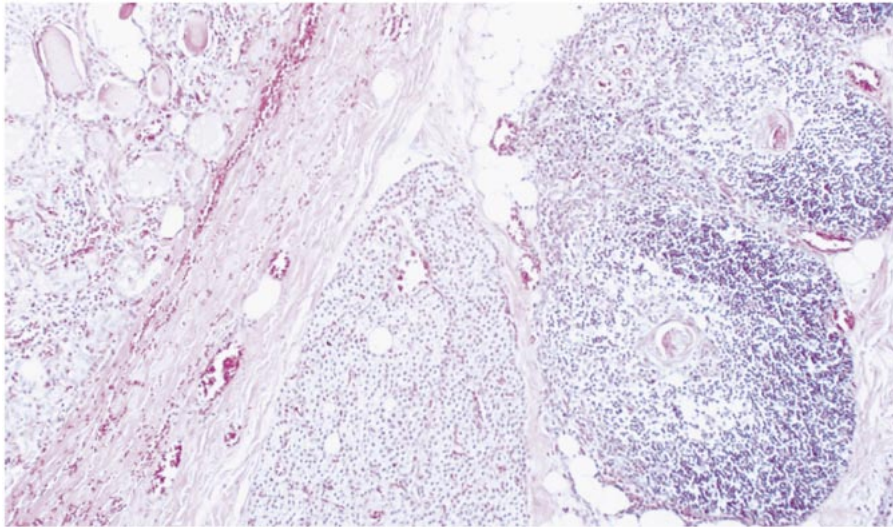


Adult Ectopic Thymus Adjacent to Thyroid and Parathyroid

Sang Ling Wu, MD; Deepali Gupta, MD; John Connelly, MD



A 22-year-old female college student presented to the hospital with a recent history of a slowly enlarging, painless mass in the anterior part of the neck. Thyroid function test results were within normal limits, and aside from cosmetic disfigurement, the patient was asymptomatic. A fine needle aspiration of the right thyroid revealed a colloid nodule with rare Hürthle cells. A right thyroidectomy was subsequently performed.

On gross examination, the right thyroid gland weighed 15.0 g and measured $5.5 \times 3.0 \times 2.5$ cm. The cut surface revealed a well-circumscribed, red-brown, cystic nodule that measured 1.7 cm in maximum dimension. A small red-purple ovoid nodule was identified attached to the inferior aspect of the thyroid gland, measuring $0.7 \times 0.5 \times 0.2$ cm. This nodule appeared grossly consistent with a normal inferior parathyroid gland.

Microscopically, the cystic mass of the thyroid showed follicles of variable size and shape with distinct lymphocytic aggregates representative of an adenomatous nodule arising within a lymphocytic thyroiditis. Interestingly, sections from the presumed parathyroid gland turned out to

also contain ectopic thymic tissue with distinct cortex, medulla, and Hassall corpuscles. A unique image of thyroid, parathyroid, and thymus is depicted in one field at $\times 10$ magnification (Figure).

The embryologic development of the thymus originates high in the neck in early fetal life and reaches its final destination in the mediastinum only after a process of progressive descent. The thymus commonly shares its origins with the inferior parathyroid glands, both endodermic derivatives of the third pair of branchial pouches. The thymus develops primarily from the ventral wing of the third pharyngeal pouch, whereas the inferior parathyroid glands develop from the dorsal wings of the same pouch. In rare occasions, the thymus fails in its descent and appears as remnants, implants, or accessory nodules anywhere along the cervical pathway from the angle of the mandible to the thyroid gland. The level of the thyroid gland is the most common site for ectopic thymic tissue, but other rare sites include the base of the skull, middle ear, tonsil, submandibular gland, posterior aortic arch, and skin surrounding a bilateral cleft lip.¹ Although our case represents ectopic thymic tissue adjacent to normally located thyroid and parathyroid gland, it is interesting to note that the converse may also take place. Maldescent during early embryologic development may also leave aberrant thyroid and parathyroid tissues within a normally placed mediastinal thymus.

Ectopic thymus from congenital maldescent generally remains dormant and is often found incidentally during

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From the Department of Pathology and Laboratory Medicine, University of Texas–Houston Medical School (Drs Wu, Gupta, and Connelly), and Department of Pathology, St Lukes Episcopal Hospital, Houston, Tex (Dr Connelly).

Reprints: Sang Ling Wu, MD, Department of Pathology and Laboratory Medicine, University of Texas–Houston Medical School, 6431 Fannin, Houston, TX 77030 (e-mail: sangwu@flash.net).

thyroid surgery, as in our case. Most reported cases of ectopic thymus occur in the prepubertal pediatric population, correlating with a period of maximum growth of the thymus. Adult cases of ectopic thymus are exceedingly rare, most likely due to age-related involution and replacement by fibroadipose tissue. Ectopic thymic tissue, like its normal counterpart, may also undergo transformation to thymic hyperplasia or even thymic neoplasms. Rare cases of thymomas, thymic carcinomas, and lymphomas have been reported.²

The accompanying photomicrograph of thymus adjacent to thyroid and parathyroid glands reminds pathologists of the infrequent occurrence of ectopic thymic tissue caused by maldescent during early embryologic development.

References

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