ORIGINAL RESEARCH PAPER

Gynaecology

KEY WORDS: post operative hypocalcemia, Thyroidectomy, Parathyroid auto transplantation.

Hypocalcemia the aftermath of thyroid surgery, a prospective study

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ABSTRACT

Background –
Post thyroidectomy hypocalcemia is a serious early complication. Estimates indicate that transient hypocalcemia incidence of 9.2% and permanent hypocalcemia incidence of 0.5%.

Materials and Method –
A prospective observational study done among 51 patients who have undergone total thyroidectomies. Data was collected from these patients by meticulous history taking, careful clinical examination, appropriate radiological and hematological investigations serum calcium and serum albumn, operative findings and follow up of the cases will be done after surgery post-operative hypocalcemia.

Results
18 (35%) patients out of 51 who had symptoms and signs of hypocalcemia. Incidence of post thyroidectomy hypocalcemia was found to be very high – 71% of patients in age group more than 50 years. 100% of hypocalcemia was documented In completion thyroid. And highest risk of hypocalcemia in patients operated for thyroid malignancy.

Conclusion –
Post thyroidectomy transient hypocalcaemia is a frequent complication which can be prevented with preoperative preparation with extreme caution and per-operative meticulous dissection, prompt identification of parathyriods and post operative frequent monitoring of serum calcium and early treatment can prevent significant morbidity.

Introduction

Post thyroidectomy hypocalcemia is a serious early complication. Estimates indicate that transient hypocalcemia incidence of 9.2% and permanent hypocalcemia incidence of 0.5%. (1)

Hypocalcemia may occur secondarily to surgical trauma, devascularization, unintentional removal of parathyroid glands, reoperation. Even meticulously performed procedures, some temporary parathyroid dysfunction may occur. (2)

Surgery extension has been seen as risk factor, as in total thyroidectomy there is a potential blood supply involvement resulting from bilateral surgical manipulation.

However, other factors are related to the chosen surgical procedure and its impact on devascularization or accidental removal of the parathyroid glands. The recommended surgical strategy is meticulous dissection and preservation of the parathyroid glands and their blood supply. The best way to avoid accidental excision is properly identifying the parathyroid glands. Risk of complication is higher when fewer than three glands are identified during surgery.

Depending upon the extent of parathyroid damage, post-operative hypocalcemia may be transient, resolving within a few months of permanent requiring lifelong oral or intravenous calcium supplementation.

Methodology

A prospective observational study done among 51 patients who have undergone total thyroidectomies. Data was collected from these patients by meticulous history taking, careful clinical examination, appropriate radiological and hematological investigations serum calcium and serum albumin, operative findings and follow up of the cases will be done after surgery post-operative hypocalcemia.

Inclusion criteria – Patients aged more than 12 years including both gender with clinically and pathologically diagnosed thyroid swellings undergoing thyroidectomy surgery.
Exclusion criteria:
1) Patients undergoing hemi-thyroidectomy/lobectomy
2) Primary parathyroid pathologies.
3) Age <12 years
4) Previous irradiation to neck.
5) Patients already on calcium supplementation.

Results.

A total of 51 patients were studied for hypocalcemia who had undergone total thyroidectomies for various indications. All the patients that met the study criteria were followed up with serial calcium levels post operatively on day1, day2 and day 4 and also record history about various presentations of post-operative hypocalcemia like peri-oral numbness, trousseau sign, chovestek's sign, ECG changes of hypocalcemia and other neurological symptoms.

In our study we followed 47(92%) female patients and 4(8%) male patients who underwent total thyroidectomy. Majority if the patients in the age groups 12-30 years - 16 (31%), 31-40 years – 16 (31%) 41- 50 – 12 (24%) and More than 50 years – 07 (14%).

In our study we documented 18 (35%) patients out of 51 who had symptoms and signs of hypocalcemia.

Incidence of post thyroidectomy hypocalcemia was found to be very high – 71% of patients in age group more than 50 years.

