

Primary Hyperparathyroidism Caused by Parathyroid Adenoma Diagnosed by Fine-Needle Aspiration Washout and Successfully Treated with Ablation

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ABSTRACT

Primary hyperparathyroidism usually happens when a single parathyroid gland grows a non-cancerous tumour called an adenoma. The standard treatment has traditionally been surgery. But recently, for certain patients, less invasive heat-based techniques have started to show promise as an alternative.

Case presentation: Take the case of a 30-year-old woman who came in feeling more and more tired and had an odd, intermittent choking sensation in her neck. Blood tests showed her parathyroid hormone (PTH) was high, while her phosphorus was low and she was low in vitamin D. An ultrasound of her neck found a suspicious spot on the left side, about the size of 21 × 13.4 × 6.3 mm, looking very much like a parathyroid adenoma. To confirm it, doctors did a fine-needle biopsy. When they washed out the needle and tested the fluid, the PTH level was over 5000 pg/mL—clearly confirming the diagnosis. The patient then had an ultrasound-guided radiofrequency ablation done by an interventional radiologist. After the procedure, the adenoma shrank significantly—down to 10 × 6.5 × 6.2 mm. Her lab results improved a lot too: her PTH dropped to 22.6 pg/mL, and her calcium normalised to 9.6 mg/dL. This case shows that radiofrequency ablation could be a real option for certain people with parathyroid adenoma—offering good results with less invasiveness and faster biochemical recovery.

Keywords: Primary hyperparathyroidism, Parathyroid adenoma, Radiofrequency ablation, Minimally invasive treatment, Parathyroid hormone

INTRODUCTION

Primary hyperparathyroidism is a hormonal disorder where the body makes too much PTH on its own, usually because of a single benign adenoma. That excess PTH throws off calcium and phosphorus levels, and it can cause vague but troubling symptoms like fatigue, weakness, brain fog, tummy troubles, and bone issues.

Surgery has long been the go-to treatment for people with symptoms. But lately, non-surgical image-guided techniques like radiofrequency ablation (RFA) and microwave ablation (MWA) have been gaining ground. They're especially appealing for people who aren't ideal surgical candidates or who just want a less invasive option.

Here, we describe a young woman whose parathyroid adenoma—and the symptoms it caused—was successfully treated with thermal ablation, leading to clear improvements in both her blood work and imaging.

CASE PRESENTATION

A 30-year-old woman walked into the endocrinology clinic feeling progressively more tired and weak, and she mentioned an odd, on-and-off choking feeling in her neck. She hadn't had kidney stones, any prior neck surgery, or known hormone problems.

Her initial lab work came back with a TSH of 1.55 mU/mL and free T4 of 0.79 ng/dL—pretty normal. But she did have very low ferritin (3.1 ng/mL) and low vitamin D (17.36 ng/mL). Her phosphorus was also low at 0.87 mmol/L, and her hemoglobin was 9 g/dL with a hematocrit of 27%, pointing to anaemia.

Her PTH was elevated at 142.6 pg/mL, and her calcium was borderline high at 10 mg/dL.

A neck ultrasound showed an elongated, dark-looking spot in the left parathyroid area, roughly 21 × 13.4 × 6.3 mm, suspicious for a parathyroid adenoma. To be sure, they did a fine-needle biopsy and checked the washout fluid for PTH. It came back above 5000 pg/mL—strongly confirming the diagnosis.



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After a team of specialists reviewed her case, she had an ultrasound-guided thermal ablation done by an interventional radiologist. The procedure went smoothly with no major complications.

Afterwards, an ultrasound showed the lesion had shrunk to 10 × 6.5 × 6.2 mm. Her labs improved dramatically too: PTH fell to 22.6 pg/mL, and calcium normalised to 9.6 mg/dL.

She was rechecked three months later to see how well the tissue had healed and if her remission was holding.

DISCUSSION

Parathyroid adenomas cause about 80–85% of primary hyperparathyroidism cases. Surgery is still the gold standard, but less invasive methods are now real options for the right patients.

Heat-based techniques like RFA and microwave ablation have shown great promise recently. They work by zapping the adenoma tissue until it undergoes coagulative necrosis—all without a big surgical cut or long recovery.

In this case, the diagnosis wasn't just based on imaging; the extremely high PTH from the biopsy washout sealed it. That washout test has become a very helpful tool when imaging alone isn't enough.

Our patient's labs improved quickly after the procedure—calcium normalised, PTH dropped sharply, and the adenoma visibly shrank on follow-up ultrasound.

This case shows that thermal ablation could be a really effective, low-impact option for selected patients. Still, long-term follow-up is crucial to make sure the remission lasts and to catch any recurrence early.

CONCLUSION

For carefully chosen patients with a parathyroid adenoma causing primary hyperparathyroidism, image-guided thermal ablation can be a very effective, minimally invasive alternative to surgery. Success depends on picking the right patient, pinpointing the adenoma accurately, and keeping a close eye on their labs afterward.

Ethics

Ethical statement: This case report has a retrospective design. The study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Patient confidentiality was strictly maintained, and all presented data were anonymized to ensure that the patient cannot be identified.

Informed Consent: Written informed consent was obtained from the patient for publication of this case report.

AI statement: Artificial intelligence tools were used only for minor language editing and grammar correction. The authors are fully responsible for the scientific content of the manuscript.

Footnotes

Authorship Contributions

Surgical and Medical Practices: A.H., A.A., Concept: A.H., Design: A.H., Data Collection or Processing: A.H., A.A., Analysis or Interpretation: A.A., Literature Search: A.A., Writing: A.H., A.A.

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