

Research Article**Parathyroid Adenoma: A Case Series and Clinicopathological Analysis from a Tertiary Care Center in Aurangabad****Dr. Gopinath Vemulamada¹, Dr. Siddhi Lalwani², Dr. Pratik Sinha³**

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ABSTRACT

Background: Parathyroid adenoma is the most common cause of primary hyperparathyroidism and can present with diverse systemic manifestations due to prolonged hypercalcemia. **Objective:** To analyze the clinical spectrum, biochemical profile, imaging characteristics, surgical management, and outcomes of patients with parathyroid adenoma treated at a tertiary care center. **Materials and Methods:** This case series includes 10 patients diagnosed with parathyroid adenoma. Clinical presentation, biochemical parameters, radiological localization, operative findings, histopathology, and postoperative outcomes were evaluated. **Case Presentation:** Patients presented with varied manifestations including skeletal disease, renal calculi, neuropsychiatric symptoms, acute pancreatitis, neck mass, and incidental hypercalcemia. All patients had elevated serum calcium and parathyroid hormone levels. Localization was achieved using

ultrasonography, sestamibi scintigraphy, and computed tomography. Surgical excision resulted in normalization of biochemical parameters and symptomatic improvement in all cases. Histopathology confirmed benign parathyroid adenoma in every patient. **Conclusion:** Parathyroid adenoma exhibits wide clinical heterogeneity. Early biochemical screening, accurate localization, and timely surgical intervention lead to excellent outcomes and prevent irreversible complications.

Keywords: Parathyroid adenoma; Primary hyperparathyroidism; Hypercalcemia; Parathyroid hormone; Parathyroidectomy; Osteitis fibrosa cystica; Brown tumor; Ectopic parathyroid adenoma

INTRODUCTION

Primary hyperparathyroidism (PHPT) is a common endocrine disorder characterized by excessive secretion of parathyroid hormone (PTH), resulting in hypercalcemia and multisystem involvement. The most common

underlying cause of PHPT is parathyroid adenoma, which makes up 80–85% of cases. It is followed by parathyroid hyperplasia and, in rare cases, cancer. Although younger patients may have more severe illness signs, the ailment primarily affects middle-aged people, with a greater frequency among females.^[1]

Over the past few decades, PHPT's clinical presentation has changed dramatically. The diagnosis of silent or minimally symptomatic diseases has risen in industrialised settings due to extensive biochemical screening. However, because to delayed diagnosis, individuals in developing nations still have overt signs involving the gastrointestinal, neuropsychiatric, renal, and skeletal systems. Nephrolithiasis and nephrocalcinosis are typical renal symptoms, while osteopenia, bone discomfort, progressive osteitis fibrosa cystica, and pathological fractures are examples of skeletal involvement.^[2]

Fatigue, muscular weakness, polyuria, polydipsia, constipation, cognitive impairment, and mood disorders are some of the systemic symptoms of hypercalcemia. Acute pancreatitis, peptic ulcer disease, and heart rhythm abnormalities are less frequent but clinically important presentations. Ectopic parathyroid adenomas, which are most commonly seen in the mediastinum, might be uncommon and provide surgical and diagnostic difficulties.^[3]

The mainstay of diagnosis continues to be biochemical analysis showing high blood calcium with abnormally elevated PTH levels. While computed tomography and magnetic resonance imaging are only employed for ectopic or recurring illness, imaging modalities including high-resolution neck ultrasonography and technetium-99m sestamibi scintigraphy are frequently used for preoperative localisation. Intraoperative PTH monitoring is increasingly used to confirm biochemical cure, although surgical excision is still the final therapy.^[4]

Early detection and prompt surgical intervention are essential because to the broad clinical range and potential for serious consequences. In order to emphasise the significance of keeping a high index of suspicion in patients who present with unexplained hypercalcemia or multisystem involvement, this case series attempts to highlight the various presentations, diagnostic difficulties, and surgical outcomes of parathyroid adenoma encountered at a tertiary care centre.^[5]

CASE PRESENTATION

Case 1: Severe Skeletal Manifestations of Primary Hyperparathyroidism

A 28-year-old female presented with complaints of severe generalized body aches and progressive weakness for several months, accompanied by fractures involving the femur and humerus following trivial trauma. The patient reported increasing difficulty in ambulation and performing daily activities. There was no history of renal calculi, neuropsychiatric symptoms, or prior neck swelling.

