Apparent Interval Contralateral Localization of a Retrovisceral Parathyroid Adenoma: A Diagnostic Pitfall on Sequential Imaging

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AUTHORS' CONTRIBUTION

Thi Thu Hang Nguyen, Viet Phuoc By, and Thu Huong Lai contributed to data acquisition and image analysis. Van Khang Le contributed to clinical management and data interpretation. Thi Thu Hang Nguyen contributed to study conception, manuscript drafting, and final revision. Dang Luu Vu supervised the study and critically revised the manuscript. All authors read and approved the final manuscript.

DISCLOSURES

The authors declare that they have no financial or competing interests to disclose.

CONSENT

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

HUMAN AND ANIMAL RIGHTS

This study did not involve any experiments on humans or animals. All procedures were conducted in accordance with institutional ethical standards and the principles of the Declaration of Helsinki (as revised in 2000).

ABSTRACT

Parathyroid adenoma is the most common cause of primary hyperparathyroidism, and accurate preoperative localization is essential for successful minimally invasive parathyroid surgery. However, discordant imaging findings may lead to failed surgical exploration and significant diagnostic uncertainty. We report a rare case of a 54-year-old woman with biochemically confirmed primary hyperparathyroidism in whom initial ultrasound and contrast-enhanced computed tomography demonstrated a hypervascular soft-tissue lesion posterior to the left thyroid lobe, suspicious for parathyroid adenoma. Based on these findings, left-sided minimally invasive cervical exploration was performed but failed to identify the lesion. Persistent postoperative hypercalcemia and elevated parathyroid hormone levels prompted follow-up imaging two weeks later, which demonstrated a hypervascular nodule of similar morphology posterior to the right thyroid lobe, associated with postoperative inflammatory changes in the left retrovisceral space. Retrospective comparison of the sequential imaging examinations suggested that differences in lesion position relative to the esophagus, together with postoperative changes within the retrovisceral space, may have contributed to the apparent contralateral localization rather than representing true ectopic disease. Repeat right cervical exploration successfully identified and removed a parathyroid adenoma, with subsequent normalization of serum calcium and parathyroid hormone levels. This case highlights an unusual imaging pitfall in parathyroid localization and emphasizes the importance of repeat multimodality imaging following unsuccessful minimally invasive exploration, particularly for lesions located within the retrovisceral space.

CASE REPORT

BACKGROUND

Primary hyperparathyroidism (PHPT) is most commonly caused by a parathyroid adenoma and requires accurate preoperative localization for successful minimally invasive parathyroid surgery. Ultrasound, Tc-99m sestamibi scintigraphy, and contrast-enhanced or four-dimensional computed tomography (4D-CT) are commonly used for lesion localization; however, adenomas within the retrovisceral space may demonstrate atypical or variable positioning because of the loose connective tissue planes in this region. In addition, their deep location, close relationship to the esophagus and thyroid gland, and potential for side-to-side interpretive ambiguity may further complicate localization. We report an unusual case of apparent interval contralateral localization of a retrovisceral parathyroid adenoma on sequential imaging examinations following unsuccessful minimally invasive cervical exploration.

CASE REPORT

Clinical Manifestation

A 54-year-old woman presented with persistent fatigue, diffuse bone pain, and recurrent nephrolithiasis. Biochemical evaluation demonstrated hypercalcemia with a serum calcium level of 3.2 mmol/L and an elevated parathyroid hormone (PTH) level of 362 pg/mL, consistent with primary hyperparathyroidism (PHPT). Other hematological and biochemical parameters were within normal limits. Initial Tc-99m sestamibi scintigraphy performed at an outside institution reportedly demonstrated no abnormal focal radiotracer uptake suggestive of parathyroid adenoma; however, the original imaging studies were unavailable for review. The patient subsequently underwent neck ultrasound and contrast-enhanced computed tomography (CT) for further preoperative localization of the suspected lesion.

