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Research Article

FREQUENCY OF TRANSIENT AND PERMANENT
HYPOCALCEMIA AFTER TOTAL, NEAR TOTAL OR
SUBTOTAL THYROIDECTOMY.

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Abstract:

Objective: To find out frequency of clinical and laboratory, transient or permanent hypocalcemia following total, subtotal or near total thyroidectomy.

Materials and methods: This case series study was conducted at teaching hospital in Lahore, Pakistan from January to October 2017. Sample size was 50 patients who underwent total, subtotal or near total thyroidectomy. Patients who fulfilled the inclusion criteria were randomly selected. These patients were either males or females belonging from 20 to 70 years of age. Patients admitted in postoperative ward in surgical department were included after taking informed written consent. Serum calcium level was performed in all patients enrolled in study population.

Results: The mean age of patients was 40.15 ± 4.1 years. Out of 50 patients, 46 (92%) were females and 4 (8%) were males. 15 patients (30%) had post-thyroidectomy hypocalcemia, out of which 13 (86.67%) had transient hypocalcemia while remaining 2 (13.33%) had permanent hypocalcemia. 70% (35) patients had simple or multinodular goiter. Subtotal thyroidectomy was performed on 68% (34) patients.

Conclusion: Post-thyroidectomy transient hypocalcemia is commonly seen in patients undergoing thyroidectomy, however permanent hypocalcemia is rarely associated with thyroidectomy. Majority of patients underwent subtotal thyroidectomy.

Key Words: hypocalcemia, thyroidectomy, transient, permanent.

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INTRODUCTION:

Laryngeal nerve injury, hypothyroidism and tetany are commonly seen in patients after thyroidectomy [1]. Parathyroid gland removal or injury during thyroidectomy is a common postoperative complication. Patients who suffer parathyroid injury suffer transient hypocalcemia while those who suffer accidental removal of parathyroid glands with thyroid gland suffer permanent hypocalcemia. Postoperative hypocalcemia incidence has been reported to be 57% by Gac EP, et al [2]. Postoperative serum calcium and PTH levels helps in determining the cause and complication. The frequency of hypocalcemia is different in different thyroidectomy procedures. Puzziello A, et al [3] concluded in a study conducted in 2014 that females suffer transient hypocalcemia more frequently than males.

A few surgeons suggest preoperative calcium supplementation, but this approach is still under debate and not proven so far [4]. Total thyroidectomy, younger age, female gender, non-teaching hospitals and malignant neoplasms are more commonly associated with postoperative hypocalcemia [5].

MATERIALS AND METHODS:

This case series study was conducted from January to October 2017 over 50 patients between 20 to 70 years of age.

Inclusion criteria: Patients who underwent total, subtotal or near total thyroidectomy by bilateral exploration were included in this study. Both females and male patients were enrolled, selected randomly.

Exclusion criteria: Patients with concurrent lymph

nodes dissection or previous hypocalcemia, were excluded.

Study was conducted after taking informed written consent from all participants and no ethical issue certificate was signed from ethical research committee. Routine preoperative investigations including baseline investigations and thyroid function tests were performed with thyroid scan. Fine needle aspiration was performed on nodular thyroid swellings or those with atypical features on ultrasound neck. Plain helical CT was performed on those extending to mediastinum. Indirect laryngoscopy was performed on all patients

24 hours after thyroidectomy, 2ml blood was collected following aseptic measures and serum calcium level was tested. A predesigned proforma including demographic details including age, gender, type of surgery and serum calcium level was recorded. Data was analysed using SPSS 20. For quantitative data mean and its standard deviation was measured while frequencies were calculated for qualitative data.

RESULTS:

The mean age of patients was 40.15 ± 4.1 years. Out of 50 patients, 46(92%) were females and 4(8%) were males. 15 patients (30%) had post-thyroidectomy hypocalcemia, out of which 13(86.67%) had transient hypocalcemia while remaining 2(13.33%) had permanent hypocalcemia. 70%(35) patients had simple or multinodular goiter. Subtotal thyroidectomy was performed on 68% (34) patients.

| Thyroid diseases | Number (N) | Percentages. (%) |
|-------------------------------|------------|------------------|
| Multinodular or simple goiter | 35 | 70% |
| Grave's disease | 6 | 12% |
| Toxic nodular goiter | 4 | 8% |
| Thyroiditis | 3 | 6% |
| Carcinoma | 2 | 4% |

Table 1: types of thyroid diseases.

| Surgical procedure | Number (N) | Hypocalcemia |
|--------------------|------------|--------------|
| Total | 5(10%) | 4(8%) |
| Near total | 11(22%) | 5(10%) |
| Subtotal | 34(68%) | 6(12%) |

Table 2: Thyroidectomy types and relation with hypocalcemia.

DISCUSSION:

Thyroidectomy is postoperatively associated with hypocalcemia [6]. Multiple research data is available regarding this commonly observed post-thyroidectomy complication. Symptomatic hypocalcemia was observed till 29 hours following

surgery. The Chvostek's (80.8%), acral paresthesia (76.9%), perioral numbness (46.1%), carpopedal spasm (15.3%), Trousseau's (7.7%) and cramps (3.8%). Those who presented with manifestations of hypocalcemia but with normal serum iCa post-operatively comprised 33.9% of the study population

and the majority presented with Chvostek's sign (52%) and acral paresthesia (50%) in a study conducted by Tongol MCL. [7] Preoperative vitamin D level has no significant impact on postoperative hypocalcemia[8]. The understudy title focuses on determining the frequency of hypocalcemia following different types of thyroidectomy procedures, in addition it emphasizes on the frequency of transient and permanent hypocalcemia as well.

Study was conducted in a tertiary care hospital on 50 patients admitted in surgical ward who underwent thyroidectomy. The routine screening and preoperative investigations were performed on all the patients and postoperative serum calcium level was measured after 24 hours of surgery. 30% patients had hypocalcemia out of which 15% had permanent hypocalcemia while 85% had transient hypocalcemia.

CONCLUSION:

Post-thyroidectomy transient hypocalcemia is commonly seen in patients undergoing thyroidectomy, however permanent hypocalcemia is rarely associated with thyroidectomy. Majority of patients underwent subtotal thyroidectomy.

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