

TOTAL THYROIDECTOMY FOR MULTI NODULAR GOITRE

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Abstract

Objective: To assess the efficacy and safety of total thyroidectomy for benign multi-nodular goitre.

Study design: Descriptive study

Place and Duration of Study: The study was conducted in the Department of General Surgery, Combined Military Hospital Kharian from January 2004 to December 2008.

Materials and Methods: A total of 66 patients with bilateral benign multi-nodular goitre (61 females & 5 males) underwent total thyroidectomy. Sixty two cases were euthyroid while 4 had hyperthyroidism. Surgical dissection techniques involved identifying both recurrent laryngeal nerves through out their course, securing of parathyroid glands with their intact blood supply and ligation of inferior thyroid artery branches close to the thyroid capsule. All the patients were evaluated post operatively for signs of recurrent laryngeal nerve injury and hypoparathyroidism and other complications. All patients were put on thyroxin replacement therapy post-operatively and were followed for 9 to 12 months.

Results: There was no injury to the recurrent laryngeal nerves. One case of injury to external laryngeal nerve was found. Transient hypocalcaemia occurred in 4 patients without permanent hypoparathyroidism. All cases of transient hypocalcaemia recovered fully within 3 months. Four patients had occult malignancy diagnosed post-operatively on histo-pathology.

Conclusions: In experienced hands, total thyroidectomy is an effective and relatively safe operation for benign multi-nodular goitre and its complication rate is same as that of a sub-total thyroidectomy.

Keywords : Multinodular goitre, occult malignancy, thyroidectomy

Article

INTRODUCTION

The ideal surgical treatment of multi-nodular goitre has remained debatable ever since Theodor Kocher proposed surgery for goitre about a century ago. The traditional Kocher type of surgical resection of multi-nodular goitre involved sparing of enough thyroid tissue bilaterally to ensure a euthyroid state. This approach of subtotal bilateral thyroidectomy resulted in a recurrence rate from 13.4% to 60%, according to the extent of resection¹. The fear of total thyroidectomy resulting in recurrent nerve damage and permanent hypoparathyroidism has been ablated by the recent studies that have shown comparably safe results of total thyroidectomy as compared to sub-total thyroidectomy. Now there is a changing trend amongst most of the endocrine surgeons towards performing total thyroidectomy for benign bilateral thyroid disease. At present, about 60% of the practicing endocrine surgeons in Australia and New Zealand perform total thyroidectomy for bilateral multi-nodular goitre². With the changing trend in thyroid surgery, the aim of this study was to review our experience with total thyroidectomy as the treatment of choice for bilateral multi-nodular goitre.

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PATIENTS AND METHODS

A total of 66 consecutive patients with benign bilateral multinodular goitre were treated by total thyroidectomy. The study was conducted in C.M.H Kharian between January 2004 and December 2008 and data from C.M.H Peshawar was also included. All the patients who were counseled and agreed to take life long thyroxin post-operatively were included in the study while others were excluded. Patients who had a pre-operative diagnosis of malignancy and recurrence of goitre were excluded. Pre-operative work-up included a detailed history, a thorough physical examination,

thyroid hormone profile, serum calcium and indirect laryngoscopy in all patients. FNAC was done in cases of discrete thyroid swellings while radioactive isotope thyroid scan was done in 4 cases of hyperthyroidism only. Standard operative techniques were employed which included identifying recurrent laryngeal nerve along its course till it pierced the thyroid cartilage posterior to ligament of Berry. Efforts were made to identify parathyroid glands on both sides and preserve their vascular pedicle. Pericapsular dissection was done and individual branches of inferior thyroid artery going into the thyroid gland were tied only, thus preventing avascularisation of parathyroid glands. The entire thyroid gland was removed taking care at ligament of Berry to safeguard the entry of recurrent laryngeal nerve into the larynx. Suction drains were used post-operatively. Post-operative follow-up protocol included serum calcium estimation in all cases before discharge along with parathormone levels in 4 cases of transient hypocalcaemia. Indirect laryngoscopy was done post-operatively in out patient department in all the cases. Average post-operative stay in hospital was 3-4 days. All the patients were put on full replacement dosage of oral thyroxin and were followed for 9-12 months post-operatively.

Data was stored in SPSS data sheet. Analysis of intra and post-operative complications was done using SPSS version 16.

