

Occult Thyroid Carcinoma in Our Experience - Should We Reconsider Total Thyroidectomy for Benign Thyroid Pathology?

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Rezumat

Cancerul tiroidian ocult în experiența noastră – ar trebui să reconsiderăm tiroidectomia totală pentru patologia tiroidiană benignă?

Introducere: Incidența carcinomului tiroidian ocult la pacienții operați pentru o patologie tiroidiană benignă a fost raportată în ultimii ani a fi mult mai mare decât se știa, în special pentru gușa multinodulară, ceea ce ridică întrebarea care ar trebui să fie cel mai indicat management chirurgical pentru aceste cazuri.

Scop: Evaluarea incidenței carcinomului tiroidian ocult într-un centru chirurgical cu volum mediu de operații și de a stabili indicația corectă asupra managementului chirurgical inițial precum și de a identifica ce patologie tiroidiană este asociată cel mai frecvent cu carcinomul tiroidian ocult. De asemenea, am trecut în revistă literatura de specialitate pe acest subiect.

Material și metodă: Am efectuat un studiu retrospectiv desfășurat în cadrul Clinicii de Chirurgie Generală a Spitalului Clinic de Urgență "Prof. Dr. Agrippa Ionescu", București, pe o serie de 145 de pacienți care au suferit intervenții chirurgicale pentru patologie tiroidiană benignă diagnosticată preoperator pe o perioadă de 10 ani, între 1 Ianuarie 2002 – 31 Decembrie 2012. S-au exclus toate cazurile cunoscute cu cancer tiroidian.

Rezultate: Incidența carcinomului ocult tiroidian în seria

noastră a fost de 6,9% (10 din 145 pacienți), 80% dintre ei fiind diagnosticați cu gușa multinodulară și două cazuri (20%) cu tiroidită limfocitară Hashimoto. 6,9% din toți pacienții cu gușa multinodulară au fost găsiți cu carcinom ocult, dar această asociere nu a fost statistic semnificativă ($p > 0,05$). Rata de incidență a cancerului ocult printre pacienții cu tiroidită Hashimoto s-a dovedit a fi de 28,6%, semnificativ statistic ($p = 0,020$). Mărimea medie a microcarcinoamelor oculte diagnosticate postoperator a fost de 7 mm, cu limite între 3 mm și 14 mm, 90% dintre acestea fiind mai mici de 1 cm. Histologic, toate cazurile au fost microcarcinoame papilare. Vârsta medie a pacienților diagnosticați cu microcarcinom ocult tiroidian a fost de 47,8 ani cu o prevalență a sexului feminin. Cea mai frecventă operație efectuată a fost tiroidectomia totală (70,8%). Morbiditatea globală în seria studiată a fost de 6,9% cu o rată a mortalității de 0,7% (1 caz).

Concluzii: În opinia noastră, tiroidectomia totală primară ar trebuie practică ca operație de elecție pentru majoritatea cazurilor cu patologie tiroidiană benignă diagnosticată preoperator, în special pentru gușa multinodulară și tiroidita Hashimoto, în ideea de a exciza radical toate posibilele focare de microcarcinom tiroidian agresiv.

Cuvinte cheie: cancer tiroidian ocult, tiroidectomie totală, microcarcinom papilar

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Abstract

Background: The reported incidence rate of occult thyroid carcinoma in patients operated for benign thyroid pathology has been much higher than expected in the last years, especially for multinodular goitre, which raises the question

about which should the proper surgical management for these cases be.

Aim: To assess the incidence rate of OTC in a single medium volume surgical center and to establish the correct indication for initial surgical management, as well as to identify the benign thyroid pathology most frequently associated with OTC. We also reviewed the relevant scientific literature on this topic.

