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The usefulness of a pectoralis major myocutaneous flap in preventing salivary fistulae after salvage total laryngectomy

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Abstract

Salvage laryngectomy in patients treated with organ preservation protocols is associated with high rates of postoperative complications. The use of non-irradiated tissue flaps in pharyngeal reconstruction could reduce the incidence of these complications.

Objective: This study aims to evaluate the usefulness of the pectoralis major myocutaneous flap in preventing salivary fistulae during the postoperative period of salvage total laryngectomy (TL).

Materials and Method: This retrospective study enrolled 31 patients operated between April of 2006 and May of 2011. All patients had advanced cancer at the time of the salvage procedure and had been treated with chemoradiotherapy or radiotherapy alone. Pharyngeal reconstruction was performed using pectoralis major myocutaneous flap in 19 cases (61%); primary wound closure occurred in 12 patients (39%).

Results: Salivary fistulae occurred in 16% of the patients who received the flap and in 58% of the patients with primary closure of the pharynx ($p < 0.02$). No statistically significant differences were noted between the groups with respect to the mean time for fistula formation, reintroduction of an oral diet, or use of a nasoenteric tube for feeding.

Conclusion: The pectoralis major myocutaneous flap was found to reduce the incidence of salivary fistulae in salvage laryngectomy procedures.

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INTRODUCTION

The treatment of head and neck squamous cell carcinoma (SCC) has changed substantially in the last few years[1]. The development of organ preservation protocols and primary chemoradiotherapy (CRT) for a subgroup of patients with advanced laryngeal cancer resulted in organ preservation rates of 64% and global survival similar to the levels seen in patients offered laryngectomy followed by radiotherapy, a treatment then considered the standard for this type of cancer[2-4].

Despite the efficacy of chemoradiotherapy, a considerable number of patients still require salvage surgery - usually in the form of total laryngectomy - when the disease persists or recurs[5,6]. However, a number of studies have shown high complication rates associated with salvage laryngectomy due to the effects of radiotherapy combined with chemotherapy upon wound healing[3,7]. More specifically, pharyngocutaneous fistulas - the most common post-laryngectomy complication - occur more frequently in this population and may affect more than 50% of the patients[8]. This complication leads to increased morbidity, prolonged hospitalization, and greater hospital care expenditure[9,10]. The same happens to patients with early recurring laryngeal tumors after radiotherapy alone[5,6].

In an attempt to prevent or reduce the incidence of salivary fistulas, some authors have advocated the routine use of non-irradiated tissue to reinforce and close the larynx. Candidate tissues range from pectoralis major myocutaneous flaps, sternocleidomastoid muscle collar flap, to microvascular flaps[2].

This study aims to assess the use of pectoralis major myocutaneous flaps to close the pharynx in patients submitted to therapy with chemotherapy and/or radiotherapy followed by total laryngectomy (TL) or salvage total pharyngolaryngectomy (TPL) and compare the incidence of salivary fistulas in flap and primary pharyngeal closure patients.

MATERIALS AND METHODS

This retrospective study included the charts of patients diagnosed with relapsing squamous cell carcinoma (SCC) after primary treatment with radiotherapy alone or radiotherapy combined with chemotherapy seen from April of 2006 to May of 2011. All patients underwent TL or salvage TPL followed by primary pharyngeal closure or placement of a pectoralis major myocutaneous flap to repair the pharyngeal tract. The choice of using the flap or not was not randomized and was based on the intraoperative preference and judgment of the surgeon.

This study was approved by the Ethics Committee on April 5, 2010 and granted permit # 0584.1.203.000-09.

The following parameters were compared: primary pharyngeal closure and repair with pectoralis major myocutaneous flap, index and mean time until the appearance of a salivary fistula, use of nasoenteral feeding tube, time until reintroduction of oral feeding. Previous tracheostomy was also investigated as a possible predisposing factor for the formation of salivary fistulas.

Only patients with primary tumors located in the larynx or hypopharynx, with failed treatment after chemotherapy and/or primary radiotherapy, and submitted to TL or TPL were included in the study. Patients submitted to partial laryngectomy, partial base of tongue resection were excluded.

Statistical analysis was done with software package SPSS release 13.0; all tests considered a level of statistical significance of 5%.

RESULTS

Thirty-one patients with relapsing or residual SCC in the larynx or hypopharynx were operated. The diagnosis was confirmed through pathology tests.

Patient mean age was 65.5 years (43-84 years). Data on gender, nutritional status, and previous tracheostomy can be seen on Table 1.

Table 1. Patient clinical characteristics (n = 31).

Variables		n	%
Gender	Male	30	97.0
	Female	1	3.0
Previous tracheostomy	Yes	17	55.0
	No	14	45.0
Nutritional status	Eutrophic	8	25.0
	Mild malnutrition	6	19.0
	Moderate malnutrition	1	3.0
	Not informed	22	31.0

The most frequent comorbidity was high blood pressure, seen in 19% of the patients. Other comorbidities were: chronic liver and coronary disease 6%, heart disease 3%. Sixty-six percent (22/31) of the patients had incomplete data on their associated comorbidities.

Primary tumor locations can be seen on Table 2.

Patient staging according to the TNM classification of malignant tumors can be seen on Table 3.

Twenty-three percent of the patients (7/31) underwent pharyngolaryngectomy and 77% (24/31) were submitted to total laryngectomy. The neck was surgically approached in 33% of the patients the following way: radical bilateral neck clearance in 3% of the cases, unilateral radical neck clearance in 3% of the patients, bilateral jugular clearance in 18% of the cases, radical clearance on one side and jugular clearance on the other side in 3%, selective clearance of levels II-III in 3%, and in 6% of the patients there was no information on their charts. No type of clearance was performed in 61% of the patients (Table 4).