Elekta Unity: The Power of Daily Adaptation in Rectal Cancer Treatment

Institution
University Medical Center Utrecht (UMC Utrecht)

Location
The Netherlands

Medical Staff
Dr. Martijn Intven
Case history

Patient with a small clinical T2N1 rectal adenocarcinoma 6 cm from the anal verge.

Past medical history
No documented medical history.

Rationale for using Elekta Unity
Clear visualization of the tumor and surrounding normal tissues enables optimal adaptation of the treatment field to daily anatomy changes in the pelvis, such as differences in rectal and bladder filling.

CT image

CBCT image

Difficult-to-visualize tumor and normal tissue on CT or CBCT; tumor and surrounding structures clearly visible on MR imaging.

As one of the first rectal cancer treatments performed, standard margins (10 mm) were used around CTV mesorectum and elective lymph node regions to gain confidence.

The patient was treated in five fractions of 5 Gy, with a five-field IMRT delivery.
**Power of adaptation**

The team evaluated what would have happened if the reference plan had been applied to each fraction.

It’s clear from the images above that fraction #5—the anterior wall of the rectum, which should have been irradiated—would have been missed.

With Elekta Unity, the team was able to adapt the plan delivered at every fraction. As seen below, due to this daily adaptation, the entire target volume was irradiated as planned.

---

**Results**

Re-staging eight weeks after treatment showed a clinical complete response, and the patient entered a wait-and-see study.
For almost five decades, Elekta has been a leader in precision radiation medicine.

Our nearly 4,000 employees worldwide are committed to ensuring everyone in the world with cancer has access to—and benefits from—one of the most advanced systems in radiotherapy.