



# Survival after curative surgical treatment for primary oral squamous cell carcinoma



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## ABSTRACT

The purpose of this retrospective study was to review recurrence rate and survival of patients with primary oral squamous cell carcinoma (OSCC) that have received surgical treatment and adjuvant radiotherapy with curative intent in our clinic over a 6-year period. A total of 106 patients were included. The 5-year overall survival (OS) was 41%, 5-year disease-specific survival (DSS) was 77%, 5-year disease-free survival (DFS) was 72%. DSS was significantly different between early and advanced stage, 87% and 67% respectively ( $p = 0.04$ ). Recurrence significantly affected survival: OS with or without recurrence at 20 months was 24% and 87% respectively ( $p < 0.001$ ). Although a guideline based approach for the treatment of OSCC might provide an advantage, more data are needed for these guidelines to be based on.

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## 1. Introduction

Oral squamous cell carcinoma (OSCC) is known for its unpredictability. Although metastases are more likely to occur with increased size of the primary tumour, small cancers can metastasise early, and some large cancers never metastasise. Besides tumour size and nodal status, other prognostic factors are the tumour site, pathological grade, depth of invasion, biological tumour markers, perineural invasion, distant metastases and patient compliance (Shah, 1990; Ferlito et al., 2009; Shaw et al., 2009). Smoking was recently proved to be a high-risk factor for recurrence (Wang et al., 2012). Technological advances in surgery and concurrent chemo-radiation therapy have significantly affected the treatment and outcome for patients with advanced stage OSCC (Andersen et al., 2002; Bernier et al., 2004; Cooper et al., 2004; Shiboski et al., 2005).

The use of free flap reconstruction improves the survival of patients with OSCC (de Vicente et al., 2012). Despite this its prognosis remains extremely poor, with 5-year survival rates estimated to be 35%–45% (Kademani et al., 2005; Bell et al., 2007; Rusthoven et al., 2010).

The purpose of this retrospective study was to review recurrence rates and survival of patients with primary OSCC who

have received adjuvant treatment with curative intent in the Department of Cranio-Maxillofacial Surgery of the Maastricht University Medical Centre (MUMC).

## 2. Material and methods

Records of all 136 patients with primary OSCC treated in the MUMC between June 2006 and December 2011 were reviewed. Inclusion criteria were: diagnosis with primary OSCC and surgical treatment, with or without microsurgical reconstruction, and adjuvant radiation or radio-chemotherapy as suggested by the guidelines of the Dutch Society of Head and Neck Cancer (NWHHT). Exclusion criteria were oral malignancies other than SCC, pharyngeal lesions and subjects with inadequate follow-up data. Thirty patients were excluded: 27 patients had not undergone surgery, two patients had an intra-oral malignancy other than SCC, one patient had incomplete medical records due to having had follow-up elsewhere. One hundred and six patients met the inclusion criteria for the study.

The 106 included subjects consisted of 58 men (55%) and 48 women (45%) with a mean age at surgery of 64.6 years (SD 11.5 years; range 40–91 years). At the time of surgery, 33 cancers were stage I (31%), 21 were stage II (20%), five were stage III (5%), and 47 were stage IV A (44%).

Follow-up ranged from 0 to 65 months in our study population, with a mean of 22.3 months (standard error of mean [SEM], 1.6 months). Forty-four patients received adjuvant radiation therapy,

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two adjuvant radio-chemotherapy, one with methotrexate and one with cisplatin.

All patients were operated on by the same team of three head and neck oncologists of the department of Cranio-Maxillofacial Surgery. Prior to surgery all patients were presented and discussed in the multidisciplinary team for head and neck cancer of the oncological centre of the MUMC (head and neck MDT). The data were extracted from the electronic patient records (SAP™, Walldorf, Germany). Data were entered into SPSS 18 (IBM, United States). Data and variables recorded and evaluated were age, gender, tumour site, regional and/or distant metastasis, TNM stage, operation performed, adjuvant radiation therapy/radio-chemotherapy, type of reconstruction, time to recurrence, time to death. Outcome measures were overall survival, disease-free survival (=time to recurrence) and length of survival after recurrence. Kaplan–Meier survival curves were created for disease-free survival, as well as survival by tumour stage, and survival after recurrence.

### 3. Results

The overall 5-year survival rate for all stages was 41% (SEM, 17%) with a mean survival of 45 months (95% confidence interval [CI], 39–50 months) (Fig. 1).

The disease-specific 5-year survival rate was 77% (SEM, 5%) with a mean survival of 54 months (95% CI, 49–59 months) (Fig. 2).

The disease-free 5-year survival rate was 72% (SEM, 5%) with a mean survival of 49 months (95% CI, 44–55 months) (Fig. 3).

At 20 months follow-up, the overall survival rate of patients who had developed a recurrence was 24% (SEM, 10%) with a mean survival of 19 months (95% CI, 15–23). The overall survival rate with no recurrence was 87% (SEM, 4%) with a mean survival of 54 months (95% CI, 49–59 months) (Fig. 4). Log-rank (Mantel–Cox) showed that the curves differed significantly  $p < 0.001$ .

