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Research Article

**TREATMENT OUTCOME OF PRIMARY
HYPERPARATHYROIDISM AFTER BILATERAL NECK
EXPLORATION**¹Dr. Abdul Majid Javed, ²Dr. Muhammad Adrees, ²Dr. Adnan Latif Khokhar¹Jinnah Hospital, Lahore, Pakistan²Lahore General Hospital, Lahore, Pakistan**Abstract:**

Objective: To evaluate the results of bilateral neck exploration in patients with primary hyperparathyroidism (PHPT).

Study design: A semi-experimental study.

Configuration and duration: Between May 2016 to May 2017, Surgery Department Unit II of Lahore General Hospital.

Methodology: In this study, 37 patients with PHPT who underwent parathyroidectomy with bilateral neck pain were included in the study. Parathyroidectomy was performed in 37 patients with bilateral neck examination by a single surgeon. Preoperative localization was performed in all patients with neck ultrasound and sestamibi and in intraoperative localization with methylene blue. The results were evaluated with postoperative serum parathormone (PTH) levels, serum calcium levels and recurrence symptoms.

Results: Of the 37 patients, 28 had only one adenoma on the right, 18 on the right and 10 on the right. In 8 patients, 6 patients had more than one adenoma on the same side and 2 patients on the same side were at the same time 1 hour 30 minutes. Postoperative hypocalcemia was observed in 5 patients with serum calcium ranging from 5.5 to 7 mg / dl and improved by supplementation with oral calcium and vitamin D, and two patients developed seroma which improved with aspiration. There was no incidence of recurrent laryngeal nerve injury.

Conclusion: Our limited study has shown that bilateral neck exploration for PHPT is an ideal approach with regard to latent adenoma and subsequent re-exploration risk.

Key words: primary hyperparathyroidism (PHPT), parathyroidectomy, adenoma.

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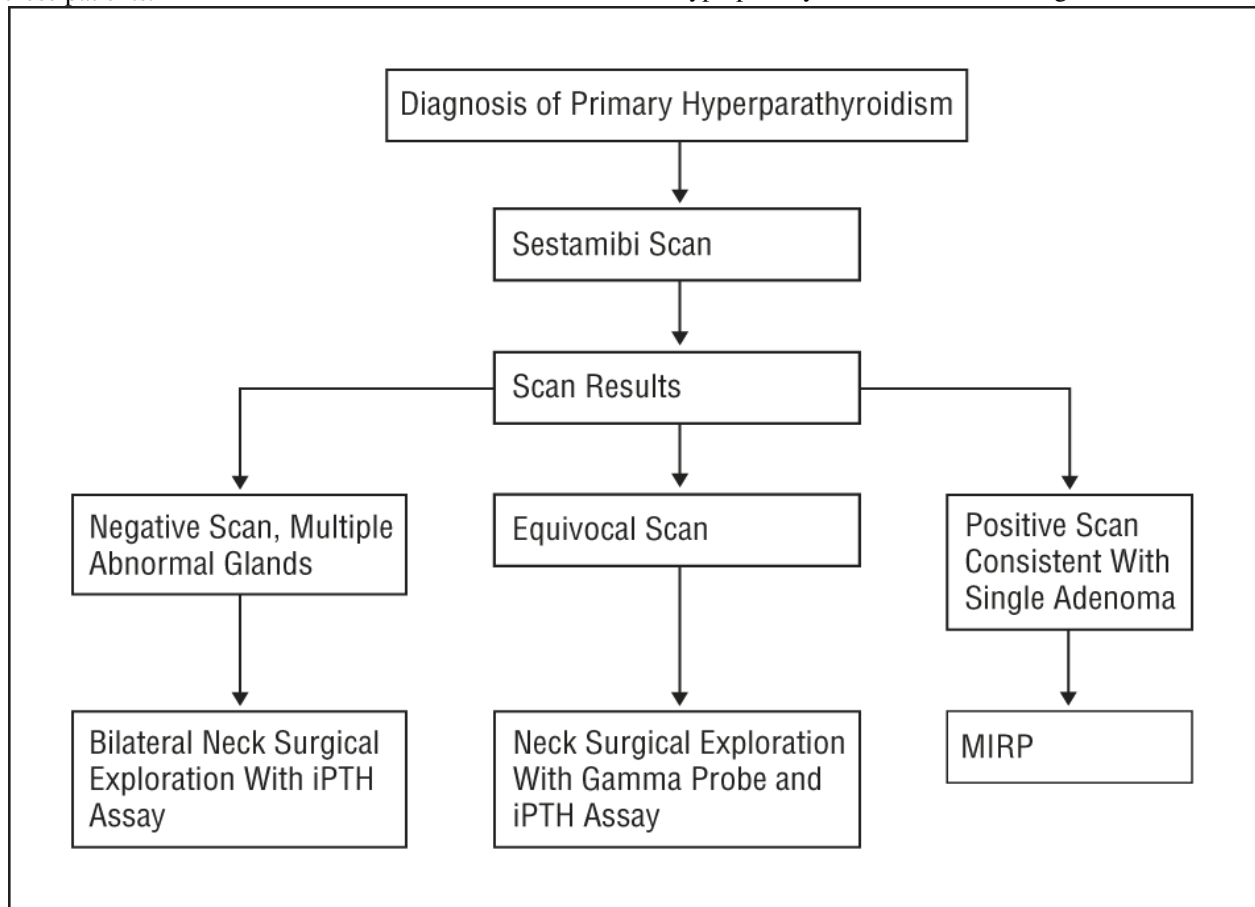
INTRODUCTION:

