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Total Thyroidectomy for Benign Thyroid Diseases-Our Experience

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Abstract

Background: *Even though Total Thyroidectomy is the treatment of choice for Multinodular goiter ,thyroid cancer, many surgeon deter to do total thyroidectomy for benign thyroid diseases because of risk associated with total thyroidectomy. We prospectively analyzed 150 total thyroidectomies done for various benign thyroid diseases .We analyzed all the parameters to assess whether our result support total thyroidectomy as safe and optimal procedure for treating benign thyroid diseases*

Methods: *A total of 150 patients underwent total thyroidectomy between 2011-2013.We excluded patients with thyroid cancer and repeat surgery. We evaluated the indication for surgery, postoperative complication rates and local recurrence rates.*

Results: *123 patients were diagnosed as euthyroidmultinodular goiter and 20 were toxic multinodular goiter and 7 were diagnosed as Graves'disease. Both temporary and permanent recurrent laryngeal nerve palsy is 0%.Temporary hypocalcaemia occurred in 15(10%) patients and there was no permanent hypoparathyroidism. Postoperative mortality is 0%*

Conclusion: *Total thyroidectomy is a safe and optimal procedure for benign thyroid diseases when it is indicated .Postoperative complication is similar to subtotal thyroidectomy. Total thyroidectomy avoids recurrence and malignancy risk*

Keywords: *Hypoparathyroidism, multinodular goiter, recurrent laryngeal nerve, Total thyroidectomy.*

INTRODUCTION

The risk and complication associated with total thyroidectomy deterred the surgeons from doing total thyroidectomy for benign thyroid disease. In spite of controversy it is being performed by most of the endocrine surgeons and current indications are cancer thyroid, toxic and nontoxic multinodular goiter and Graves' disease. In fact, thyroid surgery was rarely performed until the late 19thcentury; total thyroidectomies were only performed occasionally for indications other than cancer until the last quarter of the twentieth century. Most surgeons hesitate to do the procedure because of the possible complications such as permanent recurrent laryngeal nerve palsy and permanent hypoparathyroidism; subtotal thyroidectomy has been the preferred operation for benign thyroid diseases. An increasing number of total thyroidectomies are currently performed by endocrine surgeons. The indications for this procedure include Graves' disease and multinodular goiter. Furthermore, it has been shown that the complication rates of permanent recurrent laryngeal nerve palsy (0–1.3%) and

permanent hypoparathyroidism (1%) following subtotal thyroidectomy are similar to those following The advantages of total thyroidectomy to treat multinodular goiter are that the procedure reduce the risk of persisting symptoms and there was high recurrence rate (30%–50%) because of gland remnants following subtotal thyroidectomy, even under suppression hormonal treatment with L-thyroxin. Disease recurrence usually requires a repeat surgery, which greatly increases the risk (up to 20 times) of injury to parathyroid glands and laryngeal nerves.

Total thyroidectomy remove entire abnormal tissue in the neck and lowers recurrence rates for Graves' disease and multinodular goiter. Hormone replacement with L-thyroxin is relatively easy and can be achieved by monitoring the thyroid hormone serum levels. So total thyroidectomy is the safe and ideal treatment for benign diseases when it is indicated.

We perform only total thyroidectomy for graves' disease,toxic and nontoxic multinodulargoiter since from 2008. So we sought to assess the weather total thyroidectomy is the safe procedure to do. And also we sought to assess the temporary and permanent complication rate following total thyroidectomy.

METHODS

We conducted prospective study of patients who underwent total thyroidectomies between 2011 and 2013 in three multispecialty hospital in Chennai .All surgeries were performed by us, qualified Endocrine surgeons.

We analyzed data's like age, sex, preoperative diagnosis, postoperative complications like recurrent nerve palsy and hypoparathyroidism rate and final histopathology.

Patients with thyroid cancer and recurrent disease were excluded from the study.

