Thyroid imaging

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The workhorse investigation in thyroid disease for the surgeon is ultrasonography . This modality allows assessment of the gland and the regional lymphatics. Not only can the characteristics of the gland substance be quantified, but critically the presence and features of thyroid nodules can be described. Number, size, shape, margins, vascularity and specific features such as the presence of microcalcifications can be used to predict the risk of malignancy within a specific nodule. Regional lymphatics, particularly in the lateral neck, can be assessed accurately for the presence of metastatic deposits. During ultrasonography , fine-needle aspiration (FNA) can be performed more accurately than free-hand techniques allow . Ultrasonography has the advantages that it is not asso ciated with ionising radiation and is non-invasive and cheap (Figure 55.5). Visualisation of the central neck nodes, in par ticular those behind the sternum, is however limited. For this oss-sectional reason, when metastatic disease is detected cr imaging is required to fully stage the disease. Retrosternal extension, which can often be predicted on a plain chest radio graph (Figure 55.6), also requires more advanced techniques to determine the extent adequately prior to considering man agement. For most of these indications, the imaging modality of choice is CT . Rapid acquisition times minimise artefacts secondary to breathing and the lung fields can be accurately assessed simultaneously . In the setting of an invasive primary thyroid cancer, both y have a role. Contrast-enhanced CT is useful CT and MRI ma Robert James Graves , 1796–1853, physician, Meath Hospital, Dublin, Ireland, published an account of exophthalmic goitre in 1835. He was President of the Royal College of Physicians of Ireland and elected Fellow of the Royal Society (London, UK) in 1849. - - - -

(b) Figure 55.5 Ultrasonography. (a) Transverse scan of a normal thyroid. R, right lobe; L, left lobe; T, trachea. (b) Longitudinal scan of normal jugular lymph nodes (white arrows). Figure 55.6 Chest

radiograph showing a retrosternal goitre with calci

/f_i cation and tracheal displacement (courtesy of Dr Achleshwar Dayal, Hoshangabad, MP , India).

for determining the extent of airway invasion (Figure 55.7 and MRI is superior at determining the presence of preverte bral fascia invasion. Positron emission tomography (PET) scans have limited application in thyroid disease. They may be considered in the setting of recurrent thyroid cancer. This is particularly use ful when the disease does not concentrate iodine, at which point fluorodeoxyglucose (FDG) uptake increases and lesions become positive on PET scans.

(b)

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