Material and Method: We conducted a retrospective study in the General Surgery Clinic of "Prof. dr. Agrippa Ionescu" Clinical Emergency Hospital, Bucharest, on a series of 145 patients who underwent surgical interventions for preoperatively diagnosed benign thyroid pathology over a ten year period, between 1st January 2002 – 31st December 2012. All cases of known thyroid cancer were excluded.

Results: Incidence rate of occult thyroid carcinoma in our series was 6.9 % (10 out of 145 patients), 80 % of them being diagnosed with multinodular goitre and two cases (20 %) with Hashimoto's lymphocytic thyroiditis. 6.8 % of all patients with multinodular goitre were found to present occult carcinoma, but this association was without statistical significance ($p > 0.05$). Incidence rate of occult cancer among patients with Hashimoto thyroiditis was proved to be as high as 28.6%, statistically significant ($p = 0.020$). The mean size of postoperatively diagnosed occult microcarcinoma was 7 mm, ranging between 3 mm and 14 mm, 90% of them being smaller than 1 cm. Histologically, papillary microcarcinoma was found in all cases. The mean age of the patients diagnosed with occult microcarcinoma was 47.8 years with majority of the female gender. The most frequent operation performed was total thyroidectomy (70.8%). Overall morbidity in our series was 6.9% with a 0.7 % mortality rate (1 case).

Conclusions: In our opinion, primary total thyroidectomy should be performed as the procedure of choice for the most part of preoperatively diagnosed benign thyroid pathology and particularly for multinodular goitre and Hashimoto thyroiditis, in order to radically resect all possible foci of aggressive thyroid microcarcinomas

Abbreviations and Acronyms: OTC (Occult Thyroid Carcinoma), PTMC (Papillary Thyroid Microcarcinoma); TT (Total Thyroidectomy), MNG (Multinodular Goitre), GD (Graves' disease), TNG (Toxic Nodular Goitre), FNAB (fine-needle aspiration biopsy).

Key words: occult thyroid carcinoma, total thyroidectomy, papillary microcarcinoma

Introduction

OTC is a general term with different definitions, but usually defined as an "impalpable thyroid carcinoma (microcarcinoma) that is generally smaller than 1.0 cm in diameter" (1), while broader definitions move the upper limit of the greatest

dimension to 1.5 cm (2,3). Another key point is that the OTC must be found incidentally ("incidental thyroid cancer"), being usually asymptomatic. OTC was classically identified only after final histology, on thyroid resection specimens for known benign disease or at autopsy, but in recent years, since thyroid ultrasound completed with FNAB has become a standard in approaching thyroid nodules, its incidence rate has consequently increased.

Histologically, OTC and PTMC are accepted as synonyms in most cases, the papillary type of thyroid microcarcinoma representing the vast majority of OTC (4,5), but there are also follicular type occult microcarcinomas reported (2) or even medullary type occult carcinoma (2,6).

The incidence rates of papillary thyroid carcinoma rise faster than any other malignancy (4), reaching 93% of all thyroid cancers in Japan and 85.3% in Western countries (5). PTMC is the most common form and comprises up to 30% of all forms of papillary cancer (7). Virtually, the entire increase in thyroid cancer incidence during the last decades is the result of increased incidence of PTMC, 49% of the increase rate being from tumors smaller than 1 cm and 87% from tumors smaller than 2 cm (4). In autopsy studies, the prevalence of OTC has been reported to range from 0.01% in USA up to 35.6% in Finland (5).

The incidence rate of OTC in patients operated for known benign thyroid disease has been historically low (< 5%), but recent studies demonstrate much higher rates, up to 10% (8) or even 21.7% in patients with thyroidectomies only for MNG (9).

The largest multi-institutional study to date on this topic, conducted on a series of 2,551 patients that underwent thyroidectomy only for unequivocal benign thyroid pathology, all the cases with known malignant or indeterminate diagnosis by FNAB being excluded, has been published in 2013 and reported an OTC incidence rate of 15.6%, with 17.5% incidence rate in patients with MNG and 18.3% for those with TNG (10).

