

Primary Hyperparathyroidism – Experience at Mayo Hospital, Lahore

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The retrospective study was carried out on surgical floor at Mayo Hospital, Lahore, over a span of 15 years. Twenty patients referred from various specialities were included in the study. Seven were male and 13 were female. All patients were diagnosed biochemically and localization was performed with the help of ultrasonography, thallium & technitium subtraction. All patients underwent surgical exploration by adopting four glands exposure technique. Sixteen having single adenoma, two patients having multiple adenoma and two as hyperplasia and no malignancy seen on the basis of histopathological examination. No significant morbidity and no mortality observed in the series.

Keywords: Primary hyperparathyroidism, adenoma

Primary hyperparathyroidism is usually a sporadic disease of unknown cause. Although it occasionally results from genetic susceptibility (multiple endocrine neoplasia syndrome)¹. The clinical spectrum of the disease is so broad it must be considered in the different diagnosis of the number of common clinical problems^{2,3}. The disease can be cured. Disabling symptoms can be even reversed when the patient is treated enough^{4,5,6}.

Aims and objectives

The aims of this study is to share our experience on the clinical aspects of primary hyperparathyroidism its investigations and treatment options.

Patients and methods

This prospective study was conducted on the surgical floor of Mayo Hospital, Lahore from 1988-2003. All the patients who were referred with suspected primary hyperparathyroidism were included in the study. They were referred from Orthopaedic Department, Urology, Gastroenterology and Psychiatry Departments. In all the patients we did serum calcium, serum phosphate, alkaline phosphatase, 24 hours urinary calcium for biochemical diagnosis of primary hyperparathyroidism (serum parathormone assay was not available in initial cases).

Operative technique

- Hypotensive anaesthesia.
- Head is raised to 45 degrees.
- Kocher's collar incision (standard).
- Full, compulsive, hemostasis.
- Strap muscles division from lateral to medial side at its upper 1/3rd.
- Create space between the lateral wall of pharynx and medial surface of the upper part of lobe.
- Individual branches of superior thyroid artery tied with isolation of external laryngeal nerve.
- Mobilization of the superior pole.
- Look at the posterior surface at the junction of upper 1/3rd with lower 2/3rd.
- Parathyroid gland is embedded in the fat. The color of the parathyroid is dark brown, plum coloured, which

helps in recognition provided the field is absolutely clean.

- Then look for inferior parathyroid at the inferior pole.
- Similar procedure is repeated on the opposite side. It is integral part of the operation that all the four parathyroids must be exposed. Then see which gland is bigger in size. Remove that gland and one normal sized gland for biopsy. If one parathyroid gland is not found and the rest of the parathyroids are of normal size, search for ectopic parathyroid positions which are
 - a. in thyroid gland
 - b. Retropharyngeal space
 - c. Retroesophageal space
 - d. Paratracheal
 - e. Along the side of the carotid sheath
 - f. Ipsilateral thyroid lobectomy on the side without seeing normal parathyroid
 - g. In the superior mediastinum
 - h. Mediastinotomy rarely required

For localization, high resolution, real time ultrasonography and thallium-technitium subtraction scan were used in all cases. All the patients underwent surgery. Bilateral exploration was performed in all the cases. All the patients were monitored post operatively for the success of operative i.e., sign and symptoms of hypocalcemia.

Results

The retrospective study extends over a span of 15 years. Total cases included in study were 10. Seven (35%) were male and 13(65%) were female. Among 13 female cases 8(40%) were married and multipara and remaining 5(25%) were unmarried. Age ranged between 15-55 years. All the cases were referred from Orthopaedics 14(70%) cases (Table 1.)

Table 1. Referral source

Referral source	n=	%age
Orthopaedic	14	70
Urology	04	20
Psychiatry	01	05

Medicine	01	05
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All the patients of primary hyperparathyroidism presented with various signs and symptoms (Table 2).

Table 2 Signs and symptoms

No.	Signs & symptoms
1.	Neck fracture
2.	Shaft femur fracture
3.	Clavicle fracture
4.	Distal 1/3 tibia fracture
5.	Distal end of radius
6.	Cervical and lumber vertebra with multiple osteolytic lesion with quadriparesis
7.	Swelling of lower jaw
8.	Swelling around wrist joint
9.	Multiple cysts
10.	Bilateral renal calculi with nephrocalcinium
11.	Calculus anuria
12.	Acute pancreatitis
13.	Psychosis

All patients had biochemical investigation with following results.

