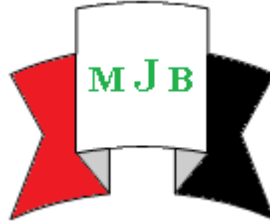


Total Thyroidectomy versus Near Total thyroidectomy in Surgical Management of Patients of Multinodular Goiter

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Abstract

Background: Near total thyroidectomy represented an appealing option for junior surgeons to perform in managing multinodular goiter however total resections in the hands of well-trained surgeons are safe and resect the whole gland with no need for completion surgery in cases of occult malignancy.

Objectives: to compare the results of neat total with total thyroidectomy.

Patients and Methods: 100 cases of total thyroidectomy are compared with 100 cases of near total thyroidectomy, prospectively and in continuously updated bases ,those patients admitted to Al Hilla General Teaching Hospital from Dec 2008 to Sep 2013.Average age in total thyroidectomy cases was 41 and in near total thyroidectomy cases was 38 and male: female ratio was 1:2.2 and 1:2.7 respectively.

Results: No permanent complications were faced in both groups apart from hypothyroidism in all cases.

Conclusion: No advantages for near total thyroidectomy. Occult malignancy detected on postoperative histopathology of near total resections may need completion surgery which carries the highest incidence of complication. Near total thyroidectomy is no more recommended for surgeons with sufficient training to perform total resections.

Keywords Multinodular goiter, total thyroidectomy, near total thyroidectomy Dunhill technique, hypothyroidism.

Abbreviations

TT: Total Thyroidectomy.

NT: Near Total Thyroidectomy.

MNG: Multinodular goiter.

CBC: Complete blood count.

ECG: Electrocardiograph

RLN: recurrent laryngeal nerve

الخلاصة

يمثل الاستئصال الكلي لما جنب الدرقية خيارا جذابا للجراحين المبتدئين في ادارة الكويتر المتعدد العقيدات ولكن استئصال الدرقية على أيادي الجراحين المدربين تدريباً جيداً

وتهدف الدراسة لمقارنة النتائج من الاستئصال الكلي لما جنب الدرقية واستئصال الدرقية الكامل.

تتم مقارنة ١٠٠ حالة من استئصال الدرقية الكامل مع ١٠٠ حالات الاستئصال الكلي لما جنب الدرقية ، من ديسمبر ٢٠٠٨ إلى سبتمبر ٢٠١٣. وأظهرت النتائج عدم وجود مضاعفات في كلا الحالتين.

Introduction

Most patients undergoing surgery for multinodular goiter (MNG) require bilateral thyroid resection. However, there is currently no consensus on what is the most appropriate technique [1-4].

Total thyroidectomy has been well established as the treatment of choice for patients presenting with malignant thyroid nodules > 1 cm or pathologically indeterminate large nodules > 4 cm (due to increased risk for malignancy), as well as for patients with a family history of thyroid carcinoma or with a previous history of head and neck radiation. However, the efficacy and safety of this surgical approach for the treatment of patients with benign multinodular goiter, toxic multinodular goiter, Graves-Basedow disease and even for small, well-differentiated thyroid carcinomas is still a matter of debate [5]. For such cases many surgeons still offering near total thyroidectomy as the midest option with less postoperative complication and less recurrences[6].

Subtotal thyroidectomy and near total thyroidectomy(NT) has been the surgical treatment of choice in surgery for MG, but it does have several inconveniences, among which is a high rate of recurrence (3% to 30%) [3,7]. Total thyroidectomy (TT) does not have these disadvantages, but it does involve a higher potential risk of complications. Reported morbidity rates are as high as 3.5% for definitive hypoparathyroidism and 3.1% for permanent recurrent laryngeal nerve (RLN) injury, to reach 5% and 17%, respectively, when there are recurrent goiters [8,9].

These figures are unacceptable for the surgical treatment of a benign pathology occurring in a relatively young population.[10-14].

It has now been seen that with skilled training and careful meticulous bloodless dissection, these complications could be reduced [15].

The risk factors for definitive complications, whether hypoparathyroidism or recurrent lesion, have not been investigated systematically. There are exceptional multivariate analyses that evaluate the influence of risk factors for disease and hospital on the rates of complications of benign thyroid surgery, and those that exist are very heterogeneous with regard to surgical technique and surgeons' experience.[9]

The aims of this study are to demonstrate that TT for goiter disease can be performed with a permanent complication rate of 1% or less and to compare the efficacy of this procedure with the less radical near total thyroidectomy.

The hypothesis of my study is investigating whether null hypothesis of no difference between total and near total thyroidectomy can be accepted and discussing the alternative hypothesis of significant difference between the two procedures.

Patients and Methods

We, prospectively and on continuously updated bases, studied 200 cases with multinodular goiter admitted , operated upon by the team of the study over the period Dec 2008 to Sep2013 in Al Hilla General Teaching hospital-Babel Health directorate. The follow up of the cases involved periodic clinical examination(Change in voice, tetany, carpopedal spasm, change in body weight) in addition to serial laboratory investigations including Thyroid Functions and S.Calcium.

our cases were categorized into two groups, the first group consisted of total

thyroidectomy(referred to as TT group) which was done for 100 patients, the second group consisted of Near total thyroidectomy (referred to as NT group)was done for 100 patients; the type of procedure for the case was chosen was random.

All of the patients were assessed preoperatively by history and clinical examination, neck ultrasound, Thyroid function tests, S.Calcium, Chest x-ray, and preoperatively by the anesthetist of duty , ECG and CBC.