Imaging Findings

Initial preoperative neck ultrasound demonstrated a well-circumscribed hypoechoic nodule measuring 16 × 8 × 7 mm (CC × TR × AP), located posterior to the left thyroid lobe and adjacent to the left lateral esophageal wall (Figure 1A). Color Doppler interrogation demonstrated marked internal vascularity within the lesion (Figure 1B), findings highly suggestive of parathyroid adenoma. Subsequent contrast-enhanced computed tomography of the neck confirmed a well-defined avidly enhancing soft tissue nodule within the left retrovisceral space (Figures 2A–2D). Multiplanar reformatted images demonstrated partial extension of the lesion across the retrovisceral space toward the right side, although the dominant component remained left-sided. No suspicious thyroid nodule or pathologic cervical lymphadenopathy was identified. Based on the concordant preoperative ultrasound and computed tomography findings, left-sided minimally invasive cervical exploration was performed. Despite careful exploration of the expected left retrothyroid operative field, no definite abnormal parathyroid tissue was identified. Given the preoperative localization findings and the planned focused minimally invasive approach, the procedure was not extended to a formal bilateral neck exploration or extensive retroesophageal dissection. To minimize unnecessary tissue trauma and the risk of complications, the procedure was therefore terminated.

Persistent postoperative hypercalcemia and elevated serum parathyroid hormone levels prompted repeat imaging evaluation two weeks later. Follow-up neck ultrasound demonstrated a persistent well-defined hypoechoic hypervascular nodule measuring 17 × 6 × 9 mm (CC × TR × AP), now localized posterior to the right thyroid lobe and adjacent to the right lateral esophageal wall (Figures 3A,3B). Repeat contrast-enhanced multiphase computed tomography similarly demonstrated an avidly enhancing right-sided retrovisceral nodule associated with postoperative edema and inflammatory fat stranding within the left retrovisceral space (Figures 4A–4E). Comparative review of the sequential imaging examinations suggested that differences in lesion position relative to the esophagus, together with postoperative changes within the retrovisceral space, may have contributed to the apparent change in side localization rather than representing true ectopic disease. Correlation of the sequential multimodality imaging findings explained the discordant localization and the failure of the initial minimally invasive exploration.

Management

Following a multidisciplinary review, a repeat right cervical exploration was performed. A well-circumscribed brownish-red soft tissue nodule was identified posterior to the right thyroid lobe and excised (Figure 5). Intraoperative frozen-section analysis confirmed parathyroid tissue. Final histopathological examination demonstrated a well-circumscribed parathyroid adenoma composed predominantly of chief cells without evidence of atypia or malignancy. Intraoperative parathyroid hormone monitoring and radioguided localization using Tc-99m sestamibi with a handheld gamma probe were not available at our institution. Surgical decision-making during both the initial and reoperative procedures, therefore, relied on repeat multimodality imaging, intraoperative anatomic findings, and intraoperative frozen-section confirmation.

Outcome and Follow-Up

The postoperative course was uneventful. Serum PTH levels returned to normal within 24 hours after reoperation, and serum calcium levels normalized within 48 hours, consistent with successful excision of the hyperfunctioning parathyroid adenoma. The patient recovered well and was discharged one week after surgery. Clinical and biochemical follow-up at 3, 6, and 12 months demonstrated sustained remission without evidence of recurrent hyperparathyroidism. The patient also reported resolution of fatigue and diffuse bone pain, with no recurrent nephrolithiasis during the follow-up period.

DISCUSSION

Etiology & Demographics

Primary hyperparathyroidism (PHPT) is an endocrine disorder characterized by autonomous overproduction of parathyroid hormone (PTH) from one or more parathyroid glands. It represents the leading cause of hypercalcemia in the outpatient setting [1,2]. A solitary parathyroid adenoma accounts for most cases, whereas multiglandular disease and parathyroid carcinoma are less common etiologies [1,3,4]. PHPT demonstrates a marked female predominance and is most commonly diagnosed in postmenopausal women during the fifth through seventh decades of life [1,5,6].

Accurate preoperative localization is central to the success of minimally invasive parathyroidectomy, particularly when a focused unilateral approach is planned [3,5,7]. Most parathyroid adenomas are located adjacent to the posterior aspect of the thyroid gland; however, lesions within the retrovisceral space may exhibit atypical or variable positioning due to the loose

connective tissue planes in this region [6,8]. The superior and inferior parathyroid glands arise from the fourth and third pharyngeal pouches, respectively. Variability in their embryologic migration contributes to the spectrum of ectopic and atypical parathyroid locations encountered in clinical practice, including retroesophageal and retrovisceral lesions [5,6].

Clinical & Imaging Findings

Clinical manifestations of PHPT range from asymptomatic hypercalcemia to symptomatic disease with nephrolithiasis, osteoporosis, fatigue, diffuse bone pain, gastrointestinal symptoms, and neuropsychiatric disturbances [1,5,7]. In the present case, the patient presented with recurrent nephrolithiasis, fatigue, and diffuse bone pain associated with markedly elevated serum calcium and PTH levels.

