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Original Research Article

To assess intra-op parathormone levels as a consistent predictor of post-thyroidectomy hypocalcemia.

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Abstract

Background & Methods: The aim of the study is to assess intra-op parathormone levels as a consistent predictor of post-thyroidectomy hypocalcemia. All patients undergoing total or completion thyroidectomies for various indications like carcinoma, grave disease, multinodular goiter over a period of 12 months were taken into account.

Results: Operative procedures in this studied patients and incidence of hypocalcaemia in operated patients. Hemithyroidectomy was done in 30/50(60%), total thyroidectomy in 15/50(30%), subtotal thyroidectomy in only 05/50(10%) case. Hypocalcaemia was seen in only 05/50(10%) cases.

Conclusion: In our study females particularly post-menopausal groups developed more incidence of post-operative hypocalcaemia. Post-operative hypocalcaemia was more observed in those cases which were operated by less experienced surgeons like resident doctors, as they have less skill for surgery, and there are more chances to damage the parathyroid glands leading to hypocalcaemia.

Keywords: parathormone, predictor, post-thyroidectomy & hypocalcemia.
Study Design: Observational Study.

1. INTRODUCTION

The thyroid (which means “shield”) gland is composed of two lobes connected by an isthmus that lieson the trachea approximately at the level of the second tracheal ring. The gland is enveloped by the deep cervical fascia and is attached firmly to the trachea by the ligament of Berry[1]. Each lobe resides in a bed between the trachea and larynx medially and the carotid sheath and sternocleidomastoid muscles laterally. The strap muscles are anterior to the thyroid lobes, and the parathyroid glands and recurrent laryngeal nerves are associated with the posterior surface of each lobe[2].

A pyramidal lobe is often present. This structure is a long, narrow projection of thyroid tissue extending upward from the isthmus and lying on the surface of the thyroid cartilage[3]. It represents a vestige of the embryonic thyroglossal duct, and it often becomes palpable in cases of thyroiditis or Graves’ disease. The normal thyroid varies in size in different parts of the world, depending on the iodine content[4].

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Thyroid operations were not always as safe as they are today. The mortality rate of thyroid operations until the mid-nineteenth century was over 40% including 8 of the first 20 patients. It is therefore not surprising that the surgeon Robert Liston, who had performed five thyroid operations, stated in 1846 that "there was a grave risk of death from hemorrhage during thyroid operations and that it was a proceeding by no means to be thought of "John Dieffenbach, a surgeon from Berlin, stated in 1848 that thyroidectomy was "one of the most thankless, and most perilous undertakings"[5]. Thyroid operations were condemned by the French Academy of Medicine in 1850. The introduction of general and local anesthesia, antisepsis, better surgical equipment, and more surgical experience during the second half of the nineteenth century contributed to the dramatic improvement in operative results[6].

2. MATERIAL AND METHODS

This study was conducted for a period of one year in thyroidectomies patients. This study is a prospective study. The patients were surgically treated for thyroid diseases. They underwent subtotal thyroidectomy (05 patients), hemithyroidectomy (30 patients), total thyroidectomy (15 patients). The previous protocol followed in our hospital involved measurement of a post-operative next morning after a thyroidectomy measurement of calcium & based on clinical signs & symptoms predicting hypocalcemia was challenged & instead a more refined correlation between perioperative PTH values and post- thyroidectomy hypocalcemia was hypothesized.

Inclusion criteria:

1. All patients who underwent for thyroidectomies for a period of one year. 50 patients 43 males and 7 females were subjected in the study.

Exclusion criteria:

1. Patients previously operated for thyroid surgeries.
2. Patients having any history of previous neck surgery.
3. Patients having any history of previous Head and Neck irradiation.

3. RESULT

Table 1: Gender distribution in this study

Male	Female
09	41

Table shows the gender distributions in my study. Females are more common 41/50 (82%) in comparision to males 09/50(18%).

Table 2: Distribution of benign lesion and malignant lesion

Table III shows incidence of benign and malignant lesions in this study. Benign lesions were present in 35/50(70%) while malignant lesions were present in 15/50(30%).

Histopathology Report	No. of Patients
Benign lesion	35
Malignant lesion	15

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Table 3: Distribution of benign lesion and malignant lesion

Histopathology	No. of Patient
Benign lesion	35
Goitre	20
Thyroid nodule	15
Malignant	15
Papillary Ca thyroid	08
Follicular Ca thyroid	07
Total	50

Table 4: Distribution of cases on basis of surgery performed and hypocalcemia found

Procedure done	No. of Cases	Hypocalcemia found
Hemithyroidectomy	30	00
Subtotal thyroidectomy	05	01
Total thyroidectomy	15	05

Table operative procedures in this studied patients and incidence of hypocalcaemia in operated patients. Hemithyroidectomy was done in 30/50(60%), total thyroidectomy in 15/50(30%), subtotal thyroidectomy in only 05/50(10%) case. Hypocalcaemia was seen in only 05/50(10%) cases. (All of these 05 had undergone total thyroidectomy surgery).

4. DISCUSSION

The availability of the IOPTH assay in the management of thyroid disease is recommended to prevent and prospectively treat symptomatic hypocalcaemia, the use of IOPTH levels provides the surgeon with a very sensitive (80%) and highly specific (100%) tool for predicting which patients may develop symptomatic hypocalcaemia before they leave the[7], With a positive predictive value of 100% and a negative predictive value of 91%, an IOPTH level of less than 10 pg/mL can be used to determine whether patients require early calcium and vitamin D supplementation and predict a safe and early hospital discharge. Recently the PTH assessment which has been used in parathyroid surgery for more than two decades, was introduced as an early predictor of parathyroid dysfunction in thyroidectomized patients[8]. It is an element of an innovative approach to thyroid surgery, Recently the PTH assessment which has been used in parathyroid surgery for more than two decades, was introduced as an early predictor of parathyroid dysfunction in thyroidectomized patients. It is an element of an innovative approach to thyroid surgery, along with neuro monitoring, usage of harmonic scalpel and videoscopic techniques[9]. Although a growing number of papers have addressed the issue, contradictory data has been reported regarding cost effectiveness, sensitivity, specificity, and optimal timing of PTH assessment, from enthusiastic opinions. The use of IOPTH levels during thyroid surgery was also recently reported by Lindblom et al. Many trials have been done to evaluate iopth as reliable indicator of hypocalcemia gaheri et al, Roh and park et al also found iopth as a reliable indicator as. In our study group also patients have symptomatic hypocalcemia having low pth less than 10pg/ml and having accuracy of more than 90% and patients having iopth less than 15pg/ml having asmptomatic hypocalcemia[10]. Although iopth is a helpful in detecting patients having risk of hypocalcemia there are other risk factors like malignancy, operating surgeons skills, size of tumor and the procedure performed. nowdays irrigation fluid PTH is also considered a valuable investigation in early

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detection of post thyroidectomy hypocalcemia but it is costly and unavailable at most centers[11].

5. CONCLUSION

In our study females particularly post-menopausal groups developed more incidence of post-operative hypocalcaemia. Post-operative hypocalcaemia was more observed in those cases which were operated by less experienced surgeons like resident doctors, as they have less skill for surgery, and there are more chances to damage the parathyroid glands leading to hypocalcaemia.

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