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Follicular Thyroid Adenoma with Papillary Architecture

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A 23-year-old woman underwent left thyroid lobectomy and isthmusectomy for a 2 cm diameter firm mass on the left side of the neck that was also visualized on ultrasonography. The specimen consisted of a 22-gram thyroid gland composed of the left lobe, isthmus and a pyramidal lobe. Cut section of the left lobe showed a 3.5 cm diameter solitary, discrete and encapsulated mass with a tan lobulated and solid cut surface. The rest of the thyroid tissues had red-brown meaty cut surfaces.

Microscopic section shows a follicular-patterned proliferation enclosed by a thin fibrous capsule with frequent Sanderson polster-like papillary excrescences. *(Figures 1 and 2)* Both the follicular and the papillary structures are lined by cuboidal to columnar follicular epithelial cells that had ample eosinophilic to pale cytoplasm and uniformly sized, minimally enlarged, generally round, and monolayered nuclei without nuclear grooving, folds, pseudoinclusions, and chromatin clearing. There are no mitotic figures seen. Some of the papillary structures have delicate vascular cores. *(Figure 3)* There are no psammoma bodies noted. The follicles contain variable amounts of pale eosinophilic colloid ranging from colloid-poor crowded follicles to those with ample colloid that have frequent peripheral scalloping. *(Figure 4)* Exhaustive sections failed to disclose capsular or vascular invasion. Based on the microscopic features, a diagnosis of follicular adenoma with papillary architecture was rendered.

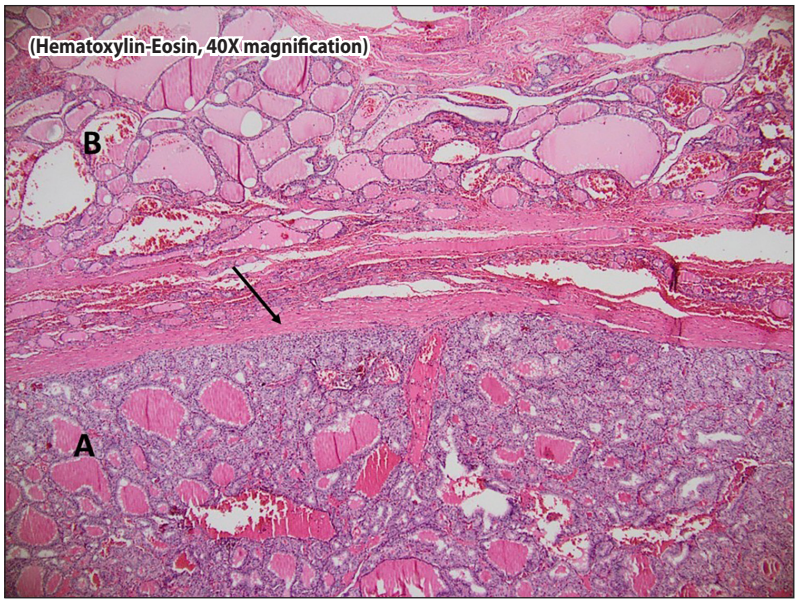

Figure 1. A. Follicular-patterned proliferation; **B.** separated by an intact fibrous capsule (arrow) from the adjacent thyroid tissue (Hematoxylin-Eosin, 40X magnification).

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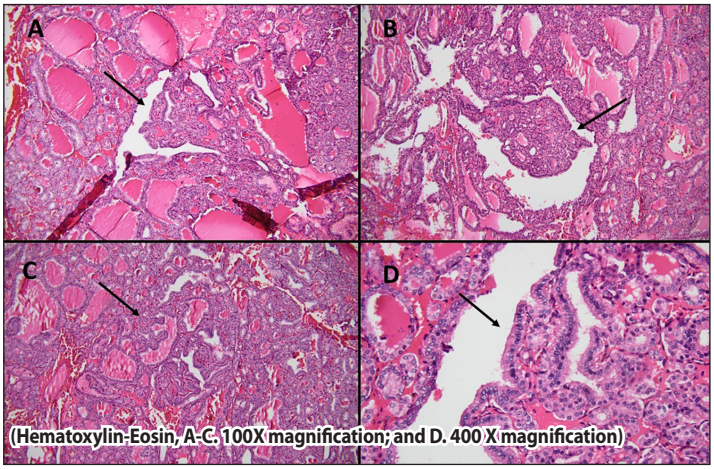

Figure 2. Sanderson polster-like papillary excrescences (arrows) (Hematoxylin-Eosin **A – C.** 100X magnification; and **D.** 400X magnification).

