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LARYNGEAL ELECTROMYOGRAPHY AS A PROGNOSTIC INDICATOR OF RECURRENT LARYNGEAL NERVE RECOVERY FOLLOWING INJURY DURING TRACHEO-OESOPHAGEAL FISTULA REPAIR

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Aim of study: Following repair of a low H-type trachea-oesophageal fistula in a 13 day old, a vocal cord palsy was noted on extubation. The recurrent laryngeal nerves were both visualised intra-operatively and retracted. Facing the prospect of tracheostomy, laryngeal electromyography was utilised as a prognostic indicator for recovery of vocal cord function.

Methods: Post-operative extubation resulted in respiratory distress. Examination of vocal cords on re-intubation revealed a bilateral vocal cord palsy. Microlaryngoscopy was performed to assess vocal cord movements. At this time laryngeal electromyography was performed by placing a monopolar needle recording electrode in the posterior cricoarytenoid and thyroarytenoid muscles, and a surface reference electrode over the sternum. The recording was assessed for spontaneous and motor unit activity.

Main results: On post-operative day 6, rigid bronchoscopy revealed paradoxical movements of the cords on rigid bronchoscopy; therefore an endotracheal tube was left insitu. Laryngeal electromyography was performed on post-operative day 13 and revealed no acute denervation within the posterior cricoarytenoid and thyroarytenoid muscles and no motor unit activity on spontaneous respiration. These findings suggested a neurapraxia as opposed to axonotmesis or neurotmesis type injury of the recurrent laryngeal nerve. Laryngeal electromyography was performed again on post-operative day 27. This revealed normal motor unit activity in the posterior cricoarytenoid and thyroarytenoid muscles with no dyskinesia or synkinesis (non-purposeful movement due to aberrant reinnervation of abductor and adductor muscles). The child was successfully extubated following this assessment.

Conclusion: Recurrent laryngeal nerve injury is a well reported phenomenon during repair of an H-type tracheo-oesophgeal fistula. Laryngeal electromyography was demonstrated to be safe and reliable. This technique was able to differentiate between a neuropraxia and transection of the nerve (neurotmesis), thereby allowing time for nerve recovery and averting placement of a tracheostomy.