

# Radiation-induced Dysphagia: Intervention and Assessment Tools for Head and Neck Cancer

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i hörsal Arvid Carlsson, Academicum, Medicinargatan 3, Göteborg, fredagen den 24 januari, klockan 9.00

av Kerstin Petersson

Fakultetsopponent:

Lisette van der Molen, Associate professor, SLP

The Netherlands Cancer Institute, Amsterdam, Nederländerna

## Avhandlingen baseras på följande delarbeten

- I. Dotevall H, Tuomi L, Petersson K, Löfhede H, Bergquist H, Finizia C. Treatment with head-lift exercise in head and neck cancer patients with dysphagia: results from a randomized, controlled trial with flexible endoscopic evaluation of swallowing (FEES). *Support Care Cancer*. 2022;31(1):56
- II. Petersson K, Finizia C, Pauli N, Dotevall H, Tuomi L. A randomized controlled study evaluating the head-lift exercise in head and neck cancer patients with radiation-induced dysphagia: effect on swallowing function and health-related quality of life over 12 months. *Eur Arch Otorhinolaryngol*. *Eur Arch Otorhinolaryngol*. 2023;280(12):5445-5457.
- III. Petersson K, Finizia C, Pauli N, Tuomi L. Validation of the Swedish Dynamic Imaging Grade of Swallowing Toxicity for Flexible Endoscopic Evaluation of Swallowing (DIGEST-FEES). *Dysphagia*. Published online September 27, 2024.
- IV. Petersson K, Finizia C, Pauli N, Tuomi L. Preventing radiation-induced dysphagia and trismus in head and neck cancer- A randomized controlled trial. *Head Neck*. Published online August 1, 2024.

**SAHLGRENKA AKADEMIN  
INSTITUTIONEN FÖR KLINISKA VETENSKAPER**



# Radiation-induced Dysphagia: Intervention and Assessment Tools for Head and Neck Cancer

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## Abstract

The aim of the thesis was to evaluate the effect of two interventions to prevent or reduce complications of radiation-induced swallowing and mouth opening difficulties among HNC patients. An additional aim was to introduce a valid and reliable tool for assessment of swallowing difficulties among HNC, by translating and validating a Swedish version.

**Study I and II** is based on an RCT evaluating the effect of the head-lift exercise (HLE) on swallowing function assessed by flexible endoscopic evaluation of swallowing (FEES) after 8 weeks of intervention. No convincing effect was found of the HLE on swallowing function assessed by FEES. In **study II** the effect of the HLE was measured by general and dysphagia-specific health-related quality of life instruments up to 12 months after intervention. No effect of the HLE could be detected, as there were no statistically significant differences attributable between the groups at any follow-up.

In **study III**, the Dynamic Imaging and Grading Assessment Tool for FEES (DIGEST-FEES) was translated and validated by comparing ratings on other well-known assessment scales as reference measures. Analyses established that correlations were equal to or better for the Swedish version (Sw-DIGEST-FEES) compared to the reference measures used in the original development. Therefore, the Sw-DIGEST-FEES was deemed to be a psychometrically sound assessment tool.

**Study IV** is based on an RCT evaluating the effect of preventive muscle-strengthening exercises on swallowing and mouth-opening function. Baseline results from FEES and mouth opening measurement were compared to measures made one-month after completion of radiotherapy for HNC. No statistically significant positive effect of the intervention protocol could be determined. Adherence to exercise protocol was 61%. Among participants in the intervention group who had completed  $\geq 75\%$  of exercises, there was a trend toward better outcomes.

In conclusion, results from both RCTs are in line with previous research within the field—i.e., improving chronic swallowing difficulties is challenging, and preventive protocols for swallowing and mouth opening function is difficult to evaluate due to low adherence rates. The Sw-DIGEST-FEES can contribute to standardization of clinical and research results and offers psychometrically sound assessments.

**Keywords:** dysphagia, radiotherapy, head and neck cancer, intervention, mouth opening difficulties, validity

ISBN: 978-91-8069-883-2 (Printed edition)

<http://hdl.handle.net/2077/83350>

ISBN: 978-91-8069-884-9 (Electronic edition)