Clinical Examination

The patient seemed incapacitated and in pain during a general physical examination. Upon local examination, there was noticeable discomfort throughout the long bones and limited range of motion because of the pain. There was no cervical lymphadenopathy or palpable neck lump. Other than that, the systemic evaluation was ordinary.

Radiological Evaluation

Classical alterations indicative of severe hyperparathyroid bone disease were seen on skeletal radiography. An X-ray of the skull revealed a distinctive "salt and pepper" look that was consistent with generalised osteitis fibrosa cystica. A lytic expansile lesion in the proximal femur on the hip X-ray suggested a brown tumour. These results suggested that sustained hyperparathyroidism was the cause of progressive skeletal involvement.



FIGURE 1

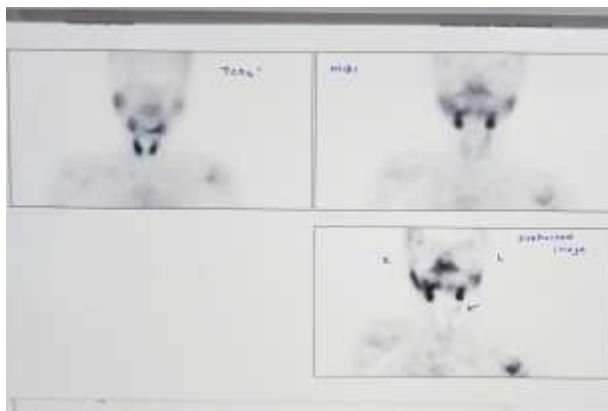


FIGURE 2

Biochemical Investigations

Laboratory evaluation revealed markedly elevated parathyroid hormone and calcium levels. Serum PTH was 1983 pg/mL (normal range: 10–65 pg/mL), and serum calcium was 15 mg/dL (normal range: 8.5–10.5 mg/dL), confirming the diagnosis of primary hyperparathyroidism.

Localization Studies



A heteroechoic lesion of 30×14 mm was seen close to the left upper pole of the thyroid gland on neck ultrasonography, which may indicate a parathyroid adenoma. The diagnosis of a left superior parathyroid adenoma was confirmed by further localisation using ^{99m}Tc sestamibi scintigraphy, which showed strong and continuous radiotracer uptake in the left upper pole area.

FIGURE 3



FIGURE 4

Surgical Management

Under general anaesthesia, the patient had a left hemithyroidectomy and left parathyroidectomy. A well-encapsulated, larger parathyroid gland was found and removed during surgery. Within ten minutes after excision, intraoperative PTH monitoring revealed a sharp drop in PTH levels from 1983 pg/mL to 144 pg/mL, indicating that the hyperfunctioning gland had been completely removed.



FIGURE 5

Histopathological Findings

Histopathological analysis showed characteristics of parathyroid adenoma, which is mostly made up of sheets of transparent cells. The benign character of the lesion was confirmed by the absence of cellular atypia, mitotic activity, or capsular or vascular invasion.

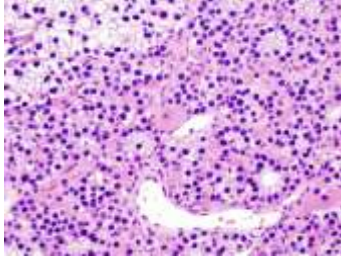


FIGURE 6

Postoperative Course and Follow-up

The time following surgery was uneventful. The patient's generalised weakness and bone pain significantly improved, and serum calcium levels returned to normal at 9.2 mg/dL. Significant clinical recovery was observed throughout follow-up, and mobility and general quality of life gradually improved.

Case 2: Neck Mass with Systemic Symptoms

Patient Details and Clinical Presentation

A 49-year-old female presented with a gradually progressive swelling on the right side of the neck for several months, associated with generalized body aches and persistent fatigue. The patient did not report symptoms suggestive of renal calculi, neuropsychiatric disturbances, or gastrointestinal complaints.

Clinical Examination

Upon physical examination, the right side of the neck showed a palpable, hard, non-tender lump that measured around 1 by 1.5 cm. The bulk was movable and unrelated to changes in the skin on top. There was no cervical lymphadenopathy. Other than that, the systemic assessment was within normal bounds.

