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Research Article

**RECURRENT PARATHYROID ADENOMA IN YOUNG  
FEMALE PATIENT**<sup>1</sup>Dr. Saba Amjad, <sup>2</sup>Dr. Nimra Gillani, <sup>3</sup>Dr. Rabiyya Khan<sup>1</sup>Resident Surgery, Jinnah Hospital, Lahore, <sup>2,3</sup> Women Medical Officer, Benazir Bhutto Hospital, Rawalpindi.**Article Received:** April 2019**Accepted:** May 2019**Published:** June 2019**Abstract:**

*Parathyroid adenoma is one of the leading causes of primary hyperparathyroidism characterized by clinical and laboratory evidence of elevated parathyroid hormone level and increased serum calcium levels. Here we have presented the case of a 24 years old young female patient with recurrent parathyroid adenoma with previous history of surgery for neck swelling. Patient's parathyroid hormone levels were found to be raised. However, despite having skeletal abnormalities like multiple long bone fractures and bowing of legs, her serum calcium levels were within normal limits. The patient underwent total thyroidectomy along with complete removal of parathyroid tissue. Immediate decline in her serum parathyroid hormone levels intraoperatively confirmed the diagnosis of parathyroid adenoma. Following surgery, patient's symptoms improved dramatically and she was successfully sent home on 5<sup>th</sup> postoperative day.*

**Keywords:** Parathyroid adenoma, skeletal abnormalities, intraoperatively,**Corresponding author:****Dr. Nimra Gillani,**Department of Dialysis, Benazir Bhutto Hospital, Rawalpindi  
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## INTRODUCTION:

In patients with parathyroid adenoma, the parathyroid hormone level is abnormally raised due to which the patients typically present with evidence of hypercalcemia, hypercalciuria and hypophosphatemia<sup>1</sup>. However, cases with normal serum calcium levels have frequently been reported<sup>2</sup>. Herein, we have reported the case of a 24 years old young female patient who underwent surgery for recurrent parathyroid adenoma with favorable outcome.

## Case Report:

A 24 years old young lady was referred to our hospital with complaints of swelling in front of neck, multiple long bone fractures, bowing of legs and generalized body weakness. She had previous history of presentation to the orthopedic department of our hospital 3 years back with complaints of recurrent long bone fractures and subsequently underwent workup for hyperparathyroidism. Thereafter, she underwent neck surgery for which little record was available; however, post-operative biopsy taken from the neck mass revealed parathyroid adenoma.

Now she presented to us complaining of recurrence of neck swelling for a few months. On examination, there was a palpable 2x2 cm nodule in front of the neck to the right of midline (Fig-1). It was non-cystic and firm to hard in consistency. No palpable lymph nodes were found. Her complete workup was done. All her baseline investigations were within normal limits. Her serum calcium level was 8.5 md/dl and completely within normal range.

Soft tissue ultrasonography of the neck swelling showed thyroid gland to be normal in size. However, a few hypoechoic areas were noted within both the lobes. A few enlarged lymph nodes were seen in close proximity to the right carotid artery measuring approximately 10.6x13mm in size. Her thyroid profile showed thyroid hormone levels to be within normal limits (table 1). However, parathyroid hormone levels were drastically raised (259 pg/ml).

## ADDENDUMS

**Table 1**  
**Thyroid profile**

	Patient's Value	Normal Value
<b>PTH</b>	250 pg/ml	12-88 pg/ml
<b>TSH</b>	3.024 mU/L	0.4-4.0 mU/L
<b>t3</b>	1.05 µg/dl	0.87-1.78 µg/dl
<b>t4</b>	10.0 µg/dl	6.09-12.23 µg/dl

Her sestamibi SPECT scan was also done which showed tracer accumulation in right upper and left lower thyroid lobes. Multiple lytic lesions were also seen in the skull which were identified as Brown tumors (Fig-2). Despite the fact that her parathyroid hormone level was significantly raised, her SPECT scan did not reveal any evidence of parathyroid adenoma. No parathyroid tissue was detected in the mediastinum either. Her ultrasound guided fine needle aspiration cytology (FNAC) was also done which was interpreted as "hurthle cell carcinoma".

Her case was discussed in the multi-disciplinary board meeting during which it was concluded that it was a case of recurrence of parathyroid adenoma. It was decided to repeat her FNAC and parathyroid hormone levels following which total thyroidectomy with lymphadenectomy was planned. Her repeated FNAC again showed hurthle cell carcinoma. Upon repetition, her PTH level was found to have escalated from 259 pg/ml to 842 pg/ml. After obtaining test reports, surgery was planned.

