Aga Khan University Hospital

Title:	ANAESTHESIA FOR AWAKE CRANIOTOMY		
Department / Division:	Department of Anaesthesiology		
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1. Purpose:

1.1 To standardize the anaesthesia conduct of patients undergoing craniotomy using awake throughout approach.

2. Scope:

2.1 These guidelines will be applicable to all the adult patients coming to operating room for surgery of brain tumors involving eloquent region of cerebral cortex, arterio-venous malformation or excision of epileptogenic foci.

3. Responsibility:

3.1 Consultant Anaethesiologist

4. Terms and Definitions:

4.1 Awake Craniotomy: A craniotomy where patient needs to be awake throughout, or for part of a procedure during the resection phase to monitor neurological functions.

4.2 Awake throughout approach: Anaesthesia technique relying on preoperative psychological counseling, institution of a scalp block.

5. Process / Procedure:

5.1. Patient Preaparation

5.1.1 Preoperative Evaluation:

5.1.2 Patient selection by surgical team.

5.1.3 Hand-over *of"Education Brochure"* to the patient by surgical team.

5.1.4 Involvement of neuro-anaesthesia team.

5.1.5 Preoperative assessment.

5.1.6 Review of MRI findings.

5.1.7 Exclude contraindications related to awake craniotomy: patient refusal, non-cooperative patient, inability to lie still, severe backache, obstructive sleep apnea, persistent cough and communication difficulties e.g. profound dysphasia.

5.2. Preoperative Psychological Preparation

5.2.1 Alleviate patient's anxiety via detailed counseling using SBAR approach. This includes situation, background, assessment and recommendations.

5.2.2 Patient should be explained about the various aspects related to surgery like institution of scalp block, insertion of Mayfield's pins, bone drilling, and dural pain. The real life images including patient experiences in the form of a power point presentation are very helpful and recommended for our setup.

5.2.3 Patient should be informed about his/her role in intraoperative neurological monitoring.

5.3. Risk Explanation:

5.3.1 Patient should be counseled about associated risks and complications.

- Local anaesthesia (LA) toxicity
- facial nerve paresis related to scalp block
- Seizures
- Nausea, Vomiting
- Conversion to general anaesthesia

5.4. Recommendations:

5.4.1 It needs to be declared if patient is motivated and can proceed safely.

5.5. Preoperative orders:

5.5.1 Patient should continue his/her anti-epileptic medication.

5.5.2 NPO for 6 hours before surgery.

5.5.3 Laboratory investigations depending upon age and comorbid conditions.

5.5.4 All patients need to be catheterized.

5.6. Anaesthetic Management:

5.6.1 Approach:

- Awake throughout approach using scalp Block
- Monitoring

- Routine ASA specified (ECG, NIBP, SPOz, ETCO z), Bispectral index (B/S and intraoperative neurological monitaring.
- Invasive Blood Pressure: Depending upon age and comorbid conditions.
- Additional Equipment:
- Nasal prong having built in ETCO, port.
- BIS monitor.

5.6.2 Analgesia:

- Scalp hlock (Please follow the departmental guidelines for insertion of Scalp block).
- Intravenous Paracetamol Ig ZU(infusion in 15 minutes).
- Top up of morphine lmg or Fentanyl 10 ug as needed.
- Start Dexmedetomidine infusion at the rate of 0.1-0.5-ug7Kg/'hr after getting an IV cannula. This will help in the gradual onset of sedation. The sedation level needs to be monitored by BIS. The target level of BIS is score between 80-90.

5.6.3 Antiemetics:

- Routine double antieinetic prophylaxis with Dexamethasone and
- Ondansetron is recommended for every patient as follows:
- IV Ondansetron 0.15mg/kg body weight
- lV Dexamethasone 0.15mg/kg body weight
- IV Dimenhydrinate 50mg in l0mls of normal saline over 10 minutes may be needed for patients with ventricular tumor and in those

with recurrent nausea or vomiting.

5.7. Management of Intraoperative Complications:

5.7.1 Seizures: Intermittent boluses of IV *Midazolam* in 1 mg increments. Surgical team needs to be ready with ice-cold ***Ringer*** *Lactate* solution to be insufflated directly lnto the surgical field.

5.7.2 Vomiting: Besides antiemetic prophylaxis, keep suction at hand.

5.7.3 Dural pain: Surgeon needs to put LA soaked petty to anaesthetize the dura mater before incising it. However, during deep resection depending upon the location of the tumor patient may feel dural pain. Treat it with intermittent boluses of narcotics like Morphine or Fentanyl.

5.7.4 Conversion to general anaesthesia: Prepare drugs and equipment needed for emergency converslon to general anaesthesia.

5.8. Postoperative Orders:

5.8.1 Discontinue NPO with clear liquids in recovery room.

5.8.2 Injection *Parucetumol I g Q6 hourly* for 48 hours.

5.8.3 Injection *TraniuJol 50 Ing Q6-8 hourly* for 48 hours.

5.8.4 Injection Ondansteron 0.15mg/kg Q8 hourly for 48 hours.

5.8.5 Postoperative anaesthesia visit for any side effects or complications related to anaesthesia and analgesia

6. Reference(s):

6.1. Shafiq F, Salim F, Enam A, Parkash J, Faheem M. Anaesthetic management of supratentorial tumour craniotomy using awake throughout approach. J Coll Physicians Surg Pak. 2017.

6.2. Shafiq F. Anaesthesia for Awake Craniotomy. In: Aliya Ahmed, Robyna Khan, Safe Anesthesia in resource limited situations, OMICS International e books, May 2018. Page no 7-11.

6.3. SA khan et al. Awake Craniotomy for brain tumours in Pakistan: an initial cases series from a developing country. JPMA: 66 (3), S68, 2016.

7. Annexures:

7.1. Education Brochure

Document Change Record:

Review #	Review Date (dd-mm-yyyy)	Description Of Change	Identification of Change
1	July 2023	Structural Change	No Change