ORIGINAL ARTICLE

Comparison of Total and Subtotal Thyroidectomy in Multinodular Goiter

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ABSTRACT

Background: Multinodular goiter is a generalized enlarged thyroid gland with recognizable nodules within it. Thyroid gland comprises of two associated lobes. The majority of general population was affected by goiter with a non-symmetrical enlargement of thyroid gland with a visible swelling in the anterior part of neck. The most frequent reason of multinodular goiter is iodine deficiency.
Aim: To evaluate the effects of total thyroidectomy as compared to subtotal thyroidectomy for the management of multinodular goiter.
Duration and Place of Study: Six months from (July 2018 to December 2018) Department of General Surgery, Avicenna Medical College and Hospital, Lahore.
Methods: This is a prospective study which includes 50 patients between 20-60 years with multinodular goiter were admitted in the hospital; 25 in group A 25 in group B for subtotal thyroidectomy.
Results: The mean age of patients in group A was 35.57±10.04 years and in group B the mean age was 36.25±10.59. Twenty one patients (84%) were female and 4 (16%) male patients in group A and 20 patients (80%) were female and 5 (20%) were male in group B. The mean hospital stay was 5.46±1.75 days in group A and in group B was 5.74±1.82. There was no comparative difference of complications in both groups.
Conclusions: The residual thyroid tissue may cause future recurrence of subtotal thyroidectomy which is difficult to treat. In our study we prefer total thyroidectomy to limit the possibility of future recurrence surgery.
Keywords: Multinodular Goiter, Total Thyroidectomy, Subtotal Thyroidectomy, Complications

INTRODUCTION

Multinodular goiter is one of the most common endocrine diseases worldwide. It is more prevalent in areas where iodine is deficient in the diet. The term goiter is used to describe generalized enlargement of thyroid gland in goiter. There are usually multiple nodules, forming a multinodular goiter. This disease is much more common is women than in men. The diagnosis of multinodular goiter is based on physical examination, thyroid function tests and by fine needle aspiration cytology (FNAC). It is simply detected as mass in the neck. But when it becomes enlarged, it causes pressure symptoms on the trachea and or oesophagus. Surgery is an acceptable choice when it causes pressure symptoms and other complications[1,2].

Subtotal thyroidectomy, near total thyroidectomy and total thyroidectomy are the surgical options for multinoudlar goiter. It has been widely used up till now but recurrence is associated with subtotal thyroidectomy.[3] Total thyroidectomy is an operation that has been generally reserved for management of differentiated thyroid carcinoma. For the last decade total thyroidectomy has become a preferred choice for the management of multinoudlar goiter affecting the entire gland. This approach avoids disease recurrence and the increase risk of morbidity associated with secondary operation, so the total thyroidectomy may be the operation of choice for multinodular goiter[4].

Postoperative hypocalcaemia is the commonest complication of thyroidectomy but its incidence is more in total thyroidectomy[4]. Total thyroidectomy is relatively a safe operation with a low recurrence rate when performed by surgeons trained in thyroid surgery. Lowest complication rate is associated with subtotal thyroidectomy which is appropriate for benign unilateral thyroid disease. In various studies there is no significant difference in the rate of complications like haemorrhage, nerve injury and hypoparathyroidism for total and subtotal thyroidectomy[4-7].

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PATIENTS AND METHODS

This prospective study was carried out in the Department of General Surgery at Avicenna Hospital, Lahore. Fifty patients were included in this study who fulfill the selection criteria. All the patients were admitted in surgical ward through out patient department. Written informed consent was taken from all the patients and was allocated in two surgical groups, group A for total thyroidectomy and group B for subtotal thyroidectomy by the surgeon incharge. Both groups were matched demographically and the demographic information, detailed history and physical examination were taken of every patient. Preoperatively IDL, thyroid function test and FNAC were carried out. Postoperative recurrent laryngeal nerve (RLN) palsy was noted by direct laryngoscopy on operation table. Postoperative IDL was done on second postoperative day. The outcome measures like transient hypocalcemia, hemorrhage, hoarseness and infection were also noted. Follow up was done on weekly basis up to one month. All information was collected on a proforma.

