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Full Length Article

When would we advocate a total thyroidectomy in cases of hypopharyngeal carcinoma?

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KEYWORDS

Hypopharyngeal cancers;
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Abstract *Background and aim:* The incidence of invasion of the thyroid gland by hypopharyngeal carcinomas is reported to be up to 57%. Our aim was to analyze the frequency of thyroid gland invasion in hypopharyngeal carcinoma treated by thyroidectomy with total laryngopharyngectomy and to identify patients in whom preservation of the thyroid gland is oncologically feasible and hence reduces post-operative hypothyroidism.

Patients and methods: This retrospective cohort study included 58 patients with hypopharyngeal squamous cell carcinoma treated by thyroidectomy with total laryngopharyngectomy at the National Cancer Institute, Cairo University between May 1996 and October 2005. Thyroid gland involvement was analyzed through review of charts and pathologic reports. Patients were assessed preoperatively by CT. The correlation between the thyroid gland involvement and the clinical and radiologic CT findings was meticulously examined.

Results: Thyroid gland involvement occurred in 37.9% (22/58) of all patients. T4 hypopharyngeal tumors were present in 29.3% (n = 17/58) of patients, paratracheal LN invasion was present in 37.9% (22/58) of patients, thyroid cartilage invasion was obvious in 19% (11/58) of patients, and previous radiotherapy was present in 5.2% (3/58) of patients. All patients with T4 hypopharyngeal tumors (n = 17/58) and with thyroid cartilage involvement (n = 11/58) had thyroid gland invasion as well. T4 hypopharyngeal tumors, paratracheal LN invasion, and thyroid cartilage invasion were statistically significant factors ($P < 0.001$, $P = 0.009$ and $P < 0.001$ respectively) in independent correlation.

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Conclusion: We would advocate a total thyroidectomy in cases of advanced stages of hypopharyngeal carcinoma, bilateral tumors, postcricoid carcinoma and in all patients with definite radiological evidence of thyroid gland invasion.

Introduction

Hypopharyngeal cancers are relatively rare neoplasms with unfavorable prognosis [1]. The hypopharynx extends from the superior border of the epiglottis and the pharyngoepiglottic folds from the level of the hyoid bone superiorly to the lower border of the cricoid cartilage inferiorly where it narrows and becomes continuous with the esophagus [2]. It is divided into three primary anatomic subsites: the pyriform sinuses, the postcricoid area, and the posterior pharyngeal wall [3].

Hypopharyngeal cancers, particularly those arising in the postcricoid area, have a strong tendency for extensive submucosal spread especially in the inferior direction [4]. Pyriform sinus cancers with lateral extension can invade the thyroid cartilage [5], but cricoid cartilage and thyroid gland involvement are also possible by the extension through the cricothyroid membrane. Postcricoid tumors tending to grow circumferentially frequently involve the cricoid cartilage whereas posterior pharyngeal wall tumors with their inferior extension may be associated with the invasion of the postcricoid hypopharynx [3].

The incidence of invasion of the thyroid gland by hypopharyngeal carcinomas is reported to be up to 57% [6–9].

Surgical excision followed by postoperative radiation is the treatment of choice for hypopharyngeal cancers. The minimum operation recommended is the total laryngectomy and partial pharyngoesophagectomy with reconstruction if extension into the esophagus is present [3]. Concurrent chemoradiotherapy is also a treatment for advanced hypopharyngeal cancers [1].

The frequency of post-operative hypothyroidism after total laryngopharyngectomy with hemi or total thyroidectomy has been reported to range from 7% to 57% [10–12]. Partial thyroidectomy with radiotherapy reportedly produced a greater likelihood of developing hypothyroidism (61–92%) compared with thyroid-sparing surgery and radiotherapy (12–59%) or radiotherapy alone (6–47%) [13]. Other studies have also reported an increased incidence of hypothyroidism after combined modality treatment of 45–65% [12]. The occurrence of hypoparathyroidism after treatment for advanced hypopharyngeal carcinoma is also common and increases with time and extent of surgical treatment [10]. This incidence of post-operative hypothyroidism and hypoparathyroidism indicates that preservation of the whole thyroid gland should be considered whenever feasible [6].

However, there are no guidelines on the indications for thyroidectomy during laryngopharyngectomy. In the present study, we analyzed the involvement of the thyroid gland in cases with hypopharyngeal carcinoma with whole organ step-serial section of laryngopharyngectomy specimens. Our aim was to analyze the frequency of thyroid gland invasion in cases with hypopharyngeal carcinoma treated by thyroidectomy with total laryngopharyngectomy and to identify those patients in whom preservation of the thyroid gland is oncologically feasible and hence reduces post-operative hypothyroidism.

Patients and methods

This retrospective cohort study included 58 patients who were diagnosed with hypopharyngeal squamous cell carcinoma and treated all by thyroidectomy with total laryngopharyngectomy at the National Cancer Institute, Cairo University, Egypt between May 1996 and October 2005. Thyroid gland involvement was analyzed through review of charts and pathologic reports. The study involved 32 (55.2%) men and 26 (44.8%) women, whose age ranged from 28 to 75 years (mean 51.2 years). All patients underwent primary surgical treatment followed by reconstruction of the pharynx by gastric pull up in 77.6% ($n = 45$) of patients and pedicled mycocutaneous pectoralis major flap in 13.8% ($n = 8$) of patients and free jeujenal flap in 8.6% ($n = 5$) of patients and one radiologist evaluated the preoperative CT findings. In accordance with our protocol, all cases underwent total thyroidectomy except for very early cases with stage II disease. Clinical staging of specimens was based on the 2003 criteria defined by the American Joint Committee on Cancer Staging.

Thyroid gland involvement was analyzed according to the clinical stage and the primary site through review of charts and pathologic reports by the attending physicians and pathologist. None of the 58 patients had clinical evidence of gross tumor infiltration into the thyroid gland pre-operatively. The correlation between thyroid gland involvement and the clinical and radiologic (CT) findings, including sex, thyroid cartilage invasion, T staging for cancer, paratracheal lymph node invasion, previous radiotherapy exposure and postoperative complications was meticulously examined.

All patients underwent parathyroid gland transplantation through surgical excision followed by multi sectioning of the gland tissue and re implantation in the forearm.

The follow-up period according to the available medical reports was 6 months. Postoperative clinical and CT (head and neck, chest and abdomen) follow-up at 3 and 6 months were reported along with both the parathyroid hormone and calcium levels. Furthermore, levels of the thyroid hormones after 2 months of the 1st dose then at 6 months were documented.

Statistical methods

Data was summarized using mean, standard deviation (SD) and range for quantitative variables and percent for qualitative variables. Comparison between groups was done using the Chi-Square Test for qualitative variables and Student t tests for quantitative variables. P values < 0.05 were considered as statistically significant.

Results

Demographic data, radiological and operative findings

This study included 58 patients with hypopharyngeal cancer: 58.6% ($n = 34$) had postcricoid cancer, 36.2% ($n = 21$) had