

Key figures

- 5 Radiation Oncologists
- 6 Medical Physicists
- 5 Dosimetrists
- 29 Radiation Therapists
- 5 Linacs (3TB+2HCY)
- 1700 Patients treated annually



CAROLINE GÉNEBÈS, MD
Radiation Oncologist

Study Case : Adaptive Radiotherapy for Prostate Cancer using AdaptBox

The Challenge : Radiotherapy proceeded normally until the 13th session. During the 14th session, therapists noted that the patient struggled to fill his bladder, and a bowel loop was nearing the 66 Gy volume. **The physician requested dosimetry calculations using AdaptBox's synthetic CT to assess the need for re-planning the treatment.** Note: SGRT was used for daily patient positioning, and no major deviations were noted. Bladder and rectum filling were visible only on CBCT scans.

Patient Profile

Gender: Male , **Age :** 71 years.

Medical History: Diagnosis of a recurrence in the prostatectomy bed of a prostate adenocarcinoma, operated on in May 2024, with a Gleason score of 7 (4+3), pT2cN0 R1. MRI identified a macroscopic residual tumor, and a PSMA PET scan confirmed no distant metastasis.

Prescribed treatment (Multidisciplinary board): Treatment included radiotherapy and hormone therapy.

Radiotherapy Protocol

Treatment Type: VMAT radiotherapy on Halcyon, planned using Eclipse TPS V16.1 (Acuros XB).

Administrated Dose: 546 Gy to pelvic lymph node areas, 66 Gy to the prostatectomy bed, 72 Gy to the macroscopic residual tumor

Start Date: September 2, 2024

RESULTS & BENEFITS

- **Time and resources savings:** Reduced workload /delays for the team and improved service organization.
- **Precision et safety :** Maintained the prescribed dose with proper positioning, without compromising dosimetric constraints.
- **Optimized Patient Experience:** The patient received continuous treatment without stress from last minute adjustments and was exposed to less imaging dose by avoiding an additional CT scan.

CONCLUSION

This clinical case demonstrates the effectiveness of AdaptBox in optimizing clinical resources and providing a smooth care experience. Thanks to the automatic creation of an accurate synthetic CT and the associated contours, the dose was quickly validated. The ease of integration into existing routines and tools confirms that AdaptBox is an essential asset for effective, seamless adaptive radiotherapy, simplifying patient management.

ab AdaptBox Usage

The dosimetry provides a reassuring bladder dose (Average dose of 39 Gy and V60 = 23.6% on the planned CT versus an average dose of 43 Gy and V60 = 32% on the synthetic CT, with a maximum dose to the bowel loop of 53.7 Gy on the synthetic CT). Thanks to AdaptBox, medical decisions can be made quickly and confidently:

- The patient does not need a new CT scan.
- A daily CBCT is acquired to monitor bladder filling and bowel positioning.
- The patient is instructed to fill their bladder as much as possible to push the bowel away.

Outcome:

The patient managed to maintain bladder filling for the remainder of the treatment. No acute urinary or digestive toxicity was observed. Re-planning was not required.

What If the team had not used AdaptBox:

- A new planning CT scan would have been needed at the 14th session.
- 1-2 days delay for scheduling the scan.
- The physician would have needed to re-contour during an already busy schedule.
- Initial dosimetry on the new CT
- It would have added approximately 1.5 hours for the team:

Medical Staff: 45 min–1 hr (patient communication, re-contouring, and dosimetry validation).

Radiotherapists: 45 min–1 hr (patient communication, re-contouring, and dosimetry validation)

Physicists and Dosimetrists : 15 min (initial dosimetry on new CT).

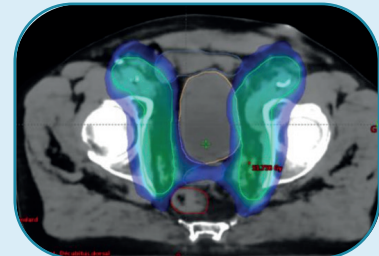
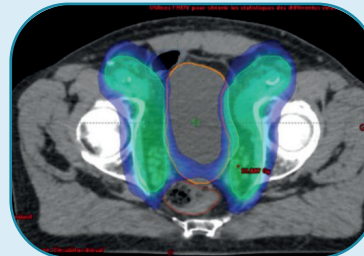
*AdaptBox time deducted

Dosimetry Check

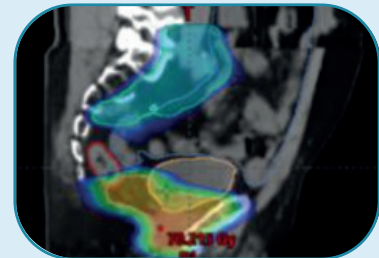
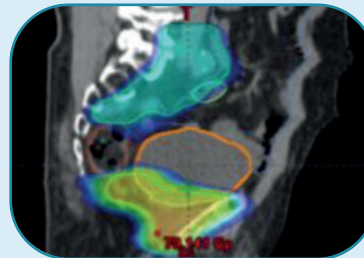
1 Planning CT

2 Synthetic CT AdaptBox

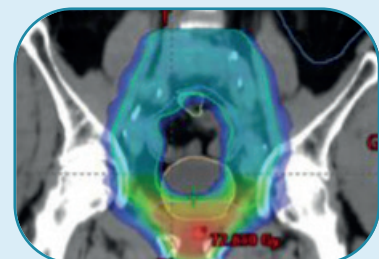
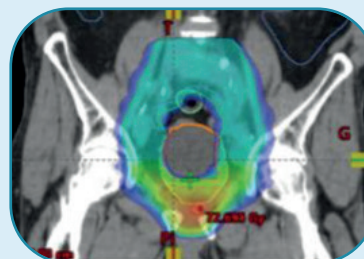
AXIAL



SAGITAL



CORONAL



DVH-OAR/PTV