The key diagnostic challenge in this case was not the recognition of a hyperfunctioning parathyroid lesion, but the discordant side localization on sequential imaging. Initial ultrasound and CT examinations favored a left retrovisceral lesion, leading to left-sided minimally invasive exploration. Following unsuccessful exploration, repeat ultrasound and multiphase CT demonstrated a persistent hypervascular nodule with similar morphology posterior to the right thyroid lobe, associated with postoperative inflammatory changes in the left retrovisceral space.

Ultrasound typically demonstrates parathyroid adenomas as well-circumscribed hypoechoic lesions posterior to the thyroid gland, frequently associated with marked internal vascularity or a polar feeding vessel on color Doppler imaging [3,6]. Contrast-enhanced CT and 4D-CT provide complementary anatomic and enhancement information, particularly in patients with equivocal or discordant findings on ultrasound and scintigraphy [3,4,9,10]. Parathyroid adenomas classically demonstrate relatively low attenuation on non-contrast CT, avid arterial enhancement, and relative washout on delayed images; these features help differentiate them from cervical lymph nodes and exophytic thyroid nodules [4,9,10,11].

Retrospective multiplanar comparison of the sequential imaging studies suggested that the lesion was closely related to the retrovisceral space, where subtle changes in esophageal position and postoperative alterations may influence the apparent side of localization. This case highlights an important limitation of side-based localization in deep retrovisceral parathyroid lesions. In such cases, careful assessment of fixed anatomic landmarks and matched-level side-by-side comparison of sequential studies are essential, particularly when lesions are adjacent to the esophagus, cross the midline, or lie within the retroesophageal plane.

This case has several limitations. The outside Tc-99m sestamibi images were unavailable for direct review. Dynamic demonstration of lesion mobility was not feasible; therefore, the proposed mechanism underlying the apparent side-to-side localization difference remains inferential. Postoperative inflammatory changes may also have contributed to altered anatomic relationships within the retrovisceral space. Finally, intraoperative parathyroid hormone monitoring and radioguided localization were not available at our institution.

Treatment & Prognosis

Parathyroidectomy remains the definitive treatment for PHPT and is recommended for symptomatic patients as well as selected asymptomatic individuals meeting established surgical criteria [4,7]. Minimally invasive parathyroidectomy has increasingly replaced traditional bilateral neck exploration in patients with accurately localized single-gland disease [3-5,7]. In patients who are not surgical candidates, medical management with cinacalcet, bisphosphonates, or denosumab may be considered to control hypercalcemia and preserve bone mineral density [2,12].

Persistent PHPT following failed minimally invasive exploration should prompt systematic re-evaluation rather than blind contralateral surgery. Repeat multimodality imaging, retrospective review of prior studies, careful assessment of anatomic landmarks, and multidisciplinary discussion are essential before reoperative parathyroid surgery. If available, additional localization techniques such as single photon emission computed tomography (SPECT/CT), 4D-CT, choline positron emission tomography (choline PET), and magnetic resonance imaging (MRI) may be considered in selected patients with persistent or discordant localization findings [3-5,13,14].

In the present case, retrospective review of sequential imaging studies enabled recognition of apparent interval contralateral localization of a retrovisceral adenoma, thereby facilitating successful repeat surgical exploration and definitive lesion excision. Prognosis following successful parathyroidectomy is excellent, with reported biochemical cure rates exceeding 95–98% in experienced centers [1,2,7]. The patient demonstrated sustained biochemical remission and clinical improvement without evidence of recurrent hyperparathyroidism during follow-up.

CONCLUSION

Retrovisceral parathyroid adenomas may present a significant localization challenge and can demonstrate apparent side-to-side positional variation on sequential imaging studies. Following unsuccessful focused exploration, repeat multimodality imaging with careful reassessment of fixed anatomic landmarks may reveal the correct lesion location and facilitate successful reoperative parathyroid surgery.

Differential diagnosis

In patients with hypercalcemia and elevated PTH levels, a hypervascular deep neck lesion should raise a strong suspicion for parathyroid adenoma. However, several important imaging

mimics should be considered, particularly when the lesion is located within the retrovisceral or tracheoesophageal region [2,4,6,14].

