International Journal of Surgery 41 (2017) S34–S39

Contents lists available at ScienceDirect

International Journal of Surgery

journal homepage: www.journal-surgery.net

Original Research

Partial thyroidectomy for papillary thyroid microcarcinoma: Is completion total thyroidectomy indicated?

C. Dobrinja [a, *], M. Pastoricchio [a], M. Troian [a], F. Da Canal [a], S. Bernardi [b], B. Fabris [b], N. de Manzini [a]

[a] Division of General Surgery, Department of Medical, Surgical and Health Sciences, Cattinara Teaching Hospital, Strada di Fiume, 34149, Trieste, Italy
[b] SS Endocrinologia (UCO Medicina Clinica), Azienda Ospedaliero-Universitaria di Trieste, Department of Medical, Surgical and Health Sciences, Cattinara Teaching Hospital, Strada di Fiume, 34149, Trieste, Italy

HIGHLIGHTS

- The best surgical approach for PTMC is still object of debate.
- Hemithyroidectomy may be adequate for low-risk patients, with no need for routine completion thyroidectomy.
- Total thyroidectomy or completion thyroidectomy is rather indicated in selected patients with risk factors for mortality and recurrence.
- Accurate patient selection is important to achieve the best results.

ARTICLE INFO

Article history:
Received 23 December 2016
Received in revised form
4 February 2017
Accepted 8 February 2017

Keywords:
Papillary thyroid microcarcinoma
Surgical management
Hemithyroidectomy
Total thyroidectomy
Completion thyroidectomy
Risk stratification

ABSTRACT

Aim: Papillary thyroid microcarcinoma (PTMC) is increasing in incidence. Despite its excellent clinical outcomes, there is still debate regarding which surgical approach is more appropriate for PTMC, procedures including hemithyroidectomy (HT), total thyroidectomy (TT), and completion thyroidectomy (CT) after initial HT and histopathologic examination confirming a PTMC. Here we report our experience in the surgical management of PTMC.

Methods: We conducted a retrospective evaluation of all patients who received a postoperative diagnosis of PTMC between January 2001 and January 2016. Every patient was divided according to the type of surgery performed (TT or HT alone). Follow-up consisted of regular clinical and neck ultrasonographic examination. Clinical and histopathological parameters (e.g. age, sex, lesion size, histological features, multifocality, lymph node metastases, BRAF status when available) as well as clinical outcomes (e.g. complications rates, recurrence, overall survival) were analyzed.

Results: Group A consisted of 86 patients who underwent TT, whereas Group encompassed 19 patients who underwent HT. Mean follow-up period was 58.5 months. In Group A, one patient (1.2%) experienced recurrence in cervical lymph nodes with need for reoperation. In Group B, eight patients (42%) underwent completion thyroidectomy after histopathological examination confirming PTMC, while one patient (5.3%) developed PTMC in the contralateral lobe with need for reoperation at 2 years after initial surgery. Multifocality was found in 19 patients in Group A (22%). Of these, 14 presented bilobar involvement, whereas in 3 cases multifocality involved only one lobe. 1 patient in Group B (5.3%) presented with unilateral multifocal PTMC ($p = 0.11$).

* Corresponding author. Division of General Surgery, Department of Medical, Surgical and Health Sciences, Cattinara Teaching Hospital, Università degli Studi di Trieste, Strada di Fiume 447, 34149, Trieste, Italy Tel.: +390403994-152, +393472514845.

E-mail addresses: ch_dobrinja@yahoo.it (C. Dobrinja), manuela.pastoricchio@gmail.com (M. Pastoricchio), marina_troian@yahoo.it (M. Troian), francescadacanal@hotmail.it (F. Da Canal), stella.bernardi@aots.sanita.fvg.it (S. Bernardi), bruno.fabris@aots.sanita.fvg.it (B. Fabris), ndemanzini@units.it (N. de Manzini).

http://dx.doi.org/10.1016/j.ijsu.2017.02.012

Conclusions: Low-risk patients with PTMC may benefit from a more conservative treatment, e.g. HT followed by close follow-up. However, appropriate selection of patients based on risk stratification is the key to differentiate therapy options and gain better results.

1. Introduction

Papillary thyroid carcinoma (PTC) accounts for about 80–90% of all thyroid cancers and its incidence has been increasing in the last three decades worldwide [1]. According to the American Cancer Society, about 64,300 new cases were estimated to be diagnosed in 2016 [2,3]. In Italy, PTC is the second most frequent cancer in women below 45 years of age and its incidence has almost doubled between 1991–1995 and 2001–2005 [3,4]. Despite this growth in incidence, mortality rate has remained the same (0.5 death per 100,000) and long-term prognosis is usually excellent, with 10-year survival rates up to 98% [3,5–7]. This upward trend in incidence can be easily explained by the wide availability and use of both neck ultrasonography and fine-needle aspiration cytology (FNAC), which allow an increased detection of papillary thyroid cancers measuring 1 cm or smaller, the so-called papillary thyroid microcarcinomas (PTMCs) [8–11]. Papillary carcinoma represents the most common type of thyroid carcinoma in patients >45 years old [2,8–11] and PTMC accounts for 49% of the overall increased incidence in thyroid cancer, as reported by the Surveillance Epidemiology and End Results (SEER) database [8,10]. PTMCs are also frequently identified incidentally upon histopathological examination of surgical specimens from presumed benign thyroid disease.

