



Benign Lesions of Thyroid: Subtotal or Total Thyroidectomy?

KEYWORDS

Bilateral Benign Multinodular Goiter; Total Thyroidectomy; Sub-Total Thyroidectomy; Hypoparathyroidism; Recurrent laryngeal Nerve Paralysis.

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ABSTRACT *The type of thyroidectomy indicated in the management of benign goiter is controversial. Some prefer subtotal thyroidectomy as it avoids inadvertent injury to recurrent laryngeal nerve and permanent hypothyroidism, which are associated with total thyroidectomy; however, recurrence and difficulty in second surgery is a disadvantage. This study compares these two modalities of treatment in benign thyroid diseases with respect to results of surgery including early and late complications.*

Introduction

Thyroidectomy is one of the most frequently performed surgical procedures worldwide. Various types of thyroidectomy like: Total thyroidectomy, Near total thyroidectomy, Subtotal thyroidectomy and thyroid lobectomy have been accepted as the surgical therapy for various benign and malignant thyroid disorders; however, it is a double-edged sword: extensive resection might increase the risk of post operative complications and limited resection may increase the risk of recurrence of primary pathology and post operative hyperthyroidism as in Graves' disease. Surgeons have been looking for a treatment option which results in low recurrence as well as complication rates.

Many surgeons prefer subtotal thyroidectomy (ST), as the chances of permanent hypothyroidism, injury to Recurrent and Superior laryngeal nerves are less frequent and as life-long thyroid hormone replacement is not required.

Another school of thought favours total thyroidectomy as replacement of thyroid hormone is a relatively less cumbersome complication as compared to recurrence of tumour/ requirement of redo-surgery.

MATERIALS AND METHODS:

Source of data: Patients with benign lesions of thyroid undergoing subtotal or total thyroidectomy at Osmania General Hospital, Hyderabad, between July 2012 and October 2014 were included in the study. Patients were randomized into two groups, the first undergoing Subtotal Thyroidectomy (ST) and the second group undergoing Total Thyroidectomy (TT).

Inclusion criteria:

All patients undergoing thyroidectomy whose preoperative clinical diagnosis was one of the following: benign multinodular goitre, mild to moderate Graves' disease, large colloid goitre.

Exclusion criteria:

Patients with known or suspicious thyroid malignancy; Hy-

perthyroidism; Previous thyroid or parathyroid surgery; Previous RLN palsy; Recurrent goiter; Hashimoto's thyroiditis; ASA grade 4; Graves' disease with severe ophthalmopathy; Inability to comply with follow up protocol.

Goiter was evaluated by 1) Thyroid function test 2) Fine needle aspiration cytology (FNAC) to exclude malignancy, 3) Ultrasonography, 4) CT scan selectively in massive retrosternal or clinically malignant goiter, 5) Indirect laryngoscopy for vocal cord functioning status.

Antithyroid medications and Lugol's iodine were prescribed to hyperthyroid patients to achieve euthyroidism and in addition, beta-blocker was added for symptomatic control.

Parameters studied:

Indications for surgery
duration of surgery
operation performed
Duration of hospital stay
Post-operative complications

Recurrence of primary pathology, recurrent hyperthyroidism as in Graves'.

RESULTS:

In this study, 26 patients were allotted to group 1 undergoing subtotal thyroidectomy (ST), and 29 patients were allotted to group 2, undergoing total thyroidectomy (TT). 49 (88.67%) of them were females and 6 (11.32%) were males. The age of the patients ranged from 21 to 70 years; mean age was 36.8 years.

Out of a total of 55 patients, 40 patients suffering from Multinodular Goiter and 11 patients suffering with colloid goiter and 4 patients with Graves' disease were studied.

Results showed that there was no significant difference in the rate of major complications between the two procedures. Total number of patients developing complications was 21 (39.62%); 10 in group1 (40%) and 11 in group2

(39.28%). Bleeding during surgery was variable in both the groups since some of the glands were very vascular. Meticulous dissection was used to minimize the blood loss.

Post operative wound infection occurred in 4 patients in each group, and after surgical drainage and resolution of infection, the wound was re-sutured.

Temporary hypoparathyroidism resulted in 5 (19.2%) patients in total thyroidectomy group and 5 (17.2%) in the subtotal thyroidectomy group respectively, with no statistical significance. Temporary recurrent laryngeal nerve palsy was noted in 4 (15.38%) belonging to ST group and 6 (20.68%) belonging to TT group respectively, which was statistically insignificant. Haematoma was recorded in 2 (7.6%) in ST group; both were managed conservatively. Stitch granuloma was recorded in 2 (6.89%) in TT group. Incidental malignancy was noted in histopathology report in 2 (7.69%) patients in ST group and 3(10.34%) patients in TT group.