TEACHING POINT

Deep retrovisceral parathyroid adenomas may demonstrate apparent side-to-side localization differences on sequential imaging examinations. Following failed minimally invasive exploration, repeat multimodality imaging and meticulous side-by-side comparison with prior studies, focusing on fixed anatomic landmarks rather than side assignment alone, are essential for accurate lesion localization and successful reoperative parathyroid surgery.

QUESTIONS

Question 1: What is the most common cause of primary hyperparathyroidism?

1. Multiglandular hyperplasia.
2. Parathyroid carcinoma.
3. Solitary parathyroid adenoma (applies).
4. Metastatic thyroid carcinoma.
5. Chronic thyroiditis.

Explanation for Question 1: A solitary parathyroid adenoma accounts for approximately 80–90% of cases of primary hyperparathyroidism, whereas multiglandular disease and parathyroid carcinoma are less common causes. [A solitary parathyroid adenoma accounts for most cases, whereas multiglandular disease and parathyroid carcinoma are less common etiologies.]

Question 2: On 4-dimensional computed tomography, which classic enhancement pattern most reliably identifies a parathyroid adenoma relative to the thyroid gland?

1. High attenuation on non-contrast images with poor enhancement on subsequent phases.
2. Poor enhancement in the arterial phase followed by a progressive plateau in the delayed phase.
3. Low attenuation on non-contrast images, avid enhancement in the arterial phase, and rapid washout in the delayed phase (applies).
4. Peripheral ring enhancement with a non-enhancing necrotic central cavity.
5. Absence of contrast enhancement across all phases due to a predominantly cystic internal structure.

Explanation for Question 2: Four-dimensional computed tomography evaluates tissue enhancement characteristics over time following intravenous contrast administration. Parathyroid adenomas typically demonstrate lower attenuation than the thyroid gland on non-contrast images, avid arterial-phase enhancement due to hypervascularity, and relative washout on delayed imaging. [Parathyroid adenomas classically demonstrate relatively low attenuation on non-contrast CT, avid arterial enhancement, and relative washout on delayed images; these features help differentiate them from cervical lymph nodes and exophytic thyroid nodules.]

Question 3: Which imaging feature on color Doppler ultrasound is commonly associated with parathyroid adenoma?

1. Complete absence of vascularity.
2. Peripheral eggshell calcification.
3. Polar feeding vessel and marked internal vascularity (applies).
4. Posterior acoustic shadowing with dense calcification.
5. Central fatty hilum with hilar vascularity.

Explanation for Question 3: Parathyroid adenomas on ultrasound typically appear as hypoechoic lesions posterior to the thyroid gland and frequently demonstrate marked internal vascularity or a characteristic polar feeding vessel on color Doppler imaging. [Ultrasound typically demonstrates parathyroid adenomas as well-circumscribed hypoechoic lesions posterior to the thyroid gland, frequently associated with marked internal vascularity or a polar feeding vessel on color Doppler imaging.]

Question 4: Which anatomic feature may contribute to apparent side-to-side localization differences in a deep retroesophageal parathyroid lesion?

1. Rigid fixation of the adenoma to the retrovisceral fascia.
2. The presence of loose connective tissue planes within the retrovisceral or retroesophageal space (applies).
3. Migration is strictly limited to the vertical path of the recurrent laryngeal nerve.
4. Position within the carotid sheath that restricts lateral movement.
5. Direct invasion into the muscularis propria of the esophagus, causing positional stability.

Explanation for Question 4: The retrovisceral space contains loose connective tissue planes that do not rigidly fix structures in place. This anatomic characteristic may permit apparent interval displacement of a deep retrovisceral parathyroid adenoma between sequential imaging examinations. [Most parathyroid adenomas are located adjacent to the posterior aspect of the thyroid gland; however, lesions within the retrovisceral space may demonstrate atypical or variable positioning because of the loose connective tissue planes in this region.]

Question 5: What is the most appropriate management strategy in a patient with persistent primary hyperparathyroidism following unsuccessful minimally invasive parathyroidectomy?

1. Perform immediate blind contralateral thyroid lobectomy without further imaging.
2. Transition the patient to permanent medical management with calcimimetic agents.
3. Perform repeat multimodality imaging with careful retrospective correlation of sequential imaging studies (applies).
4. Administer external beam radiation therapy to the neck to ablate residual parathyroid tissue.
5. Perform blind surgical biopsy of all identified deep cervical lymph nodes.

