

Current prognosis and quality of life following surgical treatment for head and neck squamous cell carcinoma

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ABSTRACT

Head and neck squamous cell carcinoma (HNSCC) is one of the most common cancers in the world with a close relation with some risk factor like, tobacco, alcohol consumption and more recently, with human papilloma virus infection. A review of the literature about actual prognosis and quality of life in HNSCC has been done analysing the results of surgical treatment and their impact on the quality of life of patients. Despite the elevated incidence of HNSCC, the survival rate has increased considerably over the last years thanks to the development of new surgical techniques, such as, microvascular reconstruction or transoral robotic surgery and the most accurate adjuvant radiochemotherapy. Even in bad prognosis cases, there are many options to take into account not only with curative expectation, even, keeping in mind the preservation of the quality of life of patients. Due to the improvement of the prognosis, the interest of surgeons has been focused on preserve the aesthetics, functional and psychosocial aspect of patients without a worsening of the main objective which is the curative result. Although prognosis of HNSCC has improved, further studies are necessary to understand the behaviour in every case and determine how the impact on the quality of life can be a useful tool to individualize the therapies.

Key words:

Carcinoma; squamous cell of the head and neck; head and neck neoplasms/mortality; quality of life; oral cancer

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INTRODUCTION

Squamous cell carcinoma (SCC) is one of the most common malignant neoplasms in the head and neck and the sixth cause of cancer worldwide. Approximately 600,000 cases are diagnosed every year. Although head and neck squamous cell carcinoma (HNSCC) includes salivary glands and paranasal sinuses tumours, their low incidence and different behaviour, have been made them be excluded from this study.^[1]

There are many risk factors associated to HNSCC, but, alcohol and tobacco consumption are the most important and they are related to the 75% total tumours. However, recent studies have demonstrated that the connection between the infection by oncogenic virus human papillomavirus (HPV) (specifically the serotype 16) and SCC is an established cause of oropharynx cancer, mainly located in tonsils and base of the tongue.^[2,3] Currently, the incidence of HPV-related HNSCC has been increased in the young population.

The survival rate of HNSCC among the last 20 years has increased considerably. The development of new methods of diagnosis, surgical techniques, radiotherapy (RT) and chemotherapy (CMT), are helpful tools that contributed to achieve the best results.^[4]

During the last decades, head and neck surgeons focused

their efforts on morbidity reduction, increased the quality of life and the functional status of the patients.^[5] The development of reconstructive surgical techniques such as microvascularized free flaps, led us transfer any kind of tissue (skin, muscle bone, nerves) to the surgical defect after resection.

Treatment choices depend on the neoplasm location, tumour stage and the oncologic free disease survival expectation. Surgery is still the main therapy, most of the time accompanied by postoperative RT. Although, some advanced cases need to be treated with CMT with cetuximab. The overall survival rate varies between 40-60% after 5 years of treatment.^[6]

METHODS

A qualitative review of the literature about actual prognosis and quality of life of oral squamous cell carcinoma has been done analysing the results of surgical treatment and their impact on the quality of life of patients. A bibliographic search on MEDLINE and EMBASE databases, with the key words: “carcinoma, squamous cell of the head and neck”; “head and neck neoplasms/mortality”; “quality of life”; “oral cancer” was conducted. After a manual selection of the abstracts, a total amount of 45 papers were selected from the literature and intensively reviewed.



Figure 1: Infiltrated skin with cervical infection in a recurrent tracheostomized head and neck squamous cell carcinoma patient

disease-free survival is the tumour depth more than 10 mm and presence of neck metastases.¹¹⁹ Regarding the group of patients with recurrences after a long period of time free of disease, the overall survival rate is higher in the group where salvage surgery were performed than the group who receive RT/CMT (84% vs. 52% after 5 years).

