

Thyroidectomy for the Treatment of Multinodular Goiter: Our Experience

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ABSTRACT

Aim: To determine the outcome of thyroid surgery for treatment of multinodular goiter and compare subtotal and total thyroidectomy surgeries.

Methods: This study was conducted at the department of Ear, Nose, Throat, Head and Neck Surgery, Hayat Medical Complex Peshawar from Jan. 2012 to June. 2012 (6months). This study included 60 patients with multinodular goiter. These patients were divided into two groups. One group was subjected to subtotal thyroidectomy while the other to total thyroidectomy. The data were obtained in terms of pt demographics, surgery type, hospital stay and postop complications.

Results: There was no significant difference in the sex, age, duration of goiter or hormonal status between these two groups ($P=0.64$, $P=0.73$, $P=0.59$ and $P=0.73$ respectively). The main indications for surgery in both groups were compression symptoms and sudden enlargement in size of the goiter. The mean surgery time and hospital stay was shorter in patients with subtotal thyroidectomy but with no statistical difference ($P>0.05$). The incidence of temporary post operative hypocalcaemia was significantly higher in total thyroidectomy ($P=0.003$). However post-operative permanent hypocalcaemia was not significantly different between the two groups.

Conclusion: The incidence of permanent complication in total thyroidectomy is not higher than subtotal thyroidectomy. So if total thyroidectomy is performed for multinodular goiter first time, the chance of recurrence of the disease may be reduced and second time surgery may be avoided.

Key words: Goiter, Total thyroidectomy, Subtotal thyroidectomy

INTRODUCTION

Goiter is the commonest endocrine disorder faced by an otolaryngologist. It is rather more common in the iodine deficient area like Khyber Pakhtunkhwa.¹ According to the World Health Organization (WHO) report 5% of the world's population suffer from goiter and 75% of these people live in iodine deficient areas. Thyroidectomy is the treatment of choice for multinodular goiter especially with suspected malignancy or large goiter resulting in compression symptoms². The procedure of thyroidectomy was developed by Theodore Kocher and William Halsted. Since that time it has evolved from a life-threatening intervention to an efficient, wide-spread, and safe procedure nowadays¹. The morbidity and mortality of thyroid surgery have been reduced due to good control on bleeding and proper management of tracheal problems nowadays³.

Over the last decade total thyroidectomy has become used increasingly and is now the preferred option for the management of multinodular goiter affecting the entire gland. Incidence of total

thyroidectomy for multinodular goiter has increased in terms of percentage from 9% to 50%.⁴ Total thyroidectomy is an appropriate operation for the management of diffuse multinodular goiter where the entire gland is involved because it precludes patients from requiring further surgery for recurrent disease, with its high associated risks⁵. It must be emphasized, however, that protection of the recurrent laryngeal nerve and parathyroid glands must still be paramount in dealing with benign thyroid disease.^{6,7}

The aim of the present study is to evaluate the safety employing total thyroidectomy instead of subtotal thyroidectomy as the procedure of choice for patients requiring surgical treatment for multinodular goiter. Patients who were managed by subtotal thyroidectomy were compared with those treated with total thyroidectomy in terms of post-operative complications and functional outcome.

PATIENTS AND METHODS

In this 6 months duration prospective cases series study sixty patients were enrolled who were equally divided into two groups. In one group subtotal while in other total thyroidectomy were performed. These two groups were made on basis of preoperative clinical and sonographic evaluation, intraoperative macroscopic finding and types of nodularity. The

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patients who had diffusely disease tissue or there was suspicion of malignancy on fine needle aspiration cytology (FNAC) were subjected to total thyroidectomy while subtotal thyroidectomy was performed in other group. The data were collected on pre-designed proforma. The preoperative evaluation included ultrasound neck, thyroid function tests and F.N.A.C. Preoperative status of recurrent laryngeal nerve was assessed with indirect laryngoscopy. In total thyroidectomy all the thyroid tissues were removed with dissection method while in subtotal thyroidectomy a 4-5 gm of thyroid tissues were left on both sides. Collar incision was given for thyroidectomy under general anesthesia through endotracheal intubation. Subplatysmal flaps were elevated superiorly up to thyroid notch and inferiorly till the level of clavicle. Straps muscles were separated at midline. The middle thyroid veins were ligated and divided. Superior thyroid vessels were also ligated and divided. Recurrent laryngeal nerves were identified and secured. Superior and inferior para-thyroid glands were preserved. Dissection of the gland was carried out following total or subtotal thyroidectomy accordingly. Drain was put in wound for 24 hours and wound was closed in layers following aseptic dressing. Patients were discharged on 4-5 days. During hospital stay measurement of serum calcium was performed. Hypothyroidism was termed permanent when patient required calcium supplement to keep normal calcium level for 6 months or longer and hypothyroidism was considered transient if it was less than 6 months. Post operative indirect laryngoscopy was performed in all cases to look for nerve status and in case of total thyroidectomy patients was put on thyroxin replacement.