Explanation for Question 5: Persistent primary hyperparathyroidism following failed minimally invasive exploration requires careful reassessment before reoperation. Repeat multimodality imaging and retrospective comparison of sequential studies may identify side ambiguity, interval positional change, or previously overlooked localization findings, thereby

facilitating successful targeted re-exploration. [Persistent PHPT following failed minimally invasive exploration should prompt systematic re-evaluation rather than blind contralateral surgery. Repeat multimodality imaging, retrospective review of prior studies, careful assessment of anatomic landmarks, and multidisciplinary discussion are essential before reoperative parathyroid surgery.]

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FIGURES

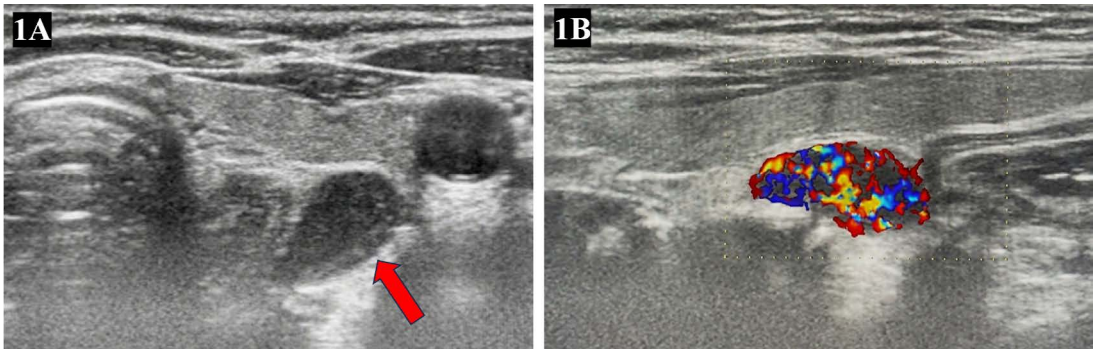

Figure 1: 54-year-old woman with primary hyperparathyroidism and initial left-sided localization of a retrovisceral parathyroid adenoma.

FINDINGS: Grayscale neck ultrasound demonstrates a well-circumscribed hypoechoic nodule measuring 16 × 8 × 7 mm (CC × TR × AP), located posterior to the left thyroid lobe and adjacent to the left lateral esophageal wall (red arrow, Figure 1A). Color Doppler imaging demonstrates marked internal vascularity within the lesion (Figure 1B).

TECHNIQUE: B-mode and color Doppler ultrasound examination of the neck was performed using a linear-array 7 MHz transducer with a thyroid preset

