

Key Figures

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



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Study Case : Adaptive Radiotherapy for Head & Neck Cancer using AdaptBox

The Challenge: This patient was undergoing **dynamic arc radiotherapy** (70 Gy to cervical lymph nodes, 56 Gy to prophylactic cervical region). The first session took place on September 18, 2024. A second planning CT (CTB) was requested on September 19, 2024, to evaluate dosimetric coverage. Based on the results, treatment continued as planned. By the 15th session on October 9, 2024, there were some treatment adjustments to be made: the patient had lost weight, prompting the physician to request a synthetic CT (synCT) via AdaptBox to confirm dosimetric coverage and check for hotspots. AdaptBox allowed the team to rapidly verify dosimetric coverage and assess the need for replanning. A synthetic CT was used instead of acquiring a new CT scan, avoiding unnecessary imaging and interruptions to the treatment schedule.

Patient Profile

Age: 65 year-old **Gender:** Male

Medical History: Right iliac stent (2021), no prior radiation history.

Disease History:

Diagnosed with right base-of-tongue squamous cell carcinoma (p16-negative, T2N2cM0) with bilateral hypermetabolic lymph nodes confirmed via PET-CT.

No abnormalities detected in the soft palate on reevaluation.

Radiotherapy protocole

Treatment Type: VMAT radiotherapy on TrueBeam, planned using Eclipse TPS v16.1 (Acuros XB).

Administred Dose:

- 70 Gy over 35 sessions to affected cervical nodes and tumor.
- 56 Gy over 35 sessions to prophylactic cervical regions.

Start Date: September 18, 2024.

RESULTS & BENEFITS

- **Precise Dosimetric Validation:** AdaptBox confirmed dosimetric coverage for lymph nodes and tumor regions, with accurate alignment between synthetic CT and planning CT. It has Identified a +5.5% hotspot, validating the need for replanning.
- **Streamlined Replaning Decision:** provided a reliable tool for making timely replanning decisions, avoiding unnecessary CT scans.
- **Enhanced Workflow:** Reduced stress on staff by minimizing the need for additional scans and maintaining continuity of care for the patient.

CONCLUSION

This case highlights AdaptBox's role in efficient, adaptive radiotherapy. Its synthetic CT technology allows for quick dosimetric assessments, ensuring accurate coverage while avoiding unnecessary treatment interruptions. **By simplifying workflows and reducing imaging needs, AdaptBox optimizes clinical resources and enhances the patient care experience.**



AdaptBox Usage :

AdaptBox generated a **synthetic CT (synCT)**, enabling a quick and accurate evaluation of dosimetric coverage. The appearance of a +5.5% hotspot clearly confirmed the need for replanning.

Indeed, by the 17th session, a third CTC scan was performed. The **syn-CT evaluation** revealed the same hotspot justifying the need for replanning.

A new dosimetric plan was implemented starting on the 21st session!

Key advantages using AdaptBox in this case

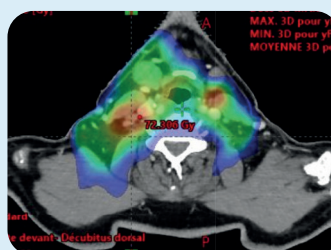
Calculations performed with AdaptBox confirmed the need for replanning.

- **Rapid verification** of dosimetric coverage can be performed whenever the physician has concerns. This allows teams to more easily and frequently verify dosimetry using the synthetic CT, promoting the identification of necessary replanning
- The patient is only informed about the need for replanning once it has been fully validated using AdaptBox, **avoiding unnecessary rescans and treatment delays.**
- Physics and dosimetry teams can rely on the tool for quick dosimetric checks, enabling them to **better anticipate the additional workload associated with replanning, reducing stress in the process.**

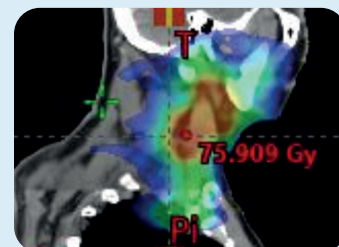
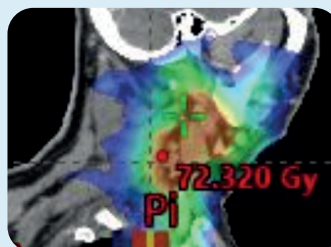
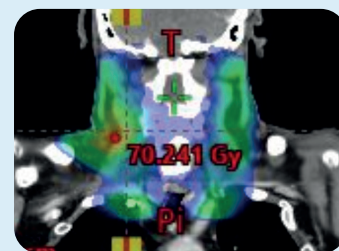
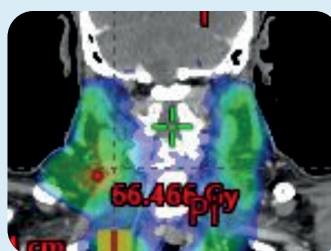
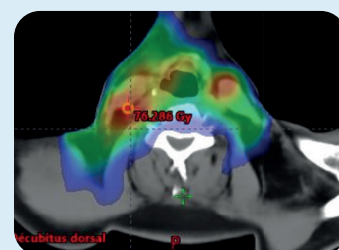
Dosimetry Check

DOSIMETRY EVALUATION ON THE SYN-CT, COMPARED TO THE INITIAL CT SCAN

1 Initial Scan CTA



2 Synthetic



DOSIMETRY EVALUATION ON THE SYN-CT, COMPARED TO THE NEW CTC SCAN

(Hotspot confirmed)

1 CTC Scan

