



## Surgery

## A STUDY OF INCIDENCE OF COMPLICATIONS IN THYROID SURGERY

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**ABSTRACT**

Post thyroidectomy complications is a common condition which surgeons encounter in the outpatient room". Injury to the nerves, parathyroids, and surrounding structures are all at risk of injury during thyroidectomy. This is an interesting study which assess the techniques adapted in doing thyroidectomy and the complications seen with them.

Knowing the incidence of complications in any surgical procedure helps us in 2 ways.

1. "Enables us to inform the patient about their queries".

2. "Evaluate our performances especially when there are established norms on the extent of complications".

The aims and objectives are:

1. To know the incidence of complications in thyroidectomy in KAPV Government medical college, Trichirapalli

2. To identify the relation between the type of procedure and the risk of complication.

3. Analyse the preventive measures

4. Gender incidence.

5. Age Incidence.

The main effects of hypocalcemia are on the neurons and cardiac muscles

**MATERIALS & METHODOLOGY:** This is a prospective study done from JUNE 2015 to JUNE 2017. Total number of 54 patients was included in the study. Patients excluded were with previous thyroid surgery. The patients were analysed according to the clinical types of thyromegaly, age and gender, techniques of thyroid surgery.

**RESULTS** It is surprising to note that the transient hypocalcemia is the most common complication

(27.7%), "It is slightly above the figure suggested by Bailey and Love (25%)". Permanent hypoparathyroidism occurs in 2% of the cases. The technique of medial ligation of inferior thyroid branches have paid off. Since it was not practiced in all cases, incidence of hypocalcemia may be further

lowered by insisting the technique in all cases. "The incidence of RLN paralysis is 3.7%. Permanent palsy was within 1.8%." It was a bilateral injury to RLN. But still the patient managed to do without tracheostomy. Probably due to partial paralysis. "The incidence quoted in the literature 1-2%".

Superior laryngeal palsy was not found to be injured. This may reflect its subtleness in manifestation. Use of USG in all MNG routinely may help reduce the incidence of thyroiditis being operated.

**CONCLUSION** Following the study certain conclusion have been reached that most of the disease is in the age group of 20-40 years & more common in females with an overall incidence of hypocalcemia is (15/54) 27.7%. All of them are transient and none is permanent. Incidence of hypocalcemia is more in more extensive surgery. Highest incidence occurred following Total Thyroidectomy. Overall incidence of haemorrhage is (7/54) 12.9%. "Two cases of cord paralysis was seen. The overall incidence of recurrent laryngeal

Nerve palsy is 3.7%". "Of this only 1 showed permanent paralysis bringing the incidence of permanent "RLN paralysis to 1.8%". Cord edema is supposed to be due to endotracheal intubation and it settled with steroids. "The incidence of permanent recurrent laryngeal nerve injury and hypocalcemia are within the acceptable limits in this prospective study." "Incidence of wound infection in zero."

**KEYWORDS :** Thyroidectomy, Complications, Hypocalcaemia, RLN palsy.**INTRODUCTION:**

"Post thyroidectomy complications is a common condition which surgeons encounter in the outpatient room"[1]. The most important complications are post procedure hypocalcemia secondary to devascularisation of parathyroid and significant hoarseness of voice caused by laryngeal nerve palsy induced either by traction or division [2]. Nerves, parathyroids, and surrounding structures are all at risk of injury during thyroidectomy[3] This is an interesting study which assess the techniques adapted and the complications rates seen with them.

Knowing the incidence of complications in any surgical procedure helps us in 2 ways.

1. "Enables us to inform the patient about their queries".

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**AIMS AND OBJECTIVES**

1. To know the incidence of complications in thyroidectomy.

2. To identify the relation between the type of procedure and the risk of complication.

3. to analyse the preventive measures

4. Gender incidence.

5. Age Incidence.

The main effects of hypocalcemia are on the neurons and cardiac muscles[3]

**Mode of Admission**

Patient with goiter presentation in our out-patient clinic were grouped as follows.

1. Diffuse goitre
2. Solitary nodule of thyroid
3. Multinodular goitre
4. Dominant nodule
5. Toxic Nodular goitre

This pattern of sub-division helps us to carry out the appropriate investigations.[8]

**Evaluation**

The following are the routine investigation done other than the basis investigation.

1. FNAC
2. Thyroid profile
3. ENT evaluation for vocal cord status.
4. Serum calcium levels.
5. USG of thyroid is not routinely done.
6. Thyroid uptake study is done in

1. Toxic nodular goitre
2. Thyroglossal cyst
3. Retrosternal goitre

Serum calcium levels are done to have a baseline value against which it can be compared in post-op for diagnosing cases of hypocalcemia[5].

**Procedure**

Only 3 basic types of surgery are done.

1. Hemi-thyroidectomy in solitary nodule of thyroid.
2. Total thyroidectomy in malignancy.
3. Sub-total thyroidectomy with either a monolateral remnant (or) bilateral remnant.

Sub-total thyroidectomy with bilateral (or) mono-lateral remnant is done in diffuse nontoxic and multinodular goitre.

Sub-total thyroidectomy with monolateral remnant is done in toxic nodular goiter[2].

**Specific surgical techniques**

**Order in which the pedicle is ligated differs.**

First always middle thyroid vein if present is ligated. Next either the inferior thyroid vein (or) the superior pedicle is ligated. Superior pedicle is ligated, blindly, without searching for SLN, after gentle downward, outward and forward traction of the upper pole. The goitre is medially rotated and RLN and parathyroid, are identified before controlling the inferior thyroid artery. In most of the cases the parathyroid are identified and preserved before ligating the inferior thyroid vessels. But in all cases RLN was identified and preserved before proceeding further. The inferior thyroid vein was not ligated in toto, but its branches were ligated close to the level of thyroid capsule. Wound was closed after keeping a corrugated rubber D.T.[6]

**Antibiotic prophylaxis**

All patients were given a dose of 3rd generation cephalosporin 1 hour before surgery.

The antibiotic was continued till the 3rd post operative day.

**Post-operative care**

- Drainage tube dressing is noted for soakage on the night of surgery. If excessive noted as post-op bleeding.
- Drainage tube is removed 24 hours after surgery if no active bleeding in noted.
- Symptoms of hypocalcemia are watched. When patient has the symptoms suggestive of hypocalcemia serum calcium done. IF the patient has hypocalcemia the sr. calcium repeated after 4-6 weekly as an OP procedure to rule out permanent hypocalcemia.
- Dressings are removed on the 3rd post-operative day and any wound infection noted.[7]

**Vocal cord function assessment**

All patients were not subjected to routine post-OP assessment before discharge. Vocal cord mobility is noted on the table as the anesthetist removes the endo-tracheal tube. Patient with voice change are subjected to ENT evaluation.[5]

Patient with vocal cord palsy are started on steroids and regularly followed up.[5] Vocal cord paralysis considered permanent if persistent for more than 6 months.

**Presentation**

1. Solitary nodule
2. Diffuse goitre
3. Multinodular goitre
4. Dominant module

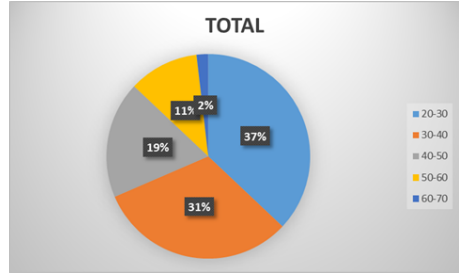
**RESULTS**

**PATIENTS AGE**

Breakup of patients age relation is as follows.

**“Patients age varied from 20-68 years”.**

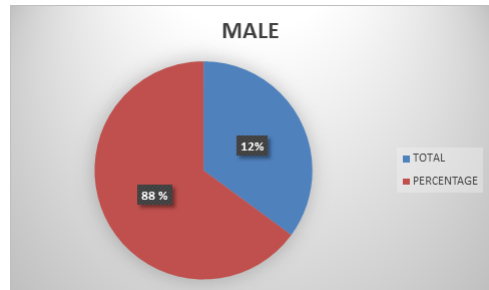
S.NO	AGE	TOTAL OUT OF 54	PERCENTAGE
1	20-30	37	
2	30-40	17	31.4
3	40-50	10	18.5
4	50-60	6	11.1
5	60-70	1	1.8



Most of the disease is in the age group of 20-40 years.

**PATIENTS SEX INCIDENCE**

S.NO.	SEX	TOTAL OUT OF 54	PERCENTAGE
1	MALE	6	11.1
2	FEMALE	48	88.8

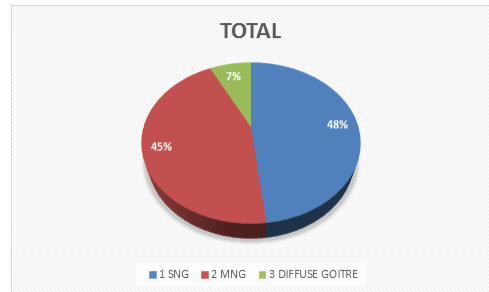


Thyroid disease is more common in females in the male female ratio of 1:8.

**ANALYSIS OF PATHOLOGY**

All the various clinical presentation and their final histopathological outcome are analysed.

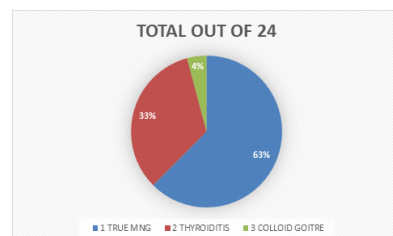
S.NO.	TYPE	TOTAL	PERCENTAGE
1	SNG	26	48.1
2	MNG	24	44.4
3	DIFFUSE GOITRE	4	7.4



Most common presentation is the solitary nodule followed by multinodular goiter.

Incidence of various histopathological types in multinodular goiter is tabulated as follows.

S.NO.	TYPE	TOTAL OUT OF 24	PERCENTAGE
1	TRUE MNG	15	63
2	THYROIDITIS	8	33.3
3	COLLOID GOITRE	1	4.1



Nearly one third of clinically appearing MNG has turned out to be thyroiditis.

It is interesting to note that not toxic case was operated. So the incidence of thyroid storm cannot be made out.

**Overall Incidence of Hypocalcemia**

S.NO.	TYPE	TOTAL OUT OF 54	PERCENTAGE
1	TRANSIENT	15	27
2	PERMANENT	0	0

**Incidence of Hypocalcemia in various procedures**

S.NO.	PROCEDURE	TOTAL OUT OF	PERCENTAGE
1	HEMI	4/25	16
2	SUB TOTAL	10/28	35
3	TOTAL	1/1	100

Overall incidence of hypocalcemia is (15/54) 27.7%. All of them are transient and none is permanent.

Incidence of hypocalcemia is more in more extensive surgery. Highest in total thyroidectomy

**Incidence of hemorrhage**

Overall incidence of haemorrhage is (7/54) 12.9%.

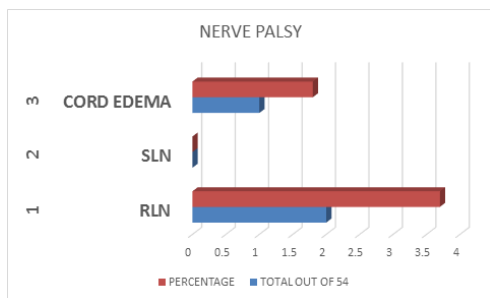
S.NO.	TYPE	TOTAL OUT OF 54	PERCENTAGE
1	PER-OP	4	7.4
2	POST-OP	2	3.7
3	BOTH	1	1.8

Per OP bleeding was due to large goiters due to increased vascularity.

**Incidence of voice change**

Voice change was noted in 3 of 54 cases.

S.NO.	TYPE	TOTAL OUT OF 54	PERCENTAGE
1	RLN	2	3.7
2	SLN	0	0
3	CORD EDEMA	1	1.8



Two cases of cord paralysis was seen. The overall incidence of recurrent laryngeal

Nerve palsy is 3.7%.

“Of this only 1 showed permanent paralysis bringing the incidence of permanent

“RLN paralysis to 1.8%”.

Cord edema is supposed to be due to endotracheal intubation and it settled with steroids.

**Incidence of wound infection**

Wound infection was noted in 0 out of 54 cases. Bringing the incidence to 0%.

**Incidence of scar hypertrophy**

Scar hypertrophy was noted in 5 out of 54 cases. Bringing the incidence to 9.2%.

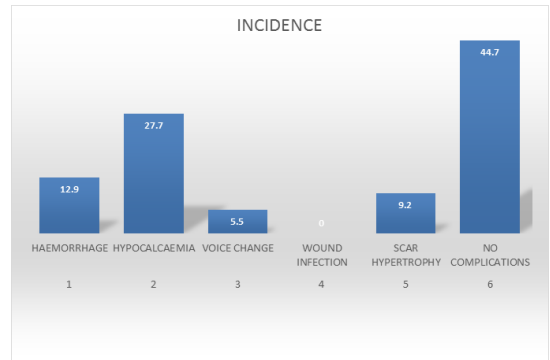
Since the surgery is performed in neck, due to constant stretching the scar in prone hypertrophy.

**Incidence of SLN Palsy**

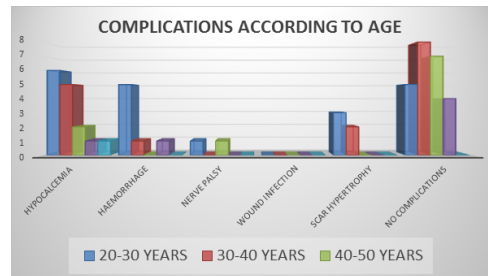
Superior laryngeal nerve paralysis is not detected.

**Sum up of complication rate in thyroidectomy:**

S.NO.	TYPE	INCIDENCE
1	HAEMORRHAGE	12.9
2	HYPOCALCAEMIA	27.7
3	VOICE CHANGE	5.5
4	WOUND INFECTION	0
5	SCAR HYPERTROPHY	9.2
6	NO COMPLICATIONS	44.7



TYPE	COMPLICATIONS ACCORDING TO AGE				
	20-30 YEARS	30-40 YEARS	40-50 YEARS	50-60 YEARS	60-70 YEARS
HYPOCALCEMIA	6	5	2	1	1
HAEMORRHAGE	5	1	0	1	0
NERVE PALSY	1	0	1	0	0
WOUND INFECTION	0	0	0	0	0
SCAR HYPERTROPHY	3	2	0	0	0
NO COMPLICATIONS	5	8	7	4	0



**Most of the complications are commonly seen in the younger age groups (20-40 years).**

**ANALYSIS**

On analyzing the 54 cases operated upon the following observation are made. “Most common complications is hypocalcemia 27.7%. All of which are transient only”

- Incidence of RLN palsy is 3.7%.
- Incidence of Permanent recurrent laryngeal nerve paralysis is 1.8%.
- Incidence of infection is 0%.
- Incidence of hemorrhage is 12.9%
- Most common presentation is solitary nodule of thyroid 48% percentage.
- Most of the disease is in the age group of 20-40 years.
- Females are most commonly affected, male : female ratio is 1:8.
- 1/3 of MNG turned out to be thyroiditis on final pathological report.

**DISCUSSION**

Key points are the parathyroids and recurrent laryngeal nerve. It is surprising to note that the hypocalcemia is the most common

complication (27.7%). **“It is slightly above the figure suggested by Bailey and Love (25%)”**[1]The technique of medial ligation of inferior thyroid branches have paid off. Since it was not practiced in all cases, incidence of hypocalcemia may be further lowered by insisting the technique in all cases. **“The incidence of RLN paralysis is 3.7%. Permanent palsy was within 1.8%.”**[4]It was a bilateral injury to RLN. But still the patient managed to do without tracheostomy. Probably due to partial paralysis. **“The incidence quoted in the literature 1-2%”**[8]. Superior laryngeal palsy was not found to be injured. This may reflect its subtleness in manifestation. Use of USG in all MNG routinely may help reduce the incidence of thyroiditis being operated.

## CONCLUSION

**This prospective study was undertaken in KAPV – MGMGH TRICHY** on the incidence of complications in thyroidectomy. Following the study certain conclusion have been reached that Most of the disease is in the age group of 20-40 years & more common in females with an Overall incidence of hypocalcemia is (15/54) 27.7%. All of them are transient and none is permanent.

Incidence of hypocalcemia is more in more extensive surgery. Highest in total Thyroidectomy, Overall incidence of haemorrhage is (7/54) 12.9%. **“Two cases of cord paralysis was seen. The overall incidence of recurrent laryngeal Nerve palsy is 3.7%”. “Of this only 1 showed permanent paralysis bringing the incidence of permanent RLN paralysis to 1.8%”. Cord edema is supposed to be due to endotracheal intubation and it settled with steroids. “The incidence of permanent recurrent laryngeal nerve injury and hypocalcemia are within the acceptable limits in this prospective study.”**

**“Incidence of wound infection in zero.”**

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