Post operative diagnosis following thyroidectomy and incidence of developing hypocalcemia

Diagnosis `	No of cases studied	Post thyroidectomy hypocalcaemia	percentage
Thyroid Malignancy	05	05	100%
Thyroid adenomas	10	02	20%
Toxic MNGs	04	02	50%
Graves Disease	03	02	66.7%
Hashimotos thyroiditis	19	04	21.05%
Lymphocytic thyroiditis	01	0	0
Nodular/colloid goiter	09	03	33.3

Total	51	18	35%

Of these 51 total thyroidectomies 2 patients were posted for completion thyroidectomy following previous hemi-thyroidectomy or subtotal thyroidectomy. Both the patients – 100% developed hypocalcemia post operatively.

Majority of the patients experienced hypocalcemia symptoms only on day 2 (61.11%) compared to 38.89% on day 2.

Presenting symptom	No of Patients
Peri-oral numbness	9
Carpo-pedal spasm	5
Asymptomatic	3
Depression	1
ECG changes	Nll

Discussion

Thyroid diseases are more common in females, as in many literatures, our study population also reflects the same male 8% and female contributes 92% of thyroid disorders.

In our study, results show that thyroid diseases that may need thyroid surgeries are frequent in the Middle Ages group between 30-40 years.

But the post thyroidectomy hypocalcaemia incidence is more common in the advancing age group i.e more than 50 years. A study conducted my Erbil Y et al named the impact of age, vit D level and incidental parathyroidectomy on post-operative hypocalcemia after total or near total thyroidectomy reveals that advancing ages the level of Vit-D fall post operatively increases tremendously so the incidence 25 times greater for patients of more than 50 years of age.

Benign diseases shows less incidence of post thyroidectomy hypocalcemia than the malignant diseases, this attribute to extensive surgical dissection performed in malignant disorders in order to obtain tumor clearance. In a study conducted by sokouti M et al, regarding the incidence of transient and permanent hypocalcemia after total thyroidectomy for thyroid cancer reveals higher incidence of hypocalcemia after total thyroidectomy in malignant diseases of thyroid. The incidence increases more with surgeries combined with radical neck dissection.

The incidence of post thyroidectomy hypocalcemia is more in the toxic thyroid diseases than non-toxic diseases, this also attributes to the extensive surgical dissection in the toxic disorders in order to avoid recurrence of the disease.

The same reason can explain the 100% incidence of post thyroidectomy hypocalcaemia in completion thyroidectomy in our study and in completion thyroidectomy some literatures postulates that extensive fibrosis can be the reason for vascular compromise that results in hypo parathyroidism.

Indications for total thyroidectomy in our study population shows majority of them are resected for thyroid mass or goiter.

In our study period we concentrated mainly on immediate postoperative hypocalcemia and due to the poor compliance of patients permanent hypocalcemia was not analysed.

This study shows the incidence of post-operative hypocalcemia was approximately 35%. In literature it was reported from 27% to 80%.

During the study period we did parathyroid autotransplantaion for 4 patients who are found to be with accidental injury to the parathyroid glands found on table and post thyroidectomy hypocalcemia didn't manifest in that patients. Low and Iam et all team follow routine auto-transplantation of parathyroid glands and incidence of hypocalcemia was found to less. Zendenius et all reported that with parathyroid auto-transplantation that there was no permanent hypocalcemia.

Conclusion

From our study we concluded that post thyroidectomy transient hypocalcaemia is a frequent complication which can be prevented with preoperative preparation with extreme caution and peroperative meticulous dissection, prompt identification of parathyriods and post operative frequent monitoring of serum calcium and early treatment can prevent significant morbidity. Parathyroid auto-transplantation should be considered in accidental injury to parathyroids during the procedure. While doing surgeries for malignant and toxic lesions for thyroid, the surgeon should consider total thyroidectomy as not only a thyroid removing surgery but also a surgery done to preserve parathyroids.

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