PREOPERATIVE ASSESSMENT

We included the measurement of Thyroid stimulating hormone, free thyroxin, free triodothyroxine and thyroid antibodies levels and serum calcium. Morphology and thyroid volume were assessed by ultrasound examination of the neck and also presence of cervical lymph nodes were also noted. Sub-sternal goiter are evaluated with Computed tomography of neck. Preoperative examination of vocal cords was carried out by video laryngoscopy examination. Patients with thyrotoxicosis were treated with anti-thyroid drugs for three months to six months.

TOTAL THYROIDECTOMY

Total thyroidectomy was performed after identifying and preserving all the four parathyroid glands. Accidentally removed parathyroid gland in four patients were auto transplanted in sternocleidomastoid muscle. Bilateral recurrent laryngeal nerves were identified and preserved.

POSTOPERATIVE ASSESSMENT

Hypocalcaemia

Postoperatively we looked for signs and symptoms of hypocalcaemiaand measured serum calcium on third postoperative day in patient who developed symptoms of hypocalcaemia. .We defined hypocalcaemia as calcium lower than 8.0 mg/dl. Patient who had symptoms of hypocalc-aemia and low calcium levels biochemically were treated with oral and IV calcium infusion. Serum Parathormone levels were checked in patient who had persistent hypocalcaemia symptoms for more than three days

RECURRENT LARYNGEAL NERVE

We assessed the voice of the patient postoperatively and in patient who had voice change video laryngoscopy examination was done two months after surgery to look for the vocal cord mobility.

FOLLOWUP

All the patients were started with thyroxin after confirming the histopathology report. All the patients were followed postoperatively at the end of sixth and twelfth months for the evaluation of hormonal assessment, voice quality, and calcium

level measurement in patient who had hypocalcaemia symptoms.

RESULTS

150 patients with benign thyroid disease underwent total thyroidectomy between January 2011 and December 2015. Of these 135 (90%) were women and 15 (10%)were men. The median age was 35 (range 22 -78)

123 patients were diagnosed as euthyroid multinodular goiter and 20 were toxic multinodular goiter and 7 were diagnosed as graves' disease (TSH receptor antibodies titer were high) preoperatively

The most common indication for surgery was multiple nodules in 113 patients and toxicity in 27 patients and follicular neoplasm and suspected malignancy in 10 patients

Altogether 27 patients with toxicity were treated with carbimazole and propranolol for the median period of three to six months.

The average thyroid volume after total thyroidectomy was 65.8 (range 25-188)cm^3.3 patient had mild hoarseness of voice on third postoperative day. And their voice improved after seven days. They all underwent video laryngoscope examination after three months and vocal cord was found normal.In our series no patient had permanent or temporary recurrent laryngeal nerve palsy.

In our series 30(20%) patient developed signs and symptoms of hypocalcaemia on second post operative day. The calcium level were checked in all these patient and 15 patient had calcium level less than 8mg/dl. The patients with normal calcium level but with symptoms were treated with oral calcium alone and all of them are recovered from signs and symptoms of hypocalcaemia. In 15 patient who had lower calcium level (less than 8mg/dl) were treated with IV calcium infusion and oral vit.D .PTH level were checked in all the patient who had persistent symptoms after 5 days and in 7 patient it was found lower than 10pg/ml. Following treatment with IV calcium and Vitamin D these patient recovered from all symptoms on eighth postoperative day and discharged. All these 7 patients were diagnosed as thyrotoxicosis preoperatively. In our series 15 patients developed postoperative temporary hypocalcaemia and they recovered well within 8 days and there was no permanent hypocalcaemia.

The wounds were not drained in 138 patient and 12 wounds were drained. Postoperative wound collection occurred in 5 patients out of 138 patients whom wounds were not drained.

