

## Ectopic Mediastinal Parathyroid Adenoma: A Case Report with Diagnostic and Management Challenges

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**Abstract :** Background: Hypercalcaemia is a common electrolyte imbalance that increases mortality if poorly controlled. Primary hyperparathyroidism often presents like this with a prevalence of 0.1-0.3%. Management due to an ectopic parathyroid adenoma in the mediastinum is challenging, especially in a patient with a pacemaker. Case Presentation: A 79-year-old woman with a history of a previous cardiac arrest, permanent pacemaker, ischaemic heart disease, bilateral renal calculi, rectal polyps, liver cirrhosis, and a family history of hyperthyroidism presented to the emergency department with acute back pain. Management and Outcome: The patient was diagnosed with primary hyperparathyroidism due to her elevated corrected calcium and parathyroid hormone levels. Parathyroid investigations consisting of an NM MIBI scan, SPECT-CT, 4D parathyroid scan, and an ultrasound scan of the neck and thorax confirmed an ectopic parathyroid adenoma in the mediastinum at the level of the aortic arch, along with benign thyroid nodules. The location of the adenoma warranted a thoracoscopic surgical approach; however, the presence of her pacemaker and other cardiovascular conditions predisposed her to a potentially poorer post-operative outcome. Discussion: Mediastinal ectopic parathyroid adenomas are rare and difficult to diagnose and treat, often needing a multimodal imaging approach for accurate localisation. Surgery is a definitive treatment; however, in this patient, long-term medical treatment with cinacalcet was the only next suitable treatment option. The difficulty with this is that cinacalcet tackles the biochemical markers of the disease entity and not the disease itself, leaving room for what happens next if there is refractory/uncontrolled hypercalcaemia in this patient with a pacemaker. Moreover, the coexistence of her multiple conditions raises the suspicion of an underlying multisystemic or multiple endocrine disorder, with multiple endocrine neoplasia coming to mind, necessitating further genetic or autoimmune investigations. Conclusion: Mediastinal ectopic parathyroid adenomas are rare, with diagnostic and management challenges.

**Keywords :** mediastinal ectopic parathyroid adenoma, hyperparathyroidism, SPECT/CT, nuclear medicine, multimodal imaging

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