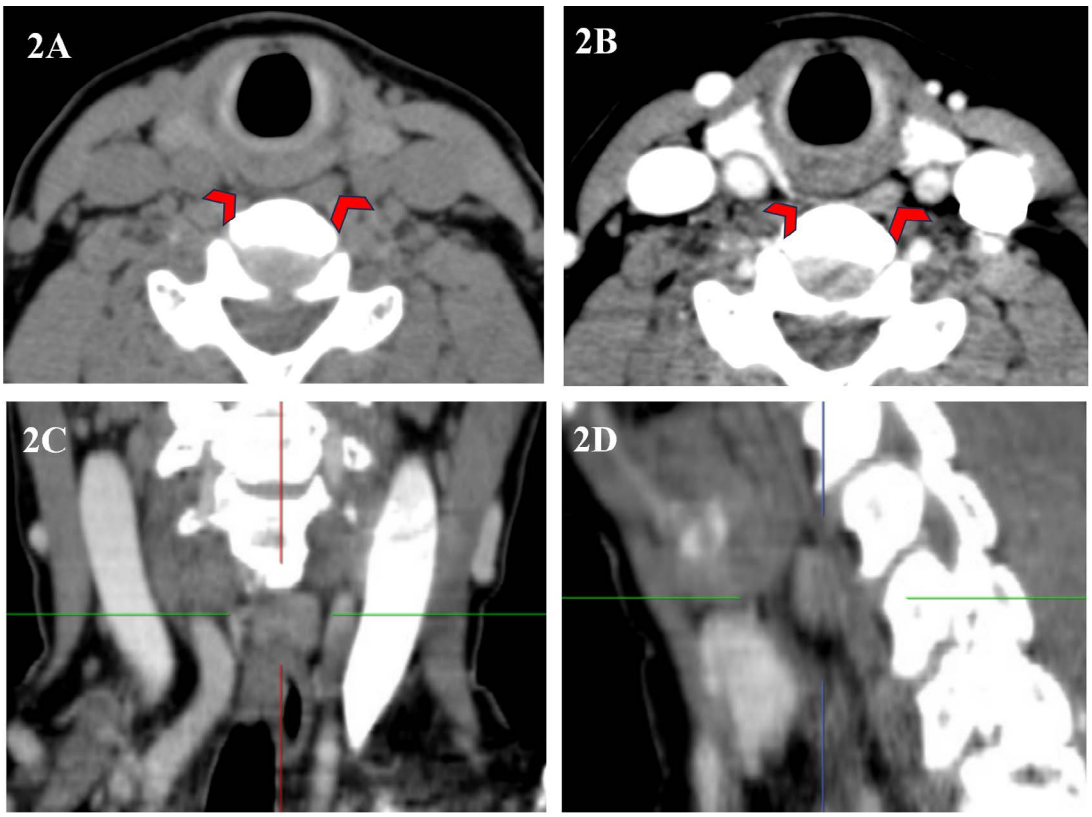

Figure 2: 54-year-old woman with primary hyperparathyroidism and initial left-sided localization of a retrovisceral parathyroid adenoma **FINDINGS:** Non-contrast computed tomography image (Figure 2A) and arterial-phase contrast-enhanced computed tomography images in the axial (Figure 2B), coronal (Figure 2C), and sagittal planes (Figure 2D) demonstrate a well-defined soft tissue nodule measuring 16 × 9 × 7 mm (CC × TR × AP), located posterior to the left thyroid lobe and adjacent to the esophagus (red arrows). The lesion demonstrates avid arterial enhancement following intravenous contrast administration. A portion of the lesion extends across the retrovisceral space toward the contralateral side.

TECHNIQUE: Non-contrast and arterial-phase contrast-enhanced neck computed tomography examinations were performed using 100–120 kVp and 150–300 mAs with thin-section axial acquisition (reconstructed slice thickness: 1.5 mm) and multiplanar reformatted images in the coronal and sagittal planes. Intravenous iodinated contrast material (Ultravist 370 mgI/mL) was administered at a volume of 60–80 mL with an injection rate of 3–4.5 mL/s.

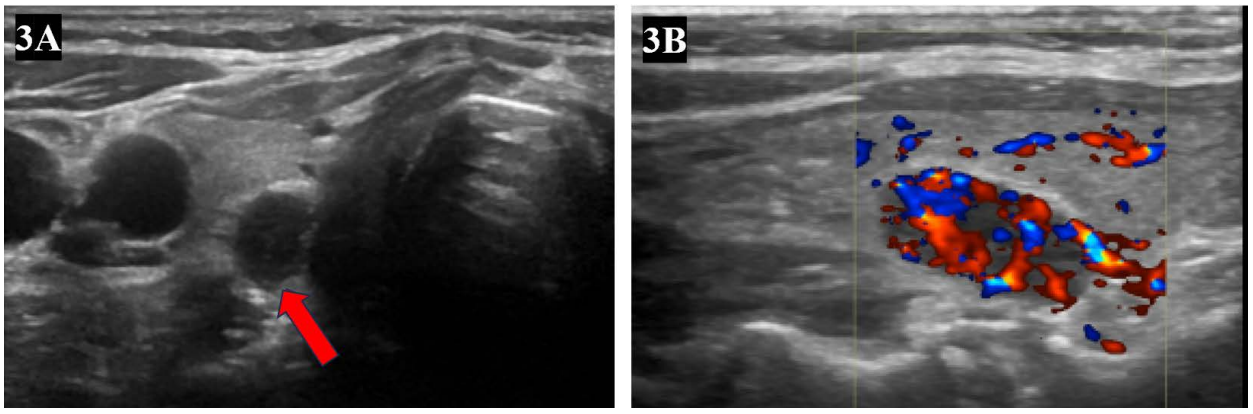

Figure 3: 54-year-old woman with persistent primary hyperparathyroidism following unsuccessful left minimally invasive exploration

FINDINGS: Follow-up grayscale neck ultrasound performed 2 weeks after surgery demonstrates a well-defined hypoechoic nodule measuring 17 × 6 × 9 mm (CC × TR × AP), located posterior to the right thyroid lobe and adjacent to the right lateral esophageal wall (red arrow, Figure 3A). Color Doppler imaging demonstrates marked internal vascularity within the lesion (Figure 3B). These findings were suspicious for a parathyroid adenoma demonstrating apparent interval contralateral localization.

