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A comparison of tongue and soft palate squamous cell carcinoma treated by primary surgery in terms of survival and quality of life outcomes

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Abstract. In the surgical management of oral cancer the resection and reconstruction of the mobile tongue and soft palate are most important if function is to be maintained. The present trend towards primary laryngeal surgery for early disease has emphasized the importance of primary surgery if good functional outcomes can be achieved. This study compares the functional and health-related quality of life outcomes for primary surgery and reconstruction of the anterior tongue and soft palate.

From a cohort of 566 patients treated from 1992 to 2002, 118 fitted the criteria for anterior tongue and 44 for soft palate resection. University of Washington Quality of Life scores were available in around three quarters of patients. In terms of speech and swallowing a 3/4 or total anterior glossectomy had a worse outcome than a 1/4 or 1/2. In patients having a 3/4 or total resection of the soft palate however, the results showed a similar outcome to those with 1/4 or 1/2 resection.

The functional results of 3/4 and total soft palate reconstruction were superior to 3/4 and total anterior tongue resections and were similar to the whole cohort. This finding extends the role of functional surgery in the oropharynx for which primary radiotherapy is often preferred to preserve function.

Key words: quality of life; function; reconstruction; tongue; soft palate; survival.

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There is agreement that the most appropriate treatment for oral cancer is primary surgery, including selective neck surgery and reconstruction followed by radiotherapy depending on the pathology report[2,7]. In the oropharynx the primary modality of treatment is often radiotherapy even for stage 1 and 2 diseases[6]. Patient choice is an important consideration when the results of primary surgery and radiotherapy are equivalent as in the oropharynx[20]. In early disease with a good prognosis there is an argument that radiotherapy should be withheld, as long as the surgery results in a good functional outcome. This principle has been exploited by the role of primary laser surgery in early laryngeal cancer reported by Ambrosch et al.[1]. The

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functional outcomes for either surgery or radiotherapy can be the main reason for adopting a particular treatment option.

One of the key components in a patient's health-related quality of life (QoL) depends on the ability to regain the basic oral functions of speech, swallowing and chewing[17]. These 3 factors have been listed as the most important to patients prior to and after receiving surgery in the management of oropharyngeal cancer[16]. Following the more extensive cancer resection there tends to be worse function and a corresponding fall in health quality of life. Although appropriate replacement of ablated tissue with free tissue transfer has greatly improved functional and quality of life outcomes, the extent and site of the resection is paramount.

The most important organs in the oral cavity and oropharynx for the provision of speech and swallowing are the tongue and the soft palate. The mandible and maxilla are static structures, which can be replaced with vascularized bone replacing both the form and function of the ablated tissues. The cheek and buccal mucosa cannot be replaced in terms of the muscular function, but as long as the tissue is replaced and contraction avoided the detriment to function is limited. Free-flaps can provide a vascularized and sensitized skin cover to increase the speed of healing and avoid contraction of the tissues that remain, but they cannot replace the complex muscular movement of the tongue and soft palate[13,19].

Resection of 3/4 or all of the anterior and especially the posterior tongue can result in very poor speech and swallowing, and a quality of life, which may not be acceptable, even after successful reconstruction[17]. There is less agreement on the outcomes of 3/4 and complete resections of the soft palate. There have been studies involving small number of patients that have shown good results in terms of speech and swallowing after extensive resection of the soft palate[4,12,22]. Patients requiring a 3/4 or total resection of the soft palate are often referred for radiotherapy because it is assumed that the functional results after ablation and reconstruction will be poor, and the survival and local disease control equivalent. Yet there are inherent advantages for successful primary surgery with good function. Radiotherapy can be withheld and so is available for the management of potential recurrence or a second primary in cured patients[11].

The aim of this study was to assess patients' health-related quality of life following an anterior tongue resection and compare that to a soft palate resection. The loco-regional recurrence and survival in both patient groups are also reported.

Patients and methods

Since 1992 a head and neck database has been prospectively completed as part of routine practice. In 1993 one of the authors (S. N. Rogers) started a major study on functional and quality of life outcomes for head and neck cancer. The main questionnaire used was the University of Washington Quality of Life (UW-QoL)[9,21], which has provided much of the outcome data for this assessment. The database was queried to find out which patients had had anterior tongue and soft palate resections, and had completed questionnaires.

It was important to ensure that the site and extent of the resection was the largest part, especially for the quarter and half resections. For instance a quarter soft palate resection may have been part of a total glossectomy. In order to reduce this sampling error to a minimum, the following principles were applied. For quarter resections of the tongue and soft palate, the site had to be specific, a T1 classification, and any other resection had to be no more than a quarter. None of these patients had segmental mandibular resections or a maxillectomy.

Patients with half resections of the anterior tongue and soft palate were excluded if half or more of the posterior tongue, a segmental mandibulectomy or a maxillectomy greater than Class 2a[3] (low hemimaxillectomy involving less than half the alveolus unilaterally) had been done. Any T classification and adjacent sites of origin were included.

Patients with 3/4 resections were excluded if there was a larger resection at another site, but any extent of mandibular resection or mandibulectomy was included.

Health-related QoL was measured by the UW-QoL, which is a validated questionnaire for head and neck cancer. There have been several versions[9,15,21] but there are 8 domains that span the duration of data collection: pain, activity, recreation, appearance, speech, swallowing, chewing and shoulder function. These domains have between 3 and 5 descriptors from which the patient chooses. The highest or 'normal' function is assigned 100 points, whereas the lowest or worst dysfunction scores 0 points. The 8 domains contribute equally to the composite score, which is out of 100 (800/8). From 1995 to 1999 patients were asked to complete the University of Washington Quality of Life questionnaire, at presentation and at about 6 and 12 months after surgery. From 2000, pre-treatment questionnaires were opportunistic and more systematic quality of life data came from annual postal surveys of post-treatment survivors. Many patients completed several questionnaires well beyond 12 months from treatment and for this study the last available questionnaire beyond 15 months (median 39 months) was taken to represent the view of the patient in the 'longer-term'.

Follow-up of the 1992–2002 cohort was until 1st March 2004. The Office of National Statistics provided details of death certifications. Disease-specific mortality was ascertained from death certification details involving a majority consensus of independent judgements from 4 Liverpool consultants. Local recurrence rates were obtained only from those with at least 2 years of follow-up.

Results

Between 1992 and 2002, 566 consecutive patients undergoing surgery for previously untreated oral and oropharyngeal squamous cell carcinoma presenting to the Regional Maxillofacial Unit Liverpool had been recorded on the Liverpool database, of which 429 had UW-QoL data available. The number of patients in each category of resection is shown in Table 1. For comparative purposes the 1/4 and 1/2 resections were grouped together as were the 3/4 and total resections.

The basic demographics, extent of neck surgery, method of reconstruction, mandibular resection, pStage and the use of postoperative radiotherapy are compared in Table 2. There were relatively fewer females in the extensive tongue resection group. Many more patients in the more

Table 1. The 1992–2002 cohort of patients by type of resection

	Patients
Tongue	
1/4	30
1/2	60
3/4	15
Total	13
Soft palate	
1/4	7
1/2	15
3/4	14
Total	8
Other patients in cohort	404
All patients in cohort	566