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50 Years Ago in *The Journal of Pediatrics*

Evolution of Imaging for Diagnosis of Abnormal Migration of the Thyroid Gland

Ashkar F, et al. A new rapid technique for the localization of abnormalities in migration of the thyroid gland. J Pediatr 1971:870-3.

In May 1971, Ashkar et al introduced a novel technique of dynamic imaging to identify malformed or ectopic thyroid tissue. They emphasized the benefits of technetium-99m (Tc-99m) over the conventional I-131 for this diagnostic purpose. Tc-99 m has low-energy gamma emissions with almost no beta emissions, a shorter half-life that allows for a faster study, and less production cost than conventional I-131.

Since the publication of this article, I-123 has been isolated and has replaced I-131 and Tc-99m as the optimal agent to use for thyroid scanning. Similar to Tc-99m, I-123 emits gamma emissions and no beta emissions, so the radiation exposure to the thyroid and surrounding tissues is minimal.[1] Unlike Tc-99m, I-123 is organified and trapped in thyroid follicles, and its uptake can be used as a direct measure of thyroid function. I-123 uptake is also specific to thyroid tissue, whereas Tc-99m may be taken up by other bodily organs such as the salivary glands. Therefore, I-123 is the ideal isotope for scintigraphy. However, owing to high costs, limited availability, and the longer half-life of I-123, Tc-99m is still used for diagnostic thyroid imaging in some institutions. Additionally, I-123 may not reliably demonstrate tissue with low iodine avidity.

Advances in other imaging modalities over the last 50 years have offered alternatives to dynamic thyroid imaging for detection of irregular thyroid descent. Computed tomography scans and magnetic resonance imaging can provide anatomic information not only of the ectopic thyroid tissue, but also on its relationship to the surrounding tissue. The advent of ultrasound examination with Doppler has made scintigraphy unnecessary in most circumstances, because it can take advantage of vascular information to sufficiently identify ectopic tissue, particularly thyroglossal duct cysts.[2] Nevertheless, scintigraphy remains an important modality to use when functional information is needed or when a normal thyroid gland is not visualized in its usual anatomic location on ultrasound examination.

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