

Endoscopic ultrasound-guided tattooing of a retroesophageal parathyroid adenoma

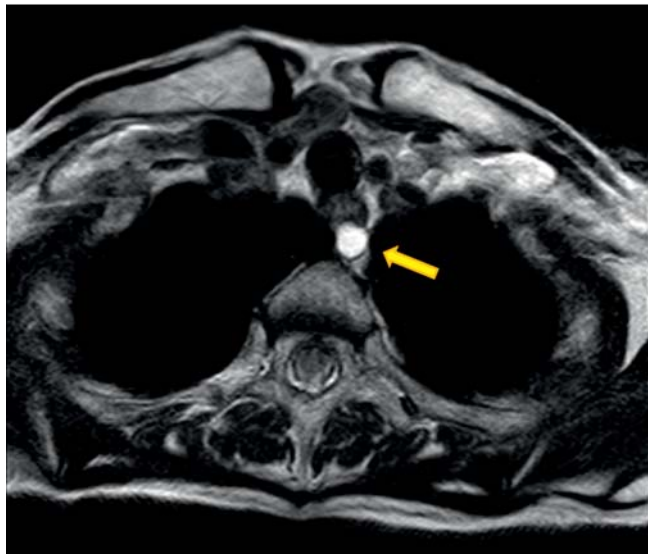


Fig. 1 Magnetic resonance imaging showed a small retroesophageal mass (arrow) at the level of the first dorsal vertebral body.

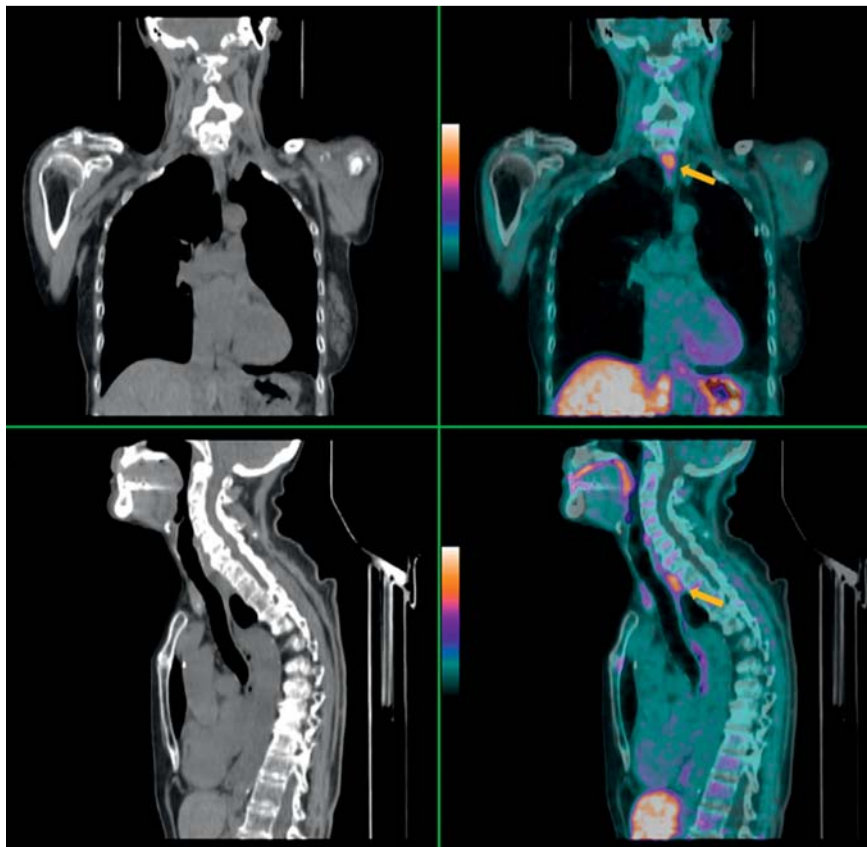


Fig. 2 11C-methionine positron emission tomography-computed tomography images demonstrated a focal area of uptake in the retroesophageal space (arrows). This finding was suspicious for ectopic enlarged parathyroid gland.