RESULTS

The age rang from 20 to 60 years with their Mean±SD 35.57±10.04 years while in group B was 36.25±10.59 respectively (Figure 1). In our study fifty patients of

multinodular goiter were undergoing thyroidectomies. Out of total 50, 9 patients (18%) were male and 41 (82%) were female. In group A 4 patients (16%) were male and in group B 5 patients (20%) were male. In group A 21 patients (84%) were female and in group B 20 patients (80%) were female (Table 1).

A total of 50 patients of multinodular goiter 42 (84%) patients were euthyroid at the time of presentation in out-patient department, while 8 patients (16%) were initially thyrotoxic. The thyrotoxic patients were made euthyroid by prescribing antithyroid drugs and ß-blockers. They were admitted only after they have become euthyroid. According to nature of presentation they were divided into both groups. Out of 8 patients which were initially thyrotoxic and later on become euthyroid 4 (8%) patients in group A and also 4 (8%) patients in group B.

Fine needle aspiration and cytology (FNAC) was done in each case. All of them proved to be benign on fine needle aspiration cytology preoperatively. Postoperatively, the benign or malignant nature of every specimen was confirmed. Two (8%) patients in group A and 1 patient (4%) in group B was proven to be papillary carcinoma histologically. Completion thyroidectomy was done in proven malignant case of group B but in group A histologically proven malignant case did not need any completion thyroidectomy which is statistically not significant (p >0.05) (Figure 2).

The mean hospital stay was 5.46±1.75 days in group A and 5.74±1.82 in group B which is statistically not significant (p >0.05) (Table 2). Transient hypocalcemia occur in 5 patients (20%) in group A and 3 patients (10%) in group B. Permanent hypocalcemia and postoperative haemorrhage did not occur in any case in both groups. Postoperative seroma did not occur in any patient of group A, but 1 patient (4%) in group B. The wound infection was not found in either group (Table 3).

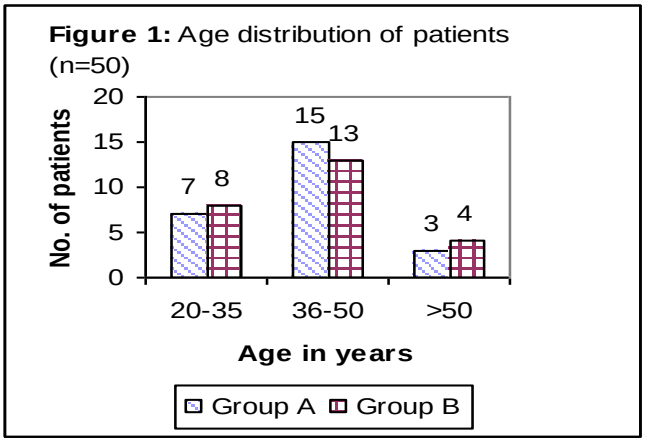

Table 1: Sex distribution of patients

Gender	Group A	Group B
Male	4(16%)	5(20%)
Female	21(84%)	20(80%)

Table 2: Comparison of hospital stay in days in both groups

Hospital stay	Group A	Group B	P value
	5.46±1.75	5.74±1.82	>0.05

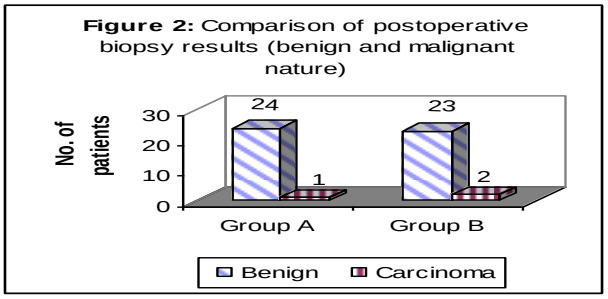

Table 3: Complications in various thyroidectomy operations

Complications	Group A	Group B
Transient vocal card paralysis (temporary RLN injury)	3(12%)	2(8%)
Permanent RLN injury	0	0
Transient hypocalcemia	5(20%)	3(10%)
Postoperative hemorrhage/ hematoma	0	0
Postoperative seroma	0	1(4%)
Infection	0	0

