



# Karolinska Institutet

**Institutionen för klinisk vetenskap, intervention och teknik  
Enheten för Öron-, Näs- och Halssjukdomar**

## Patients with head and neck cancer - aspects on treatment, complications and rehabilitation

**AKADEMISK AVHANDLING**

som för avläggande av medicine doktorsexamen vid Karolinska  
Institutet offentligen försvaras i ÖNH-klinikens föreläsningssal i  
Solna, A602 (plan 2 i huvudbyggnaden).

**Fredagen den 17 december 2010, kl. 9.00**

av

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**Stockholm 2010**

## ABSTRACT

Head and neck cancer is reported to be the fifth most common cancer globally and around 1,200 new patients are diagnosed in Sweden every year. Historically, survival rates have been rather constant but have started to improve over the last few decades as a result of new and more aggressive oncological treatments. For this reason, there is a need to re-evaluate surgical treatment—both its necessity and its morbidity in comparison to the oncological treatments available. There is also a risk of higher incidence of side effects from newer oncological regimens, which still needs to be evaluated.

In this thesis, different populations of head and neck cancer patients from our institution have been analysed concerning aspects of treatment, sequelae, and rehabilitation. The material is highly applicable to everyday clinical situations.

In paper I, patients diagnosed between 1998 and 2002 with metastases in the neck that were treated with full-dose external beam radiotherapy (EBRT) were evaluated concerning histopathology and clinical outcome, with a view to evaluating the necessity of a planned neck dissection after EBRT. One hundred and fifty-six patients were included. Overall survival was 62% and disease-specific survival was 76%. There was a clinically complete response to radiotherapy in the neck in 63 patients (40%). Of these, 15 had viable tumor cells in the neck specimen. In patients who did not achieve a clinically complete response, 40% (37/93) had viable tumor cells in the neck specimen. Disease-specific survival in patients with viable tumor cells in the neck after EBRT was 48% (25/52), and it was 90% (93/104) in patients without viable tumor cells.

Paper II describes a retrospective case-control study of patients diagnosed and treated for stricture of the upper oesophagus after EBRT for head and neck cancer between 1992 and 2005. The aim of the study was to identify possible risk factors for stricture formation. Clinical parameters were collected from the medical files. The EBRT dose delivered to the upper oesophagus was calculated using the dose-planning system data. Seventy patients with stricture and 66 patients without were identified. The incidence of upper esophageal stricture at the institution during the study period was 3.3%. A multivariate analysis showed an increased risk of stricture in patients who received enteral feeding during EBRT or with a mean dose of > 45 Gy delivered to the upper oesophagus. Treatment of the stricture with Savary-Gilliard bougienage or through-the-scope balloon dilatation was found to be safe and successful, but often had to be repeated.

In paper III, the morbidity of supraomohyoid neck dissection (SOND) or modified radical neck dissection (MRND) combined with EBRT was evaluated regarding cervical range of movement, lymphoedema, mouth opening, swallowing, and shoulder disability. The patient material was collected from the study population in paper IV. Ninety-eight patients who received only EBRT were identified, 25 patients were treated with both SOND and EBRT, and 83 were treated with MRND and EBRT. The overall incidence of shoulder disability after both types of neck dissection was 18%. SOND had no other significant negative effects on the parameters under evaluation at any time point, while with MRND there was significantly reduced CROM and mouth opening two months after treatment. After 12 months, only cervical rotation was still significantly reduced.

In paper IV, the aim of the study was to evaluate the effect of an early preventive rehabilitation programme on functional losses and quality of life. The programme started at diagnosis before the start of treatment and was based on self-care after receiving instructions from a speech language pathologist and a physiotherapist. The patients were instructed to use the training programme during and after the treatment period. One hundred and ninety patients were included in the early experimental rehabilitation programme. A control group of 184 patients who did not receive early rehabilitation was constructed. It was shown that the programme could be implemented without delaying the start of oncological treatment, but no positive effects concerning survival, weight loss, functional loss, working ability, or quality of life were observed.

The need for a neck dissection after EBRT cannot be determined by clinical examination as a high percentage of patients with clinical complete response showed viable tumor cells in the neck specimen. When performing a neck dissection, a SOND should be considered in suitable patients as morbidity of SOND is low except for shoulder disability. An EBRT dose delivered to the upper 5 cm of the oesophagus should be kept below 45 Gy to lower the risk of oesophageal stricture, and patients should be instructed to continue to swallow even if they receive enteral nutrition during treatment. Finally, even though no positive effects of early rehabilitation could be shown, the results do not contradict the idea that rehabilitation based on self-care can be effective. Efforts should be made to identify rehabilitation that can reduce functional losses and improve quality of life. Future rehabilitation programmes should also concentrate on identification of proper instruments for selection of patients and for evaluation of intervention in head and neck cancer patients.