

Relationship of step section and accuracy of pathologic diagnosis of thyroid cancers

Abstract

Objective: This case history shows the significance of the step section to be performed on any extra thyroidal neck mass containing thyroid tissue.

The material for pathologic diagnosis was a neck mass removed from the left tracheoesophageal groove in a 43-year-old lady whose right hemithyroidectomy was performed by the authors fourteen years ago (Mrs.D.). Her previous pathologic report was follicular adenoma.

The report on her new pathologic specimen was "benign thyroid tissue." However, this report did not match her previous medical history, and we requested a step section (extensive levelling) to be performed on the specimen. Her final pathologic diagnosis was "near-total replacement of a lymph node by well- differentiated thyroid carcinoma."

She underwent a total thyroidectomy and central neck dissection, followed by our nuclear medicine team for seven years.

Keywords: step section, follicular adenoma, follicular carcinoma, levelling

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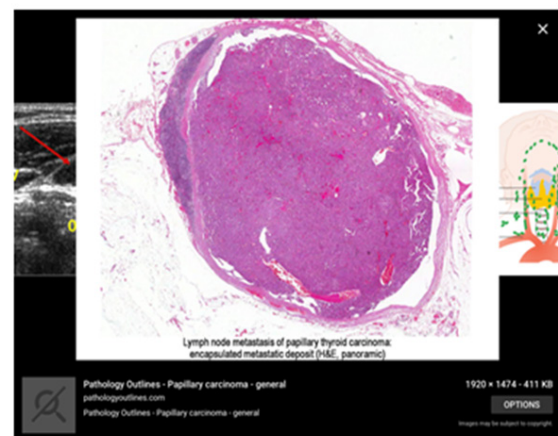
Case presentation

Mrs.D. A 43 years old female was presented with a two by 2.5-centimetre solid mass, deep in the left suprasternal notch. This mass was mobile and palpated completely separate from normal tissues. It was painless and had no symptoms of general condition.

Her medical history revealed a hemithyroidectomy performed four years prior new presentation. She had no surgical complications, and her pathologic report showed a follicular adenoma. No further treatment was recommended because no cervical node or mass in the other lobe was found. In addition, the node was well defined during present admission, and there were no mediastinal widening and/or pulmonary or pleural symptoms and radiologic findings of pulmonary metastasis (Figure 1).

The mass was removed during a cervical exploration, and no other mass was palpated intraoperatively. It did not have any attachment to the thyroid gland. The mass was sent for pathologic studies. Several slides revealed thyroid tissue without cellular and tissue pattern, raising the question of thyroid malignancy.

The pathologist reported one isolated cervical thyroid tissue. This pathologic report did not match the clinical behaviour of the disease. One further investigation must be implemented to match the clinical scenario. A step section could solve the problem. In the step section, the whole specimen is studied pathologically. Pathology of the thyroid gland, when the diagnosis of carcinoma is considered, has different aspects. Sometimes the tissue pattern is so evident in a well-differentiated carcinoma like papillary carcinoma that it is easily diagnosed. On many occasions, the cell type may be characteristic of being diagnosed with FNA (fine needle aspiration). Unfortunately, in cases like follicular carcinoma, the cell type and tissue pattern are of no help. The diagnosis is made when capsular; perineural and / or a perivascular invasion or infiltration is seen. In some cases, the concomitant presence of an involved lymph node may help make a precise diagnosis. None of the aforementioned stigmata was present in this case.



Courtesy of pathology outlines.com

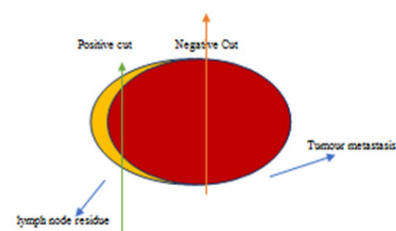


Figure 1 Courtesy of pathology.

A few cuts in the step section, stained with Haematoxylin and Eosin, could show a crescent of lymphoid tissue in the peripheral portion of the mass. This finding proved total or near-total replacement of a lymph node by follicular carcinoma so closely similar to normal thyroid tissue.

Having this diagnostic pathologic report that was explaining the clinical behaviour of our case, we completed her thyroidectomy. The

final report showed subclinical follicular carcinoma in the remaining thyroid tissue.

She had an uneventful course after her multiple surgeries and was referred to our nuclear medicine team.

Discussion and conclusion

Making diagnoses in cases of thyroid carcinoma has always been a dilemma, both for the pathologists and clinicians. This is of prime importance when the background pathology is a follicular carcinoma. Diagnosis of follicular thyroid carcinoma, Oncocytic cell carcinoma (Hurthle cell carcinoma), and encapsulated follicular variant of papillary cell carcinoma need to evaluate the capsular invasion. Invasion less than a millimetre indicates minimally invasive variants and is mostly missed with limited pathological studies.¹

If our pathological study is conclusive, we can manage the minimally invasive follicular carcinoma as a benign follicular adenoma, and lobectomy is the definitive treatment.²⁻⁴ However, follicular carcinoma can be misinterpreted if the levelling and sections for pathological slides are not enough. Therefore, the neck mass presenting after primary diagnosis of follicular adenoma or minimally invasive follicular carcinoma must be extensively studied to rule out metastasis. At the level of genetic studies on FNA, new modalities of diagnosis have solved many of these difficulties in diagnosing carcinoma of the thyroid. Nevertheless, the permanent slides of pathologic specimens may always face difficulty reaching the diagnostic points.

This case is one of the real problematic histopathologic cases of thyroid carcinomas. Unfortunately, surgeons may occasionally get involved with cases of thyroid carcinomas, where routine pathologic studies cannot resolve the problem of diagnosis. This difficulty in diagnosis is more apparent with follicular carcinoma.

The well-differentiated carcinomas of the thyroid usually have a protracted course, both locally when they are presenting as an intrathyroidal lesion or a metastatic extra thyroid lesion. This protracted course will let a metastatic lesion replace a significant part of the lymph node.

The diagnosis dilemma puts the surgeon and pathologist in a team to bring any information and technical facilities to solve the problem and end up with a definitive diagnosis that explains the disease process for a better treatment modality. The diagnosis process starts from a problem-oriented workup and meticulous physical examination to decide on ultrasonic conducted FNA, intraoperatively frozen section, and many pathologic slides. When none of these end up with a genuine diagnosis, joined discussion between clinician, surgeon and pathologist will help (multidisciplinary cancer clinics). Our case is an example of such a case; that step section resolved the difficulty. We strongly support the idea of the step section to use the whole specimen to find a clue for the best diagnosis.

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Conflicts of interest

The authors state that there is no conflict of interest.

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