DISCUSSION

The risk and complication associated with total thyroidectomy deterred the surgeons from doing total thyroidectomy for benign thyroid disease. In spite of controversy it is being performed by most of the endocrine surgeons and current indications are cancer thyroid, toxic and nontoxic multinodular goiter and Graves' disease.[1,2,3,]

Total thyroidectomy is the current treatment of choice for all thyroid malignancies if it is resectable at initial presentation[4-6] . Like many endocrine surgeon we consider total thyroidectomy as safe and optimal procedure for benign thyroid disease to avoid recurrence. Even though in graves` disease total thyroidectomy is controversial, total thyroidectomy is now recommended for these patients because it eliminates the source of autoantibodies and risk of recurrence. It also alleviate associated graves ophthalmopathy in 80% of patients. The risk of malignancy in graves' disease is less than 4% the incidence can increase upto 15% if cold nodules are present[7-9].Postoperative complication like recurrent nerve injury and injury to parathyroid glands are equivalent for total and subtotal thyroidectomy[1,3].

In Multinodular goiter if both lobes are involved with multiple nodules total thyroidectomy is the appropriate treatment[10 11]. The advantage of total thyroidectomy in these patients are the immediate relief of symptoms; provision of a definite histopathological diagnosis, especially when the cytological features indicates follicular neoplasm

or suspicious for malignancy. On the other hand, procedure such as subtotal thyroidectomy or lobectomy, is a less satisfactory procedure because, by leaving residual thyroid tissue, the patient is exposed to a higher risk of recurrent disease (23%–45%) that is not treatable by thyroxine suppression therapy and will, therefore, require repeat surgery.[12] Moreover, subtotal thyroidectomy does not avoid the risk of postoperative complications. In fact, the complication risk of subtotal thyroidectomy is similar to that of total thyroidectomy. The risk of complication in repeat surgery is up to20 times greater than initial surgery High complication rates of total thyroidectomy (hypoparathyroidism and recurrent laryngeal nerve palsy) have been reported in some case studies[13,14] whereas in many other studies the reported incidence has been low. Gough and Wilkinson reported recurrent laryngeal nerve palsy and permanent hypoparathyroidism following total thyroidectomy at the rates of 0.7% and 2.2%, respectively[1]. Erbil et al. reported that recurrent laryngeal nerve palsy occurred in 1.8% of their cases[1]. Perzik reported an incidence of nerve injury of only 0.4% and no hypoparathyroidism[16] Similar low rates of permanent complications associated with total thyroidectomy have been reported in other studies[17,18]. In addition, several studies reported no significant difference in complication rates among patients undergoing total thyroidectomy compared with those undergoing subtotal thyroidectomy[19] Moreover, repeat surgery for recurrent thyroid disease carries significantly higher risks than the initial surgery with the incidences of recurrent laryngeal nerve palsy and permanent hypoparathyroidism as high as 20.0% and 3.4% respectively[20-23].

Postoperative hypoparathyroidism is a major concern may lead to prolonged hospitalization and increased cost. In several studies, the incidence of transient hypoparathyroidism varied from 6.9% to 46% while a rate of0.4% to 3.3% has been reported for permanent hypoparathyroidism. Falk et al. reported that transient hypoparathyroidism occurred in 27.8% of their cases manifested mostly as transient hypocalcaemia, easily managed with oral supplementation of vitamin D and Ca[2,24.]

Our data suggest that total thyroidectomy can be carried out with minimum morbidity among patients with benign thyroid conditions, including multinodular goiter and Graves' disease, when surgery is indicated. In our study there was no temporary or permanent recurrent laryngeal nerve injury. Identification of recurrent laryngeal nerve during mobilization and dissection of thyroid lobe is important to avoid injury to nerves. And also identification of all the four parathyroid gland and maintaining their blood supply minimized the injury to parathyroid gland and postoperative hypoparathyroidism. In our study 15(10%) patients postoperative biochemically proven temporary hypocalcaemia and there was no permanent hypoparathyroidism.

CONCLUSION

William Halstead has stated that ''the extirpation of the thyroid gland for goiter typifies better than any operation the supreme triumph of the surgeon's art''. Total thyroidectomy can be carried out with lesser complication in benign thyroid diseases when it is indicated .Our studies shows that rate postoperative complication associated with total thyroidectomy is very minimal Our data suggest that total thyroidectomy is safe and optimal procedure for benign thyroid diseases when it is indicated as it gives immediate relief to the patient with no risk of recurrence or cancer.

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