

Dual-Energy CT for Tumor Delineation

Multi-Center Study on Head-and-Neck Cancer

Patient Cohort

15 non-resected cases with head-and-neck cancer (HNC)

Clinical Data

Dual-energy CT with contrast
MRI with contrast
Clinical description

provided by
Gustave Roussy Cancer
Campus, Villejuif, France

Study Aim

Assessment of
intra- & inter-observer
variability in primary
tumor delineation
using conventional CT
& dual-energy CT

Participants

HNC radiation
oncologists of all
experience levels
No prior knowledge in
dual-energy CT required

Timeline

Kick-off aimed for
winter 2025
Finalizing delineation
aimed for winter 2026

Join this delineation study

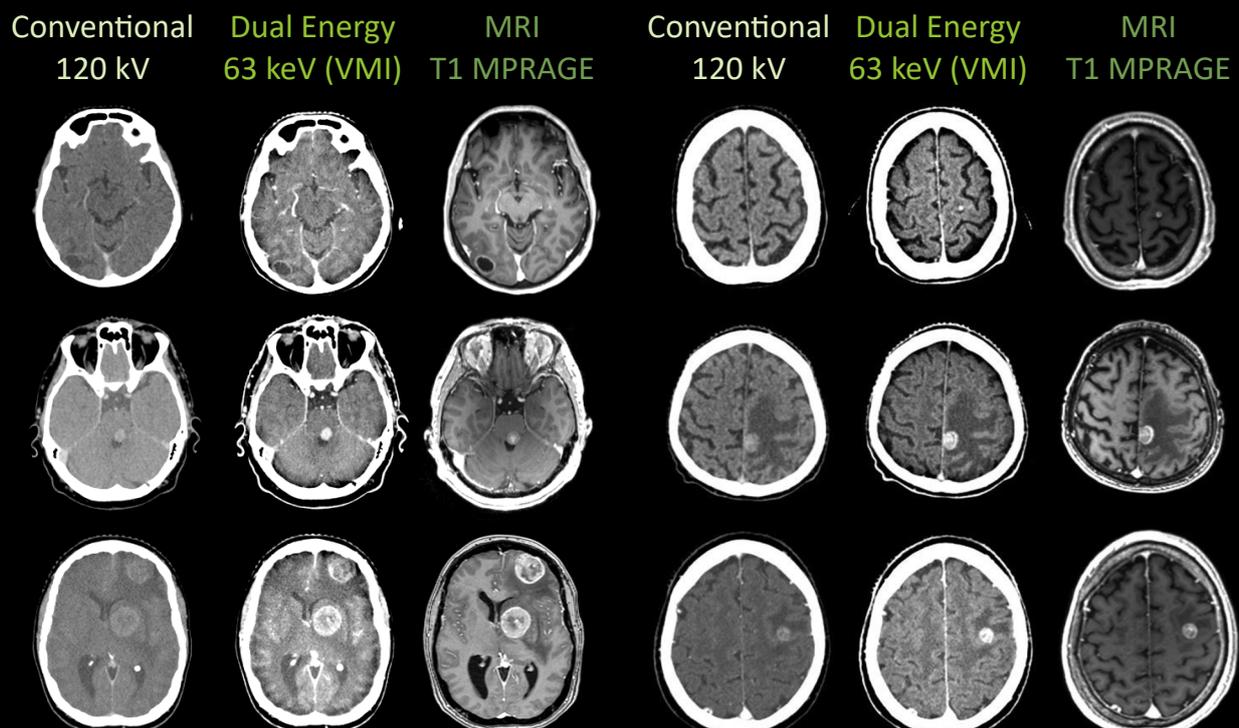
To explore the benefits of DECT and shape new delineation strategies

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Enhancement in image contrast using dual-energy CT



Kraft et al., Radiotherapy and Oncology 187 (2023)

Study design

INTER-observer variability: **3** delineation rounds

INTRA-observer variability: **3** additional delineation rounds

Delineation round I

SECT

MR

Delineation round II

DECT

MR

Delineation round III

DECT

INTER

Delineation round IV

SECT

MR

Delineation round V

DECT

MR

Delineation round VI

DECT

INTRA

Participants can decide between 4 different options for joining:

A: 3 rounds of 10 patients

C: 6 rounds of 10 patients

B: 3 rounds of 15 patients

D: 6 rounds of 15 patients

Concept

- Delineation of **primary tumor**
- **Timing** of delineation
- **Weighing relevance** of CT & MR for tumor delineation
- **Blinded study** with randomized patient order

Patient data

- **DECT & DECT-derived SECT**
- **MR** in treatment position
- **DECT-to-MR rigid registration**
- **RTSTRUCT** with box indicating tumor location
- **Clinical description**

Standard schedule: 4 weeks delineation followed by 4 weeks break

Individual scheduling possible upon availability

(accommodating for vacation, leaves, busy clinical periods)