Our procedure¹⁰ included standard Kocher's incision rising superior and inferior platysmal flaps utilizing cautery coagulation with minimum blood on the field, middle thyroid vein ligated prior to delivery of the gland, variable sizes of the gland were faced from barely clinically detected to big sizes causing obstructive symptoms and dysphagia, RLN was carefully searched in the tracheoesophageal grooves with Lahey's and right angle tipped forceps particularly in the vicinity of inferior thyroid artery which we avoided ligation in the site of the main trunk instead we did ligate the terminal branches of the artery near its entrance to the gland with absorbable sutures in idea to keep the

blood supply of the parathyroid glands which were positively identified and released down to the paratracheal fields.

In cases of near total thyroidectomy, we kept small amount(about 4 gm) of the gland at the site of entrance of RLN to the trachea and avoided ligation of inferior thyroid artery at the ipsilateral side, the remnants of the gland was oversaw with 3-0 Vycrel to ensure hemostasis.

Two Redivac drains were used in all cases and wound closed in layers, skin closed in subcuticular prolene.

Direct laryngoscopy was performed for all patients in the immediate postoperative period while the patient still under sedative effect of aneesthesia prior to discharge from the theatre.

In the surgical ward, normal voice is documented and any hoarseness is reported.

Clinical symptoms and signs of hypocalcaemia like perioral numbness and Chvostic's, Trousseau's signs are searched for specifically and results documented. All patients have been followed up without losses monthly for 3 months postoperatively.

Biostatistics were performed with Chi square and p value of 0.01.

Results

Table 1

complication	TT	NT	P 0.01 value significance
Horsenss,permanent lasting more than 6 months	0	0	Null
Hypocalcaemia, a-Permanent lasting more than 6Months	0	0	Null
b-Temporary hypocalcaemia	7	6	Null
Hypothyroidism	100	100	Null

As shown in the Table, no permanent complication (persistence of complications more than 6 months [14,15] were reported in both groups; however, hypothyroidism prevailed in all cases as no sufficient glandular tissue remained in both kinds of surgery. No significant difference in incidence of temporary hypocalcaemia.

Average age in group TT was 41 years and in group NT was 38 (p value more than 0.01) and male: female ratio was 1:3 and 1:3.1 respectively (p value more than 0.01).

The size of the gland varied from multiple bilateral 1 cm nodules to multiple big nodules of about 7 cm diameter without retrosternal extensions, the average diameter of the biggest nodule in group TT was 4cm and in group NT was 3.7 cm. None of the operated cases were associated with retrosternal extension.

In group TT, we faced 7 cases of hypocalcaemia postoperatively while 6 cases of hypocalcaemia reported in group NT (p value more than 0.01), however all cases were relieved later on on calcium supplementation which was weaned 2 months later and recovered completely.

Four cases of TT group and one case in NT group were found to have incidental malignancy by histopathological evaluation of the resected gland; all of the five cases were papillary thyroid carcinoma.

All of the patients, apart from the aforementioned 13 cases of reported complications, were discharged in day 3 postop and all patients have been followed up without losses monthly for 3 months postoperatively.

Discussion

Surgery for MG currently lies between the less radical resections in form of Subtotal and near total thyroidectomy, which has a considerable percentage of recurrences, and Total thyroidectomy, which supposed to have a high percentage of postoperative complications [16]. The defenders of less radical resections claim that with a small thyroid remnant the rates of clinical recurrence requiring surgery do not exceed 4% [17–20]. To reduce these recurrences, there are authors who consider the procedure of choice to be the Dunhill technique (near total thyroidectomy) [22–23].

There are no advantages for near total thyroidectomy over total thyroidectomy, in our study we found no difference in incidence of postoperative complications, however, 4 cases of total thyroidectomy revealed occult foci of papillary thyroid carcinoma, and one of our cases of near total thyroidectomy revealed the same cancer and patient required completion thyroidectomy later on.

All our 200 patients develop hypothyroidism postoperatively diagnosed clinically and baseline thyroid hormones estimation was done, and a daily variable doses of thyroxine were started and advised to continue treatment for the long term and thyroid functions tests were performed every 6 months [14–16].

Total thyroidectomy, with an appropriate period of learning, focusing on meticulous bloodless fields with care to ligate the inferior thyroid artery only near its entrance to the gland after positive identification of RLN through careful Lahey's and right angle forceps dissection as we described in our technique, can be performed with no

definitive complications (0%), as seen in the present study. The few existing prospective studies [3,4] that analyze the results of TT in MG performed by surgeons with experience in endocrine surgery, after excluding the period of learning, coincide with our results. Delbridge et al [3] in a series of 3089 thyroidectomies (1838 Sis and 1251 TTs) report 0.5% permanent RLN injury and 0.4% hypoparathyroidism, in other words 0.9% definitive complications. We therefore agree with Delbridge et al,[3] who consider TT to be the choice for MG, because the only real argument against it, i.e., the greater risk of complications, does not now occur in centers with experience. TT thus represents the definitive treatment of goiters, prevents recurrences, and, in the event of malignancy, may be a correct treatment with a low rate of associated morbidity.[1,3,10-13,24-26].

All our 200 patients develops hypothyroidism postoperatively diagnosed clinically and baseline thyroid hormones estimation was done, and a daily variable doses of thyroxin were started and advised to continue treatment for the long term and thyroid functions tests were performed every 6 months[13,14].

This is a major advantage of performing total resections of the gland because it's proved that surgery for the recurrent disease carries the highest incidence of postoperative complication[25,26].

Conclusions

Total thyroidectomy is superior to Near total thyroidectomy in surgical management of multinodular goiter due to no added complications in undergoing total resections and gain benefits of reoperation required in cases of

recurrence or finding of occult malignancy.

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