AWAKE BRAIN SURGERY FOR TUMOR RESECTION WHILE PRESERVING THE MOTOR FUNCTIONS IN A 6-YEAR-OLD CASE REPORT FROM A TERTIARY CARE CENTER IN LMIC. IS IT FEASIBLE AND WORTH TAKING THE RISK IN SELECTED CASES?

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Awake brain surgery is a procedure in which a patient is awake during the whole or a part of the procedure, for intra-operative mapping for eloquent areas and resection of tumor. In adults, although, it is the standard of care for resection in eloquent areas, in pediatric population, it is difficult due to various reasons including, procedural difficulty and psychological variability in the children. This report shares the successful experience of performing awake brain surgery on a 6-year-old child in such a setting. With careful planning and skilled teams, this approach can be safe and improve outcomes, showing it may be worth the risk for selected young patients even in resource-limited hospitals.

CASE PRESENTATION

We report a six-year-old right-handed boy presented to us in neurosurgery clinic with the history of partial seizures involving left side of the face and hand, since 2 years of age. On examination. He was a very pleasant boy, awake, alert, oriented to time, place and person. Higher mental functions including long and short-term memory, speech, repetition, recognition of pictures was normal. There were no motor or sensory deficits in cranial nerve examination and neurological examination of the limbs.

SURGICAL PROCEDURE

We used neuro-navigation system, microscope and CUSA for the surgery. The patient's head was kept on horse-shoe, with head tilted towards left side. Translucent drapes were used in this case to minimise the risk of a traumatic experience for the child.

The child underwent asleep-awake-asleep surgery, with laryngeal mask airway in place, was sedated; scalp block was applied. After navigation registration, the tumor was localized, and a transverse lazy-S incision was marked. After durotomy, intra-operative mapping was done using a stimulator at 1.0, 2.0, 4.0, 8, 15 and 20 mA current. The child was in conscious sedation throughout. His left upper and lower limb activities were monitored during mapping and resection by the anaesthesia resident who had developed familiarity to him during simulation sessions. We also showed him videos of animals and cartoons to keep him engaged. He developed facial twitching along with left upper limb focal seizures during stimulation in posterior and medial aspects in deep subcortical region, which were aborted with cold saline, resection in those areas was halted.

PREOPERATIVE MRI

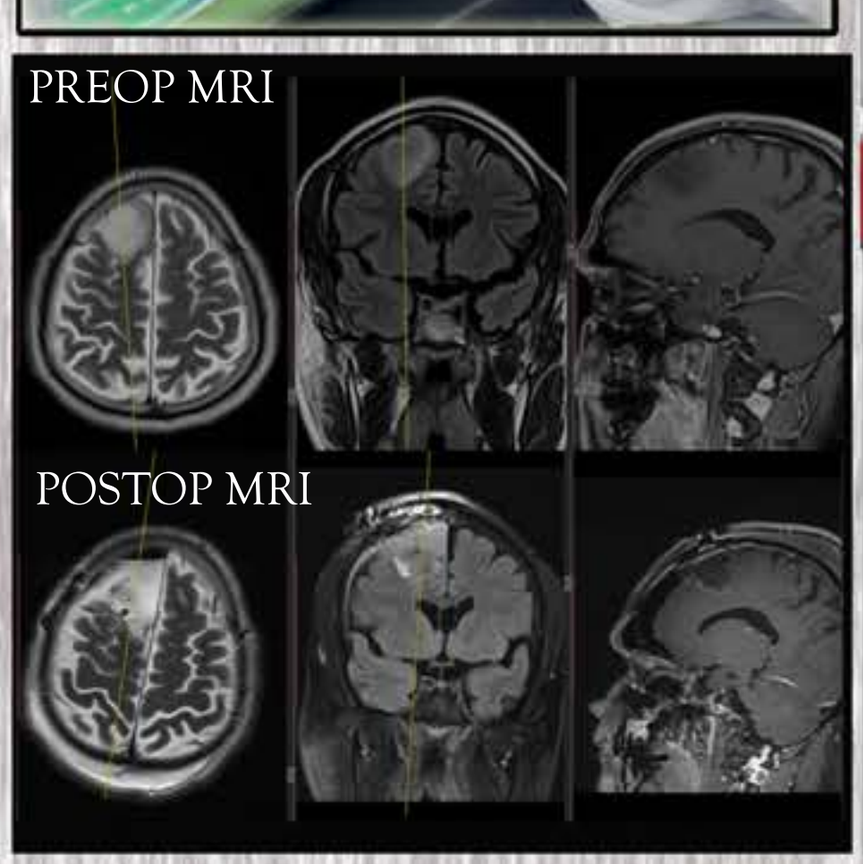
MRI done revealed a hyper-intense lesion on T2-weighted and FLAIR sequences, contrast-non-enhancing on T1-contrast sequences, in right Frontal lobe in the pre-motor area, abutting and causing pressure on the pre-central gyrus.

CASE PREPARATION

Case was discussed in multi-disciplinary neuro-oncology tumor board meeting and awake craniotomy was planned.

The child had consultations with a specialist pediatric psychologist, neurologist, neuro-oncologist, and awake anaesthesia consultant for pre-operative evalutation.

The child underwent three mock simulation sessions in the operating room to familiarize him with the teams and environment of the theatre, beforehand.



POSTOPERATIVE CARE

The child did not develop any new post-operative deficits. He was kept in the high dependency unit for 24 hours. he underwent post operative psychological assessment in which there were no signs of any post-traumatic stress, and did not have any fearful memories of surgery. He was playful and smiling at discharge on the third post-operative day.

We were able to achieve 90 percent resection as seen in the postop MRI scan.

CONCLUSION

While awake craniotomy in young children remains selective, this case supports its feasibility when tailored protocols and team expertise are applied. It also encourages further development of pediatric-focused awake surgery programs in similar settings, balancing the risks with the potential for improved functional preservation and quality of life.

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