Surgical Strategies in the Differentiated Cancers of the Thyroid

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Introduction: Amongst all epithelial cancers of the thyroid, the papillary and folicular types are usually histologically differentiated and have a more favourable outcome compared to the undifferentiated tumours. The **aim** of our study is to evaluate the surgical treatment of differentiated thyroid neoplasms both in terms of surgical indication and type of surgery.
Material and method: The study was conducted on 1349 patients suffering from different thyroid diseases that requested surgery between 2005–2009, within the First and Second Department of Surgery Tg-Mures.
Result: There have been taken into account data regarding the demographic aspecs, the pre- and postoperative diagnosis, surgical indication and the type of surgical procedure according to the histological type.
Conclusions: Surgery has proven to be the most efficient therapy in the differentiated forms of thyroid cancer including different types of total/near-totally thyroidectomies, and partial thyroidectomy comes into question only in exceptional cases.

Keywords: differentiated thyroid cancers, thyroidectomy

Introduction

The malignancies of the thyroid include a heterogenous subset of tumours presenting distinct clinical and pathological features. Almost 90% of them originate in the follicular cells consisting of differentiated types of follicular and papillary subsets, that are less agressive and have better survival rates.

The extension of the surgical act in differentiated thyroid carcinoma is chosen according to the histological type, stage, risk factors and diagnosis from a partial to a total thyroidectomy, and may associate, depending on the case, with the local lymphadenectomy.

The aim of our study is to evaluate the surgical treatment of differentiated thyroid neoplasms, both in terms of surgical indication and the type of operation performed.

Material and method

The paper is based on a longitudinal, retrospective study of 1349 patients who have undergone surgery between 2005-2009 in our units (Clinic of Surgery I and II Tg.-Mures). We have selected a number of 1185 patients with almost all histological types of thyroid cancer. Data analysis was focused on cases of differentiated thyroid carcinoma. Data from the observation sheets, surgery protocols, pathological anatomy records were included in an MS Excel database and statistically processed using the GraphPad program. There have been taken into account data regarding the demographic aspecs, the pre- and postoperative diagnosis, surgical indication and the type of surgical procedure according to the histological type. Post-operatory, patients with differentiated thyroid carcinoma were admitted to the Endocrinological Clinic and began an adjuvant and hormone replacement treatment.

Results

Following a statistical analysis, there have been found 230 cases of differentiated thyroid cancer. These included both the classical types and the morphological variations of the papillary and follicular carcinomas (Fig. 1). The demographical study has shown a higher prevalence in women (female/male ratio: 8.2/1), and a maximum occurrence between the 4th and 5th decade of life, ranging from 15–80 years of age (Table I). In relation to age, an important parameter showing at least one postoperative prognostic factor of severity, 30% were under 45 years and 70% above it.

The diagnosis can be set before, during and after the operation. In our study, the preoperative diagnosis of thyroid cancer was established taking into consideration the clinical examination, thyroid ultrasound and fine-needle aspiration biopsi (FNAB) in 39 cases (Table II).

There has been noticed an important balance of differentiated thyroid carcinoma, diagnosed postoperatively, based on histopathological examination in cases initially diagnosed as a benign disease. We mention that extemporaneous examination was performed in most patients as it is a mandatory examination of patients with thyroid nodules. This way, there have been diagnosed 92 cases of differentiated thyroid carcinoma. The differentiated thyroid carcinoma histopathological diagnosis was finally confirmed by examinations at paraffin (Table III).