TECHNIQUE: B-mode and color Doppler ultrasound examination of the neck was performed using a linear-array 9 MHz transducer with a thyroid preset.

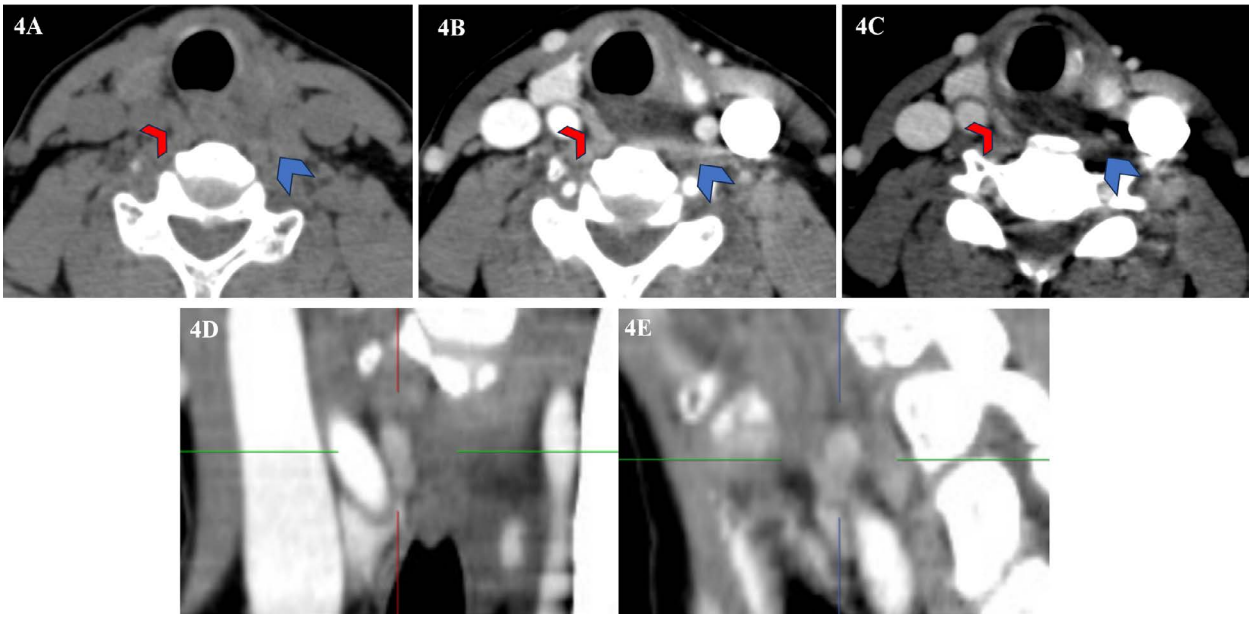

Figure 4: 54-year-old woman with persistent primary hyperparathyroidism following unsuccessful left minimally invasive exploration

FINDINGS: Follow-up multiphase computed tomography obtained 2 weeks after surgery demonstrated postoperative edema and inflammatory fat stranding within the left retrovisceral space, causing mild rightward displacement of the esophagus (blue arrows, Figures 4A–4C). A well-defined hyperenhancing soft tissue nodule was identified posterior to the right thyroid lobe and adjacent to the right lateral esophageal wall (red arrows). The lesion measured approximately 51 HU on the non-contrast image (Figure 4A), demonstrated avid arterial enhancement up to 104 HU (Figure 4B), and showed relative washout to 74 HU on delayed venous-phase imaging (Figure 4C). Coronal and sagittal arterial-phase reformatted images further demonstrated the right-sided retrovisceral lesion (Figures 4D–4E). These findings were suspicious for a parathyroid adenoma demonstrating apparent interval contralateral localization.

TECHNIQUE: Non-contrast, arterial-phase, and delayed venous-phase contrast-enhanced neck computed tomography examinations were performed using 100–120 kVp and 150–300 mAs with thin-section axial acquisition (reconstructed slice thickness: 1.5 mm) and multiplanar reformatted images in the axial, coronal, and sagittal planes. Intravenous iodinated contrast material (Ultravist 370 mgI/mL) was administered at a volume of 60–80 mL with an injection rate of 3–4.5 mL/s.