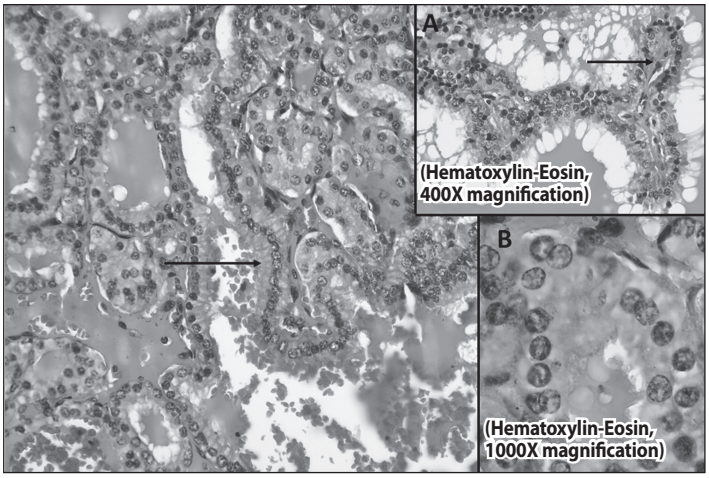

Figure 3. Follicular cells with round and uniform nuclei without clearing, grooves, or inclusions (arrow); Inset **A.** papilla with a delicate vascular core (arrow) (Hematoxylin-Eosin, 400X magnification); Inset **B.** bland, round nucleus (Hematoxylin-Eosin, 1000X magnification)

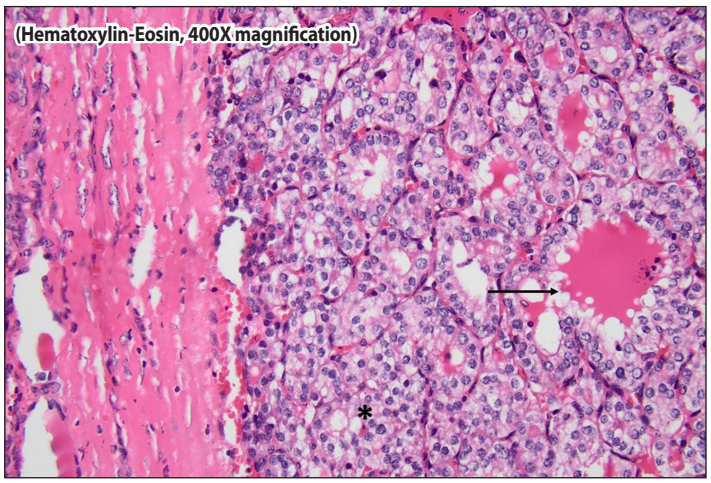

Figure 4. Pale colloid with peripheral scalloping (arrow), and colloid-poor crowded follicles (asterisk) (Hematoxylin-Eosin, 400X magnification)

Follicular thyroid adenoma can occasionally have papillae and is seen in about 3% of cases.[1,2] Follicular adenoma with papillary architecture is a completely encapsulated, follicular cell-derived neoplasm set apart by having papillary structures whose lining cells lack the nuclear characteristics of papillary thyroid carcinoma.[2,3] It is also known by various synonyms such as papillary thyroid adenoma, papillary hyperplastic nodule, and toxic adenoma – synonyms that highlight its essential features: presence of papillae ("papillary"), features of hyperfunctioning thyroid tissue ("toxic", "hyperplastic"), and a benign process ("adenoma").[4] Cases are most often seen in young adult females and often have subclinical hyperthyroidism.[2,4] Our case presented with a mass without any documented evidence of thyroid hyperfunction.

Despite having a papillary architecture, nuclear stigmata of papillary thyroid carcinoma e.g., chromatin clearing, nuclear membrane irregularities like grooves, folds, and pseudoinclusions, and enlargement, are all absent.[3] This is a very important feature to emphasize as this very same papillary architecture makes the lesion apt to be misdiagnosed as an encapsulated papillary thyroid carcinoma.[2] Close study of the nuclei is thus necessary to make this distinction. Differentiation from follicular thyroid carcinoma on the other hand requires demonstration of a complete surrounding fibrous capsule devoid of capsular and vascular invasion.[2] Judicious and exhaustive sampling of the capsule will help in this regard.

As seen more often in hyperfunctioning lesions, TSHR, DICER1 and GNAS mutations may be encountered.[2] Immunohistochemistry for BRAF p.V600E, a protein product associated with mutations in the BRAF gene, is typically negative – another important point of contrast from papillary thyroid carcinoma, among which the marker is a high-risk feature.[4,5]

This lesion is benign and, as in conventional follicular thyroid adenomas, recurrence is not seen after resection.[4] Recognition of, and familiarity with this entity is thus important to avoid an overdiagnosis of malignancy.[3]

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