

Total Laryngectomy and T3-T4 Laryngeal Cancer Without Other Adverse Histopathology: After management, risk for relapse, and prognosis?

FL Ampil, CAO Nathan, T Lian, G Caldito and E Milligan
Feist-Weiller Cancer Center • Louisiana State University Health Sciences Center at Shreveport

INTRODUCTION

Adjuvant postoperative radiotherapy (APR) is advocated for high-risk patients who are found (upon histopathologic examination of resected tissues) with tumor in the resection margins, metastatic disease in 2 or more cervical lymph nodes, and extracapsular nodal neoplastic extension. On the other hand, APR is avoided in low-risk individuals who do not possess such pathological attributes.

What is the risk of relapse in the neck, and what should be the postoperative treatment in patients who after submitting to definitive surgery including selective neck dissection for T3-T4 carcinoma of the larynx were found to be free of metastatic spread to lymph nodes in the neck and other harmful histopathology? An investigation of the frequency of failure above the clavicles and outcome in such individuals may assist in answering those issues.

The aim of this study was to retrospectively evaluate our 19-year experience focusing on the postoperative management of these particular people and the possible role of APR.

METHODS

A retrospective study of 526 patients evaluated for treatment of laryngeal cancer during the years 1983 to 2001 revealed 30 individuals who had clinicopathological T3-T4 laryngeal tumors managed by total laryngectomy, lymph nodes removed from the neck that did not contain metastatic disease and no additional detrimental histopathology.

Total laryngectomy was performed most often because of transglottic lesions and/or tumor involvement of the subglottis noted during panendoscopy. Selective neck dissection was conducted as indicated by the clinical presence of cervical adenopathy and primary tumor location. Twelve people did not receive APR, and 18 patients did.

Conventional megavoltage external beam radiotherapy was administered through a 6 MV linear accelerator. The technique of locoregional irradiation employed in these patients was similar to that mentioned in a previous report.^{Ampil 2004} The mean total dose to the primary site including the upper neck was 58± (standard deviation) 4Gy (range 50 to 65Gy) and to the lower neck 50±2 Gy (range 45 to 60Gy). The upper mediastinum of the chest with its paratracheal nodes was not irradiated in any of the 14 patients with observed subglottic neoplastic extension.

The median follow-up period was 44 months (range 6 to 122 months). Survival time was measured from the time of laryngeal cancer diagnosis until death or last follow-up.

RESULTS

The mean age at diagnosis was 57 years (range 38 to 76 years). The observed characteristics of the patients in the two management groups are shown in Table 1. Statistically significant differences were not found between the compared patient groups with regard to age, the occurrence of coexisting illnesses, number of recovered cervical nodes, T stage, or the presence of transglottic tumors.

The cumulative survival rate at 5 years was 50% for patients who did not receive APR, and 61% for patients who were managed by APR (p=0.63). Two irradiated individuals sustained stomal or esophageal stricture which required frequent dilatation.

At last follow-up, 15 patients were alive and free of disease; seven have died without cancer; four persons have died from tumor relapse or progression towards systemic disease; two patients died after the diagnosis of a second malignancy (stage IV small cell lung cancer or stage I soft palate squamous cell cancer); and two have died with undetermined neoplastic disease status. Hence, twenty eight patients were evaluable for tumor relapse or progression. The relapse rates in the neck were 25% (3/12) and 0% (0/16) in the non-APR and APR groups respectively (p=0.07); two individuals possessed T4 lesions and the remaining patient had a T3 neoplasm.

Tumor recurrences in the neck were all found in the peristomal location and seen in persons who had subglottic tumor extension but did not receive APR. There was no instance of neoplastic occurrence in the non-irradiated superior mediastinum of the 14 patients with subglottic extension by laryngeal cancer. Chemotherapy and/or radiotherapy were applied for palliation of non-resectable relapsing or progressive tumors in four patients. Of the three people with recurrent neoplasm in the neck, one patient was successfully salvaged by chemoradiation; the other two individuals died with tumor. Survival after neoplastic recurrence or progression to systemic disease did not exceed 13 months and was often less than 6 months.

TABLE I. Demographic Data

Feature	Radiotherapy	
	Not Applied	Applied
	(n=12)	(n=18)
Mean age ^a	59.7 yrs	55.2 yrs
Elderly (≥65 yrs) ^b	(4) 33%	(3) 17%
Other illness present ^{c*}	(2) 17%	(1) 6%
Mean number of nodes ^d	32.9 nodes	30.8 nodes
Tumor stage ^e		
T3	(9) 75%	(8) 44%
T4	(3) 25%	(10) 56%
Transglottic tumor ^f	(10) 83%	(17) 94%

^ap=0.23; ^bp=0.39; ^cp=0.55; ^dp=0.61; ^ep=0.10; ^fp=0.54;
*Hypertension; diabetes mellitus; coronary artery disease.

DISCUSSION

The recognition of various prognostic factors^{Cooper 1998; Rosenthal 2002} has helped identify subgroups of patients who may need a more aggressive approach to management or individuals whose prognosis is so good that APR after definitive surgery would not be cost-beneficial.

Several studies^{Hicks 1999; Yuen 1984} have described the benefits (in terms of improved survival and lower relapse rates) of combined therapy over surgery alone in stage III or IV laryngeal cancer. These reports do not clearly indicate whether the particular group of patients in our study was represented among their treated subjects. A review of the literature with regard to such patients who underwent total laryngectomy with or without neck dissection showed that APR was often applied only to T4 cases or those with the generally accepted indications such as extracapsular spread of tumor, metastatic disease in multiple nodes, tumor positive resection margins.

The answers to our initial questions are these: in our experience, the risk of tumor recurrence in the neck was 25%. We believe that such neoplastic relapse can result from inadequate management after total laryngectomy in patients T3-T4 without other harmful pathological features when subglottic tumor extension is demonstrated. Moreover, we maintain that the use of APR in patients with T4 tumors (and not for pure T3 glottic carcinomas) is essential to decrease locoregional tumor relapse in these cases considering that reseeding of the "negative" neck from failure to achieve control of the primary neoplasm is a real possibility^{Chow 1984} and that salvage of the frequently inoperable regional relapses is successful only in the very few.^{Kilgerman 1995; Yuen 1995} Goals for the future include verification of these observations by a multi-institutional cooperative study of the problem.