Analysing the group of patients who presented a short period of free survival disease (FSD), the different survival after 5 years was lower, 38% vs. 31%; this result could be caused by an early recurrence and infiltrative feature of the tumour, which determine a more aggressive behaviour that hides an occult expansion more difficult to be eradicated. In conclusion, a short period of FSD is a negative prognosis factor.^{120,21}

Oropharyngeal recurrences are more common despite the prevalence of HPV and its high sensitivity to CMT/RT. The rates of regional and distant failure in patients with HPV+ disease were 14% and 9% respectively in the Radiation Therapy Oncology Group 0129 study.¹² The survival after salvage surgery in recurrence cases is worse than for larynx and oral cavity neoplasms with a 5-year survivor of 13-28%.

The salvage surgery or reirradiation in oropharynx often results in high comorbidity including dysphagia, aspiration, dysarthria and permanent tracheostomy. The development of microsurgical reconstruction has led the possibility to perform salvage surgical treatment in more cases although the functional and QOL worsening are more controversial.

Many authors referred that the time needed to return to overall baseline health after a free flap reconstruction exceed the mean time of FSD before a second recurrence, despite the controversies, it is obvious that microvascular reconstruction demonstrates to be feasible and reliable, with low rate of complications and a better impact on patients.¹²² As well as in other tumours in oral cavity, the FSD until recurrence is one of the most important prognostic factor. Nevertheless, in that cases, salvage surgery whenever is possible, demonstrates

to be more effective than RT/CMT, despite the functional sequelae.

Recurrences in hypopharynx show worse survival and functional results than other location. Symptoms may be non-specific and diagnosis can be delayed when the disease is already advanced.

Lymphatic spread is extensive and invasion of unresectable structures can be affected, Salvage surgery such as pharyngo-laryngectomy has dramatic side effects and a high risk of postoperative complications. About 29% of patients present resectable recurrences at the moment of diagnosis, maybe this situation determine that a few cases could obtain benefits from salvage surgery.

Nevertheless, when surgery is possible, has demonstrated it is the best option to control de tumour. Some studies, showed how salvage surgery gets the same survival rates in patients previously treated with RT/CMT than patients who surgical treatment where done.

Regional recurrence is another bad prognosis factor, as well as the presence of distant metastasis. Even if, isolated neck nodule is ease to be resected compared to local recurrence, patients with regional recurrences have better free tumour margin control at the surgical moment (42% vs. 29%) rather than local recurrences. But, present a worse long term survival (26% vs. 42%). Also, overall survival decreases in operated necks than others where surgery was not performed (18% vs. 32%).¹²³ Lim *et al.*¹²⁴ found in rN2-rN3 stages that previous neck dissection and previous RT/CMT are the worst negative predictive factors.

RESULTS CONCERNING QOL

According to the World Health Organization, health-related quality of life (HRQOL) is defined as the self-perception of

Table 1: Commonly used tools to collect patient-reported QOL outcomes in patients with HNSCC

QOL instrument-specific measures for head and neck cancer	Description	Domains measured
EORTC QOL Head and Neck Version (EORTC QLQ-H&N35)	35-item, self-administered questionnaire to be administered along with EORTC QLQ-30	Pain swallowing, senses, speech, social eating, social contact and sexuality
Functional Assessment of Cancer Therapy-Head and Neck (FACT-H&N)	39-item, self-administered questionnaire 12 questions specific to head and neck cancer	General wellbeing questions (covering physical, social/family, emotional and functional parameters)
FACT-Head & Neck Symptom Index (FHNSI)	10-item, self-administered questionnaire, a subset of the FACT-H&N	General wellbeing questions (covering physical, social/family, emotional and functional parameters)
Liverpool Oral Rehabilitation Questionnaire	40-item, self-administered questionnaire	Eating, swallowing, dry mouth, saliva, speech, appearance, social life and interactions
MD Anderson Dysphagia Inventory (MDADI)	20-item self-administered questionnaire for patients with head and neck cancer	Oropharyngeal dysphagia
The University of Washington Quality of Life Instrument (UW-QOL)	10 domains, self-administered questionnaire	Pain, appearance, activity, recreation, swallowing, chewing, speech, shoulder problems, taste, saliva and general health questions

