The use of intermitted (I-IONM) and continuous intraoperative neural monitoring (C-IONM) in thyroid surgery is increasing, but true characterisation of the diffusion of I-IONM and especially C-IONM is not available (1-5).

According to preliminary reports, the translation of C-IONM devices from intermitted neural monitoring (I-IONM) is constitutive to the advancement of thyroid surgical practice and technology (2-4). Although there is little comparative effectiveness and cost-effectiveness research to support the use of C-IONM over I-IONM, it has been suggested that C-IONM has better outcomes in terms of reduction of permanent recurrent laryngeal nerve (RLN) palsy (4). C-IONM has been successful used first in human study and achieved regulatory approval (5). The subsequent adoption of C-IONM by clinicians, however, remains complex and defectively analyzed.

There are several factors that influence the diffusion of C-IONM.

Among the greatest barriers to the adoption of C-IONM accessories are the costs associated with the purchase by healthcare institutions, particularly in publically funded systems. Although cost might explain the earliest delays in diffusion, this barrier does not fully account for the different rates of diffusion.

Surgeon-specific factors may instead have played an important role. Surgeons may be reluctant to use C-IONM that has no simple application, setup time, electromyography (EMG) baseline achievement, risk malfunction or failure, displacement, particularly if such C-IONM are not perceived to offer technical advantages over I-IONM. Surgeons may find it difficult to justify use of C-IONM when procedures are technically less complex, particularly if they are performing benign thyroid procedures: in a total thyroidectomy for goiter, use of C-IONM does appear to alter the surgical procedure because of opening the carotid sheat, dissecting the vagal nerve and positioning the C-IONM probe.

Furthermore, C-IONM requires both technical and interpretative component mentoring. Technical component means using and setting up the monitoring equipment correctly and understanding the inherent properties of the system to avoid an erroneous setup. Interpretive component: i.e., is the endocrine surgeon performing C-IONM able to distinguish between a true response versus
an artifactual one? Is the surgeon performing C-IONM able to distinguish between an RLN risk EMG profile versus an artifactual one? When problems occur, can thyroid surgeon perform appropriate troubleshooting to identify and correct the issue at hand?

I-IONM and (more) C-IONM will not only require special training and acquisition of skills. These technologies will also change the existing surgical training pattern and reshape the learning curve of residents by offering new solutions, new intraoperative strategies, decision making, new techniques for thyroidectomy (both open, endoscopic, and robotic).

Next generation more customised (and less expensive) C-IONM accessories, may therefore better penetrate the clinical arena (1-6).

Acknowledgments

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.


References