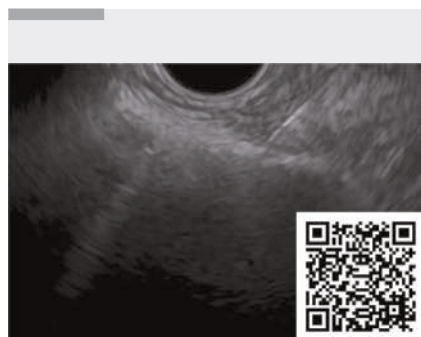
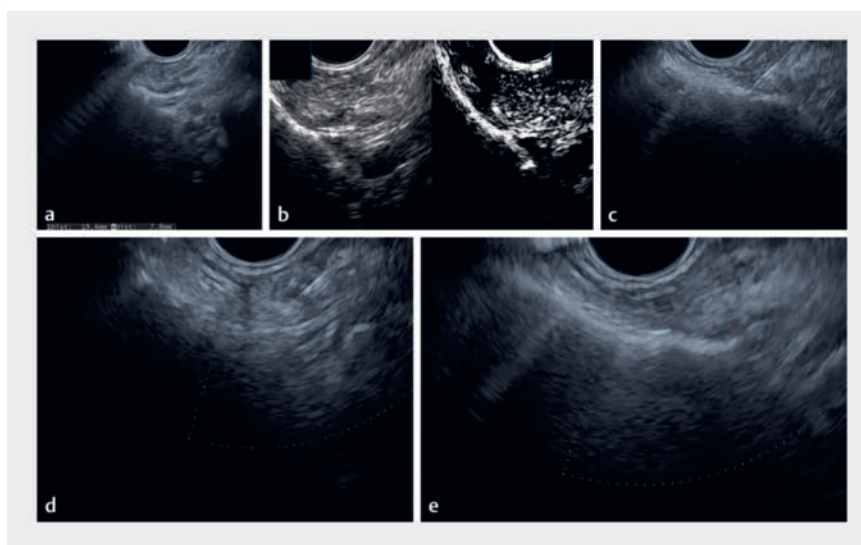


Ectopic mediastinal parathyroid diagnosed by contrast-enhanced endoscopic ultrasound-guided fine-needle aspiration and eluate parathormone level

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▶ Video 1 Sequential steps of endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) of an ectopic mediastinal parathyroid.



▶ Fig. 1 Endoscopic ultrasound (EUS) images showing the stages of the EUS-guided fine-needle aspiration (EUS-FNA) including: **a** identification of the parathyroid; **b** the use of contrast-enhanced EUS; **c, d** the EUS-FNA procedure being performed; **e** the appearance after the EUS-FNA.

Primary hyperparathyroidism is defined as an elevated serum calcium with an elevated or inappropriately normal parathyroid hormone (PTH), and rarely it can be due to an ectopic mediastinal parathyroid [1].

We describe a 68-year-old woman with a new diagnosis of primary hyperparathyroidism due to a suspected mediastinal parathyroid. Laboratory tests revealed an elevated serum calcium (11.5 mg/dL [normal range 8.8–10.1]), decreased serum phosphorus (2.1 mg/dL [2.5–4.5]), high parathormone (150 pg/mL [12–72]), and hypercalciuria (313 mg/day [>250 mg/day]). The patient also had multiple co-morbidities, including atrial fibrillation, obesity, and a multinodular goiter. According to recent guidelines, parathyroidectomy was indicated [1].

We performed endoscopic ultrasound (EUS) to identify the precise location of the ectopic parathyroid, using a linear echoendoscope (GF-UCT180; Olympus Medical, Tokyo, Japan) connected to an Arietta S70 (Hitachi-Aloka, Japan) [2,3]. We detected an ill-defined hypoechoic inhomogeneous lesion (19×8 mm) at

20 cm from the upper incisors on the right side of the esophagus (▶ **Video 1**). As we deemed B-mode scanning insufficient to proceed with EUS-guided fine-needle aspiration (EUS-FNA) safely, we investigated the lesion further with contrast-enhanced EUS after injection of one vial of Sonovue (Bracco, Italy), which showed a hyperenhanced lesion [4]. EUS-FNA was then performed with a 22G needle (Expect; Boston Scientific, USA). The aspirate was diluted in 2 mL normal saline and a real-time rapid PTH assay was performed. The cytologic appearance and PTH level on the diluted eluate (>2500 pg/mL) were diagnostic of an ectopic parathyroid (▶ **Fig. 1**).

For the detection of ectopic adenomas, current guidelines [1] recommend imaging methods such as neck ultrasound, scintigraphy, positron-emission tomography, and computed tomography, which may be inconclusive in some cases. EUS-

FNA and PTH testing on the eluate, which is usually more sensitive than the cytology of the specimen, should be considered. We believe that EUS-FNA is safe in these often co-morbid and frail patients, allowing appropriate referral for a major surgical intervention such as parathyroidectomy [5].

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Conflict of Interest

The authors declare that they have no conflict of interest.

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