Primary hyperparathyroidism (PHPTH) is a relatively common problem and has been widely accepted since the emergence of routine tests of blood calcium levels. Approximately 80% of patients with PHPTH have a single adenoma, 15% have four hyperplasia of glands, and 5% have double adenoma. Surgery offers the only definitive treatment for patients with PHPTH. The best surgical approach gives the highest cure rate with low complication rate. Felix Mandl in 1925 has done the standard operation for the dual neck PHPTH with resection of parathyroid glands since the first successful parathyroidectomy. It is associated with more than 95% and minimal morbidity rate in the hands of an experienced endocrine surgeon. However, given that 80% of PHPTH was attributed to a single adenoma, most people questioned the need for bilateral neck investigation and proposed minimally invasive procedures. These minimally invasive procedures, successful on the basis of PTH tests, should fall > 50%, with a high level of prior extraction, after removal of the gland for 10 min. Unfortunately, IOPTH testing in patients with multiple abnormal glands is not very accurate and is true in only 50% of these patients.

In theory, a less invasive procedure should offer similar healing rates with fewer complications. However, in the studies of Irvin, Udelsman and others, no difference was found in the complication rates between unilateral and bilateral operations. Therefore, the bi-lateral examination of the four glands remains a gold standard in which all other approaches are evaluated. Therefore, we conducted a prospective study to evaluate the results of bilateral neck exploration as the ideal surgical approach for parathyroidectomy in patients with PHPTH.

MATERIALS AND METHODS:

Thirty patients with primary hyperparathyroidism who underwent parathyroidectomy with bilateral neck surgery performed by a single surgeon were evaluated. Preoperative neck and sestamibi ultrasound were performed to all patients. Intraoperative site was determined in all patients with methylene blue at a dose of 5 mg / kg body weight. In an emergency preoperative period of 500 ml in dextrose / saline. After surgery, patients were evaluated for recurrence, PTH and serum calcium measurements at specific time intervals (-3 days per day, and 2 months per week). Diagnosis of primary hyperparathyroidism is shown in Figure 1.

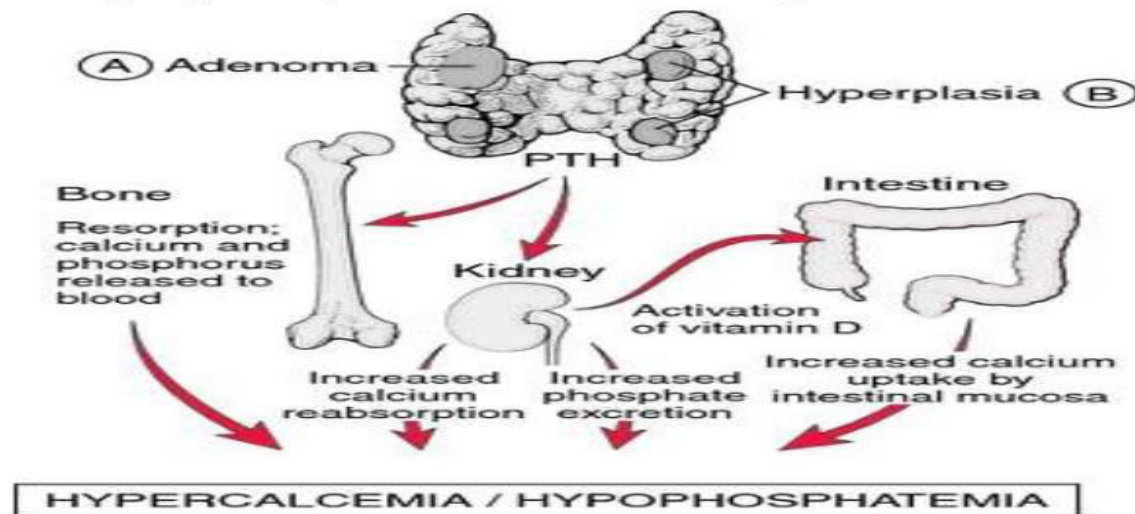


RESULTS:

