Total thyroidectomy for benign thyroid diseases

**Tireoidectomia total nas doenças benignas da tireóide**

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**ABSTRACT**

Objective: To review the indications for total thyroidectomy as the preferred option in certain benign diseases of the thyroid in order to prevent recurrence or future reoperations. **Methods:** This retrospective study analyzed 66 patients, all from a private clinic who underwent total thyroidectomy (TT), from January 1997 to December 2009. There were 58 (87.8%) females and eight (12.2%) men with the predominance of the white race (89.3%). **Results:** The mean age was 51.8 years (21-77), with the highest incidence in the fifth and sixth decades of life, with 34 (51.5%) patients. The most common preoperative diagnosis was nontoxic multinodular goiter, of which seven were also intrathoracic, followed by autoimmune thyroiditis; recurrent goiter occurred in 11 cases. Multinodular goiter was found in 37 (56.1%) patients, autoimmune thyroiditis in 22 (33.3%), follicular adenoma isolated in five (7.6%), Hurthle cell adenoma in two (3.0%). Sixteen patients (24.2%) had more than one histopathological diagnosis. Permanent injury of the recurrent nerve was observed in one patient (1.5%). There was no case of permanent hypoparathyroidism. There was no operative mortality. **Conclusion:** Total thyroidectomy is an operation that can be safely performed, with low incidence of permanent complications, which allows one to broaden its indications in various benign thyroid diseases, thus avoiding future recurrences and reoperations.

**Key words:** Thyroid gland. Thyroid diseases. Goiter, nodular. Surgery. Thyroidectomy.

**INTRODUCTION**

The thyroid is a gland of internal secretion and unique site of several common diseases susceptible to medical or surgical treatments, or a combination of both. The association of high prevalence of thyroid diseases with publications from diverse regions and different schools of surgery often results in heterogeneous information that helps feed the controversy. The choice of surgery to treat some of thyroid affections is one among many. In this context lies the indication of total thyroidectomy (TT) for certain benign diseases, a trend that is gaining adherents in the last two decades. The purposes are to avoid surprises due to a mistaken diagnosis of benignity in intra-operative frozen section examination, eliminating the possibility of a future or even incidental carcinoma, prevent recurrence and reoperation, admittedly more difficult and more prone to complications, though minimize by some, relying on experience and good surgical technique.

The indication of TT should be considered in cases of suspected malignant nodules, multinodular nontoxic goiter with bilateral involvement of thyroid follicular tumors, autoimmune thyroiditis and reoperations. It should also be considered in cases of nodules with a history of prior irradiation to the head and neck and diffuse toxic goiter, where resection can be an excellent treatment, especially in large goiters, in patients with severe ophthalmopathy, in children, in pregnant women and in those with a mental disability that impairs long-term follow-up.

This paper aims to discuss the indications for total thyroidectomy as the preferred option in certain benign diseases of the thyroid in order to prevent recurrence and future operations.

**METHODS**

We carried out a retrospective study of patients with benign thyroid diseases operated from January 1997 to December 2009, analyzing the data relating to age, surgical treatment and postoperative evolution. Patients were from the private clinic and were operated by the same surgeon, even if treated by different endocrinologists, but who participated in the surgical indication. They were assisted by the same anesthesiologist and by the same pathologists.

Preoperative laryngoscopy was performed in patients with recurrent goiter and complaints related to phonation.

All patients received antibiotic therapy for 24 h. The drainage aspiration of the thyroid space was always used for 24 pm.

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RESULTS

We operated 58 (87.8%) women and eight (12.2%) men, predominantly Caucasian (89.3%). The average age was 51.8 years (21/77), with the highest incidence in the fifth and sixth decades of life (34 – 51.5%).

Preoperative laryngoscopy was performed in 18 (27.2%) patients, 11 of them had recurrent goiter and seven had complaints related to phonation.

The most frequent diagnosis was multinodular goiter in 37 (56.1%) cases, followed by autoimmune thyroiditis in 22 (33.3%), follicular adenoma in 10 (15.1%), Hurthle cell adenoma in two (3.0%), 12 (18.2%) patients had autoimmune thyroiditis associated with goiter and four patients (6.1%) had autoimmune thyroiditis associated with follicular adenoma. Two (3.0%) patients developed severe hoarseness and in one (1.5%) a unilateral vocal fold paralysis was confirmed; in the remaining dysphonia disappeared within a maximum period of 30 days. There were no patients with permanent hypoparathyroidism, but in one (1.5%) calcium and vitamin D repletion was extended to 90 days. Oral feeding was started 12 hours after surgery. The average hospital stay was 36 hours; there was no case of bleeding and operative mortality was zero.

DISCUSSION

The complication rates of TT are similar to partial thyroidectomy when operated in high surgical volume services. In this context we have progressively extended the indications of TT in these patients.

It is known that non-toxic multinodular goiter is the most frequent indication for total thyroidectomy in benign diseases of the gland. In our series it was no different, TT being indicated in 37 (56.1%) patients; if we include another 12 that in addition to goiter had another associated diagnosis, they will add 49 (74.2%) of all operated. Noteworthy are our 11 cases of reoperations for goiter recurrence, eight having undergone previous unilateral lobectomy.