We have performed total thyroidectomies in 134 of the differentiated thyroid cancers (118 in papillary forms and

Table I. Demographic aspects of differentiated thyroid carcinoma

		Cases	%
Age	< 45 years	92	40
	> 45 years	138	60
Sex	female	205	90
	male	25	10
Environment	urban	180	78
	rural	50	22

Table II. Diagnosis on admision

Diseases	Number of cases	%
Thyroid carcinoma	39	16.95
Nodular goiter	25	10.86
Polinodular goiter	150	65.21
Diffuse goiter	15	6.52
Thyroiditis	1	0.43
Total	230	100

16 in the follicular ones). Subtotal thyroidectomy has been performed in 58 of cases (Table IV), (44 in papillary forms and 14 in the follicular ones), near-total thyroidectomies in 26 of the cases (papillary forms), lobectomies in 12 cases. In the case of 2 patient there have been associated the total thyroidectomy and the radical lymphadenectomy of the neck. We also note that 63 of the patients have undergone another surgery in order to complete the thyroidectomy.

Regarding the immediate postoperative complications, of the 230 patients operated for cancer, there were 7 (3%) cases of bleeding (they were reoperated for hemostasis), 3 (1.3%) cases of unilateral recurrent nerve injury (2 patients presenting recurrent nerve invasion).

Discussions

Thyroid carcinoma has the highest incidence amongst endocrine tumours. It represents 2% of all malignancies and occurs between 25–65 years of age [1,2]. It affects mainly women, as the thyroid node is most frequently encountered in women a fact explained by a higher frequency of benign nodular thyroid pathology in this category of population, with possible subsequent malignant deviation under the influence of some etiopathogenic predisposing factors. The sex distribution of the stugy revealed a higher incidence of disease in women compared with men: 205 out of 230 patient were females (90%) and 25 were males with a female/male ratio of 8.2/1. The average age of the female patients was of 48.7 and 46.5 the males one, with no significant statistical difference ($p < 0.49$). These results are registered in the data published in literature.

This paper reveals a significat prevalence of papillary carcinomas amongst differentiated thyroid malignancies (90% compared to 80% in epidemiologic studies [3]), with a higher incidence in women and a favourable diagnosis, cure being achieved by treatment with radioactive iodine [3], while the postoperative period.

Table III. Histological diagnoses of differentiated thyroid carcinoma

Diseases	Number of cases	%
Papillary thyroid carcinoma	87	37.82
Follicular variant of papillary thyroid carcinoma	50	21.73
Follicular thyroid carcinoma	30	13.04
Oncocitar variant of papillary thyroid microcarcinoma	5	2.17
Tall-cell variant of papillary thyroid carcinoma	5	2.17
Papillary thyroid microcarcinoma	51	22.17
Papillary + follicular thyroid carcinoma	2	0.86

Also, the statistical analysis noted the presence of the follicular thyroid carcinoma in 10% (compared to 5% in the specialized studies) of the studied cases. The low percentage is due to better standards in the diagnosis of follicular-like histology of the papillary carcinoma and to the iodine prevention goiter specific areas where the follicular carcinoma is more frequent.

In thyroid pathology, an important role is played by the intraoperative diagnosis, which aims to reveal the character of malignancy / benign lesion to guide the surgical gesture from the pivotal process of subtotal thyroidectomy to total or near -total thyroidectomy. Recent studies have concluded that the ice sections are not necessary when the diagnosis of fine needle puncture biopsy is either benign or malignant. The authors submit that extemporaneous examination of cancer diagnosed in 96.6% of the studied cases, thus influencing intraoperative decision. In our study, this exploration was performed in 80% of cases, with a reliability of 82%, a lower percentage than the one of other authors [4, 5].

According to the European Consensus in 2006 [1], regarding the management of the differentiated follicular carcinomas, total thyroidectomy represents the gold standard of surgical strategy. This procedure has several advantages: it gives considerable limitations of the morbidity, allows defining the stage of the tumour facilitating the subsequent oncological treatment and the correct hormone replacement, while preventing outbreaks of occult omissions and not least decrease the risk of tumor relapse [6, 7].

