Introduction

- Awake craniotomies for resection of tumors or epileptic foci that are located near the speech center or motor cortex have been performed in adults for decades.
- The surgery requires an extremely cooperative patient who is able to effectively communicate during the procedure.
- A child’s inability to cooperate and maturity level have been a hindrance from performing these operations in children.
- We present a case of a 12-year-old patient who successfully underwent an awake craniotomy using the sleep-awake-asleep technique, LMA placement, and propofol, dexmedetomidine, and remifentanil for anesthetic maintenance.

Case History & Intraoperative Management

- The patient was a 12-year-old female who presented for an awake craniotomy for left frontal lobe tumor resection.
- The patient had a history of epilepsy due to a dysembryoplastic neuroepithelial tumor (DNET) which was discovered in 2008 and subsequently partially resected.
- When MRI showed the residual tumor was immediately adjacent to Broca’s area, it was determined that the patient would need to undergo an awake craniotomy in order to preserve the primary language motor cortex.
- The technique for anesthetic management included a sleep-awake-sleep technique with LMA placement.
- Anesthetic maintenance consisted of sevoflurane and propofol, dexmedetomidine, and remifentanil infusions.
- The scalp nerves were blocked with 0.25% bupivacaine.
- Upon awakening, the patient was able to recite the alphabet and count numbers while the brain mapping was done successfully, allowing the surgeon to resect the tumor in its entirety.
- At the end of the operation, the patient was without any gross motor or sensory deficits.
- The patient did well post-operatively and was able to be discharged only 48 hours after surgery.

Discussion

- Awake craniotomies are rarely performed in children due to the patient’s inability to cooperate with and lack of maturity.
- However there have been several case reports in the last two decades describing different anesthetic techniques used for children as young as 9 years of age.
- The anesthetic management of these cases over the past few decades in adults has been tried in pediatric cases with varying success.
- Propofol, benzodiazepines, and opioids have been the standard of care in adults at different infusion rates, but all have had drawbacks including respiratory depression and vomiting.
- Tobias and Jimenez combined midazolam, fentanyl, and propofol, while Everett has published case reports in which dexmedetomidine was used successfully.
- LMA has also been upheld as a sufficient alternative to nasal cannula for airway management during spontaneous respiration during these cases.
- We were able to maintain adequate sedation with minimal infusions and awakening time was short following discontinuation of the infusions.
- The patient was able to effectively communicate with the anesthesiology and neurosurgery teams during the awake portion of the procedure and also had sufficient amnesia.
- Because of our findings, we believe pediatric patients and families that demonstrate the ability to understand the procedure and agree to proceed should be included.

References