Stage appeared to effect survival. Those patients who had early stage OSCC's had a 5-year disease-specific survival of 87% (SEM, 6%), mean = 59 months (95% CI, 54–64), whereas those with advanced stage cancers had a 5-year disease-specific survival of 67% (SEM, 9%), mean = 46 months (95% CI, 39–54) (Fig. 5). Log-rank (Mantel–Cox) showed that the difference between survival was significant  $p = 0.04$ .

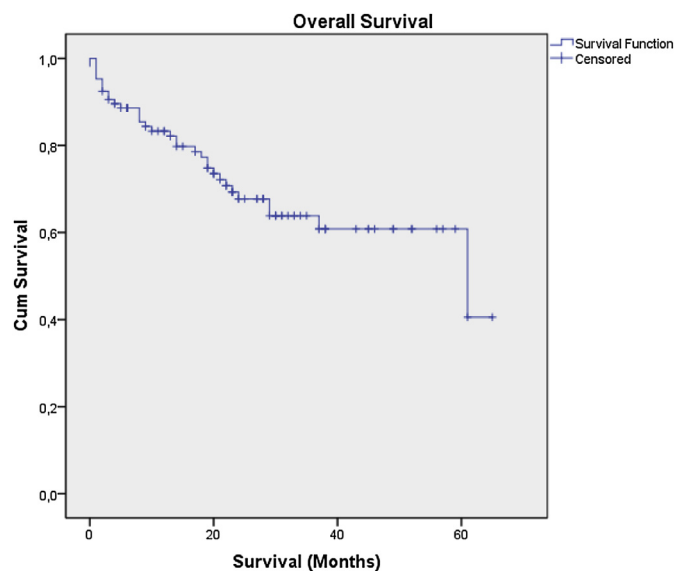


Fig. 1. Overall survival.

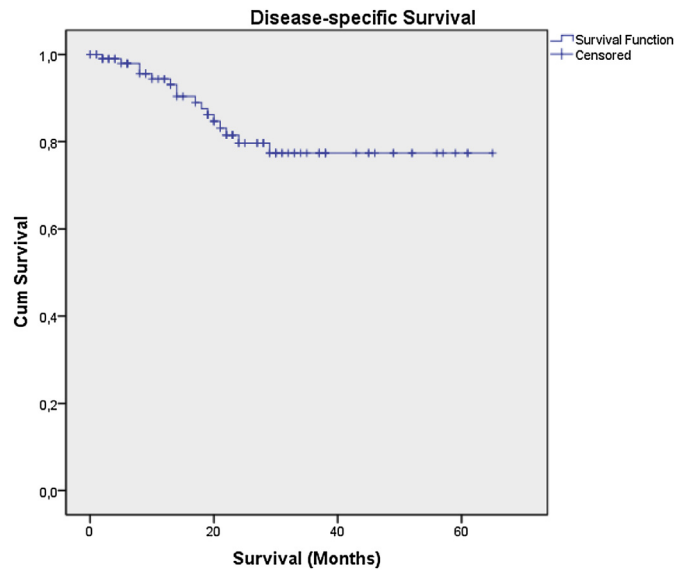


Fig. 2. Disease-specific survival.

Out of the 106 subjects, 24 (23%) had a recurrence. Of these subjects 18 (75%) had died before the end of the study. At 17 months after diagnosis of recurrent disease, the survival rate had dropped to 6% (SEM, 5%), with a mean survival of 7 months (95% CI, 4–10).

### 4. Discussion

This study is necessary to support the database to define or strengthen existing guidelines in head neck oncology as the database in literature is lacking large populations with OSCC to support therapy concepts with sufficient statistical power. For example, the therapy concepts as suggested by the Dutch Society of Head and Neck Cancer are based on one prospective randomised multi-centre study that included only 35 patients. The study was terminated prematurely, because survival of patients in the treatment group with surgery and radio-therapy on indication turned out to be more favourable compared to primary radiation therapy alone (Robertson et al., 1998).

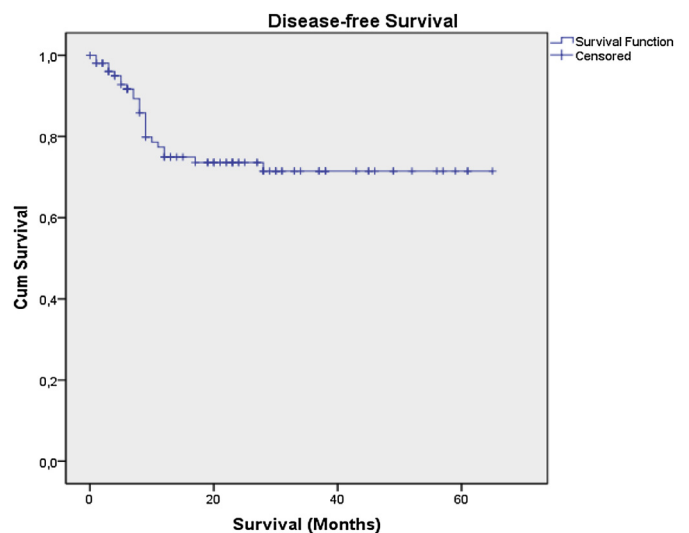


Fig. 3. Disease-free survival.

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