Hypothyroidism after Hemithyroidectomy

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Abstract

Introduction: Thyroid lobectomy has the advantage of sparing many patients from the need of thyroxine definitive replacement therapy.

Objective: To evaluate the thyroid function after the hemithyroidectomy and the risk factors for the postoperative hypothyroidism.

Methods: It is a retrospective study of 333 consecutive patients undergone thyroid lobectomy and isthmusectomy from 2007 to 2014. Thyroid hormone determinations were performed before and one month after the surgical approach and were correlated to demographic, clinical e histopathological data. The Mann-Whitney U Test and the Exact Test of Fischer were employed.

Results: The mass of the remaining lobe presented some statistical trend (p=0.0949) as risk factor for the hypothyroidism. No statistical significance was observed regarding the other analyzed aspects.

Conclusion: Subclinical hypothyroidism was detected in 26.1%, whereas clinical hypothyroidism was detected in 3% of the patients in the postoperative period. The mass of the preserved lobe presented some statistical trend (p=0.0949) as risk factor for the hypothyroidism.

Keywords: Thyroidectomy; Hypothyroidism; Thyroid gland disorders; Thyrotropin; Thyroiditis; Thyroid

Introduction

Thyroid disorders are one of the more common endocrine disorders in the American population with prevalence rates ranging from 5 to 20% [1]. While the management of most thyroid cancers is to perform a total thyroidectomy [2,3], the extent of thyroid removal in cases of benign conditions or indeterminate nodules is still a topic of discussion [4,5].

The thyroid lobectomy and isthmusectomy is a common and effective procedure for benign nodular disease. After the hemithyroidectomy, patients must be followed up to prevent a progression to hypothyroidism [6]. The American Thyroid Association (ATA) guidelines strongly suggests the lobectomy for patients with a solitary nodule [7]. Compared to the total thyroidectomy, this surgical approach may avoid definitive hormone replacement therapy with levothyroxine [8]. Although, thyroid hormone supplementation is required in approximately 10% to 50% of patients after thyroid lobectomy [9-11].

The objective of this article is to evaluate the thyroid function after partial thyroidectomies and risk factors for hypothyroidism after this approach.

Methods

A total of 333 medical records of patients who underwent lobectomy with isthmusectomy in the Head and Neck services of Hospital Ana Costa and Irmandade da Santa Casa de Misericórdia de Santos, from 2007 to 2014 were retrospectively revised. All patients had normal thyroid function in the preoperative period, as the TSH and fT4 routine measurements have shown. All patients who underwent thyroidectomy totalization were excluded from the study. Patients were evaluated according to age, race, gland’s mass, preoperative TSH and fT4 levels, results of the histopathological study and thyroiditis (according to the histopathological findings) – (Table 1). The postoperative hormonal measurements were performed 30 days after surgery.

Statistical analysis was performed by the chi-square test obtained from U test of Mann-Whitney and the exact Fisher test, being adopted as of statistical significance the p<0.05 value.
Results

Two hundred and thirty six patients (70.9%) showed normal thyroid function, 87 (26.1%) subclinical hypothyroidism and 10 (3%) hypothyroidism in the postoperative period. The only statistical trending feature as a risk for hypothyroidism was the volume of the preserved thyroid lobe (p=0.0949). Patients with bigger remnant thyroid mass had a tendency for normal thyroid function in the postoperative period – (Table 2).

Discussion

The incidence of hypothyroidism after hemithyroidectomy in several studies ranges between 11 and 43 % [12]. In our study, we found 26.1% of the cases with subclinical hypothyroidism and 3% with clinical hypothyroidism. The only statistical trending feature as a risk for hypothyroidism was the volume of the preserved thyroid lobe. Patients with bigger remnant thyroid mass had a tendency for normal thyroid function in the postoperative period.

Some studies found that preoperative TSH level as the most important predictor for the development of post-hemithyroidectomy hypothyroidism [4,9,12]. In a Brazilian series of 85 patient who underwent hemithyroidectomy, 27 showed hypothyroidism (31%), being the presence of the antithyroperoxydasis antibody (50% vs. 20%, p<0.05) and a preoperative TSH level above 2.5 mIU/mL (65% vs. 23.5%, p<0.05) the main risk factors [8]. In another series of 71 patients who underwent lobectomy with hormonal dosage after five weeks, subclinical hypothyroidism was present in 35% of the patients and clinical hypothyroidism in 12% [13]. In our study there was no statistical significance between genders, as other articles reported [14], nonetheless, we must consider that male patients are in a smaller number.

There is a association between the presence of thyroiditis, as evidenced by lymphocytic infiltration of the gland on histopathology and postoperative hypothyroidism [4]. Autoimmune thyroiditis compromising the remnant lobe is a frequent cause of functional thyroid failure, mainly in elders, who underwent a lobectomy [15]. We did not perform a systematical dosage of the anti thyroid antibodies, however, the histopathological finding of thyroiditis in our series did not show statistical significance of hypothyroidism. Although it is still a major controversial issue [16,17], some authors understand that hormonal changes may occur later, which would suggest a larger follow up period [16]. In fact, being thyroiditis a progressive pathology, it is possible that a later hormonal dosage may show statistical significance.

On the other hand, we found a tendency for hypothyroidism in patients with smaller remnant lobe mass, which shows conformity with other articles [17,18]. Lang "et al." [19] considered that there is a significant inverse association between the preoperative contralateral lobe’s volume and hypothyroidism risk after hemithyroidectomy. In their study, together with a higher preoperative TSH level and fewer ipsilateral nodules, a smaller body surface area measured by preoperative ultrasonography independently predicted
hypothyroidism.

Systematical levothyroxine reposition is not recommended and should be used only in case of hypothyroidism development or in case of thyroid remnant growth [20].

**Conclusion**

Subclinical hypothyroidism was shown in 26.1% and clinical hypothyroidism in 3% of the patients in hemithyroidectomy postoperatory. The preservated thyroid lobe mass showed statistical trending as a risk factor for hypothyroidism.

**References**