The patient underwent total thyroidectomy and removal of all superficial nodular tissue. All of her parathyroid tissue was removed. As per guidelines, her intraoperative PTH level was sent immediately after the removal of all of her parathyroid glands. The PTH level had dropped from 842 pg/ml to 95 pg/ml which was consistent with the diagnosis of parathyroid adenoma.

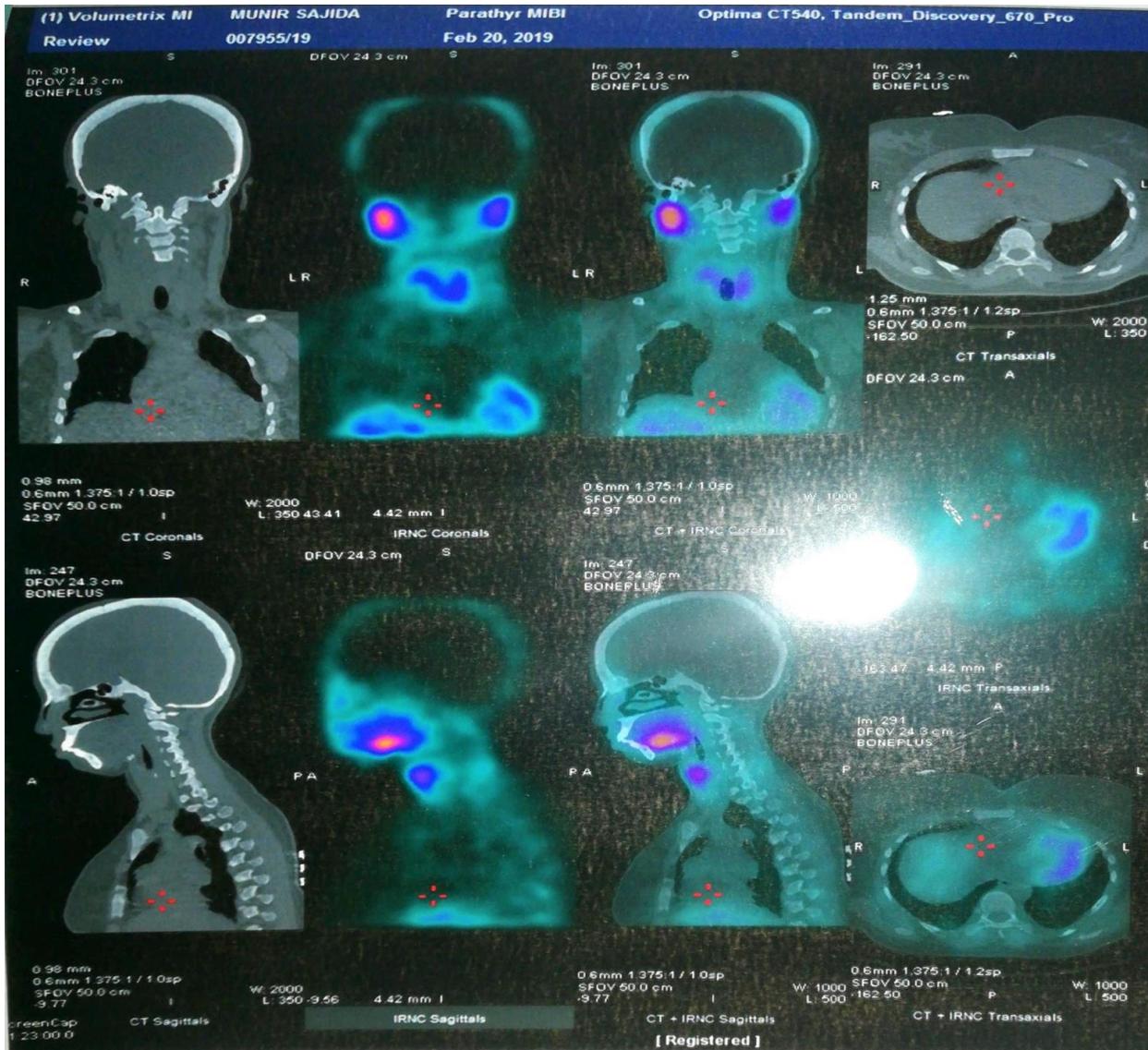
Frozen sections of the removed tissue were also sent which revealed parathyroid tissue. Her surgery went uneventful. Post operatively, all of her baseline investigations were normal. Her serum calcium level was also normal. Patient was discharged on 5<sup>th</sup> post-operative day on oral calcium supplementation. Her histopathology report was obtained on 6<sup>th</sup> post-operative day which revealed benign parathyroid tissue and confirmed the diagnosis of parathyroid adenoma.