Biochemical Investigations: Significantly higher blood calcium and parathyroid hormone levels were found during laboratory

testing. A diagnosis of primary hyperparathyroidism was supported by blood calcium levels of 14 mg/dL and serum PTH levels of 583 pg/mL.

Radiological Evaluation: A distinct lesion originating from the right lower parathyroid gland was seen on neck ultrasonography, which may indicate a parathyroid adenoma. There was no further parathyroid enlargement seen.

Surgical Management

The patient underwent right parathyroidectomy with hemithyroidectomy, as the adenoma was found to be adherent to the adjacent thyroid tissue. The procedure was completed without complications.

Postoperative Outcome: Postoperatively, serum PTH levels decreased to 28.7 pg/mL, and serum calcium normalized to 8 mg/dL. The patient experienced complete resolution of body aches and fatigue.

Histopathological Findings: A parathyroid adenoma made up of cuboidal cells with monomorphic nuclei, stippled chromatin, and eosinophilic cytoplasm was discovered during histopathological analysis. Malignancy, mitotic activity, or capsular invasion were all absent.

Follow-up: The patient remained asymptomatic on follow-up, with no evidence of biochemical or clinical recurrence.



FIGURE 7

Case 3: Mixed Presentation with Abdominal Symptoms

Patient Details and Clinical Presentation

A 58-year-old female presented with a left-sided neck swelling associated with abdominal pain of four months' duration. The abdominal pain was intermittent and localized predominantly to the right upper quadrant. There was no history of vomiting, jaundice, or bowel disturbances.

Clinical Examination: A palpable lump on the left side of the neck was discovered during local inspection. An examination of the abdomen revealed right upper quadrant pain without organomegaly or guarding. There were no noteworthy systemic results.

Radiological and Biochemical Evaluation: A distinct lesion posterior to the thyroid's left lobe was seen on neck ultrasonography, which may indicate a parathyroid adenoma. A heterogeneous, modestly enhancing soft-tissue lesion measuring $4.1 \times 1.3 \times 1.4$ cm was seen posterior to the left thyroid lobe on contrast-enhanced computed tomography (CECT) of the neck. This lesion is compatible

with a benign neoplastic aetiology, most likely parathyroid adenoma. The abdominal symptoms were explained by cholelithiasis, which was discovered by abdominal ultrasonography. Biochemical tests revealed significantly higher levels of serum calcium (14 mg/dL) and PTH (985 pg/mL).

Surgical Management: The swollen parathyroid gland was effectively removed during the patient's parathyroidectomy.

Postoperative Outcome: Following surgery, blood calcium levels returned to normal from 14 mg/dL to 9 mg/dL, and serum PTH levels decreased to 100 pg/mL. After surgery, the patient's stomach ache subsided.

Histopathological Findings: Parathyroid adenoma, which is made up of cuboidal cells with monomorphic nuclei, stippled chromatin, and eosinophilic cytoplasm with no signs of cancer, was verified by histopathological testing.

Follow-up: The patient was planned for elective cholecystectomy at a later date and remained normocalcemic on follow-up.