Of the 37 patients, 22 were female and 15 were male. All patients were between the ages of 30 and 50, with a mean age of 40 years. Musculoskeletal problems including muscle weakness, arthralgia, myalgia and pathological fractures were the most common findings. The average hospital stay was 5 days. In preoperative ultrasonography, 37 patients had right, 18 patients had right and 10 patients had adenoma. The preoperative PTH levels were between 45-65ng / ml with an average of 55ng / ml. The rest of the nine patients were non-localized hyperplasia. The clinical presentation of primary hyperparathyroidism is shown in Figure.

CLINICAL FEATURES

- The signs and symptoms of primary hyperparathyroidism are those of hypercalcemia.



In the preoperative period, methylene blue injection was performed. Operatively, 28 patients with a single adenoma diagnosis had multiple adenomas, 6 patients had bilateral and 2 had unilateral involvement. Bilateral neck examination was performed in all cases with an average study time of 90 minutes (60-120 minutes). In the adenoma patients, total excision of the single gland was performed and total or subtotal parathyroidectomy was performed by forearm auto-transplantation in hyperplasia cases. Hypocalcemia was observed in 5 patients with serum calcium between 5.5 and 7 mg / dl after the operation. Calcium and vitamin D were decided by 2 oral supplements. There was no single incidence of recurrent laryngeal nerve injury.

DISCUSSION:

The main aim of parathyroidectomy in patients with PHPTH is to improve the disease and reach normocalcemia. The best surgical strategy should be achieved with minimal complications such as persistent recurrent hyperparathyroidism, postoperative hypoparathyroidism and recurrent laryngeal nerve injury, as well as efficient use of time and operational resources. The rate of persistent hyperparathyroidism may be as high as 30%, usually due to a lack of one of the more than one abnormal gland. For this reason, having a higher success rate in the first operation is more profitable than being dependent on a new operation where the costs and risks of recurrent nerve injury are greater. In our 37

patients, we were able to accurately detect the preoperative adenoma in 20 patients. In the study performed by Sippel, additional adenoma was found in 10-15% of patients with sestamibi test. negative. Of the 37 patients examined, 8 had more than one adenoma. Also, exploring the opposite side did not take longer than waiting for IOPTH levels. Allendorf reported a 95% success rate for parathyroidectomy using a bilateral approach. In our study, only 5 (13%) of 37 patients developed transient hypocalcemia, which improved with transient calcium and vitamin D supplements, but no recurrent hypercalcemia was observed alone. 95% redundancy However, in most cases, this rate cannot be established with confidence since we have not followed a long-term follow-up.

Our mean operative time was 90 minutes, which is higher than that of specialist endocrine centers and an average working time of 45 minutes. The success rate of minimally invasive parathyroidectomies is a combination of Tc-99m audio-complement SPECT and the use of a scanning extraction pertechnetate thallium in the surgical gamma probe and test, largely utilizing the precise location of the preoperative pre-operative parathyroid hormone to exclude intraoperative multigland disease. Unfortunately, the IOPTH test is not accurate in patients with more than one abnormal parathyroid glands, and is only true in about 50% of these patients. Therefore, when abnormal parathyroid glands remain in the neck, IOPTH levels may decrease more than 50% in some patients with more than one abnormal parathyroid gland. The cause of this reduction is unknown, but it may be due to a different calcium or PTH receptor setpoint in these tumors. In addition, waiting for IOPTH operation to delay the operation in about 15 minutes, this can also be compared to the time spent exploring the opposite side. Many previous reports show that a perfect outcome can be achieved by an experienced surgeon using a two-sided approach, as shown in a limited study. Therefore, bilateral neck research is not only cost-effective, it also takes the same time as the focused approach to evaluating IOPTH levels.

CONCLUSION:

Our study shows that bilateral neck studies are a safe approach with an excellent success rate for PHPT patients. It is associated with minimal complications and the efficient use of time and operational resources.

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