QOL: quality of life; HNSCC: head and neck squamous cell carcinoma



Figure 2: The reconstruction of mandibular oral squamous cell carcinoma with composite resection by the miocutaneous pectoralis major flap. Note differences in terms of color and possibility for scar contraction in the neck area

differences were found in the domains: appearance, shoulder and anxiety. Patients who underwent surgery and reconstruction were found to be more concerned about their appearance and complained about shoulder pain; whereas patients who were treated with radical radiotherapy were more anxious about their cancer. Finally, no significant differences were found according to the follow-up, it seems that do not interfere in the QOL.^[29]

Chewing is the function that was mostly impaired after HNSCC treatment, despite the location. Also, impaired chewing may lead to dysphagia and insufficient feeding. These are consequences not only of radiation and surgical damage of the salivary glands but also his disruption of the normal anatomy of the jaw. Thus, all efforts must be made to preserve vital structures and organ-function, the use of organ-sparing RT could be a good option because it predicts potential complications according to the dose of radiation and allows preservation of contralateral salivary glands.^[32,33]

The facial disfigurement after surgery is considered to be the most distressing aspect of HNSCC, although is well tolerated in patients who received RT. The surgery group, scars and the different colour of the flaps' skin paddle add serious discomfort to patients [Figure 2]. Another aspect to

be concerned is that anxiety was significantly higher in the group of radiotherapy, especially in women.^[29]

Among psychosocial issues, depression is the most prevalent in cancer patients, and it is the most common reason for referral to a mental health professional in oncology. In head and neck cancer, depression rates can reach 43% before treatment and 44% after treatment, which is particularly elevated compared with all oncology patients, in whom depression rates vary between 20 and 30% at any one time.^[34]

Depression is underdiagnosed and the consequence includes impaired quality of life, treatment noncompliance, and increased length of hospital stay, greater health care utilization, and suicide. Taking into account that HNSCC survivors rank among the top three cancers with the highest rates of suicide, after lung and stomach cancer, the main interest about target depression as a main QOL-outcome is the powerful to be prevented or treated using psychotherapy and/or pharmacologic therapy.^[35,36]

Moubayed *et al.*^[37] established a study including 209 patients with HNSCC and they analysed the results of a few questionnaires to determine the presence of depression and its impact in their quality of life. They identified 4 independent predictors of long-term depressive symptoms after controlling for all patient, tumour and treatment factors. They include the following pre-treatment factors: (1) having more than 3 medications; (2) smoking at diagnosis; (3) having more than 14 drinks per week; and (4) T3 or T4 tumour stages. These factors were used as independent risk factors in the creation of a depression predictive score, identify patients at risk for developing depressive symptoms and to be treated. In this study, they conclude that in presence of 2 risk factors, there is 82.3% of probability to identify depressive symptoms.^[37]

The development of new surgical techniques such as transoral robotic surgery (TORS) has let us to find not only the reduction of side effect; whereas it has demonstrated the same long-term results with better preservation of the quality of life. Choby *et al.*^[38] analysed in a retrospective study 34 patients who TORS was performed in oropharynx (tonsil and base of the tongue). They used the UW-QOL questionnaire in different times: at 1-month, 6-month, 12-month and 24-month postoperative visits. The results showed a tendency to improve throughout follow-up, specially the domains pain, swallowing, activity and chewing. Increasing recognition of the adverse effects of CRT and their negative effect on QOL has provided the rationale for TORS as a primary treatment modality option for some head and neck cancers. This study not only obtained an improvement in the QOL, whereas presents better results compared to the group of conventional surgery.^[38]

Other authors analysed 32 patients classified in 3 groups: surgery for resection, surgery and adjuvant RT and surgery and adjuvant RT/CMT. In this case, they apply the

