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Long-term quality of life measured by the University of Washington QoL questionnaire (version 4) in patients with oral cancer treated with or without reconstruction with a microvascular free flap

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Abstract

We used the University of Washington Quality of Life (UW-QoL) questionnaire (version 4) to assess the long-term quality of life (QoL) of patients with oral squamous cell carcinoma treated with or without reconstruction with a microvascular free flap, and all patients with T2–T4 oral squamous cell carcinoma (SCC) treated in this way were eligible for the study. A total of 139 patients' personal details, medical history, and QoL scores were collected and analysed. The mean (SD) overall QoL score was 73.09 (14.8) for patients with T2–T4 oral SCC. The mean (SD) global QoL scores of patients who had had reconstructions was 75.68 (13.85) and of patients who had not 71.00 (15.34) ($t = 1.864$, $df = 137$, $p = 0.064$). Univariate and multivariate analyses indicated that site of tumour, T stage, and the need for postoperative radiotherapy had significant effects on the global QoL scores. Among patients with T2 oral SCC there was no significant difference between patients who did and did not have reconstructions. However, there were significant differences among patients with T3/T4 SCC in scores for appearance, recreation, mood, anxiety, chewing, swallowing, and speech depending on whether they did or did not have reconstructions. There were significant differences in the domains recreation, chewing, speech, and taste, depending on the primary site of the tumour. We conclude that reconstruction with a microvascular free flap had a beneficial effect on the treatment of SCC and improved the QoL of patients with oral SCC.

Keywords: Oral cancer; Squamous cell carcinoma; Microvascular free flap; oral reconstruction; UW-QoL v4

Introduction

Oral cancer is still a considerable problem of global public health, particularly in south and southeast Asia and parts of Western and Eastern Europe. Oral cancer together with oropharyngeal cancer are the sixth most common cancers in the world, and squamous cell carcinomas (SCC) account for more than 90% of oral malignancies.[1] The main treatment for patients with oral SCC is resection, which always leads to considerable orofacial defects.[2] To maintain facial aesthetics and oral function, it is necessary to reconstruct the defects after the tumour has been resected with microsurgical free flaps. Either surgical treatment, or combination treatment with surgery, radiotherapy, and chemotherapy has a noticeable influence on the patient's physical, mental, emotional, and psychosocial life. Because clinician's opinions may be

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one-sided, measurement of quality of life (QoL) is necessary to understand the patients' perception of their own treatment.

In recent years, various types of questionnaires have been developed for subjective assessment of health-related quality of life (HR-QoL). Among them are the European Organization for Research and Treatment of Cancer (EORTC), FACT, and University of Washington Quality of Life (UW-QoL).[3–6] The best questionnaire is the UW-QoL, which is the most comprehensive and was first introduced in 1993 by Hassan and Weymuller[7] and then improved by other authors.

Although it has been confirmed that free flaps result in acceptable QoL,[8,9] we know of no study that compares the QoL of patients with oral cancer who have been treated with and without reconstruction of the defects. The purpose of this study was to assess long-term QoL of patients with oral SCC who were treated with or without reconstruction with microvascular free flaps using the UW-QoL v4 questionnaire.

Patients and methods

All patients were treated in the Department of Maxillofacial and ENT (ear, nose, and throat) Oncology of Tianjin Medical University Cancer Institute and Hospital between 2005 and 2014. All patients had their tumours resected, and this was followed for those with T2–T4 oral SCC by reconstruction with a free flap. Patients were included if they were alive and free of disease at the time of the study and had had at least 12 months' follow up postoperatively. Exclusion criteria were: lack of relevant clinical information, preoperative radiotherapy, and recurrence of the tumour. All patients were staged according to the 2009 American Joint Committee on Cancer (AJCC) staging system.[10] The patients' personal and clinical data were collected, including age, sex, size of tumour, clinical stage, and type of free flaps.

The patients completed the questionnaire when they came back to hospital for regular review. They were given a brief explanation about the study and the UW-QoL questionnaire. This is composed of 12 sections: pain, appearance, activity, recreation, swallowing, chewing, speech, shoulder, taste, saliva, mood, and anxiety. Each of the 12 questions has four or five options to choose. Patients were also asked to list the three most important domains that affected their health. There are three extra global questions about the quality of life in general (a) about how they feel relative to before they developed the cancer, (b) about their health-related QoL, and (c) about their overall QoL. The sections were scored on a scale ranging from 0 (worst) to 100 (best).

Statistical analysis

Descriptive statistics was used for presentation of the general data. We analysed the impact on global QoL scores of the following factors: sex, age, T stage, site of tumour, postoperative radiotherapy, and free flap reconstruction. Student's *t* test was used for univariate analysis, and for multivariate analysis we used linear regression models. The significance of differences between nominal or ordinal variables between patients treated by resection alone or resection followed by immediate reconstruction with a free flap were analysed with the help of the chi squared test, and that between continuous variables by Student's *t* test. PASW SPSS version 18.0 (SPSS Inc, Chicago, ILL, USA) was used for all statistical analyses, and probabilities of less than 0.05 were accepted as significant.

Results

Details of patients

A total of 139 patients with T2–T4 OSCC were included, 90 of whom were male and 49 female. Ninety-two patients had T2 stage tumours and 47 T3/T4. Nearly half the primary sites were tongue (n = 68), and the other sites (n = 71) including buccal mucosa, palate, floor of mouth, and retromolar trigone. Among these patients, 62 patients were treated by resection of the tumour alone, while the remaining 77 then had immediate reconstruction using different microvascular free flaps. The types of flap included radial forearm free flap in 48 patients, anterolateral thigh flap in nine, and fibular osteomyocutaneous flap in five. Patients with T3/T4 stage disease had neoadjuvant chemotherapy with docetaxel, cisplatin, and 5-fluorouracil. Twenty four patients also had adjuvant postoperative radiotherapy.

T2 patients showed no significant differences between those treated with, and those without, reconstruction in age, sex, site of tumour, and neck dissection. However, there were significant differences between the two groups in postoperative radiotherapy (chi squared 11.222, df = 1, p = 0.001) and extent of resection (chi squared 13.947, df = 1, p = 0.000) (Table 1). There were no significant differences between patients with T3/T4 oral SCC treated with, and without, reconstruction in age, sex, site of tumour, postoperative radiotherapy, extent of resection, or neck dissection (Table 2). The proportions of age, sex, postoperative radiotherapy, reconstruction, resection extent and neck dissection were similar in patients with SCC in the tongue and buccal mucosa, palate, floor of mouth, and retromolar trigone (Table 3).

Quality of life

The mean (SD) global QoL score was 73.09 (14.8) for patients with oral cancer. The global QoL scores for patients who had had reconstructions were 75.68 (13.85) and for patients without reconstructions 71.00 (15.34) ($t = 1.864$, df = 137, p = 0.064). Site of tumour, T stage, and postoperative radiotherapy each had a significant impact on the global QoL score in both the univariate and multivariate analyses (Table 4). Compared with other sections, the taste, chewing, and anxiety sections showed the worst scores in all patients. Of the three domains, chewing was considered the most important, fol-

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