

ORIGINAL ARTICLE

REOPERATIVE THYROID SURGERY IN HOSPITAL UNIVERSITI SAINS MALAYSIA

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From 1996 to 2001, 393 thyroidectomies were performed and 25 (6.4%) patients underwent reoperative thyroid surgery at Hospital Universiti Sains Malaysia. All reoperated patients had undergone one prior thyroid operation. All were females with an average age of 39.1 years (18-61 years). The most frequent indication for reoperation was cancer in resected specimen of an originally misdiagnosed carcinoma treated by partial thyroid resection. Final histological diagnosis of 25 reoperations showed thyroid carcinoma in 22 (88%) cases and multinodular goiter in 3 cases. The overall interval between the initial and the reoperative procedures ranged from 3 weeks to 15 years. There was no post-operative mortality after reoperation. Post-operative complications were discovered in 5 patients, as 3 (12%) of whom had transient hypocalcaemia, one (4%) had wound breakdown and one (4%) had permanent recurrent laryngeal nerve palsy. Reoperative thyroid surgery is an uncommon operation with high complication rate.

Key words : *Reoperative thyroid surgery, hypocalcaemia, recurrent laryngeal nerve palsy*

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Introduction

Reoperative thyroid surgery is generally considered to be associated with high risk of damage to recurrent laryngeal nerve and the parathyroid glands. Patients with thyroid cancers are sometimes denied repeat surgery for fear of increased complications.

The purpose of this study is to analyse the histopathologic findings and complication rate of reoperative thyroid surgery at Hospital Universiti Sains Malaysia.

Material and methods

Patients

During the 6-year period from January 1996 to December 2001, 393 patients underwent primary thyroid operations at Hospital Universiti Sains Malaysia and reoperative thyroid surgery was performed on 25 (6.4%) patients. All patients had undergone one prior thyroid surgical operation. The records of all these patients including history,

physical examination, operation, pathology reports and follow up visits were reviewed.

Operative technique

All reoperative thyroidectomies were performed using standard Kocher technique with anterior approach. Preoperative vocal cord function was routinely assessed by otorhinolaryngologist and post-operatively by the anaesthetist at extubation. Mobilising of thyroid was done by the technique of capsular dissection (1). True capsule of thyroid is identified and by working anteriorly to the recurrent laryngeal nerves, the blood supply of parathyroids was preserved. The recurrent laryngeal nerves were routinely identified. Frozen section was done only in selected cases with suspected papillary lesions in fine needle aspiration cytology (FNAC) and during an intraoperative lymph node biopsy.

In all patients with thyroid carcinoma, total body radionuclide scanning was arranged one month after reoperative surgery. Radioiodine ablation was given for the patients with residual thyroid remnant or distant metastases.

Table 1: Initial pre-operative and permanent section histology in 25 reoperative thyroid surgery patients.

Diagnosis	Pre-operative histologi		Permanent section	
	Benign	Malignant	Benign	Malignant
Colloid nodule	8	0	0	8
Multinodular goiter	7	0	3	4
Follicular neoplasm	6	0	0	6
Solitary nodule	1	0	0	1
Cystic nodular	1	0	0	1
Papillary carcinoma	0	1	0	1
Follicular carcinoma	0	1	0	1
	23	2	3	22

The results of reoperative surgery were carefully examined with special emphasis on features of hypoparathyroidism and recurrent laryngeal nerve injury. Hypoparathyroidism is defined as symptomatic hypocalcaemia needing oral or parenteral calcium. It is considered permanent if the patient needs calcium supplements to maintain serum calcium for more than 6 months.

The recurrent laryngeal nerve injury is noted by hoarseness or change in quality of voice with evidence of vocal cord paralysis documented by laryngoscopy. It is regarded as transient if it recovers within 6 months. Persistence of recurrent laryngeal nerve palsy after 6 months is regarded as permanent.

Results

Reoperative thyroid surgery was performed on 6.4% (25/393) patients after primary thyroid operations. All patients were females with an average age of 39.1 years (18-61 years). The most frequent initial preoperative FNAC diagnosis were colloid nodule in 8, multinodular goiter in 7 and follicular neoplasm in 6 patients.

The rest included solitary nodule, thyroid cyst and papillary carcinoma with lymph node

metastases. One patient underwent excision biopsy of cervical lymph nodes without FNAC, biopsy report showed presence of and follicular carcinoma (Table 1).