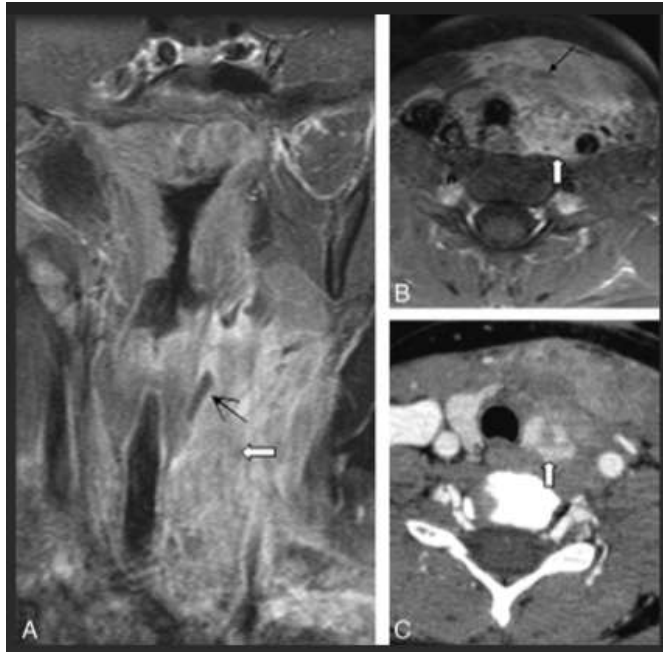


FIGURE 8

Case 4: Long-standing Skeletal Disease Mimicking Malignancy

Patient Details and Clinical Presentation

A 38-year-old female presented with swelling over the left-hand ring finger, accompanied by generalized bony pain. The clinical course was remarkable for a prolonged history of recurrent skeletal lesions and prior misdiagnosis.

Clinical History: The patient underwent a broad local excision in 2019 after experiencing a similar swelling in the left hand. At the time, a large cell tumour was suggested by histopathological investigation. When she complained of widespread bony pain once more in 2021, a bone scan showed many lytic lesions, which were first thought to be bony metastases. Chemotherapy and radiation were then administered. A corticated expansile lytic lesion measuring $4.9 \times 3.4 \times 8.6$ cm involving the right ischium and acetabulum and another lesion measuring $2.8 \times 4.8 \times 3.9$ cm in the left iliac bone were discovered on a pelvic MRI in 2022. Embolisation of the left iliac was done. PET-CT showed many lytic skeletal lesions at the

time of presentation, but there was no indication of visceral metastasis.

Laboratory Investigations: Biochemical evaluation revealed markedly elevated serum alkaline phosphatase (3044 U/L), serum calcium of 11.8 mg/dL, and extremely elevated serum PTH of 1553 pg/mL, raising suspicion of primary hyperparathyroidism.

Imaging Studies: Neck ultrasonography revealed a solid heterogeneous lesion measuring $2.3 \times 2.3 \times 2.8$ cm, located inferior to the right lobe of the thyroid, suggestive of a parathyroid adenoma.

Surgical Management: The patient underwent parathyroidectomy, following which there was a significant biochemical response.

Postoperative Outcome

Postoperatively, serum PTH levels decreased to 140 pg/mL, and serum calcium normalized to 8 mg/dL, confirming successful removal of the hyperfunctioning gland.

Histopathological Findings

Histopathological examination revealed a parathyroid adenoma composed of cuboidal cells with monomorphic nuclei, stippled

chromatin, and eosinophilic cytoplasm, without evidence of malignancy.

Follow-up

The patient showed biochemical improvement and symptomatic relief,

highlighting the importance of considering parathyroid adenoma in patients with multiple lytic bone lesions.



FIGURE 9

Case 5: Recurrent Renal Calculi with Neuropsychiatric Manifestations

Patient Details and Clinical Presentation

A 45-year-old male presented with a one-year history of recurrent episodes of renal colic requiring multiple hospital admissions for nephrolithiasis. In addition, he complained of generalised weariness, irritability, polyuria, polydipsia, and difficulty concentrating. His everyday functioning had been impacted by these neuropsychiatric symptoms, which had gotten worse over time.

Biochemical Evaluation

Significant hypercalcemia was found in the lab, with a blood calcium level of 13.6 mg/dL and a noticeably high serum parathyroid hormone level of 712 pg/mL. The diagnosis of primary hyperparathyroidism was supported by decreased serum phosphate levels.

Radiological Evaluation

A hypoechoic lesion inferior to the thyroid's right lobe on neck ultrasonography raised the possibility of a parathyroid adenoma. 99mTc sestamibi scintigraphy, which revealed continuous radiotracer uptake in the right inferior parathyroid gland, further supported this.

Surgical Management: A targeted right inferior parathyroidectomy was performed on the patient. Within ten minutes of the adenoma excision, intraoperative PTH monitoring showed a decrease of more than 80%, suggesting that the hyperfunctioning gland had been successfully removed.

Histopathological

Findings:

Histopathological examination showed an encapsulated parathyroid adenoma composed of chief cells arranged in sheets, with a

compressed rim of normal parathyroid tissue at the periphery.

Postoperative Outcome: Postoperatively, serum calcium levels normalized to 9.1

mg/dL. The patient experienced complete resolution of renal colic and significant improvement in neuropsychiatric symptoms within four weeks of surgery.