DISCUSSION

There are various surgical operations for multinodular goiter like subtotal thyroidectomy, total thyroidectomy. Some postoperative complications like (transient/ permanent hypocalcemia and transient/permanent RLN palsy) and recurrences are viewed as the evaluation of the balance between subtotal thyroidectomy and total thyroidectomy. It is associated with very limited morbidity and almost no mortality in majority of current series[1,2]. In recent years, advanced surgical centers have been performing increasingly more proportion of total thyroidectomies in comparison to other types of thyroid surgeries[8].

In our setup, subtotal thyroidectomy was carried out mostly, but due to increasing popularity of total thyroidectomy this comparison of outcome was carried out in both types of procedures. The multinodular goiter procedure is indicated in patient requiring rapidly, effective and definitive treatment. Operation is a treatment of choice for patients with suspicion of malignancy, a massive goiter, sign of local compression, dire requirement for control the disease and extreme thyrotoxicity. The thyroidectomy for the management of disease is still debatable[8-10].

The surgical treatment of multinodular goiter is to control the hyperthyroidisim preoperatively, limit the need to re-operate for malignancy and to avoid the recurrence of goiter and complications. The various surgical procedures for multinodular goiter patients are total thyroidectomy, near total thyroidectomy and subtotal thyroidectomy[1,2,11].

In this study all patients had benign thyroid lesion on fine needle aspiration cytology but 1 patient (4%) in group A and 2 (8%) in group B turned up to be carcinoma on biopsy. Total thyroidectomy should be viewed as a legitimate procedure of choice for multinodular goiter treatment. The subtotal thyroidectomy leaves behind presumably irregular thyroid tissue and exposes the patient to potential risk of recurrent disease. The choice of subtotal thyroidectomy procedure for benign thyroid is challenged

by the possibility of incidentally discovered malignancy in resected specimen[12-13].

Subtotal thyroidectomy carries the risk of second thyroid operation either due to recurrence or an identified cancer in the resected specimen. The post surgical fibrosis, new dissection of the thyroid gland can cause high rate of complication regarding recurrent laryngeal nerve injury. In the study done by Glies papillary cancer was found 7.3% in subtotal thyroidectomy. They recommended total or near total thyroidectomy in multinodular goiter to eliminate the necessity for early completion[11].

Major precaution in every thyroidectomy is to avoid recurrent laryngeal nerve injury. Patients with unilateral vocal cord paralysis present with postoperative hoarsness or breathlessness. Presentation is often temporary and subacute.[12] In the present study postoperative complication of temporary recurrent laryngeal nerve palsy was (12%) in group A and (8%) in group B. Permanent recurrent laryngeal nerve injury did not occur in any case of both groups. In the study of Ho the postoperative hypocalcemia was commonest complication of total thyroidectomy occurring in 17.2% and temporary RLN injury was in 2.4%. They explained that postoperative hypocalcemia was temporary, and it improves on supplementation[14-15].

In the present study the postoperative transient hypocalcemia was high in group A (20%) for total thyroidectomy while in group B was (12%) for subtotal thyroidectomy. In another study Sepell total thyroidectomy was done in 233 (69%) patients of multinodular goiter. Temporary hypocalcaemia was occurred in 13.4%. The rate of postoperative haemorrhage was 0.9%. There was no postoperative mortality. They conclude that total thyroidectomy removes disease process completely. They also conclude that total thyroidectomy is a safe procedure[16].

