Contraindications for TceMEPs

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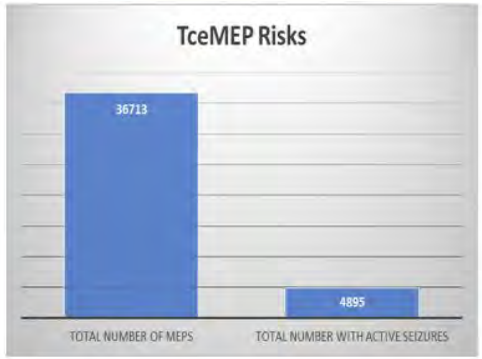
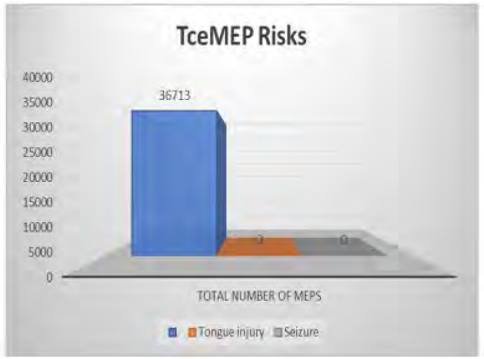
Objective, Methods

- **Objective**: Transcranial motor evoked potentials (TceMEPs) provide a high level of sensitivity in detecting a postoperative deficit (Zuccaro et al., 2017). Previous studies have explored some contraindication, such as tongue laceration and seizures, for performing TceMEPs (MacDonald et al., 2013). This retrospective study examined the risk of both tongue laceration and seizure in a pediatric population that received TceMEPs.
- **Methods**: After obtaining IRB approval, a retrospective quantitative study was performed on 992-pediatric patients. Patients ranged in age 0-18 years, had a history of scoliosis, and underwent spinal deformity correction surgery. Multimodality monitoring, consisting of TceMEPs and somatosensory evoked potentials, was performed. TceMEPs were stimulated at the premotor cortex through the use of Caldwell cascade pro. Manufactured pre-bent electrodes were used for stimulation. Stimulation parameters consisted of constant voltage with a train range 5 to 9, and a pulse duration of 50 to 75 microseconds. Peripheral muscle recordings were achieved through the use of subdermal electrodes, and placed in the following muscles: abductor polices brevis, quadricep femoris, tibialis anterior, gastrocnemius, and abductor hallicus. Electroencephalography was monitored through four channels on the Caldwell cascade pro. Montages consisted of the following:c3-c4, c4-Fz, c3-Fz and Cz-Fz. Dual bite block were created from four by four square gauze and placed between upper and lower molars on each side of the oral cavity.

		Tongue injury	Seizure
total number of MEPs	36713	0	0
total number with active seizures	4895		





Results, Conclusion

- **Results**: TceMEPs were performed and recorded on 992-patients. Total number of TceMEPs performed were calculated at 36,713. Operative and immediate post-operative complications of tongue injury, seizures, and scalp burns were calculated. There was 0 incidence of either tongue injury, seizure, or scalp burns.
- **Conclusion**: TceMEPs are sensitive in detecting postoperative iatrogenic neurological deficits (Zuccaro et al., 2017). This study suggests TceMEPs are indeed safe on a pediatric population, and should be attempted on all patients if possible. However, two bite blocks need to be placed and monitored throughout the entirety of the surgical procedure, and a full TIVA protocol should be utilized due to its anti-seizure property (Dhir et al., 2011).

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