Table 3. Biochemical investigations

Investigation	n=	%age
Serum calcium	Normal	5
	Raised	15
S. Phosphate	Normal	Nil
	Low	20
Alkaline Phosphatase	15-++++	75
	5-++	25
24 hours urinary calcium	Raised	15
	Normal	5

Serum parathormone assay was performed in some of cases because facility was not available initially. For localization of parathyroid glands real time ultrasonography and thallium-technetium subtraction scan was one in all patients. Seventy percent were localized with ultrasonography and 80% were localized with the help of thallium – technetium scan. Both studies are associated with an appreciable risk of false positive and false negative values because of thyroid nodule.

Mandatory bilateral neck exploration was done in all the cases. Multiple adenomas in 2(10%) cases.

Table 4. Operative findings

Findings	n=	%age
Single adenoma	16	80
Multiple	02	10
Hyperplasia	02	10

Thyroid gland was not enlarged in 60% of the cases. In 20% cases it was slightly enlarged and in remaining 20% cases it was nodular. Site-of adenoma was also studied as Table 5.

Table 5. Site of adenoma

Site of adenoma	n=	%age
Left inferior parathyroid gland	10	50
Left superior parathyroid gland	04	2
Right inferior parathyroid gland	05	25
Right superior parathyroid gland	01	05

Two cases of ectopic adenoma, one in the superior mediastinum, along the thymus delivered through neck and one is behind the retroclavicular and subclavian vein. The biggest size adenoma was 750mg. Two were 500mg, one 350mg and 5 were 200mg. All the other were less than this.

All the patients were monitored postoperatively in the ward. All the patients developed signs and symptoms of hypocalcaemia.

Table 6. Postoperative complication

Complications	n=	%age
Hoarseness of voice	Nil	Nil
Wound infection	1	

No mortality recorded in the series.

Discussion

Persay primary hyperparathyroidism is difficult to diagnose because there is no routine examination of serum calcium and phosphate for generalized aches, pain and rheumatism with which the patients present to general practitioner or family physician. It is only when these patients develop the complications of hyperparathyroidism and they are referred to their respective specialities. In our study all are the referral cases. None of them visited as our patients primarily. The commonest presentation in our study is the bone complication with which the patients presented to the orthopaedic units. Out of twenty cases, 14 cases were referred from the Orthopaedic surgeon; presented with pathological fractures of different parts of the skeleton, quadriparesis, bony swellings. Three cases were referred from urologist, with bilateral renal calculi with nephrocalcinosis and calculus anuria. One patient presented with acute pancreatitis during second trimester of pregnancy⁷. One patient was referred from psychiatry with episodes of depression⁸.

In 75% cases there was hypercalcemia with hypophosphatemia and markedly raised alkaline phosphatase. Five (25%) cases were normocalcaemic with mild hypophosphatemia and slightly raised alkaline phosphatase. It was observed that normocalcaemic patient were female, married, multipara and they already having the clinical features of osteomalacia.

In all the patients with no prior surgery non invasive investigation techniques were being used. High resolution real time USG and thallium technetium subtractions can were used to localize the parathyroid adenoma. These

investigations also offered the comparable reliability⁹. No localization technique has ever surpassed the ability of experienced surgeon to localize the adenoma CT & MRI were not used in series, though these investigations have proved useful in detecting ectopic adenoma.

The only effective treatment for patients with primary hyperthyroidism is surgery. Surgical intervention is strongly favoured in our study because these patients are not likely to improve spontaneously and must be considered at high risk for development of serious complications. In all patients, all the four parathyroid were identified, explored. In 16 cases there was single gland adenoma, 2 cases with multiple glands adenoma and in two cases there was hyperplasia. In patients with adenoma, excision of involved parathyroid was done. No lobectomy of thyroid was performed as there was no cancer of parathyroid in our series.

All the patients monitored postoperatively for any complication. Hypocalcaemia was observed in all patients which was managed with i/v and oral calcium. No mortality was seen in the series.

Knowledge of anatomy and embryology of the parathyroid and experience in visual identification of the parathyroid and systematic exploration in an attempt to identify all four parathyroids are important steps in parathyroid surgery. Because of the above requirements, no substitute exists for experience in identification and assessment of the macroscopy of all parathyroid glands because adenomatous hyperplastic of normal glands may co-exist¹⁰.

The single most important thing in the success of operation is the surgeon who must have the habit of looking parathyroids in thyroid surgery (routine procedure) occasional operation on parathyroids are occasionally

successful. The single most important, investigation is to look for a surgeon who is regular operator on parathyroids. All the investigations are helpful but not the replacement of experienced parathyroid surgeon.

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