MNG remains the most common disease significantly associated with an increased risk of OTC (10), FNAB having its limits in diagnosis of a millimetric tumor. Also, age over 45 years and male gender are associated with a higher risk (2,10,11).

For a better understanding and in order to comprise all the possible situations, OTC can be divided into four different categories: 1. patients with thyroid microcarcinoma incidentally found after thyroidectomies for preoperatively known benign pathology; 2. patients with incidentally diagnosed PTMC on imaging studies, mainly ultrasonography, and evaluated and confirmed by FNAB; 3. clinical apparent metastases of thyroid carcinoma, but with undetectable primary thyroid tumor prior to surgery, microscopic carcinoma being found in the final resection specimens; 4. thyroid cancer localized in ectopic thyroid tissue with clinical symptoms or apparent metastases present (5). OTC found at final histology exam after surgery for benign pathology is the most frequent form and the focus of our study.

Table 1. Demographic and clinical factors associated with the presence or absence of occult thyroid cancer (postoperatively diagnosed)

		BENIGN (group A)	CANCER (group B)	p Value
Mean Age (years)	49.41	47.80	0.671	
Sex, n (%)	Female	110 (81.5)	9 (90)	0.501
	Male	25 (18.5)	1 (10)	
Multinodular Goitre, n (%)	Yes	118 (81.4)	8 (80)	0.908
	No	27 (18.6)	2 (20)	
Thyroiditis*, n (%)	Yes	7 (4.8)	2 (20)	0.020
	No	138 (95.2)	8 (80)	
Graves' disease, n (%)	Yes	19 (13.1)	-	0.206
	No	126 (86.9)	10 (100)	
Toxic Nodular Goitre [†] , n (%)	Yes	1 (0.7)	-	0.787
	No	144 (99.3)	10 (100)	

*all 7 cases were Hashimoto's cronic lymphocytic thyroiditis; [†]Plummer's disease

Material and Method

We conducted a retrospective study on a series of 145 consecutive patients that underwent surgery for preoperatively diagnosed benign thyroid pathology over a ten year period, between 1st January 2002 and 31st December 2012. All of these interventions have been performed in the General Surgery Clinic of "Prof. dr. Agrippa Ionescu" Clinical Emergency Hospital by a team of surgeons with special interest in thyroid surgery. All cases with preoperatively known malignant thyroid pathology as well as ten patients whose relevant records were not found were excluded from the study.

We extracted and assessed relevant data from patient charts, surgical intervention log books and pathology reports. Our interest was focused on demographic aspects, perioperative data regarding the diagnostic tools used, clinical forms of preoperative diagnosis, thyroid hormonal status, type of thyroidectomy performed, length of hospital stay, incidence of postoperative complications and pathology results, including size and histological type of the OTC. This information was extracted in a retrospective manner from a prospectively maintained database. The data was centralized with Microsoft Excel 2007 and statistically analysed using IBM® SPSS® Statistics, version 19.0.0 (2009), statistical significance being considered only at $p < 0.05$.

The aim of this study was to evaluate the incidence rate of OTC in a single medium volume surgical center and to establish the correct initial surgical approach, as well as to identify the thyroid pathology most frequently associated with OTC. We also reviewed the relevant scientific literature on this topic.

Results

The series of patients was divided into two groups based on the criteria of the presence of OTC on the surgical specimens. Thus, group A consisted of 135 patients (93.1%) with benign pathology and group B consisted of 10 patients with histopathologically diagnosed OTC.

In close cooperation with the endocrinologist, depending

on their initial hormonal status (hypothyroidism or hyperthyroidism), all patients were brought to an euthyroidism status prior to surgery.

Overall rate of OTC in our series was 6.9 % (10 out of 145 patients), 80 % of them being diagnosed with MNG and two cases (20%) with Hashimoto lymphocytic chronic thyroiditis.