In the study of Moalem, there are more risk of RLN injury both temporary (0-22% versus 0.5-18.1) and permanent (0-13% versus 0-4%). In secondary versus primary thyroid surgery, they also reported that permanent hypoparathyroidism (0-22% versus 0-4%) appeared to be more common in the redo groups. They concluded that definitive treatment and prevention of recurrence of benign goiter is primarily surgical resection[14].

In another study Lombardi also reported that RLN injury is (1.2%) and hypoparathyroidism is (5%) in secondary surgical groups. These results are higher than primary surgical resection groups[17].

CONCLUSION

It is concluded that no significant difference showed in the rate of complications regarding recurrent laryngeal nerve injury, hemorrhage, seroma and infection. The postoperative hypocalcemia was higher in total thyroidectomy group but if both procedures are done by experienced surgeons then there is no significant difference in the complication rates. Therefore we prefer thorough excision of thyroid gland. This will decrease the recurrence and need for re-operative surgery.

REFERENCES

1. Cirocchi R, Trastulli S, Randolph J, Guarino S et al. Total thyroidectomy versus subtotal thyroidectomy for multinodular goitre in adults. Cochrane Database System Rev. 2015;8:35
2. Fatih C, Erdal S, Ibrahim A. Total versus subtotal thyroidectomy for benign multi-nodular goiter. Int J Clin Exp Med. 2015;8(3):4596-4600.
3. Ozbas S, Kocak S, Aydintug S, Cakmak A et al. Comparison of the complications of subtotal, near total and total thyroidectomy in the surgical management of multinodular goiter. Endocr J 2005; 52: 199-205.
4. Lombardi CP, Raffaelli M, De Crea C. Complications in thyroid surgery. Minerva Chir. 2007;62:395-408.
5. Lal G, Clark OH. Thyroid, parathyroid and adrenal. In: Schwartz SI, editors. Principles of Surgery. 8th ed. New York: F.C. Brunicardi-Hill Book Comp; 2005. pp. 1395-1470.
6. Tezelman S, Borucu I, Senyurek Giles Y, Tunca F. The change in surgical practice from subtotal or total thyroidectomy in the treatment of patients with benign multinodular goiter. World J Surg 2009; 33: 400-405.
7. Vieni S, Latteri S, Lo Dico R. Short account of the history of thyroid surgery. Ann Ital Chir 2005; 76: 5-7.
8. Lang BH, Lo CY. Total thyroidectomy for multinodular goiter in elderly. Am J Surg 2005; 190: 418-23.
9. Yujie L, Yangjun L, Xiaodong Z. Total thyroidectomy versus subtotal thyroidectomy for bilateral multinodular goiter: A Meta-Analysis. ORL 2016;78:167-75.
10. Bellantone R, Lombardi CP, Bossola M. Total thyroidectomy for management of benign thyroid disease: review of 526 cases. World J Surg 2002;26:1468-71.
11. Giles Y, Boztepe H, Terzioglu T. The advantage of total thyroidectomy to avoid reoperation for incidental thyroid cancer in multinodular goiter. Arch Surg 2004;139:179-82.
12. Friguglietti CU, Lin CS, Kulcsar MA. Total thyroidectomy for benign thyroid disease. Laryngoscope 2003;113:1820-6.
13. Agarwal G, Aggarwal V. Is total thyroidectomy the surgical procedure of choice for benign multinodular goiter? An evidence-based review. World J Surg 2008;32:1313-24.
14. Moalem J, Suh I, Duh QY. Treatment and prevention of recurrence of multinodular goiter: an evidence-based review of the literature. World J Surg 2008;32:1301-1312.
15. Ho TW, Shaheen AA, Dixon E. Utilization of thyroidectomy for benign disease in the United States: a 15 year population-based study. Am J Surg. 2011;201:570-74.
16. Serpell JW, Phan D. Safety of total thyroidectomy. ANZ J Surg 2007;77:15-9.
17. Lombardi CP, Raffaelli M, DeCrea C. Complications in thyroid surgery. Minerva Chir 2007;62:395-408.