Two patients initially treated by ST required further surgery following HPE of the resected specimen as HPE of one revealed follicular and the other one revealed papillary carcinoma. Completion thyroidectomy was done within 2 weeks after the initial operation. Percentage of completion thyroidectomies and associated morbidity that could have been avoided in doing total thyroidectomy was 9.09%.

DISCUSSION:

The present study had an overall complication rate of 7.78%. Recurrence of goiter and re-operation rates after surgery was significantly lower after TT. ST has the disadvantage of high recurrence rates and carries the risk for increased surgical morbidity during the course of reoperation^{1,2}. The incidence of recurrence after ST varies in different studies and may be as high as 23%^{3,4}.

Two patients in this study developed recurrence of goitre, one of them 12 months and the other 16 months after the initial operations, ST in both cases, but the follow up period is too short to make any significant comparison between ST and TT.

Reoperation for recurrent disease carries a significant risk of damage to both RLN and parathyroid glands and during completion thyroidectomy there is a tenfold increase in iatrogenic injuries³. As a general rule, the risk of injuries increases with the number of reoperations performed. It has been well documented, however, that to leave a small amount of thyroid remnant *in situ* will not prevent the onset of hypothyroidism⁴. This finding has been confirmed in our study with 100% of all patients treated by ST in group 1, requiring at least 100 microgram of L- thyroxine daily. Furthermore in the presence of unrecognized malignancy, ST may represent inadequate surgery⁵. High rates of temporary (15.5% to 23.6%) and permanent (2.6% to 15.5%) damage of RLN have been reported in secondary thyroidectomy⁹.

The incidence of occult malignancy is generally thought to be 7 -10 %⁴. The tumors are generally well differentiated and usually follicular or papillary carcinoma⁶. In this study, the overall occult malignancy rate is 9.09%.

Delbridge et al⁴ stated that transient hypoparathyroidism should be an accepted outcome of bilateral thyroid surgery rather than a complication. It should be noted that degree and duration of hypocalcaemia increases with the

extent of thyroid surgery. Results of this study concur with literature with an incidence of temporary hypoparathyroidism little increased with the extent of surgery, 4(16%) vs 5(17.8%) in ST and TT respectively.

Equal rates of complications have been reported in TT and partial thyroidectomies (Colak et al., 2004)⁷, which are consistent with the results of our study. The use of L-thyroxine supplementation has been suggested to efficiently prevent recurrence (Kraimps et al., 1993)⁸.

Under these circumstances, TT offers complete initial treatment eliminating the need for completion thyroidectomy while ST, an inadequate surgery, would mandate a completion thyroidectomy, steeply increasing the morbidity fifteen fold^{10,11}. Palit et al¹² in their meta-analysis showed that remnant size was negatively correlated with hypothyroidism, with an 8.9% decline in the rate of hypothyroidism for each gram of thyroid remnant left.

CONCLUSION:

Total thyroidectomy is a safe and effective surgery of choice for the treatment of benign lesions of thyroid. ST is associated with significant recurrence of goiters, inadequate treatment of incidentally detected thyroid cancers and insignificant advantage over TT. Increased risks of secondary or completion thyroidectomy outweigh any potential advantage in terms of lower complication rates.

Despite the adoption of subtotal thyroidectomy as surgery for Graves' disease, a significant number of patients developed hypothyroidism and required long term L-thyroxine replacement, apart from the substantial rate of recurrence. With regard to progression of ophthalmopathy, post-operative bleeding, temporary hypoparathyroidism, temporary RLN palsy and post operative hyperthyroidism, TT is consistent with ST in experienced hands and provide more predictable outcome immediately after surgery and long term follow up with thyroxine replacement.

TT provides a radical but definitive control of the disease in Benign Multinodular goiter and colloid goiter, completely removing the abnormal thyroid tissue and prevents the future need of surgery for recurrence and incidentally detected malignancy and it assures total relief of compressive symptoms, comparable low incidence of complications and also obviates the need for completion thyroidectomy and its related complications.

The complication rates of TT are acceptably low and are comparable with that of ST, as it is evident from the results of this study.

In view of the insignificant long term benefits of subtotal thyroidectomy with risk of requirement of and difficulty in second surgery, and the low complication rates of total thyroidectomy, we recommend total thyroidectomy over subtotal thyroidectomy for benign lesions of thyroid, like multinodular goiter, mild to moderate Graves' disease, large colloid goiters, etc.

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