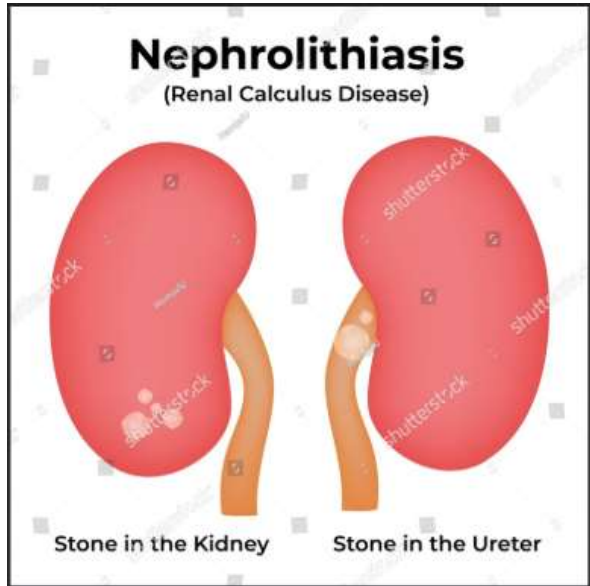


FIGURE 10

Case 6: Incidental Hypercalcemia Detected on Routine Evaluation

Patient Details and Clinical Presentation:

A 52-year-old female was incidentally detected to have hypercalcemia during routine preoperative evaluation for an elective hysterectomy. The patient was completely asymptomatic, with no history of renal stones, bone pain, or neuropsychiatric complaints.

Biochemical Evaluation: Biochemical investigations revealed a serum calcium level of 11.9 mg/dL and an elevated serum PTH level of 328 pg/mL, consistent with primary hyperparathyroidism.

Radiological Evaluation: Neck ultrasonography identified a small hypoechoic lesion posterior to the left lobe of the thyroid gland. Sestamibi scintigraphy demonstrated focal uptake in the left inferior parathyroid gland, confirming localization.

Surgical Management: A minimally invasive parathyroidectomy was performed with successful excision of the adenoma.

Histopathological Findings: Histopathological examination revealed a parathyroid adenoma composed predominantly of clear cells, without evidence of cellular atypia or malignancy.

Postoperative Outcome: Postoperatively, serum PTH levels decreased to 32 pg/mL, and the patient remained normocalcemic and asymptomatic during follow-up.

Case 7: Acute Pancreatitis as Initial Presentation

Patient Details and Clinical Presentation:

A 40-year-old male presented with acute-onset severe epigastric pain radiating to the back. Laboratory evaluation confirmed **acute pancreatitis**. There was no history of alcohol consumption, gallstones, or hypertriglyceridemia.

Biochemical Evaluation: Subsequent analysis showed serum PTH of 890 pg/mL and serum calcium of 14.2 mg/dL, indicating hypercalcemia-induced pancreatitis owing to primary hyperparathyroidism.

Radiological Evaluation: A right superior parathyroid lesion was identified by neck ultrasonography, and a contrast-enhanced CT scan of the neck revealed a distinct enhancing lesion posterior to the right thyroid lobe.

Surgical Management: Following stabilization and resolution of acute

pancreatitis, the patient underwent elective parathyroidectomy.

Histopathological

Findings:

Histopathological examination confirmed a parathyroid adenoma composed of chief cells arranged in a trabecular pattern, without malignant features.

Postoperative Outcome: Serum calcium levels normalized postoperatively, and the patient did not experience any recurrence of pancreatitis on follow-up



Figure 11

Case 8: Hungry Bone Syndrome Following Parathyroidectomy

Patient Details and Clinical Presentation:

A 60-year-old woman showed signs of severe metabolic bone disease, including increasing kyphotic deformity, proximal muscle weakness, and persistent bone pain.

Biochemical Evaluation: Laboratory investigations revealed severe hypercalcemia with serum calcium of 15.4 mg/dL, markedly elevated serum PTH of 1650 pg/mL, and significantly raised alkaline phosphatase levels, indicating high bone turnover.

Radiological Evaluation: X-ray of the spine showed diffuse osteopenia, and sestamibi

scintigraphy localized a left superior parathyroid adenoma.