The most frequent indication for reoperative thyroid surgery was the presence of carcinoma in the permanent section after a history of partial thyroid resection less than a total thyroidectomy, usually a lobectomy (Table 1). Cancer was identified in these patients by permanent section of the specimen inspite of negative FNAC or frozen biopsy results. This group constituted 20 (80%) patients out of 25 reoperations (Table 2). No patient with recurrent thyrotoxicosis after primary surgery was seen in the present study.

25 reoperative thyroid surgery performed were completion thyroidectomy as excision of the residual contralateral lobe in 17 patients, total thyroidectomy in 4 patients, modified neck dissection in 2 patients, near total thyroidectomy in one patient and total thyroidectomy with lymph node excision in one patient.

18 (72%) patients underwent reoperation within one year. For 22 patients with thyroid cancer, the interval of reoperation varies from 3 weeks to 4 years. Two patients refused the completion

Table 2: Indications for 25 reoperative thyroidectomies from year 1996 to 2001.

Indication	No.	%
Malignant		
Cancer in permanent section	20	80
Lymph node metastases	2	8
Benign		
Recurrent multinodular goiter	3	12
	25	

Table 3: Complications of reoperative thyroid surgery

Complication	Diagnosis	Operation	Interval between primary surgery and reoperation
1. Wound breakdown	Recurrent multinodular goiter	Total thyroidectomy	15 year
2. Bleeding and transient hypocalcaemia	Recurrent MNG multinodular goiter	Total thyroidectomy	11 year
3. Hypocalcaemia (Transient)	Papillary carcinoma	Total thyroidectomy	18 year
4. Hypocalcaemia (Transient)	Papillary carcinoma	Completion thyroidectomy	13 weeks
5. Permanent recurrent laryngeal nerve palsy	Papillary carcinoma	Total thyroidectomy	2 year

thyroidectomy after right lobectomy with papillary carcinoma. During the regular followup, consent for reoperation was given and left lobectomy as completion thyroidectomy were performed 3 and 4 years later respectively.

There were three patients with recurrent multinodular goiters presented at 2, 11 and 15 years after primary surgery. Two patients were treated by total thyroidectomy and one treated by near total thyroidectomy.

There was no post-operative mortality in 25 patients reviewed. Post-operative complications were seen in 5 patients (Table 3). Post-operative transient hypocalcaemia was seen in 3 (12%) patients. One of these 3 patients had associated post-operative bleeding requiring urgent reexploration. One (4%) patient had wound breakdown and one (4%) patient had hoarseness of voice with documented permanent recurrent laryngeal nerve palsy.

All patients are still alive. One patient with follicular cancer who had metastatic lesions in the vertebral spines recovered from paraplegia after radioiodine ablation treatment.

Discussion

Total thyroidectomy is the treatment of choice for well differentiated carcinoma as recommended by many surgeons and endocrinologists. The role of pre-operative FNAC is limited and the frozen biopsies are also not infallible in diagnosis of thyroid lesions (2,3). At times well differentiated thyroid cancer is only detected by several sections of thyroid tissue in a permanent section. This study revealed

that cancer was discovered in 20 patients by permanent histopathology sections of 23 patients who initially had benign lesions by FNAC.

Presently, the surgeon is forced to do a limited resection to a thyroid lobectomy in the primary operation. Further extensive surgery as total thyroidectomy is deferred pending examination of permanent sections. ¹³¹I ablation of the residual thyroid tissue is commonly used to achieve a state of total thyroidectomy.

The incidence of complications after reoperative thyroid surgery varies from center to center. Beahrs and Vandertoll (4) reported 548 secondary thyroidectomies performed up to the year 1963 with high incidence of recurrent laryngeal nerve injury (7.9%) and hypoparathyroidism (11.2%). The same authors mentioned that complications were more likely when operation was performed for thyroid cancer. A swiss group reported permanent recurrent laryngeal damage at 3.5% to 5.6% in 166 reoperations (5).

