

ANATOMY OF THE PARATHYROID GLANDS

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The developmental embryology and surgical anatomy of the parathyroid glands are intimately linked, and knowledge of both is essential for successful surgical treatment of parathyroid disease. The parathyroid glands, of which there are four, develop from the third and fourth pharyngeal pouches between the

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Marcel Eugene Gley, 1857–1930, French pathologist.

William J MacCallum, 1874–1944, Professor of Pathology, Johns Hopkins Hospital, Baltimore, MD, USA.

Felix Mandl, 1892–1957, Professor of Surgery, Vienna, Austria.

fifth and 12th weeks of gestation. They are typically described as 'Portland brick' (yellow/brown) in colour and weigh approximately 30 mg. Approximately 13% of the population have abnormal parathyroid tissue, with 5% having a true supernumerary gland. The blood supply of both the superior and inferior parathyroid glands arises from the inferior thyroidal artery. While the location of the individual glands may vary significantly, there appears to be a degree of symmetry between opposite sides that can be helpful during surgical dissection. The inferior parathyroid gland and the thymus arise from the third pharyngeal pouch. As a result of the longer normal embryological descent, there is correspondingly more variation in their anatomical position. However, in more than 50% of cases they are located at the inferior pole of the thyroid gland, on the anterior, lateral or posterior surface. The gland itself is freely mobile within a globe of fat adjacent to the lower pole (Figure 56.1a). The superior parathyroid glands arise from the dorsal portion of the fourth pharyngeal pouch. As a result of their more limited embryological descent they are more constant in position. In more than 80% of patients, the superior parathyroid glands are located at the posterior aspect of the thyroid lobe in an area 2 cm in diameter, centred 1 cm around the junction of the inferior thyroid artery and the recurrent laryngeal nerve in strict proximity to the cricothyroid junction (Figure 56.1b). - The parathyroid glands are closely associated with, but contained within, a halo of fat that is freely mobile over the thyroid capsule.

The aetiology, presentation, investigation and management of secondary and tertiary hyperparathyroidism

The aetiology and management of parathyroid carcinoma

Undescended (above ITA) Below intersection ITA and RLN Mediastinal (b) In carotid sheath 1%
Paraoesophageal and below ITA Figure 56.1 Potential locations of the inferior (a) and superior (b)

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