Considering the thyroid pathology, most patients had MNG – 118 cases (81.4%), followed in order of frequency by GD – 19 cases (13.1%), Hashimoto's autoimmune thyroiditis – 7 cases (4.8%) and one case (0.7%) of Plummer's toxic nodular goitre (TNG), without statistical significance between these groups by presence of OTC ($p=0.086$). Of all 118 cases with MNG, 8 patients (6.8%) were diagnosed with OTC, the association of cancer with this thyroid pathology being without statistical significance ($p=0.908$) (Table 1). On the other hand, the association of OTC with Hashimoto's chronic lymphocytic thyroiditis was statistically significant ($p=0.020$), cancer being diagnosed in 28.6% of all thyroiditis patients in our series (Table 1). Cancer wasn't found in any of the 19 GD cases, with a similar situation in the singular case of Plummer's nodule, the association of OTC with these pathologies being without statistical significance.

The mean age of the series of studied patients was 49.3 (± 0.958) years, ranging between 18 and 74 years, the median age of group B being 47.8 (± 3.203) years, with a range between 32 and 65 years, statistically similar ($p=0.671$) with that of group A – 49.41 (± 1.003) years, range between 18 and 74 years. Most of the studied patients belong to the 50-59 years interval (42 patients representing 28.97% of the series). The majority of patients were women, sex frequency of the series being 82.1% / 17.9% in favour of the feminine sex, but with a different proportion between groups – group A (81.5% / 18.5%) and B (90% / 10%), without statistical significance ($p=0.501$) (Table 1).

The mean size of the tumors on the surgical specimens was 7 mm, ranging between 3 and 14 mm, 90% of them being smaller than 10 mm. In the two cases of thyroiditis, tumor size was 5 mm, and 6 mm respectively. Histopathologically, all 10 tumors were papillary microcarcinomas (Table 2).

Table 2. Postoperative hospital stay, types of operations performed, postoperative complications and histological type of thyroid microcarcinoma in our series

Mean postoperative hospital stay, (days)		Overall: 4.11 ($\pm$ 0.204)
		Group A: 3.50 ($\pm$ 0.34)
		Group B: 4.16 ($\pm$ 0.22)
Types of thyroidectomy, n (%)	Total thyroidectomy	Overall: 102 (70.3%) Group A: 94 (69.6%) Group B: 8 (80%)
	Hemithyroidectomy	Overall: 28 (19.3%) Group A: 26 (19.3%) Group B: 2 (20%)
	Subtotal thyroidectomy	Overall: 14 (9.7%) Group A: 14 (10.4%) Group B: -
	Completion thyroidectomy	Overall: 1 (0.7%) Group A: 1 (0.7%) Group B: -
Morbidity (post-thyroidectomy complications), n (%)		
Overall		10 (6.9 %)
wound hematoma		2 (1.4%)
recurrent laryngeal nerve palsy		Overall: 4 (2.76 %), - Unilateral: 3 (2.07%) (2 transient, 1 permanent) - Bilateral: 1 (0.7%) (permanent)
severe hypocalcemia		3 (2.07%)
thyrotoxicosis		1 (0.7%)
Mortality, n (%)		1 (0.7%)
Mean size of microcarcinoma, mm (ranges)		(3-14)
Histological type of the OTC, n (%)		
Papillary microcarcinoma		10 (100%)

Considering the type of thyroidectomy performed in our series, the most frequent intervention was total thyroidectomy (TT) - 102 cases (70.3%), followed by hemithyroidectomy – 28 cases (19.3%) and subtotal thyroidectomy – 14 cases (9.7%), one patient undergoing completion thyroidectomy for MNG relapse after hemithyroidectomy (Table 2). All cases of initial hemithyroidectomy were noted early in the study period, most of them (92.8%) for MNG limited to one lobe, the decision for hemi- or total thyroidectomy depending on the surgeon and the intraoperative assessment.

