2. Thyroid Tumours

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2.1 Introduction

The proper handling and reporting of thyroid tumour specimens is important as gross and histological features contribute to the staging of the tumour and thus have implications for prognosis and therapy.

The British Thyroid Association recommends the use of the 5th edition of TNM staging for this purpose.

The proposals for the reporting of thyroid tumours are important for a number of reasons.

Firstly, pathological staging is important in the correct clinical management of these tumours.

Secondly, particular features of carcinomas, for example variants of papillary carcinoma, or minimally or widely invasive follicular carcinoma have recognized outcomes.

These features thus provide prognostic information to the surgeon/ physician and patient as well as accurate data for cancer registration and national data bases.

Thirdly, such proposals will allow the accurate and equitable comparison of surgeons and oncologists dealing with thyroid cancer.

Although this document does not discuss the details of Fine needle aspiration of the thyroid, most lesions should have had FNA before surgery, so that at least a differential diagnosis is available.

Intra-operative frozen section is occasionally used to confirm the diagnosis of papillary carcinoma, medullary or anaplastic carcinoma or to identify lymph node involvement. It should however, not be used to differentiate follicular carcinoma from adenoma.

The incidence of thyroid gland carcinoma in Sri Lanka according to the cancer registry 2000 in both males and females is 4.6%

2.2 Gross examination (x)

2.2.1 Specimen description

The specimen should be described as a total or near-total thyroidectomy; right or left total or near-total lobectomy, with or without isthmus. It should be noted whether the capsule appears intact on receipt, except for the intra-thyroidal margin on lobectomy specimens.

A lobectomy specimen is often combined for cosmetic reasons with removal of the isthmus. In a subtotal thyroidectomy specimen, the posterior part of the capsule and a small portion of thyroid tissue are left on the side opposite the lesion. In a total thyroidectomy specimen, the entire gland, including the posterior capsule is removed.

The specimen should be weighed (where possible), measured and described grossly.

In thyroidectomy specimens measurement of each lobe and isthmus should be noted.

Any nodularity on the outer surface should be noted.

The entire surface should be inked.

It should be cut into at 5 mm intervals without separating the individual segments in the fresh state or after formalin fixation. Any suspicious areas should be measured and their location and cut surface described. The distance to the closest margin of resection should be

indicated. **The inclusion of a diagram or photograph in the records with annotation of block selection is the best practice.**

It is important to record the greatest dimension of the lesion or of the largest lesion (if multiple) as this defines the pT status. If this is less than 20 mm, a microscopic measurement should be made. The presence of apparent direct extension beyond the thyroid should be recorded as well as the extent of invasion.

The state of the parathyroid glands should be noted and they should be sampled if present.

The number and site of lymph nodes submitted or identified in the main specimen should be recorded.

2.2.2 Block selection (x)

The number of blocks taken will vary with the tumour type. All surgical resection margins should be taken, including the isthmic resection margin in a lobectomy specimen. Any suspicious areas should be sampled.

- Adequate number of blocks to include the tumour capsule.
- If lobectomy
  a) Sample resection margin (isthmus)
  b) If a suspicious nodule extends close to the posterior /deep margin, this should be sampled.
- Lymph nodes if present
- Non neoplastic thyroid-one block from each lobe and isthmus

In papillary carcinoma, a practical approach would be to block the whole tumour if the lesion is less than 20 mm diameter and to sample the lesion widely if larger. A minimum of two blocks from the ipsilateral and contralateral thyroid lobe is recommended to identify multi-focal disease.

Follicular lesions that are not grossly invasive should be widely sampled at the interface between the tumour, capsule and the normal gland to detect capsular and vascular invasion. It is recommended that small lesions less than 30 mm be processed entirely and an

adequate number of blocks be taken from larger lesions. Where multiple nodules are present, the largest should be processed as described.

Other nodules showing obvious encapsulation, solid areas or a pale colour should also be sampled.