**Figure 1**



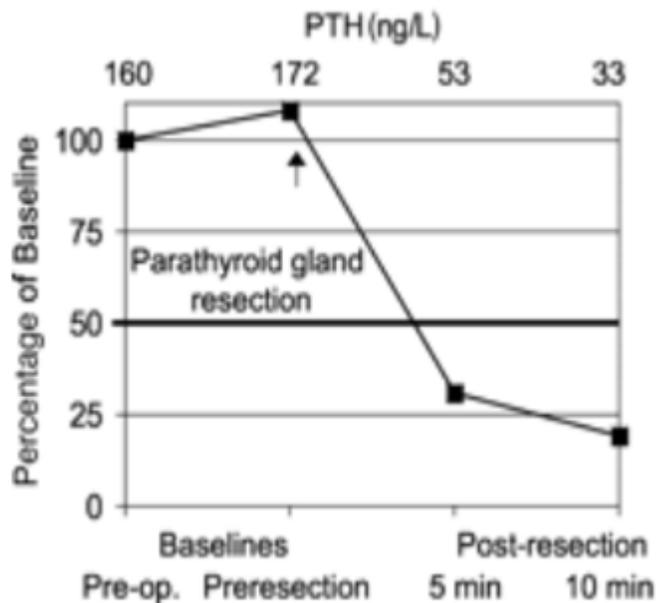
Physical Examination of Neck Mass

**Figure 2**



Sestamibi SPECT

Figure-3



#### Rapid Intraoperative PTH Assay

#### DISCUSSION:

Parathyroid adenoma is a part of a cluster of parathyroid proliferative disorders including parathyroid hyperplasia, parathyroid adenoma and parathyroid carcinoma. 80-85% cases of primary hyperparathyroidism are due to parathyroid adenoma, 10-15% occur as a result of parathyroid hyperplasia, whereas less than 1% occur due to parathyroid carcinoma [3].

The etiology of parathyroid adenoma is still largely unknown. However, it has been associated with common sporadic genetic mutation in cyclin D1/PRAD1 gene<sup>4</sup>. On microscopy, parathyroid adenoma is composed primarily of chief cells including oxyphil cells, oncocytes and transitional oncocytes with a rim of normal parathyroid tissue surrounding the adenoma. The nuclei are usually round in shape and stain densely. Mitotic activity may also be evident. The adenomas are usually unencapsulated [5].

Various imaging modalities can be used for detection of parathyroid adenoma. The imaging of choice is single photon emission computed tomography (SPECT) scan using technetium-99m (<sup>99m</sup>Tc Sestamibi) as the radiotracer as it is not only highly sensitive and specific, but is also non-invasive and

completely safe [6]. Other non-invasive imaging techniques include ultrasonography, 4D-computerized tomography (CT) and MRI. Invasive imaging procedures include angiography, venous localization and ultrasound guided biopsy of the parathyroid tissue.

For recurrent parathyroid adenoma, the treatment of choice is bilateral neck exploration along with total parathyroidectomy. Intra-operative rapid parathyroid assay has significant diagnostic and prognostic value. Parathyroid level is sent before induction of anesthesia, at resection of adenoma, 5 minutes and then 10 minutes after the resection of adenoma (Fig-3). 50% reduction in the level of PTH at 10 minutes compared to the original level confirms the removal of parathyroid adenoma. Miura et al. have reported quick intraoperative PTH assay to significantly improve the success rate of surgery [7].

In case of missed parathyroid (as in this case parathyroid tissue was not visible on sestamibi SPECT) the operative strategy entails systematic perithyroid exploration, PTH monitoring, extended cervical exploration and hemithyroidectomy. Other strategies that may be utilized alone or in combination include bilateral internal jugular venous sampling; cervical thymectomy; opening the carotid sheath; searching for undescended gland; and intraoperative

ultrasound. Sternotomy is not recommended during the initial exploration. If the gland cannot be found, it is recommended that the surgery be terminated leaving normal parathyroid gland intact [8].

### CONCLUSION

Although we initially faced difficulty in detecting parathyroid adenoma on imaging and histopathology in our patient, her clinical features and previous history combined with rapid intraoperative PTH assay helped confirm the diagnosis. Surgical removal along with perioperative PTH assay is a valid approach for the treatment of recurrent parathyroid adenomas.

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