However, since PTMC generally exhibits an overall excellent prognosis, the most appropriate management of this disease remains a matter of debate and strategies range from observation alone [12] to surgical resection [13,14]. Still, there is no consensus yet about the extent of surgery ensuring oncologic completeness and low risk of complications and surgical approaches may consist of either simple lobectomy or total thyroidectomy, sometimes associated with neck dissection and/or postoperative radioactive iodine (RAI) therapy [6,9,15–21].

In order to better clarify whether the extent of surgery affects the outcomes of PTMC patients, we aimed to evaluate patients undergoing total thyroidectomy versus those undergoing simple hemithyroidectomy by comparing complications, reoperation rates, and overall survival.

2. Materials and methods

A retrospective analysis was carried out considering all papillary thyroid cancer operations performed at the General Surgery Department of the University Hospital of Treiste between January 2001 and January 2016. 105 consecutive patients with histological diagnosis of PTMC (major diameter $\leq$ 10 mm) were enrolled in the study and assigned to two independent groups according to whether they received total thyroidectomy (TT, Group A) or hemithyroidectomy (HT, Group B). Preoperative work-up consisted of full clinical examination, ultrasonography of the thyroid gland and regional lymph nodes, and FNAC. In most cases, PTMC was diagnosed preoperatively on FNAC analysis. In a minority of cases, diagnosis was incidental on pathological specimens after surgery for presumed benign thyroid disease. Patients with preoperative evidence of lymph node disease, those with extrathyroidal extension at clinical and/or ultrasound examination, and papillary tumors larger than 1 cm were not included in the analysis.

Total thyroidectomy (TT) was immediately performed in case of: malignant or suspicious lesions (TIR 5 or TIR 4 on FNAC) of $\leq$10 mm in diameter at preoperative ultrasound (US), multifocal PTC, bilateral goiters, prior neck irradiation, history of familial thyroid malignancies, age > 45 years, and/or presence of BRAF and/or nRAS mutation (when available) [22]. When nodal metastases were identified at the time of surgical procedure or during follow-up, the patients underwent either unilateral or bilateral central neck dissection (CND) or lateral neck dissection (LND) according to the American Thyroid Association (ATA) guidelines [23].

Patients were considered to be “low-risk” when presenting <2 cm papillary thyroid cancer without preoperatively apparent cervical lymph node metastases. Patients were classified as “high-risk” when unfavourable histological features (i.e. tall cells, oncogenic mutations as BRAF or nRAS, vascular invasion), extrathyroidal extension or spread of the cancer to the neck lymph node with potential risk factors (i.e. sex, age, and familiarity) were present [22–24].

HT was the treatment of choice for patients with preoperative TIR2 or TIR3 diagnosis [25], monolateral, unifocal, and intrathyroidal lesions, negative BRAF and/or nRAS status on FNAC, no history of previous head and neck irradiation, no clinical nor radiological evidence of nodal disease or distant metastases, no other specific risk factors. HT group included also 6 cases with BRAF negative, TIR 4 lesions (i.e. suspicious for malignancy), who underwent HT alone by choice of the single patients. Completion thyroidectomy (CT) was performed when definitive pathology found one or more of the following features associated with potentially aggressive PTMCs: multifocal disease with an overall sum of all lesions' diameters > 10 mm, actual size of papillary thyroid carcinoma >10 mm at definitive histology, microscopic extrathyroid extension, aggressive features (tall cell, columnar cell, or diffuse sclerosing variants).

Radioactive iodine (RAI) ablation therapy was administered on the basis of stage and prognostic risk factors [23–27]. In detail, patients received RAI therapy after total thyroidectomy or completion thyroidectomy in case of: aggressive histological subtypes (i.e. tall cells, columnar cells, or diffuse sclerosant variants), multifocality, extrathyroid invasion, and lymph node metastases, which potentially increase the risk for local recurrence and metastases. Successful thyroid ablation was defined by the disappearance of any visible area of uptake in the thyroid bed ($\leq$1%), and undetectable serum Tg levels of levothyroxine (TSH > 30μUI/mL).

All patients in Group An underwent long-term follow-up every 6 months for the first two years and on a yearly basis thereafter, whereas patients in Group B were followed every 6 months for the first three years and every year thereafter. Every follow-up visit consisted of clinical examination, cervical US, measurement of serum thyroglobulin (Tg) levels and anti-thyroglobulin antibodies (Ab-Tg).

Recurrence was defined by the presence of thyroid carcinoma within the thyroid bed, regional lymph nodes metastates, distant site metastases, or, in Group B patients, lesions to the contralateral lobe.

Histopathologic data (e.g. multifocality, aggressive features, extracapsular invasion, lymph node metastases) were recorded for