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SOLVING THE UNLOCALIZED PARATHYROID: EXPERIENCE WITH SELECTIVE VENOUS SAMPLING IN THREE PATIENTS

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INTRODUCTION

Accurate preoperative localization is essential for the surgical management of primary hyperparathyroidism (PHPT). Although ultrasound, technetium-99m sestamibi scintigraphy, and 4D-CT provide high localization rates, a subset of patients have non-localizing or discordant imaging. Selective parathyroid venous sampling (PVS) is an invasive adjunct that measures regional parathyroid hormone (PTH) gradients to aid localization in challenging cases. We present a three-patient case series demonstrating the utility of PVS in diagnostically complex PHPT.

CASES

We retrospectively reviewed three female patients (ages 44–63) with biochemically confirmed PHPT who underwent selective PVS following negative or discordant imaging. Venous sampling was performed via femoral access with catheterization of bilateral internal jugular, brachiocephalic, and bilateral thyroidal veins. PTH levels were measured at each site and compared to peripheral levels to identify regional gradients. Surgical findings, intraoperative parathyroid hormone monitoring (IOPTH), histopathology, and postoperative biochemical outcomes were recorded.

All patients had non-localizing or discordant preoperative imaging (USG, sestamibi, 4D-CT). PVS identified significant PTH gradients, guiding focused parathyroidectomy. IOPTH monitoring confirmed successful excision in all operated patients. Histopathology confirmed parathyroid adenoma in two cases; in the third case, the parathyroid tissue was identified within the thyroid gland. Postoperative PTH levels suppressed (range 0.79–1.48 pg/mL) in keeping with successful parathyroidectomy.

CONCLUSION

PVS effectively lateralized disease in imaging-negative PHPT and directly guided surgical management. When conventional imaging fails, PVS combined with intraoperative PTH monitoring enables targeted surgery and favorable biochemical outcomes.