NERVE MONITORING DURING THYROID SURGERY- NEED OR HYPE?

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Thyroid surgery is a common procedure in otolaryngology and head and neck surgery. Despite advances in surgical techniques, recurrent laryngeal nerve (RLN) injury remains an important complication. It can cause temporary or permanent vocal cord paralysis, voice changes and, in bilateral cases, serious airway problems. Intraoperative neuromonitoring (IONM) is increasingly used during thyroid surgery, particularly in Western countries. However, its routine use in every thyroid operation remains debatable. In a resource-limited country like Nepal, we need to ask whether nerve monitoring is necessary for all patients or should be reserved for selected cases.

Visual identification of the RLN remains the standard of care during thyroid surgery. IONM is an additional tool that helps identify the nerve and assess its function during surgery. However, evidence regarding its benefit is mixed. A Cochrane review did not find convincing evidence that IONM significantly reduces permanent RLN injury compared with visual identification alone.[1] In contrast, a recent systematic review and meta-analysis reported a reduction in permanent nerve injury with IONM.[2] These differences may be related to variations in study design, surgical experience and patient characteristics. Therefore, IONM should not be considered a replacement for proper surgical technique and careful nerve dissection.

The benefit of IONM is likely to be greater in difficult and high-risk cases. It should be considered in revision thyroid surgery, invasive thyroid malignancy, large retrosternal goiters, reoperations in a previously dissected neck and procedures requiring extensive central or lateral neck dissection. It is also useful when a non-recurrent laryngeal nerve is suspected or when the patient has pre-existing paralysis of the opposite vocal cord.[3,4] In bilateral thyroid surgery, loss of signal after removal of the first lobe may help the surgeon decide whether to postpone surgery on the opposite side. This may reduce the risk of bilateral vocal cord paralysis and the need for tracheostomy. However, this approach requires reliable monitoring and proper interpretation of the signal.

The cost of IONM is another important issue in Nepal. The equipment, specialized endotracheal tubes, disposable accessories, maintenance and staff training add to the cost of surgery. These expenses must be balanced against the potential benefits of preventing nerve injury, additional treatment and prolonged hospital stay. Permanent vocal cord paralysis can have a major impact on a patient's quality of life and occupation. However, in straightforward primary thyroid surgery performed by an experienced surgeon, the absolute benefit of routine monitoring may be limited. A cost-effectiveness study from the United States also highlighted that the value of monitoring depends on the reduction in nerve injury and the additional cost involved.[5] Its findings cannot be directly applied to Nepal, where healthcare costs and available resources differ. Nepal-specific cost-effectiveness data are lacking.

In our context, a selective approach may be more practical than routine use in every thyroid operation. Monitoring should be prioritized in revision surgery, invasive malignancy, complex bilateral procedures and cases with anticipated difficulty in identifying or preserving the nerve. In uncomplicated primary thyroid surgery for benign disease, careful visual identification by an experienced surgeon remains an acceptable approach where monitoring is unavailable. The decision should also consider the surgeon's experience, the complexity of the disease and the availability of trained personnel and reliable equipment.

There is a need for prospective studies from Nepal comparing thyroid surgery with and without IONM. These studies should assess temporary and permanent nerve injury, voice outcomes, operative time and the overall cost of treatment. Standard documentation of vocal cord function before and after surgery is equally important.

IONM is neither a replacement for surgical skill nor merely a technological trend. Its value depends on appropriate

patient selection and how the information is used during surgery. In our context, the aim should be to use available resources where they provide the greatest benefit, rather than adopting technology simply because it is widely used elsewhere.

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