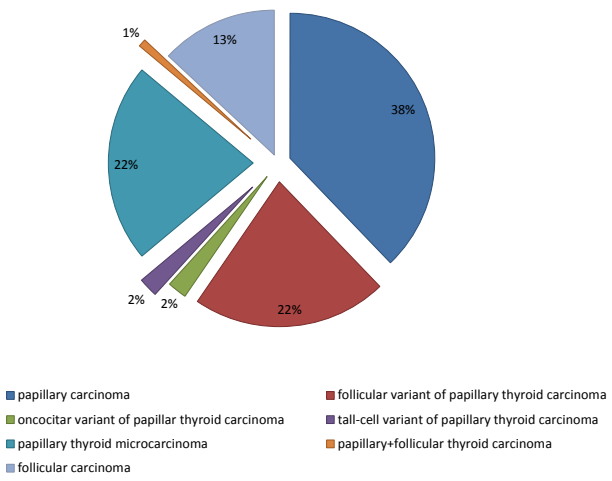

Fig. 1. Distribution of cases according to the histological type of differentiated thyroid carcinoma

Table IV. Surgical procedure

Histological type	Surgical procedure		No. of cases
	Recommended [1]	Done	
Papillary carcinoma	Total thyroidectomy	Total thyroidectomy	45
		Subtotal thyroidectomy	27
	Near-total thyroidectomy	Near-total thyroidectomy	15
Follicular variant of papillary thyroid carcinoma		Total thyroidectomy	26
	Total thyroidectomy	Subtotal thyroidectomy	12
		Lobectomy	12
Follicular thyroid carcinoma		Total thyroidectomy	16
	Total thyroidectomy	Subtotal thyroidectomy	14
Oncocitar variant of papillary thyroid carcinoma	Total thyroidectomy	Total thyroidectomy	5
		Total thyroidectomy	5
Tall-cell variant of papillary thyroid carcinoma	Total thyroidectomy	Total thyroidectomy	35
Papillay thyroid microcarcinoma	Total thyroidectomy	Subtotal thyroidectomy	5
	Near-total thyroidectomy	Near-total thyroidectomy	11
Papillary +follicular thyroid carcinoma	Total thyroidectomy	Total thyroidectomy	2

Total thyroidectomy has been primarily performed in 58% of the cases, and near-total thyroidectomies in 11% of them, for different histologycal types of differentiated carcinomas.

Limited resections for lesions that have initially been thought to be benign and have come out positive for malignancy after histology, needed a subsequent completion of the thyroidectomy. The indications were: significant remnant tissue, multifocal lesions histologically confirmed or highly probable (history of neck irradiation), primary tumor larger than 1 cm, presence of lymph node or distant metastases [8, 9, 10]. Thus, the study presents a percentage of 31% of partial thyroidectomies as initial surgery, and the final histopatological examination dictated the end of the thyroidectomy. The completion of the surgery happened in 90% of the cases as 10% of the patients did not return. We recurred to intraoperative histology in 25% of the cases, 15% of them were benign and 10% were suspected for malignancy. The completion surgery is best to be performed the week following the operation or 6–8 weeks later. Delaying the procedure over 12 weeks has a poor outcome and presents greater risks (double) of laryngeal nerve or parathyroid injuries.

The detection of a single malignant spot in the thyroid tissue involves total thyroidectomy and examination of the local lymph nodes. In the absence of the adenopathy, the intervention is limited to the thyroid. The detection of a marginal malignant spot that has gone through the connective capsule, implies examination of the neck central limph nodes. Central lymphatic dissection associated with total thyroidectomy in the study group met only in two cases of follicular carcinoma.

Conclusions

Differentiated thyroid carcinoma is an endocrine neoplasia with an increasing prevalence and affecting mainly the female sex.

The election of the surgical procedure has been made according to the histological type of thyroid cancer, in most of the cases consisting of total thyroidectomy.

The intraoperative histopathological examination was conducted to reveal the benign / malignant character of the lesion in order to guide the surgery from the pivotal procedure of hemitiroidectomy to the total/neat total thyroidectomy.

Completion thyroidectomy, after a surprise diagnosis of differentiated thyroidian cancer has been a justified intervention from the onchological point of view. The indications of completion thyroidectomy in differentiated thyroidian carcinomas practically derives from the indications of total thyroidectomy.

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