Surgical Management: The patient underwent parathyroidectomy.

Postoperative Course: The patient had hungry bone syndrome in the early postoperative phase, which is marked by chronic hypocalcaemia and necessitates vigorous calcium and vitamin D treatment.

Histopathological

Findings:

Histopathological examination revealed a large parathyroid adenoma with clear cell predominance.

Outcome: With continued supplementation, serum calcium levels gradually normalized

over six weeks, accompanied by significant symptomatic improvement.



FIGURE 12

Case 9: Ectopic Mediastinal Parathyroid Adenoma

Patient Details and Clinical Presentation:

A 55-year-old male presented with nonspecific symptoms including fatigue, constipation, and recurrent urinary tract infections.

Biochemical Evaluation: Laboratory investigations showed serum calcium of 13.1 mg/dL and serum PTH of 610 pg/mL, confirming primary hyperparathyroidism.

Radiological Evaluation: Neck ultrasonography revealed nothing noteworthy. However, aberrant uptake in the upper mediastinum was shown by 99mTc

sestamibi scintigraphy. An ectopic parathyroid adenoma in the anterior mediastinum was verified by a contrast-enhanced CT scan of the chest.

Surgical Management: The patient underwent video-assisted thoracoscopic excision of the ectopic adenoma.

Histopathological Findings: Histopathology showed a parathyroid adenoma composed of chief cells, without capsular invasion or malignant features.

Postoperative Outcome: Postoperative biochemical parameters normalized, and the patient remained symptom-free on follow-up.

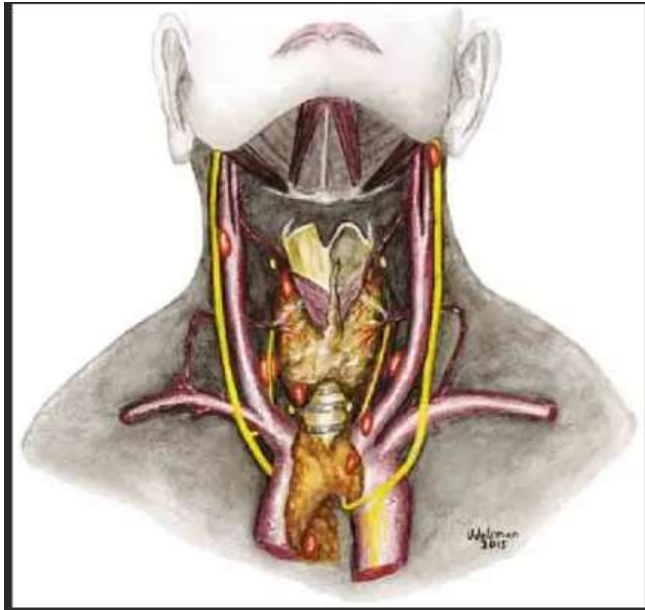


FIGURE 14

Case 10: Parathyroid Adenoma with Coexisting Thyroid Nodule

Patient Details and Clinical Presentation: A 48-year-old female presented with anterior neck swelling and intermittent dysphagia.

Biochemical Evaluation: Laboratory investigations revealed serum calcium of 12.8 mg/dL and serum PTH of 540 pg/mL, consistent with primary hyperparathyroidism.

Radiological Evaluation: Sestamibi scintigraphy revealed concordant uptake that matched the parathyroid adenoma, and neck

ultrasonography revealed a thyroid nodule with an adjacent parathyroid lesion.

Surgical Management: The patient underwent **parathyroidectomy with hemithyroidectomy**.

Histopathological Findings: Histopathology confirmed parathyroid adenoma, along with a benign colloid goiter in the excised thyroid tissue.

Postoperative Outcome: Serum calcium and PTH levels normalized postoperatively, and the patient remained asymptomatic on follow-up.