Group A consisted of 69.6% total thyroidectomies (94 cases), 10.4% subtotal thyroidectomies (14 cases), 19.3% hemithyroidectomies (26 cases) and just one case (0.7%) of completion thyroidectomy (Table 2). 80% of the patients in group B were diagnosed with OTC due to the complete resection of the thyroid gland, which represented 7.84% of the total thyroidectomies in the studied series. Although total thyroidectomy was the most frequent operation associated with OTC discovery in the studied series, this association was without statistical significance ($p=0.492$).

In 20% of the patients of group B, only hemithyroidectomy was performed, which represented 7.14% of all patients with hemithyroidectomy in the studied series. It was performed in two cases with MNG, where initially only hemi-thyroidectomy was performed and completion thyroidectomy was necessary after OTC was discovered on the initial surgical specimen, but these patients were included in the study only for the first intervention.

Postoperative morbidity in the studied series was 6.9% (10 patients):

- Two cases of surgical wound hemorrhage that required reintervention for hemostasis after hemithyroidectomy in one case and total thyroidectomy in another case;
- Four cases of recurrent laryngeal nerve injury after total thyroidectomy (3.9% of all patients with TT) – 3 cases of unilateral palsy, 2 transient with full recovery and 1 permanent palsy that demanded ENT surgery for glottis widening and 1 case of bilateral permanent lesion after total thyroidectomy for voluminous MNG adherent to the trachea that required tracheostomy with unfavorable evolution and exitus;
- Three cases of severe hypocalcemia after total thyroidectomy;
- One case of postoperative thyrotoxicosis (Table 2).

The association between the occurrence of postoperative complications and a certain type of surgery in the studied series did not present statistical significance ($p=0.910$). Although the majority of complications occurred after total thyroidectomies, the difference between the rate of complications after this particular type of intervention versus another type of surgery was not statistically significant ($p=0.615$).

Postoperative mortality in our series was 0.7% (one patient). It was the case of an elderly patient with multiple associated pathology and bilateral recurrent laryngeal nerve lesion and vocal cords paralysis after total thyroidectomy

that led to respiratory insufficiency and demanded tracheostomy. The patient died 18 days after surgery.

The mean postoperative hospital stay of the entire series was of 4.11 ($\pm$ 0.204) days, ranging between 1 and 14 days, for group A being 3.50 ($\pm$ 0.34) days with no statistically significant difference from that of group B ($p=0.417$). The type of surgery influenced with statistical significance ($p=0.018$) the hospital stay, the shortest hospital stay being for hemithyroidectomy and the longest for total thyroidectomy.

Discussions

OTC became a public health issue in recent years when statistic studies have shown a rise in incidence, especially in patients over 45 years old (4).

The preoperative diagnosis of incidental thyroid cancer is based primarily on guided FNAB of the suspicious nodules documented mainly by thyroid ultrasound, neck CT or MRI. However, FNAB has a sensitivity of up to 70% in diagnosing thyroid malignancy (12), especially for microcarcinomas. For example, the risk of thyroid cancer within MNG patients using FNAB and ultrasonography was considered to be between 3 % to 5 %, but latest studies suggest that this approach fails to exclude the real incidence of cancer in patients referred to surgery for presumably benign thyroid pathology (10). Moreover, in many cases of millimetric microcarcinomas, the thyroid nodules don't reach significant volume and may not be centred by a FNAB, therefore being misdiagnosed (13).

