Thyroidectomy: Time for a Change of View?

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Abstract

True postoperative vocal cord (VC) paresis or paralysis (VCP) secondary to the injury of the recurrent laryngeal nerve (RLN) is one of the major thyroid surgery complications, but with a low incidence. In theory, IntraOperative Nerve Monitoring (IONM), aimed at reducing permanent injuries of recurrent laryngeal nerve during thyroidectomy, but systematic studies of IONM have shown that enhances RLN identification via functional assessment, showing no statistically significant difference in the incidence of RLN palsy when using IONM versus VA during thyroidectomy.

IONM can be done with an electromyographic endotracheal tube (EMG TET), and we believe that the videolaryngoscopes (VDL) are a better option than Fiberoptic Bronchoscopy for intubation with EMG TET.

Keywords: Airway Management; Videolaryngoscope; Intubation; Thyroidectomy

Introduction

True postoperative vocal cord (VC) paresis or paralysis (VCP) secondary to the injury of the recurrent laryngeal nerve (RLN) is one of the major thyroid surgery complications, but with a low incidence. In theory, IntraOperative Nerve Monitoring (IONM), aimed at reducing permanent injuries of recurrent laryngeal nerve during thyroidectomy, but systematic studies of IONM have shown that enhances RLN identification via functional assessment, showing no statistically significant difference in the incidence of RLN palsy when using IONM versus VA during thyroidectomy.

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Case Report

A 63-yr-old woman with difficult airway predictors (16 points in Arné test) and no previous general anesthesia was scheduled for Thyroidectomy.

Our plan was to make an IntraOperative Nerve Monitoring (IONM) with an electromyographic endotracheal tube (EMG TET) (Figure 1B and 1C), and we performed intubation with videolaryngoscope because avoid difficult intubation in a possible difficult airway patient (Figure 1A and 1D), at the time that accurate checking of the placement of the band between the vocal cords (Figure 1E to 1H).

Intubation was achieved at first attempt (Figure 1I), and both Surgery and IntraOperative Nerve Monitoring they were successfully.

Discussion

True postoperative vocal cord (VC) paresis or paralysis (VCP) secondary to the injury of the recurrent laryngeal nerve (RLN) is one of the major thyroid surgery complications, but with a low incidence, around 3%, rising when it is a malignant tumor, hyperthyroidism, Graves-Basedow, goiter, substernal, prior cervical radiation, and getting up to 13% in reoperation [1-3].

RLN’s injury can be unilateral or bilateral, and temporary or persistent. Gravity lies in the vital commitment for acute obstruction of the airway, which can produce bilateral RLN paralysis. Identifying the RLN visually during surgery can lower the incidence of RLN injury and the permanent injury rate of 0.9%.

In theory, IntraOperative Nerve Monitoring (IONM), electromyographic recording of the thyroarytenoid muscle activity after electrical stimulation of the vagus or RLN nerves [4,5], aimed at reducing permanent injuries of recurrent laryngeal nerve during thyroidectomy, but systematic studies of IONM have shown that enhances RLN identification via functional assessment, showing no statistically significant difference in the incidence of RLN palsy when using IONM versus VA during thyroidectomy [6-10]. Nevertheless, IONM seems to decrease the incidence of transient RLN paresis in repeat thyroid operations compared with nerve visualization alone [11].

Thyroidectomy: Time for a Change of View?

IONM increases the safety for the patient and has a number of implications that basically focus on the benefits in clinical practice, research, training and teaching, and in the legal medical field. So International Intraoperative Monitoring Study Group recommends in these patients make, at least, a preoperative laryngoscopy, a vagal stimulation prior to dissection of the RLN, a vagal stimulus later than the dissecting of the RLN (increases the validity of the test), and a postoperative laryngoscopy [12].

Since IONM is considered a useful tool to help the identification of the nerve, and is used as a method of visual identification pattern support, which do not substitute, and although should not be considered standard neither supplant the anatomical identification of the nerve, increases the safety of the patient undergoing thyroid surgery and should be performed in routine thyroid surgery [1].

IONM can be done with an electromyographic endotracheal tube (EMG TET) which has a band with electrodes surface that should be placed at the level of the VC to provide electromyographic signal [13]. This signal, by way of hearing and visual signal, identifies the RLN. To do this, the EMG TET band must be in contact with the VC [14], so it is recommended direct visualization during placement of the EMG TET and a subsequent check, once placed the patient prior to surgery.

It has been published the use of Fiberoptic Bronchoscopy for intubation with EMG TET [15,16], checking the placement of the band when removes it. This would be done looking through the tube or with a direct laryngoscopy. But, since the repeated use of a Laryngoscope on airway can lead to the trauma and subsequent complication of ventilation, should be limited number of attempts.

In this regard, we believe that the videolaryngoscopes (VDL) are a better option [17], since they allow intubation in patients with a potential difficult airway, such as thyroid surgery [1,19,20], and allows accurate checking of the placement of the band between the vocal cords (Figure 1E to 1H).

The method of laryngoscopy has a direct effect on the appropriateness of the choice of device for successful tracheal intubation. Unlike the ASA 2013 guidelines [21] or the Canadian recommendations for airway management [22,23], which address both the anticipated and the unanticipated difficult airway, the new DAS 2015 guidelines focus on the unanticipated difficult airway, an unpredictable problem. And Ear–Nose–Throat (ENT) surgery is considered a risk factor for difficult intubation, moreover thyroid surgery.

The use of videolaryngoscopy has increased with a profusion of publications. The introduction of new airway devices into clinical practice accounted for the most significant changes in the ASA Difficult Airway Practice Guidelines [21], and from 2003 to 2013 it was the introduction of the VDL as the rescue of a failed intubation attempt. Both of these devices have also been incorporated into the new DAS 2015 guidelines [24] because randomized controlled trials have been successfully conducted on patients with a history of difficult intubation, and intubation success with these patients has been appropriately assessed.

Conclusion

Successful airway management requires a range of expertise and skill sets and a systematic approach which gives priority to the planning and preparation, bearing in mind the human factors and team work, to reduce the complications of intubation.

As all we know, VDL offers an improved view compared with traditional direct laryngoscopy, and currently are the first choice or default device for many anesthetists.

Anesthetists need to be skilled in a variety of techniques to manage a range of clinical situations into the OR, and a patient with an unanticipated difficult airway needs an anesthetist who has chosen the best technique, and has the expertise to modify it. So DAS 2015 guidelines recommend the regular practice to ensure that the improved view translates reliably into successful tracheal intubation.

And, considering all anesthetists should be trained to use, and have immediate access to, a VDL, these devices should not only be immediately available, but the practitioner should become proficient in their use [24].
Thyroidectomy: Time for a Change of View?

The standard of care for VDL is traditional direct laryngoscopy, although this has been put in doubt [25]. And, although today there are still not replace direct laryngoscopy in patients with normal or difficult airways, as more videolaryngoscopes are introduced into clinical practice and as more practitioners become increasingly skilled with the technique of VDL, it could quite possibly becoming the standard for routine and difficult intubations.

Bibliography


Thyroidectomy: Time for a Change of View?


