

# Effects on quality of life of new radiotherapy techniques in treatment of head and neck cancer

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i K Isaksson, Medicinargatan 16, den 16 september 2022, klockan 9.00

av Edvard Abel, leg läkare

Fakultetsopponent:

Professor Jesper Grau Eriksen

Aarhus Universitet, Danmark

## Avhandlingen baseras på följande delarbeten

- I. **Abel E**, Silander E, Nyman J, Bove M, Johansson L, Björk-Eriksson T, Hammerlid E. Impact on quality of life of IMRT versus 3-D conformal radiation therapy in head and neck cancer patients: A case control study. *Adv Radiat Oncol.* 2017 May 12;2(3):346-353.
- II. **Abel E**, Silander E, Nyman J, Björk-Eriksson T, Hammerlid E. Long-Term Aspects of Quality of Life in Head and Neck Cancer Patients Treated with Intensity Modulated Radiation Therapy: A 5-Year Longitudinal Follow-up and Comparison with a Normal Population Cohort *Adv Radiat Oncol.* 2019 Aug 2;5(1):101-110.
- III. **Abel E**, Silander E, Nordström F, Olsson, C, Brodin NP, Nyman J, Björk-Eriksson T, Hammerlid E. Fatigue in head and neck cancer patients treated with radiotherapy: a prospective study of patient-reported outcomes and their association with radiation dose to the cerebellum. *Adv Radiat Oncol.* 2022 Apr 8;7(5):100960.
- IV. **Abel E**, Brodin NP, Viswanathan S, Nordström F, Nyman J, Hammerlid E, Björk-Eriksson T. Radiotherapy induced fatigue in head- and neck cancer patients using longitudinal data analysis *Manuscript*

**SAHLGRENKA AKADEMIN**  
**INSTITUTIONEN FÖR KLINISKA VETENSKAPER**



GÖTEBORGS  
UNIVERSITET

# Effects on quality of life of new radiotherapy techniques in treatment of head and neck cancer

**Edvard Abel**

Avdelningen för onkologi, Institutionen för Kliniska Vetenskaper, Sahlgrenska akademien, Göteborgs universitet, Sverige, 2022.

## **Abstract**

The treatment of head and neck cancer (HNC) with radiotherapy has greatly evolved during the last twenty-five years with the introduction of new algorithms and techniques such as three-dimensional conformal radiotherapy (3D-CRT) and intensity-modulated radiotherapy (IMRT). The aim of this thesis was to investigate short- and long-term effects of new radiation therapy techniques on patients' quality of life and contribute to the implementation of the results in the everyday clinical care for these patients.

In a longitudinal study health-related quality of life (HRQOL) questionnaires were used to prospectively study patient-reported outcome measures (PROM) in patients with advanced HNC treated with IMRT versus 3D-CRT. We found better HRQOL scores regarding symptoms such as dry mouth and head and neck-specific pain as well as functional aspects, like cognitive functioning and sexuality, favoring the IMRT group.

In a five-year follow-up of HNC patients treated with IMRT, most HRQOL domains returned to baseline values with exception of local symptoms like dry mouth, taste alterations and problems with teeth. A comparison with an age and sex matched cohort from the normal population showed even more HRQOL effects in the treated patients.

Cancer-related fatigue (CRF) was evaluated in the same group of patients with a fatigue-specific HRQOL questionnaire. A significant increase of CRF within the first three months after start of treatment was found. CRF scores returned to baseline values within twelve months. Radiation mean dose to the cerebellum, age < 60 years, lower performance status and lower tumor stage were predictive for higher levels of CRF.

**Keywords:** Head and neck cancer, IMRT, HRQOL, fatigue, predictive