Unlike the endemic goiter where the role of iodine in prevention is recognized, the sporadic type has a more complex pathogenesis and possibly multifactorial, because besides the regulation caused by TSH, it seems that other mechanisms such as the epidermal growth factor and stimulation of immunoglobulins are involved. The use of thyroid hormone in the postoperative period, applied by some in an attempt to avoid a relapse, is no proven method and its main indication remains the correction of hypothyroidism. Piraneo clearly associated with the recurrence with the size of the remnant gland, reporting 20% of recurrence after lobectomy alone, while only 4% in bilateral subtotal thyroidectomy. In cases of involvement of both lobes, regardless of the size of the nodules, as well as in large goiters with compression symptoms and the recognition that the most frequent indication for reoperation is recurrent goiter, TT is gaining more and more defenders.

The follicular tumor is certainly the most uncomfortable preoperative diagnosis for the surgeon. Not even the most experienced pathologist is able to define, by cytologic or perioperative frozen section exams, the real nature of these tumors, since the criteria for commitment of the capsule and angioinvasion, which characterize the carcinoma, are pathological.

The postoperative diagnosis of follicular carcinoma almost always results in a new operation to total thyroidectomy, regardless of prognostic factors. Thus, without definitive diagnosis, and knowing that about a third of follicular neoplasms may be malignant, TT is a valid, yet riskier, option for those with bilateral nodules and those who do not accept the possibility of a reoperation.

The autoimmune thyroiditis, also known as Hashimoto’s thyroiditis, is an always-evolving clinical disease and the main cause of primary hypothyroidism. Besides the blood tests that bring the suspicion of the disease, ultrasound usually shows an enlarged gland, with heterogeneous texture and pseudonodules, in several cases displaying well-defined nodules, which characterize the nodular thyroiditis. Usually, treatment is clinical, but it deserves special attention for possible association with thyroid carcinoma. It is another controversial issue and studies show incidence ranging from zero to more than 30%. Some researchers have observed a higher incidence of cancer in this type of thyroiditis, suggesting that this association is not just casual. Di Pasquale, on an extensive review of 23 cases of thyroiditis spanning 16 years, found 30 papillary carcinomas and three follicular associated.

In the period that includes the present study, we performed thyroidectomies in 37 patients with autoimmune thyroiditis, of which 12 (32.4%) had concomitant carcinoma, all papillary. Once defined the surgical approach, we consider TT as the best option, as in 22 (33.3%) of our cases.

The risk of complications after thyroidectomy is potentially large, but they have low incidence. As general complications such as wound infection, seroma and bleeding that occur sporadically are easier to prevent and treat, the goal is to perform such an operation preserving the integrity of the laryngeal nerves and parathyroid glands, avoiding permanent complications.

Vocal fold paralysis can be temporary or permanent and has an incidence ranging from 0 to 5.0% and greater potential risk in reoperations. Such an occurrence, although low, can be disastrous, although some cases of unilateral paralysis can evolve without interfering with voice or breathing due to contralateral compensation. We always have a preoperative laryngoscopy performed before a reoperation, but only in some cases after surgery.

Vocal cord paralysis almost always results from direct surgeon action over the recurrent laryngeal nerve and may occur after section, thermal injury by cautery or...
by nerve entrapment by the suture; it may also be secondary
to neuropraxia or the formation of perineural fibrous tissue
arising from the exposure. Interesting to note is the curious
evolution of the patient who had vocal cord paralysis, but
usually spoke in the early days, the hoarseness becoming
manifest only in the ninth day after surgery.

The care of preservation of the recurrent nerve
should be observed by all surgeons, as a total thyroidectomy
can hardly be held safely without identifying it to the fullest
extent. In special situations where its dissection appears
very difficult, a section of the isthmus of the thyroid and its
release in the mediolateral direction can be helpful. Possibly,
surgical trauma secondary to exposure of the nerves explain
that seven (13.4%) of patients had mild dysphonia or
transient hoarseness, although in two they could be
considered serious. Except in situations that interfere with
breathing, we only considered the indication for examination
of the vocal cords after 30 days if the complaints remained.

The external branch of superior laryngeal nerve,
whose injury may go unnoticed, except for those who use
their voices as a tool, also deserves attention. It is difficult
to identify and its inadvertent damage often occurs when
during section of the superior thyroid artery. The best way
to preserve them is to perform the individual ligation of its
terminal branches near the thyroid on the occasion of the
release of the upper poles.

Hypoparathyroidism is another complication of
thyroidectomy, and in most cases it is transient and may be
caused by injury, devascularization or removal of a gland,
although other non-mechanical factors may be associated
with the development of hypocalcemia\textsuperscript{25}. Its incidence is
less than 3\%\textsuperscript{26}. During a thyroidectomy, all parathyroid
glands are rarely identified with certainty, especially in
reoperations. Thus, capsular dissection and individual ligation
of the terminal branches of the thyroid arteries are important
maneuvers to preserve these small glands. It is also a good
practice to immediately reimplant, in the
sternocleidomastoid, any parathyroid that has been
devascularized or inadvertently removed during dissection\textsuperscript{27}.
In none of our patients we dosed calcium in the first 20
days after surgery, as we consider the clinical evaluation
enough. Therefore, 12 of them used oral calcium, most
until the 10th day after surgery. Clinical signs of
hypocalcemia were considered significant in only two of
them, whose administration of calcium and vitamin D was
extended to 30 and 90 days. None of our patients had
permanent hypoparathyroidism.

In conclusion, total thyroidectomy is an operation
that can be safely performed, with low incidence of
permanent complications, which allows one to broaden its
indications to various benign thyroid diseases, thus avoiding
future recurrences and reoperations.

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