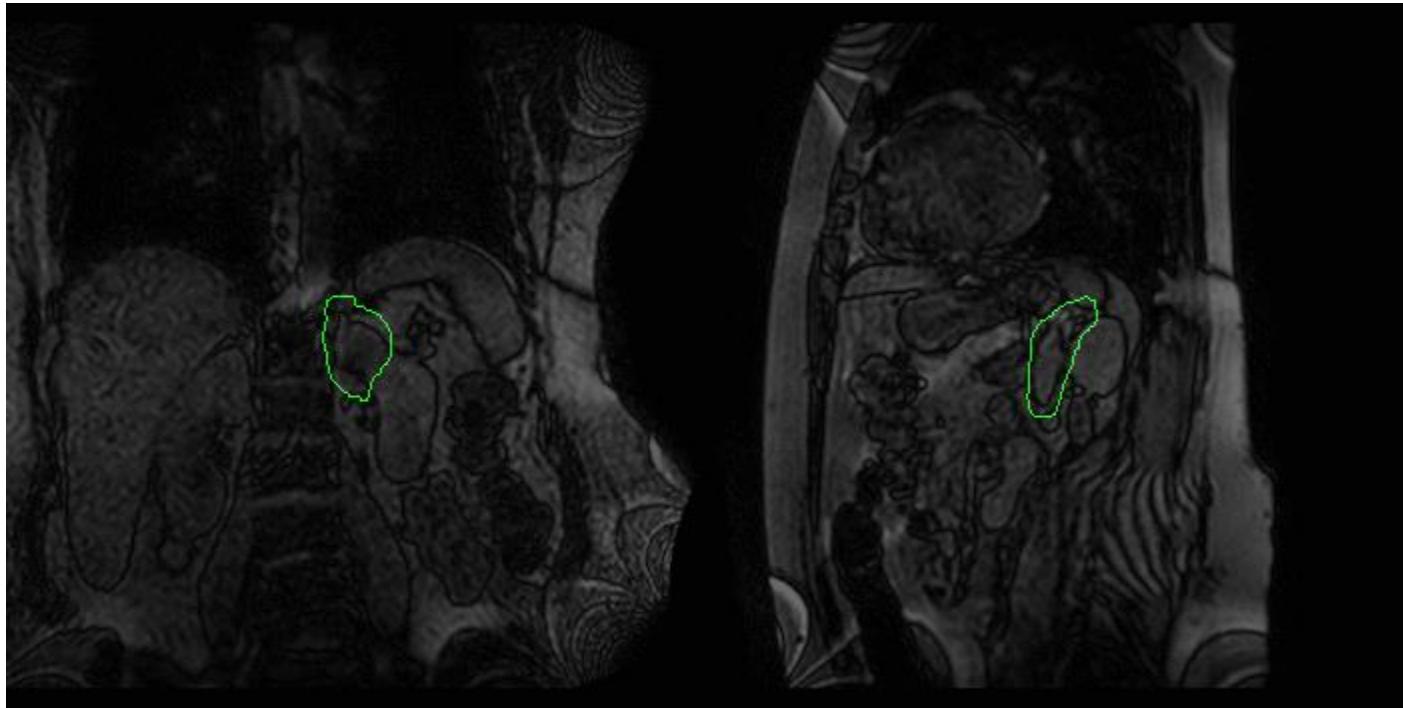


Online Workflow

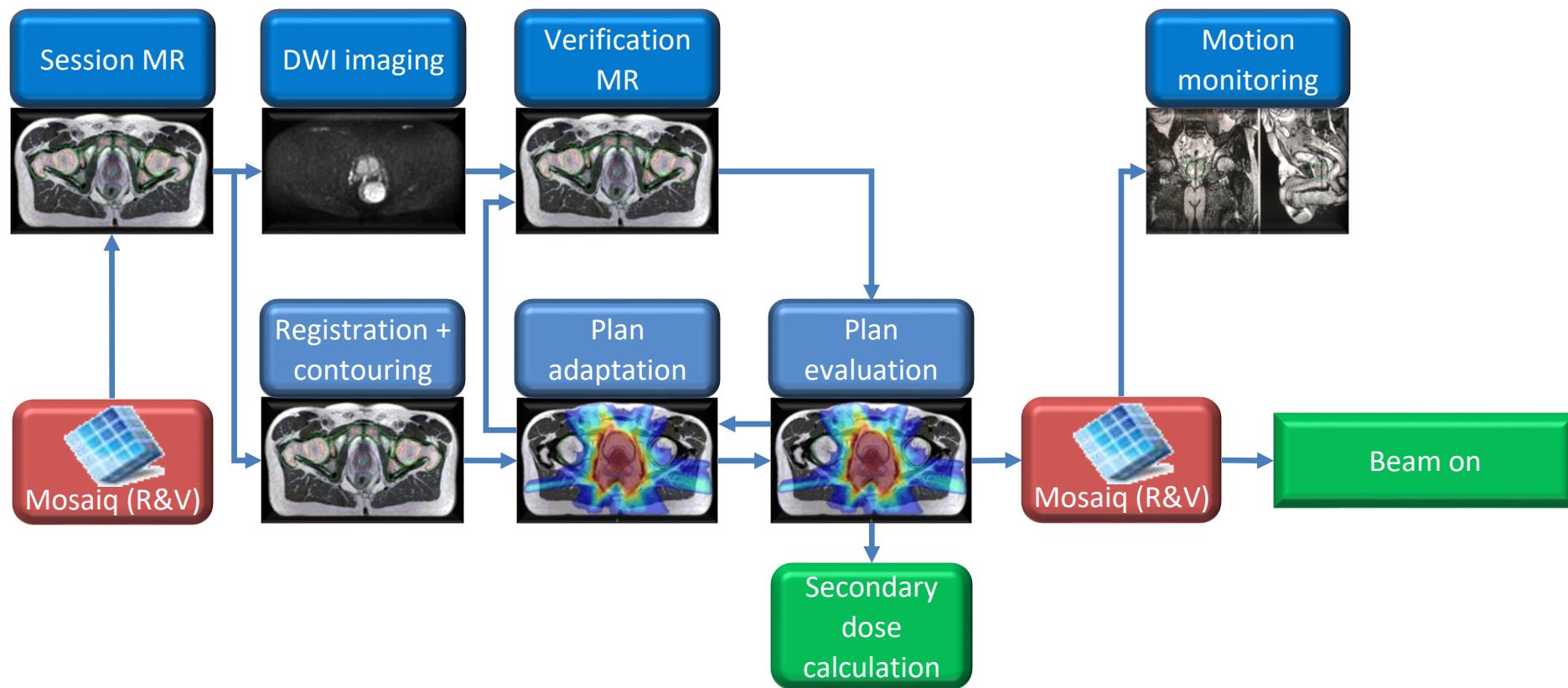


Online Workflow





Online Workflow



Acknowledgement