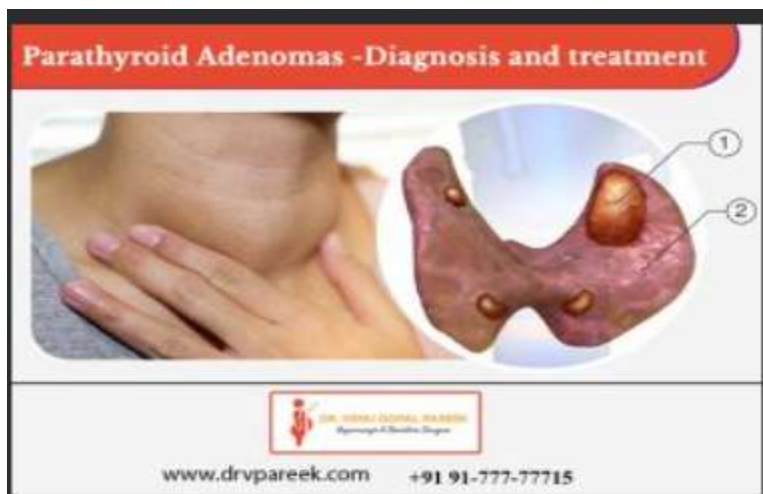


FIGURE 15

Table: Summary of Clinical, Biochemical, Radiological, and Outcome Characteristics of Patients with Parathyroid Adenoma (N = 10)

Case	Age / Sex	Presenting Symptoms	Serum Calcium (mg/dL)	Serum PTH (pg/mL)	Key Imaging Findings	Surgical Management	Histopathology	Outcome
1	28 / F	Pathological fractures, severe bone pain, weakness	15.0	1983	USG: Left upper parathyroid (30×14 mm); X-ray skull: salt & pepper; Brown tumor femur; Sestamibi +	Left parathyroidectomy + hemithyroidectomy	Clear-cell parathyroid adenoma	Calcium normalized ; marked symptom improvement
2	49 / F	Right neck mass, fatigue, body aches	14.0	583	USG: Right lower parathyroid adenoma	Right parathyroidectomy + hemithyroidectomy	Cuboidal cells, benign adenoma	Complete symptom resolution
3	58 / F	Neck swelling, abdominal pain	14.0	985	USG & CECT: Left parathyroid adenoma ; USG abdomen : cholelithiasis	Parathyroidectomy	Benign parathyroid adenoma	Calcium normalized ; pain resolved
4	38 / F	Recurrent lytic bone lesions, finger swelling, bony pain	11.8	1553	USG: Right inferior adenoma ; PET-CT:	Parathyroidectomy	Benign adenoma (cuboidal cells)	Biochemical normalization

					multiple lytic lesions			
5	45 / M	Recurrent renal stones, polyuria, neuropsychiatric symptoms	13.6	712	USG: Right inferior lesion; Sestamibi +	Focused right inferior parathyroidectomy	Encapsulated chief-cell adenoma	Symptom resolution in 4 weeks
6	52 / F	Asymptomatic (incidental hypercalcemia)	11.9	328	USG: Left posterior lesion; Sestamibi +	Minimally invasive parathyroidectomy	Clear-cell adenoma	Normocalcemic on follow-up
7	40 / M	Acute pancreatitis	14.2	890	USG & CT: Right superior parathyroid lesion	Elective parathyroidectomy	Trabecular chief-cell adenoma	No recurrence of pancreatitis
8	60 / F	Bone pain, muscle weakness, kyphosis	15.4	1650	X-ray spine: osteopenia; Sestamibi: left superior adenoma	Parathyroidectomy	Large clear-cell adenoma	Hungry bone syndrome; recovered
9	55 / M	Fatigue, constipation, recurrent UTI	13.1	610	Sestamibi: mediastinal uptake; CT chest: ectopic adenoma	VATS excision	Chief-cell adenoma	Complete biochemical normalization
10	48 / F	Neck swelling, dysphagia	12.8	540	USG: Thyroid nodule + parathyroid	Parathyroidectomy + hemithyroidectomy	Adenoma + benign colloid goiter	Asymptomatic, normocalcemic

					lesion; Sestamibi +			
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DISCUSSION

Parathyroid adenoma is the most common cause of primary hyperparathyroidism (PHPT), accounting for approximately 85–90% of cases, and is characterized by excessive secretion of parathyroid hormone (PTH) leading to hypercalcemia and multisystem involvement.^[6] The present case series of ten patients highlights the wide clinical spectrum, diagnostic delays, and excellent surgical outcomes associated with parathyroid adenoma in a tertiary care setting.

