

Ectopic parathyroid and its role in surgical failure

Murilo Catafesta das Neves¹, Marcello Rosano¹, Rodrigo Oliveira Santos¹

¹ Otorrinolaringologia e Cirurgia de Cabeça e Pescoço, Escola Paulista de Medicina, Universidade Federal de São Paulo, São Paulo, SP, Brazil.

DOI: 10.31744/einstein_journal/2025AI1403

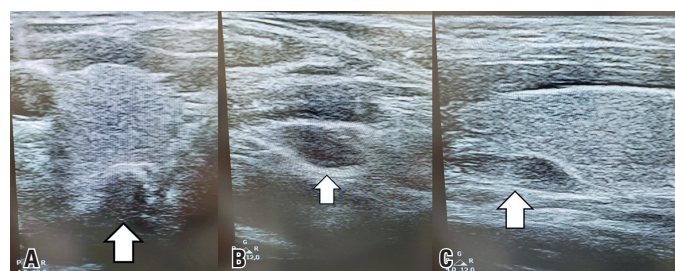


Figure 1. Preoperative ultrasound showing three parathyroid glands. (A) Arrow indicating the right superior parathyroid gland; (B) arrow indicating the right inferior parathyroid gland; (C) arrow indicating the left superior parathyroid gland

How to cite this article:

Neves MC, Rosano M, Santos RO. Ectopic parathyroid and its role in surgical failure. *einstein* (São Paulo). 2025;23:eAI1403.

Associate Editor:

Leandro Luongo Matos
Faculdade Israelita de Ciências da Saúde Albert Einstein, Hospital Israelita Albert Einstein, São Paulo, SP, Brazil
ORCID: <https://orcid.org/0000-0002-5068-8208>

Corresponding author:

Murilo Catafesta das Neves
Rua Botucatu, 572 - Vila Clementino
Zip code: 04023-062 - São Paulo, SP, Brazil
Phone: (55 11) 99251-1941
E-mail: drmuriloneves@gmail.com

Received on:

Sep 17, 2024

Accepted on:

Nov 4, 2024

Copyright the authors



This content is licensed under a Creative Commons Attribution 4.0 International License.

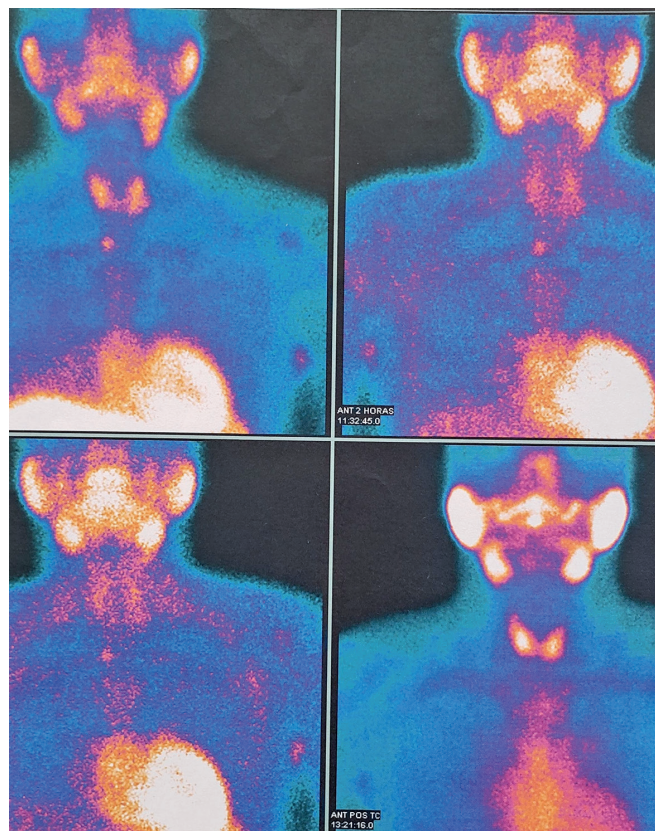


Figure 2. Planar Sestamibi scan showing an inferior parathyroid gland located in the upper right mediastinum

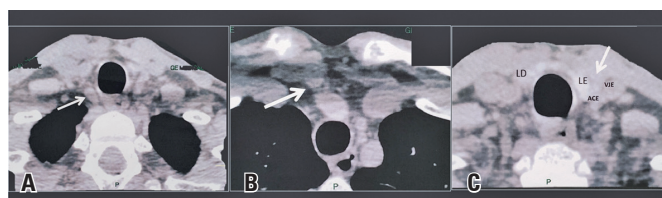


Figure 3. Preoperative SPECT-CT showing three possible parathyroid glands corroborating the ultrasound findings. The white arrows indicate the right superior parathyroid gland (A), right inferior parathyroid gland (B), and left superior parathyroid gland (C)