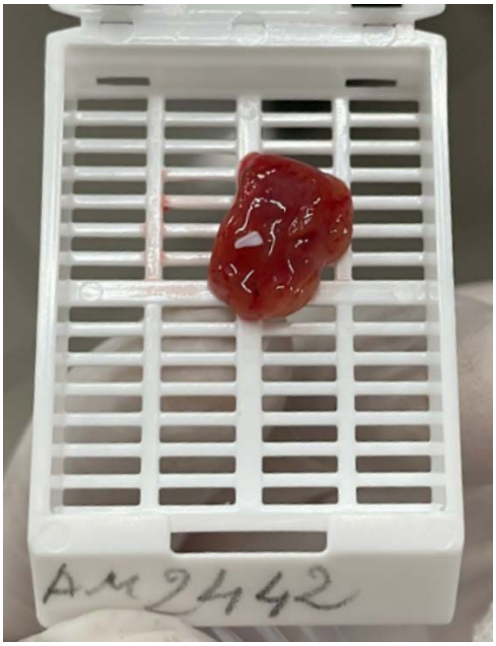

Figure 5: 54-year-old woman with persistent primary hyperparathyroidism following unsuccessful left minimally invasive exploration, undergoing repeat right cervical exploration.

FINDINGS: Gross examination revealed a well-circumscribed soft tissue nodule located posterior to the right thyroid lobe, measuring 17 × 10 × 8 mm. The lesion was brownish-red and soft in consistency. Intraoperative frozen-section analysis demonstrated findings consistent with parathyroid adenoma, which was subsequently confirmed on final histopathological examination.

TECHNIQUE: Intraoperative gross specimen photograph obtained under standard operating-room lighting with a surgical ruler for size reference.

Table 1: Clinical timeline of imaging findings, surgical interventions, and postoperative follow-up

Time point	Event and key findings
Initial presentation	Fatigue, diffuse bone pain, recurrent nephrolithiasis, hypercalcemia, and elevated PTH levels consistent with PHPT.
Initial localization imaging	Outside Tc-99m sestamibi scintigraphy was reportedly negative. Neck ultrasound and contrast-enhanced CT demonstrated a hypervascular nodule posterior to the left thyroid lobe and adjacent to the esophagus.
First operation	Left-sided minimally invasive cervical exploration was performed, but failed to identify a definite parathyroid lesion within the expected operative field.
Two weeks later	Persistent postoperative hypercalcemia and elevated PTH levels prompted repeat ultrasound and multiphase CT, which demonstrated a hypervascular retrovisceral nodule apparently localized posterior to the right thyroid lobe.
Second operation	Right-sided cervical re-exploration identified and removed the lesion posterior to the right thyroid lobe; frozen-section analysis and final histopathology confirmed parathyroid adenoma.
Follow-up	Serum PTH and calcium levels normalized after reoperation, with sustained biochemical remission at 3, 6, and 12 months.

Table 2: Differential diagnosis of a hypervascular retrovisceral neck lesion in primary hyperparathyroidism

Differential diagnosis	Helpful imaging features	Reason less likely in this case
Parathyroid adenoma	Hypoechoic hypervascular nodule on ultrasound; avid arterial enhancement with relative delayed washout on multiphase CT.	Biochemical PHPT, operative findings, histopathology, and postoperative biochemical cure supported the diagnosis.
Cervical lymph node	Typically oval with a preserved fatty hilum and central hilar vascularity; enhancement pattern is less characteristic.	No suspicious cervical lymphadenopathy was identified, and the lesion demonstrated marked hypervascularity within the retrovisceral space.
Exophytic thyroid nodule	Continuity with thyroid parenchyma and enhancement similar to thyroid tissue favor thyroid origin.	The lesion appeared separate from the thyroid gland and was confirmed histologically as parathyroid tissue.

KEYWORDS

Primary hyperparathyroidism; Parathyroid adenoma; Multiphase CT; 4D-CT; Ultrasound; Retrovisceral space; Diagnostic pitfall; Reoperative parathyroid surgery.

ABBREVIATIONS

CT = Computed Tomography
4D-CT = Four-Dimensional Computed Tomography
US = Ultra Sound
PHPT = Primary Hyper Para Thyroidism
PTH = Para Thyroid Hormone
MIP = Minimally Invasive Parathyroidectomy
MPR = Multi Planar Reformatted
SPECT/CT = Single-Photon Emission Computed Tomography/Computed Tomography
PET = Positron Emission Tomography
MRI = Magnetic Resonance Imaging

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