

PREDICTIVE FACTORS OF VOCAL FOLD PARALYSIS IN THYROID SURGERY. IS NEUROMONITORING ALWAYS NECESSARY? A COHORT STUDY

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1. INTRODUCTION

- Inferior laryngeal nerve injury is one of most important complication of thyroidectomy.
- Laryngeal nerve identification during the surgery is a standardized step of thyroid surgery
- Nowadays intraoperative neuromonitoring (IONM) is a debatable tool used by surgeon aiming to decrease nerve related complication. However, the benefit of the routine use of IONM in total thyroidectomy is still controversial and the costs are questionable.
- This study aims to determine the effectiveness of IONM in a high-volume teaching hospital and define which patient would have more benefit of this technology.

2. MATERIALS AND METHODS

- A retrospective cohort study with data from 4,561 consecutive patients that underwent total thyroidectomy between January 2014 to July 2019.
- A total of 1,764 patients with preoperative and postoperative (seven days) videolaryngoscopy were analyzed. Were excluded 2,797 patients without vocal symptoms that had not undergone postoperative videolaryngoscopy.
- The use of IONM occurred according to the availability by the source of payment of the surgery.
- IONM was used in 1,708 surgeries and performed the direct nerve visualization technique in 56 cases.
- We applied a logistic regression model to evaluate the significant predictors for RNL injury.

3. RESULTS AND DISCUSSION

- Transient vocal fold paralysis occurred in 5.7% of 4,561 patients.
- The subgroups with the strongest association between nerve injury without IONM were patients submitted to central compartment lymph node dissection (level VI), age less than 20 years, body mass index above 30 and ASA Physical Status Classification III and IV (Table 1).
- The incidences of inferior laryngeal nerve injury in patients without these factors were 11.7% with IONM and 14.3% with direct nerve visualization group. The relative risk of nerve injury is 1.2.
- The incidence of nerve complication in patients with at least one risk factors described were 18.5% and 48.6% with and without IONM, respectively. The relative risk were 2.6 in these patients (table 2).
- The protective effect of the IONM is demonstrated in our study, like in other cohort studies. However, the variables of high-risk patients described in this study had not been described.

Table 1. Main risk factors associated with vocal fold paralysis

Variable	Coefficient	Odds ratio	95 % CI
Age < 20 years	0.94	2.6	- 0.083 - 1.970
Node dissection	0.88	2.4	0.409 - 1.350
Obesity	0.72	2.1	-0.452 - 1.905
ASA III-IV	0.70	2.0	-0.163 - 1.569

Table 2. Comparative between the IONM and Direct visualization only groups

	With IONM			Direct nerve visualization		
	Patients	Paralysis	Incidence	Patients	Paralysis	Incidence
All sample	4,471	276	6.1%	388	21	5.4%
Patients with videolaryngoscopy	1,908	266	13.9%	58	18	31.4%
Patients with any of risk factors	779	138	18.5%	37	15	48.6%
Patients without risk factors	1,129	128	11.7%	21	3	14.3%

4. CONCLUSION

- Our study showed that the use of IONM decrease laryngeal nerve complication, especially in selected subgroups of patients (younger than 20 years old, with BMI >30 and those who underwent central compartment lymph node dissection).
- In situation of restricted resources, the IONM should be prioritized for high-risk patients.

5. REFERENCES

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