Recently new diagnostic techniques for thyroid cancer have recently been developed. Some authors argue that real time elastography ultrasound, which evaluates the differential thyroid tissue characteristics using a tissue rigidity/elasticity ratio, has a good potential in differentiation of malignant from benign lesions independent of thyroid nodule volume, allowing the study of nodules smaller than 0.5 ml (12). The only certain tool for OTC diagnosis remains the careful histological examination of thyroid resection specimens, 3 mm slices being usually used, but according to some authors, it is necessary to use even thinner slices as this routine examination may not detect some microcarcinomas < 1 mm in diameter (5). Given the evidence that thyroid microcarcinoma is frequently multicentric (5), it seems only logical that the best chance to identify OTC consists in histological examination of the entire resected thyroid gland, consequently many studies supporting TT as indication of primary resection for excluding the risk of OTC (2,4)

TT has been recognized as the surgical procedure of choice for malignant nodules over 1 cm or for indeterminate nodules larger than 4 cm, due to increased risk for malignancy, as well as for patients with previous head or neck radiation or with family history of thyroid cancer (14,15). On the other hand, for preoperatively known benign thyroid pathology such as MNG, GD, TNG or even for small carcinomas, indication of TT is still a matter of debate, due to its risks and possible postoperative complications, especially permanent recurrent nerve injuries with vocal

cords paralysis (14). However, recently TT tends to replace other more limited types of thyroidectomies and is becoming the preferred procedure even for benign conditions, as the best surgical treatment for symptom relief and for better control of postoperative therapy, the risk of OTC being an additional argument favouring this approach (14,16).

The most feared complication after TT, temporary or permanent recurrent laryngeal nerve palsy, has a reported incidence of under 4%, but studies have shown that this complication is not significantly associated with TT and may occur regardless of the type of thyroidectomy (14,17). It is also stated that as surgical experience accumulates, the morbidity of TT becomes comparable with that of less radical thyroidectomies (14).

It should be mentioned that some authors consider this extensive thyroid resection too aggressive and unnecessary. They support the concept of limited surgery, concluding that in diagnosed malignant nodules smaller than 1 cm or in incidentally found papillary microcarcinomas without metastatic disease, thyroid lobectomy or subtotal thyroidectomy could be the treatment of choice (4,5). The major disadvantage of limited surgery for presumably benign thyroid conditions such as MNG is the high risk of recurrence in residual thyroid tissue, between 23%-45%, generally with resistance to conservative measures, the only solution remaining completion thyroidectomy. This reintervention procedure is proved to be more technically challenging for the surgeon and with higher risks of complications, with up to 20% rate of recurrent laryngeal nerve palsy or 3.4% permanent hypoparathyroidism (14).

Other authors, who support the idea of completion thyroidectomy in selected cases with incidental PTMC after initial less than total thyroidectomy, have conversely found that completion surgery was not followed by a significant increase of pathological features associated with cancer related morbidity and mortality (18).

Even though in our series 20% of the patients with OTC were diagnosed after hemithyroidectomies, we consider that the chance to diagnose microcarcinomas, that are often multifocal, rises in direct proportion with the quantity of excised thyroid tissue. This advantage is added to the other benefits of TT in the management of presumably benign thyroid disease and avoidance of more surgically difficult completion thyroidectomy.

There are also some authors who consider that the initial treatment of OTC should be just observation and follow-up, and surgery should only be indicated for nodules that gain in size (5). This conservative, non-surgical, approach including imagistic follow-up of the micronodules' progression is based on the fact that long time survival of the majority of patients with low-risk PTMC is good even though these nodules are not excised and should be treated in a similar manner to benign nodules (2,5). Conversely, it is demonstrated that PTMC are frequently multicentric and within there is a small group with aggressive biological behaviour and tendency to spread to local lymph nodes, and for this reason they should be treated surgically with no delay (5). The main problem regarding conservative approach in the management of OTC

is that, so far, there are no very specific preoperative methods to differentiate this particular high-risk group from the low-risk asymptomatic forms of OTC which may need only observation due to their excellent long-term prognosis. Complex tests for molecular markers, such as overexpression of Cyclin D1 or protein S100A4, or genetic analysis of BRAF mutation status could be valuable for this differentiation (5). Several studies have mentioned that microcarcinoma size greater than 1 cm, multifocality, the presence of capsular invasion, vascular emboli and lymphadenopathy are the characteristics of aggressive forms (4). It should be known though that small tumor size alone does not always assure low risk in incidentally found thyroid microcarcinomas (4).

