Original Articles

Prognosis After Reoperation for Local Recurrence of Papillary Thyroid Carcinoma

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Abstract

Purpose. To investigate the factors associated with a favorable prognosis after reoperation for local recurrent papillary thyroid carcinoma (PTC), we reviewed 45 patients who underwent surgery for first local recurrence of PTC.

Methods. We divided the patients into two groups. Group A (n = 28) had no second recurrence, and group B (n = 17) had second local recurrence after surgery for recurrence.

Results. The mean follow-up period after reoperation was 56.9 months. The mean age at the time of reoperation in group A was significantly lower than that in group B, at 48.1 years versus 62.3 years, respectively (P = 0.0007). The mean age at the time of the initial operation in group A was also significantly lower than that in group B, at 40.1 years versus 55.1 years, respectively (P = 0.0006). Patients with recurrent tumors only outside the area dissected at the initial operation (n = 27) had a better outcome than those with recurrence within the dissected area (n = 18; P = 0.0127). Patients who underwent systematic partial or modified neck dissection (n = 36) had a better outcome than those who underwent only simple local resection (n = 9; P = 0.0169).

Conclusion. For local recurrent PTC, systematic neck dissection is recommended over local resection of recurrent tumors.

Key words Papillary thyroid carcinoma · Reoperation · Recurrence

Introduction

Papillary thyroid carcinoma (PTC) is the most common malignancy of the thyroid gland, accounting for about 75%–85% of all thyroid malignancies.1–4 It is generally associated with a good prognosis, especially in patients younger than 45 years of age; however, because it frequently metastasizes to the regional lymph nodes, recurrence develops in the cervical lymph nodes in 5.4%–13% of patients after initial surgery.5 Although lymph node recurrence is associated with a better prognosis than distant metastasis to the lungs or bones,5,6 the initial treatment of lymph node recurrence is important because recurrent tumors may become uncontrollable after repeated operations. There is limited information on the outcome of local recurrence, and its treatment strategies, especially reoperation. The purpose of this study was to analyze the outcome of patients who underwent reoperation for local recurrent PTC, to determine the factors associated with a favorable prognosis after reoperation, and to devise a better treatment strategy for this condition.

Patients and Methods

Between January 1, 1996 and December 31, 1997, 45 patients underwent surgery at Kuma Hospital for first local recurrence of PTC. All 45 patients had been operated on for primary PTC at the same hospital. There were 7 (15.6%) men and 38 (84.4%) women, with a mean age of 53.4 years (range 19–76 years). A histological diagnosis of PTC was made at the primary operation, and also at the second operation, in all patients. Local recurrence, mainly in the form of lymph node recurrence, was diagnosed by ultrasonography, followed by ultrasound-guided fine-needle aspiration cytology, and sometimes by thyroglobulin measurements of aspirate from the lymph nodes. The mean age of
patients at the time of their initial operation was 45.7 years (range 16–71 years). Total or subtotal thyroidectomy was performed in 20 patients (44.4%), and lobectomy or enucleation of a thyroid tumor was performed in 25 patients (55.6%). In addition to thyroidectomy, central lymph node dissection was done in 3 patients, ipsilateral modified neck dissection (MND) was done in 32, and bilateral MND was done in 7. We used radioactive-iodine scintigraphy (10 mCi) to examine 5 of 19 patients after initial total thyroidectomy. Four of these patients did not have any abnormal uptake, but one was found to have distant lung metastasis, for which radioiodine ablation was performed after the initial surgery. This patient’s lung metastasis was controlled at the time of our last follow-up. The mean disease-free interval between the initial operation and reoperation was 87.0 months (median 57 months). We classified local recurrence into two types: within the area of lymph node dissection at the initial operation (dissected area), or outside this area (nondissected area). The type of reoperation was also classified into two types: regional systematic dissection of the recurrent area or resection of the recurrent tumor only (local resection). The former included central node dissection (CND), modified neck dissection (MND), and partial neck dissection (PND). We divided the patients into two groups: group A (n = 28) with no second recurrence, and group B (n = 17) with second local recurrence after an operation for recurrence. We measured serum thyroglobulin and did a physical examination every 3 months, and performed ultrasonography yearly to detect any evidence of second recurrence after reoperation. The mean follow-up of these 45 patients after reoperation was 56.9 months (SD 14.9). We analyzed age at the time of initial operation and reoperation, the disease-free interval between the initial operation and reoperation, the tumor size, the extrathyroidal extension according to the Japanese classification,\textsuperscript{14} and the number of lymph node metastases at the initial operation, the type of recurrence, and the type of reoperation in the two groups.

Results

The mean age at the time of reoperation in group A was significantly lower than that in group B, at 48.1 and 62.3 years, respectively; $P = 0.0007$. The mean age at the time of initial operation in group A was also significantly lower than that in group B, at 40.1 and 55.1 years, respectively ($P = 0.0006$). A younger age at the time of initial operation or reoperation was associated with a better prognosis after reoperation. The disease-free interval between the initial operation and reoperation was 94.1 months (median 58 months) in group A and 75.4 months (median 54 months) in group B, which was not significantly different. The mean size of the tumor at the initial operation was 2.78 cm (SD 1.39) in group A and 3.95 cm (SD 1.56) in group B ($P = 0.007$). The number of lymph nodes, extrathyroidal extension, and gender of the patients was comparable between the two groups (Table 1). Table 2 shows the sites of recurrence. These were 55 sites of recurrence in the 45 patients. Eight patients had recurrence only in the dissected area; 27 had recurrence only in the nondissected area; and 10 had recurrence in both areas. Recurrence in the remnant thyroid, as found in three patients, was assigned as recurrence in the nondissected area. Table 3 shows that 27 patients had recurrence only in the area outside the initial operation (nondissected area) and 18 had recurrence that included the area dissected at the initial operation. Twenty-one (77.8%) of the 27 patients who had local recurrence only in the nondissected area did not have a second recurrence after reoperation, whereas only 7 (38.9%) of the 18 patients who had local recurrence at the dissected area did not have a second recurrence ($P = 0.0127$, Fisher’s exact test). The number of recurrent lesions that included the dissected area and the number of those only outside the dissected area did not differ significantly between patients aged up to 45 years and those older than 45 years, at the initial operation or at reoperation (Tables 4 and 5). The reoperation consisted of systematic regional lymph node dissection in 36 patients and resection of the recurrent tumors only (local resection) in 9 patients. Of the 9 patients who underwent local resection, 7 (77.8%), had a second recurrence, whereas only 10 (27.8%) of the 36 who underwent systematic dissection had a second recurrence (Table 6; $P = 0.0169$, Fisher’s exact test). All 17 patients who had a second recurrence after reoperation underwent a third operation, 5 of whom underwent a fourth operation for a third recurrence. Distant metastasis to the lung, bone, brain, and other sites developed in ten patients (apart from the one patient who presented with lung metastasis at initial diagnosis). All of these patients were alive at the time of their last follow-up.

Discussion

Our first finding was that a younger age at the time of initial operation or reoperation was associated with a better prognosis after reoperation. Age at the initial diagnosis is one of the most important prognostic indications for PTC,\textsuperscript{1,3,4,7–10} and is used as an independent prognostic factor in the UICC TNM classification.\textsuperscript{11} However, few reports are available on reoperation for recurrent PTC. Voutilainen et al.\textsuperscript{6} reported that the obscure association between age and prognosis in PTC