Reeve and coworkers in their 20 year period of study on 408 secondary thyroidectomies up to the year 1986 reported operative recurrent laryngeal damage as 1.5% compared to 0.3% in primary thyroid surgery. The incidence of permanent hypocalcaemia fell from 3.5% during the first 15 years to 1.6% over the last 5 years using the capsular dissection method (6). Because of definite increased morbidity in reoperative thyroid surgery, radioiodine ablation treatment of the thyroid remnant to replace completion thyroidectomy was suggested with 65.8% success rate (7). Few reports also questioned the rationale of total thyroidectomy which jeopardises the recurrent laryngeal nerve and

parathyroid glands without clear demonstration of survival benefit (8,9).

On the other hand, Auguste and Attie reported no cases of permanent recurrent laryngeal nerve injury or hypoparathyroidism after reoperative total thyroidectomies (10). Completion thyroidectomy were reported to be a safe procedure with minimal morbidity as shown by 1.7% permanent recurrent laryngeal nerve injury and 1.7% hypoparathyroidism (11-13).

In general, complications of reoperative thyroid surgery are higher than primary surgical procedure. But a total thyroidectomy will remove residual tumour in the remaining contralateral lobe of thyroid gland in 43% of patients (14). Total thyroidectomy prevents the recurrent disease in a multinodular goiter. In addition total thyroidectomy allows the patient to be scanned for residual thyroid remnant and distant metastases.

The present study shows four percent permanent recurrent laryngeal nerve injury and twelve percent transient hypocalcaemia in patients after reoperative thyroid surgery. Complications were seen in both benign and malignant thyroid diseases. Reoperative thyroid surgery is an uncommon operation with increased morbidity. With careful attention to operative details to preserve the recurrent laryngeal nerves and the parathyroid glands, the complications can be minimized to an acceptable level. At the same time the advantages of total thyroidectomy has indicated that reoperative thyroid surgery is a feasible procedure in proper circumstances.

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References

1. Reeve TS., Delbridge L., Cohen A., Crummer P. Total thyroidectomy: The preferred option for multinodular goiter. *Ann Surg* 1987; **206**(6): 782-786.
2. Hamburger JL., Hamburger SW. Declining role of as frozen section in surgical planning for thyroid nodules. *Surgery* 1985; 307-312.
3. Miller JM., Kini SR., Hamburger JL. The diagnosis of malignant follicular neoplasms of the thyroid by needle biopsy. *Cancer* 1985; **55**: 2812-2817.
4. Beahrs OH., Vandertoll DJ. Complications of secondary thyroidectomy. *Surg. Gynecol. Obstet.* 1963; **117**: 535-539.
5. Seiler CA, Glaser C., Wagner HE. Thyroid gland surgery in an endemic region. *World J. Surg.* 1996; **20**: 593-597.
6. Reeve TS., Delbridge L., Brady P., Crummer P., Smyth C. Secondary thyroidectomy: A twenty-year experience. *World J. Surg.* 1988; **12**: 449-453.
7. Lin JD., Chao TC., Huang MJ., Weng HFBS., Tzen KY. Use of radioactive iodine for thyroid remnant ablation in well-differentiated thyroid carcinoma to replace thyroid reoperation. *Amer. J. Clin. Oncol.* 1998; **21**(1): 77-81.
8. Grant CS., Hay ID., Gough IR. et al. Local recurrence in papillary thyroid carcinoma: Is extent of surgical resection important? *Surgery* 1988; **104**: 954-962.
9. Hoie J., Stenwig AE., Brennhovd IO. Surgery in papillary thyroid carcinoma: A review in 730 patients. *J. Surg. Oncol.* 1988; **37**: 147-151.
10. Auguste LJ., Attie JN. Completion thyroidectomy for initially misdiagnosed thyroid cancer. *Otolaryngol. Clin. North Am.* 1990; **23**: 429-439.
11. Pasieka JL., Thompson NW., McLeod MK., Burney RE., Macha M. The incidence of bilateral well-differentiated thyroid cancer found at completion thyroidectomy. *World J. Surg.* 1992; **16**: 711-717.
12. Chao TC., Jeng LB., Lin JD., Chen MF. Reoperative thyroid surgery. *World J. Surg.* 1997; **21**: 644-647.
13. Levin KE., Clark AH., Duh QY., Demeure M., Siperstein AE., Clark OH. Reoperative thyroid surgery. *Surgery* 1992; **111**: 604-609.
14. De Jong SA., Demeter JG., Lawrence AM., Paloyan E. Necessity and safety of completion thyroidectomy for differentiated thyroid carcinoma. *Surgery* 1992; **112**: 734-739.