

## TOTAL THYROIDECTOMY AS PRIMARY ELECTIVE PROCEDURE IN MULTINODULAR THYROID DISEASE

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**Background:** Multinodular goitre is one of the commonest thyroid diseases encountered in the practice of surgery. The most common surgery being performed for multinodular goitre is subtotal thyroidectomy. Total thyroidectomy is designed to remove all of the thyroid tissue. The objective of this study was to evaluate total thyroidectomy as a primary elective procedure for treatment of multinodular thyroid disease. This descriptive study was carried out at Combined Military Hospital Rawalpindi from June 2003 to September 2006. **Methods:** 88 patients of multinodular thyroid disease were included. Patients having evidence of recurrent laryngeal nerve damage, recurrent goitre, evidence of altered parathyroid functions or evidence of malignancy were excluded. All patients underwent total thyroidectomy by the same team of surgeons and the patients were closely followed up for postoperative complications especially in terms of recurrent laryngeal nerve damage and hypocalcaemic tetany. **Results:** No major postoperative complication was noted. Only 1 patient (1.14%) developed unilateral recurrent laryngeal nerve damage and 2 patients (2.27%) developed transient hypocalcaemia that recovered quickly. **Conclusion:** Total thyroidectomy as a primary elective procedure in multinodular thyroid disease is a safe option and it removes the disease process completely, lowers local recurrence rates and avoids the substantial risks of reoperative surgery.

**Keywords:** Multinodular goitre, Total thyroidectomy, Primary elective total thyroidectomy.

### INTRODUCTION

Multinodular goitre is one of the commonest thyroid diseases encountered in the practice of surgery. Treatment modalities are mainly antithyroid drugs and surgery. The most common surgery being performed for multinodular goitre is subtotal thyroidectomy for the reasons that it is comparatively easier to perform, less time consuming and has a lesser complication rate especially of damage to recurrent laryngeal nerve and parathyroids. Subtotal thyroidectomy involves removal of majority of the diseased thyroid tissue along with the isthmus leaving behind a remnant of roughly 4–8 grams on each side.<sup>1</sup>

On the contrary subtotal thyroidectomy has a major pitfall in that up to 40% of the cases have been reported in the literature to come up with recurrence in the long term follow up requiring a second surgery which has its own high morbidity.<sup>1,2</sup>

Another choice is total or near total thyroidectomy followed by hormone replacement therapy. Total thyroidectomy is designed to remove all of the thyroid tissue. It is generally avoided mainly because of its complication of recurrent laryngeal nerve and parathyroid damage.<sup>1</sup>

We have been doing total thyroidectomies for multinodular goitre and we feel that it is a better procedure in terms of complete removal of thyroid disease once and for all and the chances of recurrent laryngeal nerve damage is minimal if a good surgical technique is adopted and recurrent laryngeal nerve is properly identified. The purpose of this article is to present our data of 88 total thyroidectomies thereby

advocating that it is a safe and complete procedure for even benign thyroid disease.

### PATIENTS AND METHODS

This is a descriptive study carried out at combined military hospital Rawalpindi from June 2003 to September 2006. A total of 88 total-thyroidectomies were carried out for multinodular thyroid disease. All cases of multinodular thyroid disease (both toxic and euthyroid) presenting to the department of surgery were included. A detailed preoperative assessment was carried out in every case. Thyroid function tests were carried out in all cases and those having laboratory or clinical evidence of thyrotoxicosis were controlled to euthyroid with medication preoperatively. Serum calcium levels and indirect laryngoscopy was carried out in all cases. Patients of all age groups and both sexes were randomly picked up and included. Those patients having evidence of recurrent laryngeal nerve damage, recurrent goitre, evidence of altered parathyroid functions or evidence of malignancy was excluded from the study. Those patients who were from far off places and/or were suspected to have a poor follow up were also excluded. A total of 88 total thyroidectomies were carried out by the same team of surgeons under similar controlled conditions. Attempts were made to identify recurrent laryngeal nerve in all cases. All vessels going into the thyroid were tied on the surface of thyroid and inferior thyroid artery was not tied to preserve parathyroid function. Removed specimen was subjected to histopathology in every case. Histopathology was carried out by the same

consultant histopathologist in every case. Patients were followed up for two weeks postoperatively. All preoperative, peroperative and postoperative findings were collected onto a data collection proforma and later fed into computer software SPSS version 10. Descriptive statistics were used to analyse data.

