Unilateral and bilateral vocal fold palsies can have devastating functional effects on a child. We have developed a standardised peri-operative protocol for the use of laryngeal electromyography in these patients. This aids in diagnosis and guiding treatment strategies, and to date has been used on 18 occasions in our region.

**Introduction**

- Laryngeal electromyography (LEMG) is a useful tool in assessing laryngeal nerve function, extent of injury, and the likelihood of recovery in children with vocal fold palsies.
- In babies and young children the procedure is performed in the absence of muscle paralysis, under general anaesthesia.
- In our unit concentric needles are used percutaneously to assess the electrical action potentials within the thyroarytenoid and posterior cricoarytenoid muscles.

**Methods**

- A multidisciplinary protocol for LEMG testing was developed incorporating the anaesthetic technique, electrode placement and a postoperative care plan.

**Anaesthetic**

- General anaesthesia.
- No use of paralysing agents.
- If tracheostomy, inhalational anaesthesia via laryngoscope, otherwise:
  - Spontaneous ventilation with inhalational agent / O₂ mixture or total intravenous anaesthesia.
  - IV dexamethasone (0.1-0.25mg/kg) on induction.
  - Atropine/glycopyrrolate (10mcg/kg) to reduce secretions & bradycardia.
  - 1% lignocaine to vocal folds.

**Surgical**

- Suspension laryngotracheobronchoscopy to assess the airway.
- Palpation of cricoarytenoid joints and for laryngeal cleft.
- Concentric LEMG needles are inserted percutaneously while visualising the larynx into each thyroarytenoid and posterior cricoarytenoid muscle.
- Position is confirmed with electrophysiologist.
- Correlation of timing with respiration / coughing noted.
- Photographic and video record.

**Post-operative**

- Dexamethasone: 2 further doses of 150 mcg/kg 6 hourly.
- Ensure medication given for secretions.
- Consider antibiotics.
- Consider anti-reflux medication.
- Evaluation of electrophysiology trace.

**Conclusion**

- This protocol has been used in 18 cases to date without perioperative or postoperative complication.
- Laryngeal EMG testing was successfully achieved and significantly contributed to the management of these children.
- The technique employed for acquiring LEMG is vital in obtaining accurate data, but also in safely managing the child’s shared airway.
- Establishing a guideline for LEMG testing in our unit has facilitated the smooth introduction of this technique in the paediatric population in our centre.

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**References**

1. Southampton Children’s Hospital, University Hospital Southampton NHS Foundation Trust, Southampton, UK;
2. Queen Alexandra Hospital, Portsmouth;
3. Poole Hospital NHS Foundation Trust, Poole, UK.

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**Photographic and video record**

**Concentric LEMG needle placed percutaneously into left posterior cricoarytenoid muscle**