From asymptomatic incidental hypercalcemia to severe skeletal illness, recurring renal calculi, acute pancreatitis, neuropsychiatric symptoms, and ectopic adenoma, the patients in this collection exhibit a notable degree of presentation variation. Many patients had skeletal symptoms, such as widespread osteopenia, brown tumours, pathological fractures, and lytic lesions that resembled cancer. Due to delayed diagnosis, this severe bone disease, which is a result of extended exposure to increased PTH, is still prevalent in underdeveloped nations.^[2] Some individuals had renal involvement, including recurrent nephrolithiasis and polyuria, which is consistent with the consequences of hypercalcemia on renal tubular function. The idea of "stones, bones, and psychic groans," which is traditionally described in PHPT, was supported by the observation of neuropsychiatric symptoms such as irritation, poor attention, and exhaustion.^[3]

This collection included uncommon but clinically relevant manifestations including hungry bone syndrome and severe pancreatitis. Although rare, hypercalcemia-induced pancreatitis is a known side effect of

PHPT that necessitates a high degree of suspicion. [3] After adenoma ectomy, a quick inflow of calcium into remineralising bone causes hungry bone syndrome in individuals with severe skeletal condition, which calls for close postoperative surveillance.^[7] The foundation of diagnosis is still biochemical analysis. PHPT was confirmed by the fact that all of the patients in this series had abnormally high PTH levels together with higher blood calcium levels. Serum alkaline phosphatase measurements, which indicate significant bone turnover, were especially helpful in individuals with substantial skeletal involvement.^[8]

Imaging investigations were used more for localisation than for diagnosis. In most cases, technetium-99m sestamibi scintigraphy and neck ultrasonography worked well together to provide precise localisation. It has been shown that using these modalities together can increase preoperative localisation accuracy to more than 90%.^[9] The identification of an ectopic mediastinal parathyroid adenoma in one patient was made possible by sestamibi scintigraphy and CT imaging, highlighting the need of advanced imaging when cervical investigations are not clear.^[10] The possibility of misdiagnosis is demonstrated by a number of instances in this series, especially when skeletal lesions are confused for metastatic illness or giant cell tumours. Similar diagnostic mistakes have been documented, highlighting the necessity of routine PTH and calcium testing in patients with lytic bone lesions that cannot be explained.^[11]

The only effective therapy for parathyroid adenoma is still surgical removal. Every patient in this series had a parathyroidectomy, with methods customised according to

thyroid pathology and localisation. While hemithyroidectomy was necessary in individuals with adhering thyroid tissue or accompanying thyroid nodules, focused and less invasive parathyroidectomy was effectively carried out in localised instances. When used, intraoperative PTH monitoring showed a sharp and quick drop in PTH levels, indicating that the hyperfunctioning gland had been completely removed. It has been demonstrated that this method lowers the incidence of reoperation and chronic illness.^[12]

Following surgery, all patients experienced biochemical recovery, with PTH and serum calcium levels returning to normal. Bone pain, neuropsychiatric symptoms, renal colic, and pancreatitis were among the many symptoms that showed improvement. These results are in line with documented cure rates for sporadic parathyroid adenoma that surpass 95% after surgery.^[13] All of the patients' histopathological examinations revealed benign parathyroid adenoma, which is often made up of chief cells or clear cells with monomorphic nuclei and no vascular or capsular invasion. These results are crucial in differentiating parathyroid cancer from adenoma, which is still uncommon but has important prognostic ramifications.

This case series emphasizes that parathyroid adenoma should be considered in patients presenting with unexplained hypercalcemia, skeletal lesions, renal stones, pancreatitis, or neuropsychiatric symptoms. Early biochemical screening and timely referral for surgical management can prevent irreversible complications and improve quality of life.

CONCLUSION

From asymptomatic hypercalcemia to severe skeletal illness, renal calculi, pancreatitis, and ectopic presentations, this case series demonstrates the wide range of clinical manifestations of parathyroid adenoma.

Significant morbidity and misdiagnosis can arise from delayed diagnosis, especially in individuals with substantial skeletal involvement. Imaging helps with accurate localisation, but biochemical assessment is still the mainstay of diagnosis. When paired with suitable perioperative surveillance, surgical excision provides a definitive cure with good biochemical and clinical results. To lower problems and enhance patient quality of life, early intervention and increased clinical awareness are crucial.

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