

Images in surgery

This section features outstanding photographs of clinical materials selected for their educational value or message, or possibly their rarity. The images are accompanied by brief case reports (limit 2 typed pages, 4 references). Our readers are invited to submit items for consideration.

Supernumerary intravagal parathyroid hyperplasia

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A 46-YEAR-OLD WOMAN was referred to National Cheng-Kung University Hospital in January, 1997 with a diagnosis of renal hyperparathyroidism. She was uremic and had received hemodialysis for 10 years. She had bone pain and muscular weakness for 2 years and experienced 2 episodes of fractures during this period. There were no palpable neck masses, and the remainder of the physical examination showed no significant findings. Laboratory assessments revealed a serum calcium concentration of 11.1 mg/dL (normal range, 8.1-10.1 mg/dL), a serum phosphorus concentration of 6.3 mg/dL (normal range, 2.5-5.0 mg/dL), an alkaline phosphatase level of 813 U/L (normal range, 30-110 U/L), and an intact parathyroid hormone level of 1242 pg/mL (normal range, 10-65 pg/mL). Roentgenograms of the skull showed a pepper-and-salt appearance of the cranial bone and roentgenograms of the hands showed subperiosteal resorption of phalangeal bones. Sonographic examination of the neck revealed 5 hypoechoic nodules, 2 on the right and 3 on the left side.

During an operation, 4 hyperplastic parathyroid glands adjacent to the thyroid gland were identified. Subtotal parathyroidectomy and cervical thymectomy were performed, leaving a well-vascularized remnant of the left superior parathyroid gland of about 60 mg. Special attention was paid to the left lateral neck because 3 hypoechoic nodules were shown by preoperative sonography. Within the left carotid sheath, a fusiform swelling of the vagus nerve that initially was thought to be a neurogenic tumor was seen opposite the upper pole of the thyroid (Figure). The perineurium was split longitudinally and a 1.0 × 0.5-cm brownish mass was carefully enucleated from between the vagus fibers. Unexpectedly, on examination of frozen and permanent sections, the intravagal tissue was proved to be hyperplastic parathyroid.

Postoperatively, the serum calcium level dropped immediately to below the normal range and was maintained in the normal range with supplements of oral calcium carbonate and 1,25-dihydroxyvitamin D₃.

DISCUSSION

Ectopic parathyroid glands are well recognized and have been reported in a number of unusual locations. However, intravagal parathyroid glands are rare. Only 3 prior cases of primary hyperparathyroidism resulting from intravagal parathyroid adenoma have been reported.¹⁻⁴ No cases of supernumerary intravagal parathyroid hyperplasia

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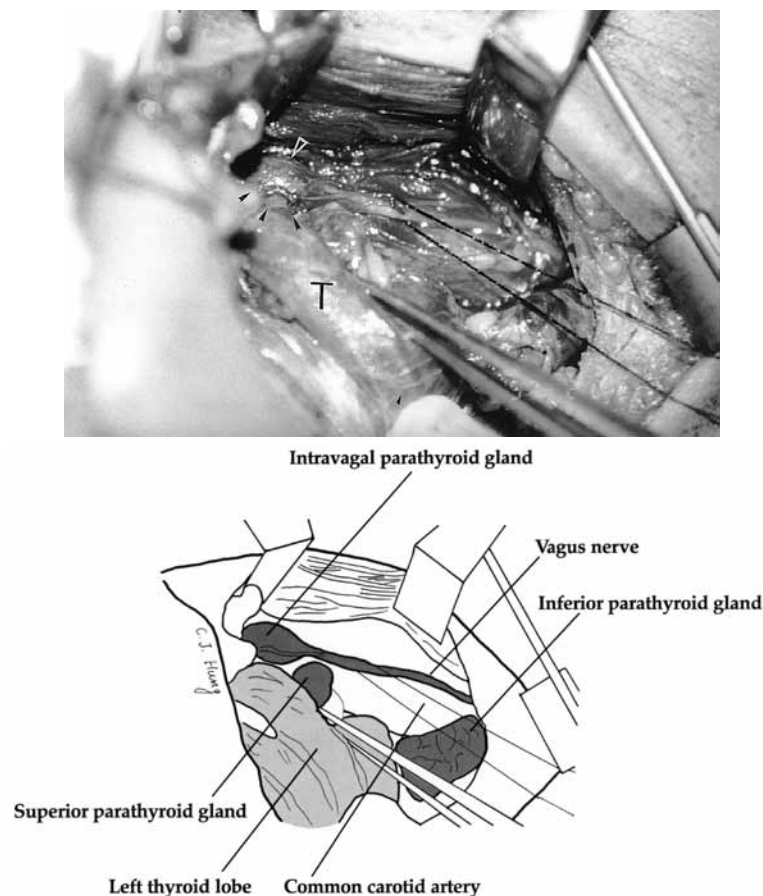


Figure. A fusiform swelling (*arrowheads*) of the left vagus nerve (*encircled by silk*) was seen opposite the upper pole of the thyroid (*T*).

have been reported to date. Herein, we present the first case of supernumerary intravagal parathyroid hyperplasia in a patient with uremia.

Anomalies in the number and anatomic position of the parathyroid glands are common. These anomalies challenge the endocrine surgeon in managing patients with hyperparathyroidism, especially in persistent or recurrent cases. In the majority of human beings, there are 4 parathyroid glands. The frequency of individuals with supernumerary glands has varied in different series. Supernumerary glands have been considered to be responsible for some cases of persistent or recurrent hyperparathyroidism after parathyroidectomy. In cases of secondary hyperparathyroidism, all the parathyroid glands—including the supernumerary glands—almost always are hyperplastic, and, therefore, can constitute a significant clinical problem. Ectopic parathyroid tissue has been reported in a number of unusual locations, such as the thymus, mediastinum, intrathyroid, undescended position, within the carotid sheath, and, rarely, within the submucosa of the esophagus and the hypopharynx.

In a postmortem study, Lack et al⁵ performed serial sections of both vagus nerves from the upper neck of 32 infants aged 1 year or younger. Four (6%) of the 64 nerves contained solitary microscopic collections of parathyroid chief cells, confirmed by their positive immunoreactivity for chromogranin and parathyroid hormone. The exact embryologic derivation of ectopic parathyroid tissue within the vagus nerve is still uncertain. Lack et al⁵ hypothesized that intravagal parathyroid tissue probably represents accessory or supernumerary tissue, which is thought to arise by a splitting off of the primordia during embryogenesis.

Clinically, only 3 prior cases of primary hyperparathyroidism due to intravagal parathyroid adenoma have been reported.¹⁻⁴ Intravagal hyperplastic parathyroid glands had not been detected in patients with multiple endocrine neoplasia or with chronic renal failure. Our case is the first case of supernumerary intravagal parathyroid hyperplasia presented to date. Appearance of more cases of supernumerary intravagal parathyroid hyperplasia may be expected. During preoperative localization

or surgical exploration, increased awareness of parathyroid ectopia in the upper neck and elsewhere may help to avert a failed operation for hyperparathyroidism.

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