**RESULTS**

Total thyroidectomy was carried out in 88 patients for benign thyroid swellings. The Mean±SD of age was 34±6.07. Female to male ratio was 10:2. The different types of thyroid diseases subjected to total thyroidectomy are listed in Table-1. Ninety-seven percent of the patients were discharged on the 3<sup>rd</sup> postoperative day and advised to follow up at 1 week post operative. No patient had any major peroperative complication. Sign and Symptoms of recurrent laryngeal nerve injury were noted in 1 (1.4%) patient. It was probably due to neuropraxia as it recovered completely with in a period of 3 months postoperatively. Tetany was noted in 2 (2.27%) patients. It was treated with calcium and alphacalcidol. It was transient as patients did not need any calcium support after one month. Papillary carcinoma of thyroid was diagnosed in 1 patient upon histopathology and the patient was referred to the Department of Oncology for further management.

**Table-1: Type of thyroid disease**

Type of thyroid disease	Number	%
Multinodular goitre	74	84.10
Toxic nodular goitre	14	15.90
Total	88	100

**Table-2: Complications of total thyroidectomy**

Complications	Number	%
Recurrent laryngeal nerve damage (transient)	1	1.14
Recurrent laryngeal nerve damage (permanent)	0	0
Tetany (transient)	2	2.27
Tetany (permanent)	0	0
Total thyroidectomies	88	100

**DISCUSSION**

Surgery is the main stay of treatment for most of the benign and all of the malignant conditions of thyroid. The extent of surgery varies for the benign as well as the malignant thyroid disease. Various surgical options available are lobectomy, hemithyroidectomy, subtotal thyroidectomy, near total thyroidectomy and total thyroidectomy.<sup>2,3</sup> Whether benign or malignant total thyroidectomy is avoided by many because of its propagated potential high risk of recurrent laryngeal nerve damage and hypocalcaemia.<sup>4,5</sup> Because of this main reason protocols have been devised that tend to avoid total thyroidectomy for small malignancies of thyroid.<sup>6</sup>

We have been doing total thyroidectomies for benign thyroid diseases and have found that it is a

very safe procedure with a good and safe technique. It has the major advantages that chances of recurrence are very low; morbidity due to recurrent thyroid surgery is avoided and underlying malignancy if any is treated in the same sitting.<sup>7</sup> The main disadvantage is that people who can't follow up can't be dealt with this modality as it requires long term thyroxin replacement therapy which in a non compliant patient may end up in hypothyroidism.

In our study we performed 88 thyroidectomies in patients of nodular thyroid disease. Only one patient (1.14 %) developed transient recurrent laryngeal nerve damage that recovered within a period of 03 months postoperatively. This is comparable to recurrent laryngeal nerve damage after subtotal thyroidectomy (2.6%) in a study carried out by Ozbas S.<sup>8</sup> Rosato L reported the incidence of permanent recurrent laryngeal nerve damage after total thyroidectomy to be 1.3% and it was 0% in our study which is comparable.<sup>1</sup> The percentage of recurrent laryngeal nerve damage was found to be in more or less the same range as that of recurrent laryngeal nerve damage after subtotal or near total thyroidectomy as reported in the literature.<sup>7,8</sup>

We noted that out of 88 cases only 2 (2.27%) developed transient hypocalcaemia and permanent calcium supplements was not required in any case after a period of one month. This was better when compared to Rosato L<sup>8</sup> where the hypocalcaemia was reported to be transient in 14% and definitive in 2.2%. This less incidence of hypocalcaemia in our case was probably because of the fact that we stuck to the policy of identification of parathyroid in most of the cases, not tying inferior thyroid artery and only tying the vessels close to the surface of thyroid thus sparing the blood supply to the parathyroids with less likelihood of parathyroid shock. Whether tying or not tying the inferior thyroid artery makes any difference for the parathyroid functioning is debatable in the literature<sup>9</sup> however we found it to be the main reason for a low incidence of hypocalcaemia in our study.

Another important fact which is of great concern in patients of total thyroidectomy is that a non compliant patient, if omits thyroxin, can develop hypothyroidism in the long run. Total thyroidectomy should be avoided whenever possible if thyroxin supplies are unreliable.<sup>10</sup> It has been stated that a large thyroid remnant is no protection against early or late postoperative hypothyroidism that has been reported after relatively conservative form of thyroid surgery; however it can certainly lead to an increased risk of recurrent goiter.<sup>11</sup> Surgery for recurrent nodular goitre is associated with a significant risk of parathyroid and recurrent laryngeal nerve (RLN)

morbidity<sup>12,13</sup> and this can certainly be avoided if we opt for total thyroidectomy as a primary elective procedure. Histopathology of the specimen may be helpful in the diagnosis of occult carcinoma thyroid as was true in our study where papillary carcinoma was diagnosed upon histopathology in one patient.

## CONCLUSION

Total thyroidectomy has an important role in the management of patients with benign thyroid disease. Total thyroidectomy removes the disease process completely, lowers local recurrence rates and avoids the substantial risks of reoperative surgery. Total thyroidectomy is safe and can be carried out with low complication rates that are equal to world centres of excellence.

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