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RESULTS

The patients' age ranged from 30 to 60 years with a mean age of 42 years (SD±8.3). out of these patients 92.4%(n=61) were female while 7.6% (n=5) were male. Duration of symptoms ranged from 3 to 15 years. Mean duration of symptoms was 5.7yrs (SD±2.78). The main clinical presentation was pressure effects in 76% (n=47) of cases followed by cosmetic reasons in 24.2 % (n=16). Sixty-two (94%) patients were euthyroid, while four (6.1%) patients had hyperthyroidism. All the patients made an uneventful recovery. In one patient tracheostomy was performed for tracheomalasia. There was no significant intra-operative or post-operative bleeding and post-operative drainage remained between 50 ml to 200ml (mean= 109ml SD±30.3) while drains were removed on 2nd post-operative day. Four (6%) patients had transient post-operative hypocalcaemia that was manifested clinically by carpopedal spasm. They were given calcium supplements and vitamin D3 preparations. After 1-3 months of follow-up none of them developed permanent hypocalcaemia and their serum parathormone levels remained within normal limits. There was no case of injury to recurrent laryngeal nerve. One patient had symptoms of external laryngeal nerve injury (failure to sustain her voice pitch over prolong talking). Thyroid malignancy was an incidental finding in 4/66 (6%) patients. Follicular carcinoma was diagnosed in two patients on postoperative histopathology, while papillary carcinoma was found in two cases. No further completion surgery was performed on these patients. Superficial wound infection occurred in 4 (6%) patients which settled with regular wound dressings and antibiotics. Sub-cutaneous seroma was formed in 4/66(6%) patients that were treated with repeated aspirations. There was no hypertrophic scar or keloid formation at the follow up of 9 -12 months. The results of surgery as assessed by relief of symptoms were satisfactory in over 95% of patients. All the patients were adjusted on full replacement thyroxin therapy during the follow-up.

DISCUSSION

The surgical management of multi-nodular goitre in an endemic area is controversial. Therefore one has to choose between a conservative approach like subtotal thyroidectomy and a more radical procedure like total thyroidectomy. A number of studies have demonstrated that in cases of long-standing multi-nodular goitre in an endemic area there is a high percentage of cases with disease involving the entire gland. On microscopy even apparently healthy tissue is seen to demonstrate lymphocytic infiltration, follicular hyperplasia or even lobular dysplasia, which has a tendency to form nodules. Therefore if the entire gland is not treated the disease can recur³. The role of thyroxin for prevention of recurrent goitre after primary surgery remains debatable. Recurrent goitre does occur in patients on TSH suppression therapy after subtotal thyroidectomy. The general recurrence rate for all subtotal thyroidectomies is 21%^{4,5}. It can however vary from 13.4% to 60% according to the extent of resection⁶⁻⁹. At the same time surgery for recurrent multi-nodular goitre is technically demanding and associated with a high complication rate^{10, 11}.

Total thyroidectomy appears to be an appropriate choice for the management of benign multi-

nodular goitre because it spares the patient from further surgery for recurrent disease at the expense of a permanent substitution therapy¹².

Total thyroidectomy also precludes the patient from completion surgery in the presence of occult malignancy, the incidence of which ranges from 6.3% to 13%¹³⁻¹⁵. We consider 6.06% (4/66) incidence of occult malignancy in our study as significant and advocate the logic of total thyroidectomy to eliminate the risk to the patient of re-exploration for completion surgery. Re-exploration of the neck for definitive treatment is met with high morbidity in our set-up including injury to the recurrent laryngeal nerves, trachea and surrounding structures¹³. In the past total thyroidectomy seemed to be an extensive procedure for benign thyroid disease and was considered to have a greater complication rate when compared with subtotal resections. With the advent of pericapsular dissection technique as proposed by Delbridge et al⁷ and followed by many endocrine surgeons at present, the complication rate associated with total thyroidectomy can no longer be used as a basis against its role as a definitive procedure for benign thyroid disease. Most of the recent studies have shown that the complication rate of total thyroidectomy is either equal to or less than that of subtotal thyroidectomy¹⁶⁻¹⁷. After total thyroidectomy incidence of permanent recurrent laryngeal nerve palsy is 0.8% and permanent hypoparathyroidism is 1.6%. Whereas the incidence of partial recurrent laryngeal nerve palsy in sub-total thyroidectomy is 0.9% and that of partial hypoparathyroidism is 1.8%¹⁸⁻¹⁹. In the very same study the incidence of partial recurrent laryngeal nerve palsy in total thyroidectomy was 0.6% and partial hypoparathyroidism was 2.9%. Our study demonstrated that by using careful surgical techniques of dissection, there was no injury to either recurrent laryngeal nerve, or to external laryngeal nerve. Moreover, the incidence of transient hypocalcaemia was 6% that recovered in 1-3 months without permanent hypoparathyroidism. This may be explained by transient ischemia of the parathyroid glands due to local dissection. A thorough knowledge of anatomy and embryology of thyroid gland remains the single most important factor to render total thyroidectomy a safe and effective procedure in experienced hands.

CONCLUSION

Total thyroidectomy is the treatment of choice for Benign Multinodular Goitre as it is a safe and effective procedure in experienced hands. It reduces the morbidity of revision surgery for recurrent disease and obviates any need for completion surgery in cases of occult malignancy. Its complication rate is either same or even less than that of sub-total thyroidectomy.

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