The laryngeal adductor reflex is a new methodology for monitoring thyroid surgeries that may predict long term outcome of vocal fold function

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What is the Laryngeal adductor reflex? (LAR)

Is a protective reflex that prevents aspiration by causing vocal fold closure (Sinclair and Ulkatan, 2017)

Methodology

This non-invasive, tube-based methodology has been developed to monitor the recurrent laryngeal nerve during thyroid surgeries (Sinclair et al., 2017). However, it can be used to monitor the Vagus nerve and its brainstem related structures, as well.

Vocal fold mucosa is electrically stimulated to elicit a short latency R1 response (R1-LAR) using endotracheal tube based electrodes.

Contra-lateral R1 responses are recorded using the endotracheal tube electrode contra-lateral to the stimulating electrode.

Right/Left LAR on the basis of the Recording side (cR1).

Limitations:

Tube movement Far-field recording

Clinical cases

Mechanisms of RLN injury during thyroid surgeries include: traction (stretching), heat injury and nerve transection.

The amplitude of the LAR frequently decreases with surgical maneuvers that put traction on the RLN and are reversible upon releasing the stretched tissue.

Patient 1: Traction
Female 68 y/o underwent right lobe thyroidectomy for a large benign nodule.
Normal pre-operative laryngeal examination.

Outcome: Vocal fold paralysis.
She recovered baseline laryngeal function by 6 weeks.

Patient 2: Vascular event (?) during nerve dissection
Female 57 y/o underwent left lobe thyroidectomy due to posteriorly located thyroid carcinoma.
Pre-operative vocal cord paresis.

Outcome: Vocal fold paralysis.
Ten months post-op the cord mobility has not returned to normal.

Conclusions

1. The LAR is a new tube-based methodology for monitoring the RLN during thyroid surgeries or other surgeries where the Vagus nerve is at risk.
2. The LAR behavior during thyroid surgeries may predict long term outcome of vocal function.

References: