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Recurrrent Laryngeal Nerve injury in complicated Thyroidectomy with Intraoperative Nerve Monitoring (IONM) in a Single Centre for 1 year

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INTRODUCTION

Recurrent laryngeal nerve injury during thyroidectomy is a potentially catastrophic complication. Permanent recurrent laryngeal nerve palsy account about 0.3-3% while transient palsy accounts about 5-8%. Risk factors for recurrent laryngeal nerve injury during surgery are huge retrosternal goiter, re-operation, cancer surgery, extent of resections in difficult thyroid or cancer,toxic goiter , left versus right side and surgeon experience in surgery and IONM usage.

OBJECTIVE

To identify factors contributing to nerve injury during surgery

METHOD

Data collected retrospectively from patients medical record, IONM signal values during surgery in OT and during follow up in clinics.

RESULTS

Age Group	No
20-39	20
40-59	22
60-79	17
Gender	
Male	12
Female	47
Thyroid Disease	
Benign	41
Malignant	18
Thyroid Status	
Euthyroid	48
Hypothyroidism	0
Hyperthyroidism	11
Preop Laryngoscope	
Normal	59
Abnormal	0
Specimen Weight (g)	
0-100	29
101-200	9
201-300	6
301-500	6
501-999	8
≥1000	1

Table 1: Demographic data,thyroid status, specimen weight& pre-operative laryngoscopy result of patients that underwent thyroidectomy with IONM monitoring from January 2023 to December 2023

- **A total of 59 cases of thyroidectomies with IONM with 82 nerves over 1 year (1.1.2023 - 31.12.2023).**
- **7 out of 82 had recurrent laryngeal nerve injury**
- **1 out of 82 were permanent injury (1.2%) and 6 were transient injury (6.1%) in which recovered within 6 weeks postoperatively & 1 recovered after 9 months.**
- **Case of permanent recurrent laryngeal nerve injury was unexplained as evidence by stable values of IONM reading both at vagus nerve and recurrent laryngeal nerve.Its a case of post right hemithyroidectomy for follicular adenoma where notel right vocal cord plasy during postoperative laryngoscopy.**
- **Among 5 cases of transient recurrent laryngeal nerve injury, 2 cases demonstrated loss of signal intraoperatively secondary to mechanical cause.Rest was diagnosed during routine postoperative vocal cord assessment.**
- **5 cases of transient injury resolved by 6 weeks but 1 case recovered after 9 months after injection laryngoplasty. It was a case of huge multinodular goitre(1100g) with intraoperative mechanical injury**

Amplitude	No Drop		Dropped >50%	
Resolved of Event			Resolved	Not Resolved
			2	5
Post-operative Laryngoscope	Normal	Abnormal	Normal	Abnormal
	31	2	2	5

Table 2: Results of recorded nerve signal amplitude and post-operative laryngoscopy result.

DISCUSSION

In order to reduce the rate of recurrent laryngeal nerve injury, direct visualization of recurrent laryngeal nerve has been implemented since year 1938. IONM was subsequently introduced since year 1966 as an adjunct to further facilitates the identification of the nerve and verifies its functional integrities.It has further reduced the incidence of vocal cord paralysis. **The overall incidence of RLN paralysis ranges from 0.5% to 20.0%, with a transient incidence of 0.6% to 9.6% and a permanent incidence of 0.0% to 2.0%.Our audit revealed transient injury 6.1% and permanent 1.2% which is within the acceptable incidence.**Among the 59 cases of thyroidectomy, we have had 7 patients sustained RLN injury with 3 Type 1C, 2 Type 2, 1 Type 3a injury and 1 unexplained injury. 2 out of 7 cases had recovery of amplitude intraoperatively. The results are as shown in table 2. We have noted that 5 unresolved cases are 4 toxic multinodular goitre and 1 malignant case.3 out of 5 cases are patients with multinodular goiter with mass effect that the weight of gland more than 500g. This result has showed the accuracy of IONM in predicting RLN injury. However, the complexity of surgery, such as patients with hyperthyroidism and huge goiter might still affect the practicability of IONM in helping to preserve the recurrent laryngeal nerve. This could be due to hypervascularity of the gland and mass effect of enlarged thyroid causing variation of anatomy and difficulty in dissection. Follow up laryngoscope was done 1 month after the operation, noted that 5 out of 7 cases of vocal cord injury showed resolved vocal cord paralysis. 1 case revealed resolved palsy after 9 months and this patient had injection laryngoplasy and rehabilatation by ENT team.1 patient remain unexplained permanet vocal cord palsy.

CONCLUSION

Identifying the possible factors is paramount in avoiding similar outcome in handling difficult and high risk cases in future. IONM may provide a new concept for effective protection of the RLN during thyroid surgery.

REFERENCES

- Role of intraoperative neuromonitoring of recurrent laryngeal nerve in thyroid and parathyroid surgery.Yuwei Ling et all.J Int Med Res. 2020
- Intraoperative recurrent laryngeal nerve monitoring versus visualisation alone - A systematic review and meta-analysis of randomized controlled trials.Matthew G. Davey et. all.September 2022,American journal of surgery
- Association of Intraoperative Neuromonitoring With Reduced Recurrent Laryngeal Nerve Injury in Patients Undergoing Total Thyroidectomy.Ioannis Vasileiadis et all.JAMA Otolaryngol Head Neck Surg. 2016
- Augen BR et all 2015 american thyroid association, predictors of difficulty in thyroid surgery increase the incidence of complications?
- Prospective study with the proposal of a preoperative score. BMC Surg. 2019 Apr;18(S1):116.D'Orazi V et all
- Proving the superiority of intraoperative recurrent laryngeal nerve monitoring over visualization alone during thyroidectomy 2023 Wojtczak B et all