Although in our series 4 out of 102 cases with TT suffered recurrent nerve injuries (3.9 % incidence) and one patient with voluminous MNG died after a bilateral recurrent nerve paralysis, we consider TT as the procedure of choice for primary resection of a presumably benign goitre due to its advantages in postoperative therapy control, avoiding recurrences and also excluding the presence of an OTC. It should be highlighted that 80% of our patients diagnosed with OTC (group B) underwent TT.

In our series, two cases are notable for the necessity of total thyroidectomy in order to exclude a possible OTC. The first case is that of a female patient with a small volume paucisymptomatic MNG, that initially avoided surgery but with OTC diagnosed after total thyroidectomy. The other case is that of a female patient with MNG limited to one lobe on imagistic studies and even though intraoperatively no lesions were suspected in the contralateral lobe, total thyroidectomy was performed for a better control of the endocrine treatment. The surprise came after the pathology report which demonstrated that the lesions known preoperatively were benign, but in the contralateral lobe an incidental microcarcinoma of millimetric proportions was found.

The association between thyroiditis and especially Hashimoto's thyroiditis and OTC is described in the literature, with an incidence that reaches even 23.8%, which would justify TT in these cases (2,19,20). In the group we studied, OTC was found in 28.6% of all cases with thyroiditis ($p=0.020$); however we had few cases.

The risk of occurrence of incidental thyroid cancer in patients with benign pathology is maximum in the case of MNG, different statistic studies revealing an incidence between 9% and 21.7% for MNG cases and between 9% to 18.3% for TNG cases (9,10). There are authors who stated that unilateral thyroidectomy is the correct indication for patients with symptomatic benign unilateral MNG due to its lower risks of complications in contrast with TT (17), but as a counterargument it's worth mentioning that in 54% of the known benign cases with OTC who underwent TT the malignancy was discovered in the contralateral lobe (14). We had one similar case in our series.

At this time, our opinion is to perform initial TT for MNG cases, even if it is limited to one lobe, knowing the fact that frequently the entire thyroid tissue is microscopically affected in this disease and that there is a considerable risk of relapse that

would eventually demand completion thyroidectomy, and moreover in order to exclude the risk of OTC.

Prevalence of thyroid cancer in GD has been reported to range from 0.5% to 15%, with rates around 3% to 5% in the largest surgical series, being usually lower than for the MNG or TNG patients (10). Nonetheless, it is known that the best surgical indication for this disease is TT for symptomatic relief and for removal of the source of autoantibodies (10,14). In our series, none of the patients with Graves' disease was diagnosed with OTC, but in these cases we prefer TT as well.

Conclusions

Over the last years, the incidence rate of OTC has dramatically increased and became a reality that should not be ignored by endocrinologists and thyroid surgeons. In this study the overall incidence rate of OTC was 6.9%, the highest rate being noted in the Hashimoto thyroiditis group of patients, 28.6%.

The preoperative possibilities for diagnosis of thyroid microcarcinoma have demonstrated unsatisfactory results, the only certain way of diagnosis remaining histological examination of the thyroid resection specimens.

In our opinion this should lead to performing initial TT as the correct surgical option in the majority of cases with preoperatively known benign thyroid pathology, especially for MNG and Hashimoto thyroiditis, in order to radically resect all possible foci of aggressive thyroid microcarcinomas.

Thus, the advantages of TT for benign thyroid disease consist of better control of postoperative therapy, avoiding the risk of recurrence and necessity of completion thyroidectomy, with its known technical difficulties and increased risk of complications, and should also include avoiding the risk of OTC presence in remnant tissue.

However, TT should be performed only in specialised high volume centers by experienced surgeons, in order to diminish the risk of possible postoperative complications.

Disclosures

The authors have no conflict of interest.

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