



Introduction

The annual incidence of uveal melanoma in the Netherlands is estimated to be between 120 and 150 cases, with an average age of 60 years. Radiotherapy is a commonly used treatment. At the Erasmus MC Cancer Institute, patients receive stereotactic radiosurgery on the Cyberknife. 50 Gy in 5 fractions is prescribed to the 80% isodose line.

Methods

To immobilize the affected eye during the planning CT scan and during irradiation, the double-shell-positioning-system (DSPS) is used with a camera (above the

	Constraints
PTV coverage	± 98%,
N. opticus	Dmax 20 Gy
Gl. lacrimalis	Mean dose < 25 Gy
Corpus ciliare	Max 25% > 12.5 Gy
Brain	Dosis uitloop < 10 Gy

Table 1. Constraints PTV + OARs

affected eye) and a blinking light (above the unaffected eye) attached to it. Multiplan (version 5.1.3) is used for contouring and planning. The PTV margin is 2mm. Table 1 shows the constraints that are used. Treatment delivery time is aimed at 15 to 20 minutes.

During the treatment, the position of the eye is continuously monitored and is compared to the recorded eye and mask contours from the CT scan.

Figure 2. Monitoring position of the eye

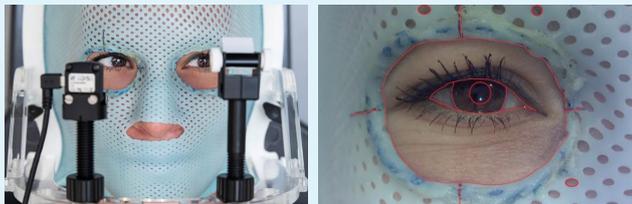
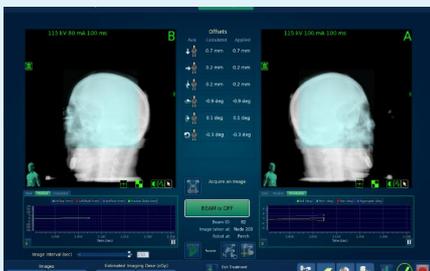


Figure 3. 6D Skulltracking



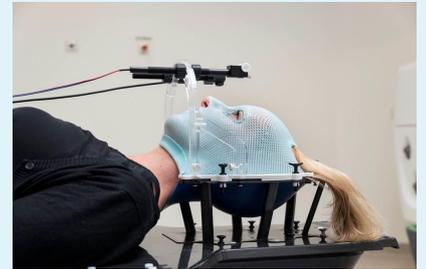
Orthogonal kV-images are used for online verification of intrafractional differences in patient head position. If necessary, a correction is applied by table shift and adjustments of the robot (6D skulltracking).

Results and conclusion

The first clinical treatments satisfy the requirements for the various workflow components. Stereotactic radiosurgery on the Cyberknife is a feasible treatment for patients with uveal melanoma.

Figure 1. Workflow

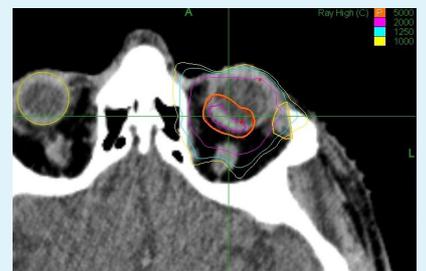
Day 1: DSPS



Day 1: CT-scan



Day 1 - 5: Contouring and planning



Day 6: Start treatment

