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The value of intraoperative diagnosis in thyroid surgery

KEYWORDS: Thyroid Diseases; Thyroid Neoplasms; Intraoperative Period; Diagnosis; Sensitivity and Specificity

INTRODUCTION

Frozen section (FS) helps us to make intraoperative diagnosis of excised specimens for more than 100 years. The value of routine FS examination for intraoperative diagnosis of thyroid cancer is controversial and needs to be evaluated on an institution to institution basis (1). In the intraoperative assessment of thyroid lesions, FS are performed to detect malignancies, and help to surgeon in decision making process to choose adequate extensivity of operation. Thyroidectomy plays very important role in the management of patients with thyroid cancer. The characteristic of certain types of thyroid cancer brings difficulties for intraoperative diagnosis of malignancy and challenge for pathologist. Although one-stage total thyroidectomy is preferable, this situation often necessitates a second operation, but reoperation carries an inherent risk of complications (2). Frozen sections can reliably diagnose papillary, medullar, and anaplastic thyroid carcinomas (3). Interpretation of encapsulated follicular thyroid lesions, which include adenomatous goiter, follicular variant of papillary carcinoma, often causes difficulty, and diagnosis may vary among pathologist (4). Metastases to the thyroid gland may pose diagnostic problems. A majority of secondary tumors of the thyroid are asymptomatic and clinically undetectable. In the same cases, metastatic tumors may be mistaken for a thyroid primary tumor if it presents as a solitary nodule and are detected long period after the primary tumor (5). The aim of the study was to evaluate the relationship between intraoperative diagnosis and final diagnosis in patients operated for thyroid nodules.

MATERIAL AND METHODS

In period from 1998 to 2002, 675 operated patients (503 females and 172 males) were included in this retrospective study. Five pathologist and five surgeons with experience in thyroid pathology, participated in this study. All thyroid specimens were subjected to FS by use one to three representative samples. The intraoperative diagnosis was benign, malignant (papillary, medullar,

and anaplastic thyroid carcinomas) and follicular neoplasms: benign, malignant or "deferred". When FS confirmed malignancy, total thyroidectomy was done. When FS showed benign of indeterminate findings, operation was finished, and final histology on paraffin section (PS) then determined subsequent management. Patients were analyzed in regard to FS results, extent of surgery performed, final histopathology and early surgical complications. Statistical analysis was done by statistics for Windows v0.5 StatSoft Inc. software. P-values less than 0.05 were considered significant.

RESULTS AND DISCUSSION

There was 579 (85.8%) patients operated for benign disease and 96(14.2%) patients who had malignant disease. Tumor histology was 60 (62.5%) papillary carcinomas (PC), 26 (27.1%) follicular carcinomas (FC), 4 (4.2%) anaplastic carcinomas, 4 (4.2%) medullar carcinomas, and 2(2%) lymphomas. A FS diagnosis of malignancy was done in 88 (91.7%) patients and 8 (8.3%) had "differed" diagnosis: 3 with PC (1 with micro papillary carcinoma, 2 with follicular variant of PC) and 5 with minimally invasive FC. There were no false-positive results in patients with a diagnosis of malignancy. The sensitivity of FS for the diagnosis of thyroid carcinoma was 92.3%. Early surgical complications (transitory and permanent hypoparathyroidism, hemathoma requiring surgical revision and transitory or permanent recurrent laryngeal nerve injury) occurred in 10.7% of patients, and 19.7% of 96 patients with thyroid carcinoma. The complication rates were significantly higher ($p < 0.05$) in patients with a diagnosis of malignancy and second operation.

CONCLUSION

In different studies, the sensitivity of FS for the diagnosis of thyroid carcinoma ranges from 60% to 70%. The sensitivity of FS for the diagnosis of malignancy ranges from 68% to 77% for PC and from 29% to 55% for FC (1,3). Our results show that FS sensitivity for the diagnosis of thyroid malignancy is higher than in others studies. This paper highlights the local experience with FS and analyses its role, accuracy and limitation in thyroid surgery. FS was effective in recognition of cancer confirming the doubt on its cost effectiveness in planning the surgical approach (2). Completion of thyroidectomy can be done safely and with acceptable morbidity in a specialized centers.

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