2.2.3 Microscopy and conclusion (x)

A detailed microscopic description is considered optional.

There are a number of features that should be documented in all tumours and specific features relating to individual types. **A minority component in a well-differentiated tumour should be mentioned as such, as the classification changes only when it constitutes the majority of the tumour**. However, it is important to note that **any focus of anaplastic change should be classified as undifferentiated/anaplastic**.

Core data items for all malignant tumours include: (x)

- Specimen type
- Tumour type
- Tumour size
- Tumour location and multiplicity
- Tumour grade (mainly for papillary carcinoma)
- Tumour encapsulation
- Capsular invasion
- Presence and extent of lymphatic /vascular invasion
- Completeness of excision

- Extra thyroid extension
- Surgical margin involvement
- Other thyroid pathology
- Pathological stage of tumour
- Lymph node status
- Presence of parathyroid tissue

2.2.4 Recommendations to surgeons

The lobes of the thyroid should be oriented and marked.

The thyroid gland should not be cut in to or separated.

Information on evidence of autoimmune thyroid disease (AITD) should be recorded in the request form, to help elucidate the relationship between AITD and the pathogenesis of thyroid tumours.

2.3 Annexure 1

TNM PATHOLOGICAL STAGING (FIFTH EDITION, UICC)

The recommendation to use the fifth edition is based on the fact that the pT1 cut-off is 10 mm, allowing the identification of papillary micro carcinomas as a separate group. This is important as they generally have a benign biological behaviour and may be treated by lobectomy and thyroid stimulating hormone suppression rather than total thyroidectomy. Using the sixth edition, these are grouped with tumours up to 3 cm, which have a different prognosis and treatment.

pT 0 No evidence of primary tumour
pT 1 <_ 1O mm, limited to thyroid
pT 2 >10-40 mm, limited to thyroid
pT 3 >40 mm, limited to thyroid
pT 4 Tumour invades extra thyroid tissues or anaplastic carcinoma.
pT x Primary tumour cannot be assessed.

Multifocal tumour of all histological types should be designated (m), the largest focus determining the classification e.g. pT2(m)

pN 0 No nodes involved
pN 1 Regional nodes involved (cervical or upper mediastinal)
pN 1a Metastasis in ipsilateral nodes
pN 1b metastasis in contra lateral nodes
pN x cannot assess nodal involvement

pM 0 No distant metastasis
pM 1 Distant metastasis
pM x cannot assess distant metastasis

2.4 Annexure 2

THE TRANSLATION OF PATHOLOGICAL DATA INTO STAGING

The following is only provided as further information to pathologists and is not required in routine reporting.

The translation of pathological data into staging differs with tumour type

In papillary and follicular carcinoma, there is evidence that prognosis is poorer in older patients and therefore different criteria are applied to patients under 45 years than to those 45 years and older.

In medullary carcinoma, no age stratification applies.

All undifferentiated tumours are regarded as stage IV

Papillary or follicular under 45 years

Stage I	Any T	Any N	M0
Stage II	Any T	Any N	M1

Papillary or follicular 45 years or over

Stage I	T1	N0	M0
Stage II	T2	N0	M0
	T3	N0	M0
Stage III	T4	N0	M0
	Any T	N1	M0
Stage IV	Any T	Any N	M1

Medullary carcinoma

Stage I	T1	N0	M0
Stage II	T2	N0	M0
	T3	N0	M0
	T4	N0	M0
Stage III	Any T	N1	M0
Stage IV	Any T	Any N	M1

Anaplastic/undifferentiated carcinoma

All are stage IV

2.5 References

1. Cancer Registry 2000, Cancer Control Programme, Cancer Institute Maharagama, Sri-Lanka
2. Juan Rosai, Rosai and Ackermann's Surgical Pathology, 9th Ed, Mosby 2004
3. www.rcpath,org/psu The Professionals Standards Unit, The Royal College of Pathologists