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REVIEW ARTICLE

Recommendations on the Use of Neuromonitoring in Thyroid and Parathyroid Surgery☆

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Thyroid;
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Abstract
Introduction: Thyroid and parathyroid surgery (TPTS) is associated with risk of injury to the recurrent laryngeal nerve, superior laryngeal nerve and voice changes. Intraoperative neuromonitoring (IONM), intermittent or continuous, evaluates the functional state of the laryngeal nerves and is being increasingly used. This means that points of consensus on the most controversial aspects are necessary.
Objective: To develop a support document for guidance on the use of IONM in TPTS.
Method: Work group consensus through systematic review and the Delphi method.
Results: Seven sections were identified on which points of consensus were identified: indications, equipment, technique (programming and registration parameters), behaviour on loss of signal, laryngoscopy, voice and legal implications.
Conclusions: IONM helps in the location and identification of the recurrent laryngeal nerve, helps during its dissection, reports on its functional status at the end of surgery and enables decision-making in the event of loss of signal in the first operated side in a scheduled bilateral

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thyroidectomy or previous contralateral paralysis. The accuracy of IONM depends on variables such as accomplished technique, technology and training in the correct execution of the technique and interpretation of the signal. This document is a starting point for future agreements on TPTS in each of the sections of consensus.

PALABRAS CLAVE
Tiroidectomía;
Paratiroidectomía;
Neuromonitorización;
Nervio laríngeo recurrente;
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Guía de práctica clínica;
Laringe;
Voz;
Tiroides;
Paratiroides

Recomendaciones sobre el uso de la neuromonitorización en cirugía de tiroides y paratiroides

Resumen
Introducción: La cirugía de tiroides y paratiroides (CTPT) se asocia a riesgo de lesión del nervio laríngeo recurrente, nervio laríngeo superior y cambios en la voz. La neuromonitorización intraoperatoria (NMIO), intermitente o continua, en CTPT evalúa el estado funcional de los nervios laríngeos y se utiliza progresivamente con más frecuencia. Esto obliga a adoptar puntos de acuerdo en los aspectos más controvertidos.
Objetivo: Elaborar un documento de ayuda para orientar en la utilización de la NMIO en CTPT.
Método: Consenso en grupo de trabajo mediante revisión sistemática y método Delphi.
Resultados: Se identificaron 7 secciones sobre las que se establecieron puntos de acuerdo: indicaciones, equipo, técnica (parámetros de programación y registro), conducta en pérdida de señal, laringoscopia, voz e implicaciones legales.
Conclusiones: La NMIO ayuda en la localización e identificación del nervio laríngeo recurrente, ayuda durante su disección, informa sobre su estado funcional al finalizar la cirugía y permite tomar decisiones en caso de pérdida de señal en el primer lado operado en una tiroidectomía bilateral programada o si había parálisis contralateral previa. La precisión de la NMIO depende de variables como la técnica realizada, la tecnología utilizada y la formación para la correcta ejecución de la técnica e interpretación de la señal. El documento presentado es un punto de inicio para futuros acuerdos en CTPT en cada una de las secciones de consenso.

Introduction

Intraoperative neuromonitoring in thyroid and parathyroid surgery (TPTS) assesses the functional state of the laryngeal nerves (superior—SLN—and recurrent—RLN—) through the transformation into acoustic signal and electromiograph of the neuromuscular activity of the intrinsic muscles of the larynx after electric stimulus (directly or in the vagus nerve—VN—).

In TPTS the IONM helps to identify the RLN in its dissection and predict possible laryngeal paralysis (LP) by providing information on its functional state on termination of surgery.[1]

The laryngeal nerves may be injured through several mechanisms (sectioning, thermal mechanism, ligation, compression or traction).[2]

Thyroid surgery is associated with a relatively high proportion of changes in voice after surgery and a low prevalence of LP associated with variables such as the surgeon's experience or the performing of pre and postoperative laryngoscopy.[3,4] The prevalence of LP and voice changes in parathyroidectomy has been less reported since few specific studies exist on IONM in parathyroidectomy.[5]

IONM in TPTS has controversial aspects, especially due to the non significant reduction of LP or its cost and the confusion generated by the large number of publications concerning it.[5]

In this regard, in 2016 the objective of the head and neck and skull base surgery commission was to design a document as guidance to the use of IONM in TPTS.

Material and Method

The methodology of this study is summarised in Fig. 1.

The group worked in 2 areas. One concerned the text document using bibliographical review and another consisted of 3 rounds of successive surveys with web forms (Google Forms) applying the Delphi method.[6] The questions contained multiple choice answer options and open-ended questions. In each round all members of the group were anonymously made aware of the answers of the others. Consensus was established when over 50% of members reached a final agreement.