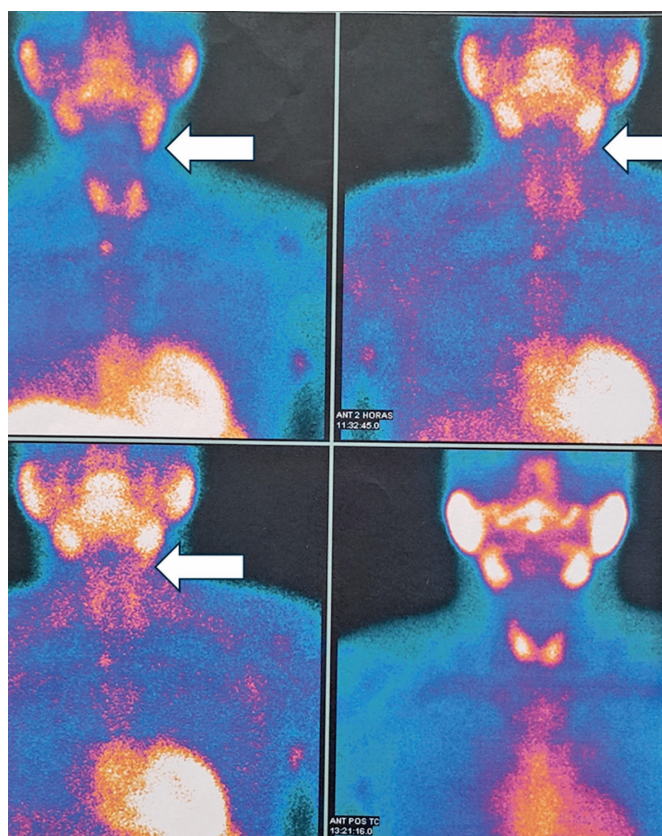


Figure 4. Reevaluation of Sestamibi imaging showing asymmetric uptake along the left submandibular region (indicated by the white arrows)

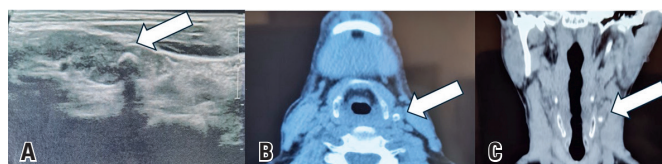


Figure 5. Target ultrasound (A) and computed tomography (B and C) showing an ectopic, non-descended inferior left parathyroid gland located in the submandibular region. The white arrows indicate the ectopic gland. Identification was facilitated by the observation of an intraparenchymal calcification

A 32-year-old man with renal hyperparathyroidism was referred for surgical treatment after exhausting clinical measures for metabolic control.^(1,2) Combined analysis of neck ultrasound (Figure 1) and Sestamibi (Figure 2)/SPECT-CT (Figure 3) findings enabled the identification of three possible enlarged parathyroid glands.⁽³⁾ The right and left superior parathyroid glands were located in their usual positions beneath the thyroid gland, while the right inferior parathyroid gland was found in the upper mediastinum.

During surgery, the three identified glands were successfully located and removed. However, despite extensive dissection of the neck and upper mediastinum, the left inferior parathyroid gland could not be found.⁽⁴⁾ The intraoperative PTH failed to decline as expected, indicating the presence of a fourth ectopic gland.⁽⁵⁾

The patient's condition showed mild metabolic improvement, but elevated PTH levels persisted, associated with hypercalcemia.

A comprehensive review of the Sestamibi/SPECT-CT images suggested the possibility of an undescended left parathyroid gland adjacent to the submandibular gland (Figure 4). Targeted ultrasound and CT (Figure 5), along with fine-needle aspiration, confirmed the presence of an ectopic, non-descended inferior left parathyroid gland, which was subsequently excised during a second surgery via a direct approach to the submandibular area.

It is essential to thoroughly evaluate localization exams to consider all potential ectopic locations of parathyroid glands and minimize the risk of surgical failure. Although undescended parathyroid glands are rare, ectopic glands are a significant cause of initial surgical failure and reoperation.⁽⁶⁾

AUTHORS' CONTRIBUTION

Murilo Catafesta das Neves: study concept and design, drafting the manuscript, revision of the manuscript. Marcello Rosano and Rodrigo Oliveira Santos: study concept and design, revision of the manuscript

AUTHORS' INFORMATION

Neves MC: <http://orcid.org/0000-0002-8094-6298>
Rosano M: <http://orcid.org/0000-0002-3026-466X>
Santos RO: <http://orcid.org/0000-0003-1172-4621>

REFERENCES

1. Rocha LA, Neves MC, Montenegro FL. Parathyroidectomy in chronic kidney disease. *J Bras Nefrol.* 2021;43(4 Suppl 1):669-73.

2. Lau WL, Obi Y, Kalantar-Zadeh K. Parathyroidectomy in the management of secondary hyperparathyroidism. *Clin J Am Soc Nephrol*. 2018;13(6):952-61.
3. Spence RA, Patterson TJ, Currie P, Convie L, Tong L, Brown T, et al. Renal failure parathyroidectomy - Is pre-operative imaging worthwhile? *Surgeon*. 2019;17(4):201-6.
4. Neves MC, Rocha LA, Cervantes O, Santos RO. Initial surgical results of 500 Parathyroidectomies for Hyperparathyroidism related to chronic kidney disease - mineral and bone disorder. *J Bras Nefrol*. 2018;40(4):319-25.
5. Ohe MN, Santos RO, Kunii IS, Carvalho AB, Abrahão M, Neves MC, et al. Intraoperative PTH cutoff definition to predict successful parathyroidectomy in secondary and tertiary hyperparathyroidism. *Braz J Otorhinolaryngol*. 2013;79(4):494-9.
6. Okada M, Tominaga Y, Yamamoto T, Hiramitsu T, Narumi S, Watarai Y. Location Frequency of Missed Parathyroid Glands After Parathyroidectomy in Patients with Persistent or Recurrent Secondary Hyperparathyroidism. *World J Surg*. 2016;40(3):595-9.