RESULTS

In this study total of 60 patients were enrolled. They were divided in two groups of 30 patients each. Total thyroidectomy was carried out in one group while subtotal thyroidectomy was performed in other group. The total thyroidectomy group comprised 19 female and 11 males with a mean age of 35±10.99 years while subtotal thyroidectomy group consisted of 22 females and 8 males with mean age of 41±17.56 years. The mean duration of goiter in both groups was 5.66±2.45 years. All the patients were euthyroid during thyroid surgery. There was no significant difference in the sex, age, duration of goiter or hormonal status between the two groups of patients (P= 0.60, P=0.69, P=0.70 and P=0.63). Compression symptoms and recurrent hypertrophy of the thyroid gland were the commonest indications in both groups of patients (Table 1).

Operating time was calculated from skin incision till skin closure. Mean operating time was shorter in those patients subjected to subtotal thyroidectomy when compared with total thyroidectomy patients. Similarly mean hospital stay was also shorter in the group underwent subtotal thyroidectomy. The mean operating time was 2 hours and 1.35 hours for total and subtotal thyroidectomy, while mean hospital stay was 3.5 and 2.5 days respectively. Although the operating time and hospital stay were shorter in subtotal group but still there was no statistically significant difference [P >0.05] (Fig.1).

Table 1: Indication for thyroidectomy (n=60)

Symptom	Total thyroidectomy	Subtotal thyroidectomy
Compression symptoms	48.33%	42.65%
Recurrent hypertrophy of gland	31.42%	34.87%
Suspicious on FNAC	17.14%	20.35%
Cosmetically	3.11%	2.13%

Fig. 1: Operating time and hospital stay in total and subtotal thyroidectomy.

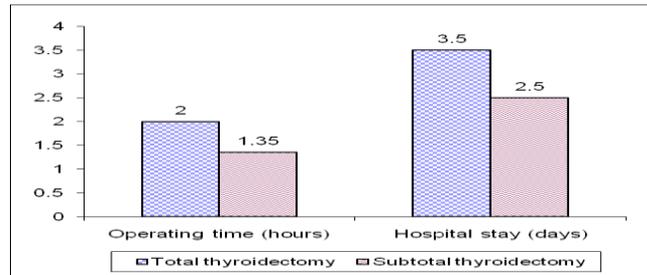


Table 2: Post-operative complications in both groups

Complication	Total thyroidectomy	Subtotal thyroidectomy
Transient RLN palsy	9.11%	8.54%
Permanent RLN palsy	-	-
Temporary Hypocalcaemia	19.23%	10.41%
Permanent hypocalcaemia	3.33%	-
Reoperation for haemorrhage	6.66%	3.33%
Wound infection	3.33%	3.33%

The incidence of temporary post operative hypocalcaemia was significantly higher in total thyroidectomy (P=0.003). However, post-operative permanent hypocalcaemia was not significantly different between the two groups (P>0.05). Re-operation for controlling bleeding was carried for in two patients (6.66%) who underwent subtotal thyroidectomy and one patient (3.33%) was reopened

for hemorrhage in total thyroidectomy group. There was no statistically significant difference between the two groups with respect to wound infection. (Table 2)

DISCUSSION

In the past subtotal thyroidectomy was considered best treatment option for multinodular goiter. Because it was argued that this remnant thyroid tissue is sufficient for patient to have euthyroid status instead of being put the patient on lifelong thyroxin replacement⁸. Subtotal thyroidectomy was considered to be a safe operation in terms of minimum postoperative complications like recurrent laryngeal nerve palsy and hypoparathyroidism.⁹ But now a day the scenario has been changed due to achievement of good result from total thyroidectomy by most of the endocrine surgeons globally for the treatment of multinodular goiter. Khanzada and colleague also reported that post-thyroidectomy complications were 10.7%. Post thyroidectomy hypocalcaemia was the commonest (3.5%) complication followed by recurrent laryngeal nerve injury (2.8%)¹⁰. Subtotal thyroidectomy was traditionally the procedure of option in our unit with the belief that it has minimum post-operative complications as compared to total thyroidectomy. Although there is an unlimited discussion on the topic of comparison of total with subtotal thyroidectomy.¹¹ However the two main issues are recurrent laryngeal injury and hypocalcaemia. The incidence of recurrent laryngeal injury varies from surgeon to surgeon and country to country. In this study transient recurrent laryngeal injury was 9.11% and 8.54% in total and subtotal groups respectively with no statistically significant difference¹². Our results are comparable with other studies of Gulcelik who reported that there was no significant difference in recurrent laryngeal nerve injury in total and subtotal thyroidectomy patients¹³. No case with permanent recurrent laryngeal nerve injury was reported in this study in both groups which renders no statistically significant difference between the two operations. The same conclusion was drawn by other studies also.^{14,15} In the previous studies transient hypocalcaemia was reported ranged from 1.61% to 21.9% after subtotal thyroidectomy and from 23.79 to 33% after total thyroidectomy¹⁶. In this study temporary hypocalcaemia in total thyroidectomy (19.23%) was significantly higher than subtotal thyroidectomy (10.41%). However the incidence of permanent hypocalcaemia was 0% in subtotal group and (3.33%) in the total thyroidectomy group which is in accordance with previous studies reporting permanent hypocalcaemia ranged from 0.3% to 3%. However this difference is not significant¹⁷.

CONCLUSION

The incidence of permanent complication in total thyroidectomy is not higher than subtotal thyroidectomy. So if total thyroidectomy is performed for multinodular goiter first time, the chance of

recurrence of the disease may be reduced and second time surgery may be avoided.

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