Primary hyperthyroidism (PHPT) results from an ectopic adenoma located in a retroesophageal space in about 3% of cases [1]. In these patients, parathyroidectomy is a challenge even for skilled surgeons due to difficulty in identifying the lesion in a very limited operating space between the cervical and thoracic regions. Preoperative imaging techniques include ultrasound, positron emission tomography-computed tomography (PET-CT) and magnetic resonance imaging (MRI) [2,3]. Endoscopic ultrasound (EUS) has been proposed as a tool for detecting parathyroid adenomas [4–6]. This report describes the case of a 74-year-old woman with PHPT.

Preoperative 99mTc-sestamibi scintigraphy showed a parathyroid adenoma behind the esophagus, which was confirmed by MRI (● Fig. 1) and 11C-methionine PET-CT (● Fig. 2). In an attempt to facilitate surgical identification, an operative EUS was performed in order to tattoo the target nodule.

The adenoma was visible from the upper esophagus as a 13-mm iso-hyperechoic nodule with a peripheral cyst, behind the esophagus. A 25-gauge needle (Echo-Tip Ultra; Cook Medical, Limerick, Ireland) was used under EUS guidance to inject 1 mL of ink into the nodule (● Fig. 3). During the injection, a hyperechoic blush was visualized around the tip of the needle. No complications were observed.

The patient underwent surgery 3 days after the tattooing procedure. A video-assisted parathyroidectomy was performed. Behind the esophagus, the black tattooed nodule guided the surgeons to perform a gentle dissection and excision of the adenoma. The tattoo was extremely precise and no ink had spread into the surrounding tissue (● Fig. 4). The intraoperative serum parathyroid hormone assay showed a drop to the normal range, and calcium serum level reached the normal value within the first postoperative day.

EUS-guided tattooing has been used to mark the location of small pancreatic neuroendocrine tumors [7]. The present case represents the first report of EUS-guided tattooing of a retroesophageal parathyroid adenoma. Its use for preoperative marking of a small tumor can be helpful to the surgeon by making surgical removal more precise and less invasive and thus avoiding unnecessary dissection.

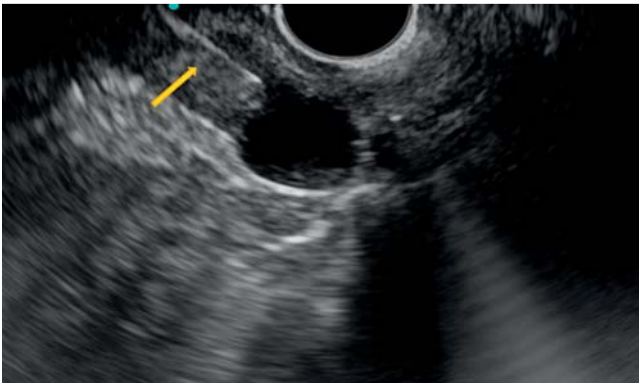


Fig. 3 Endoscopic ultrasound-guided fine-needle injection of ink into the parathyroid adenoma. The 25-gauge needle was seen as a hyperechoic line (arrow). 1 mL of sterile purified ink (dilution 0.5:10 000) was injected into the nodule and it was seen as a hyperechoic cloud inside the adenoma.



Fig. 4 The black tattooed nodule guided the surgeons to perform a gentle excision of the adenoma. Pathological analysis confirmed parathyroid adenoma.

Endoscopy_UCTN_Code_TTT_1AS_2AG

Competing interests: None

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DOI <http://dx.doi.org/10.1055/s-0034-1377586>
Endoscopy 2014; 46: E496–E497
© Georg Thieme Verlag KG
Stuttgart · New York
ISSN 0013-726X

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