The Leeds Teaching Hospitals NHS Trust

# Seizures during Craniotomy

## Recognition

- Physical movement
- Sudden reduction in BIS
- Sudden rise in EtCO2
- Sudden rise in ICP

## Immediate Action

- Notify surgeon
- Halt surgical manipulations
- ABC rapid assessment and management
    - FiO2 1.0
    - If Awake craniotomy - airway management
    - Treat haemodynamic instabilities
- Start timing
- Ice-cold saline on cortex

## Useful Drugs

**Thiopentone**

| | | | |
|---|---|---|---|
| **Dose** | 100mg at a time aiming for burst suppression | | |

**Levetiracetam**

| | | | |
|---|---|---|---|
| **Dose** | 40-60mg/kg bolus (max 4.5g) | Example for 70kg | 2.8g |

**Phenytoin**

| | | | |
|---|---|---|---|
| **Dose** | 20mg/kg bolus (max 50mg/kg) | Example for 70kg | 1.4g |

## Ongoing Management 0-15 mins

### Assessment

- Mild and self-limiting seizure- surgery can continue cautiously
  - awake craniotomies (monitoring of airway patency, oxygenation, ventilation, and GCS)

- Identify and treat the cause
  - *Metabolic*: hypoglycaemia, hyponatremia, hyperventilation, hypocalcaemia or hypomagnesaemia
  - *Drug*s: toxicity, withdrawal, epileptogenic drug, inadequate anticonvulsant levels
  - *Surgical insults*: cortical stimulation, brain injury, cerebral haemorrhage/ ischaemia.

- ABG and arterial line - identify cause, response to management, BP monitoring.

### Management

- Losing airway patency or inadequate ventilation in awake patient
  - airway adjuncts / LMA /ETT
  - consider inserting bite block and/or orogastric tube

- Ongoing seizures (>5 mins)
  - Incremental doses of IV benzodiazepine/propofol– discuss antiepileptics use with surgeon

- BP management- discuss targets with neurosurgeons

- Aim $P_aO_2$ of >13KPa & $P_aCO_2$ of 4.5–5KPa

## Ongoing Management 15-30+ mins

### Ongoing Assessment

- If paralysed need CFAM/BIS/EEG to monitor for ongoing seizures

### Ongoing Management

- Ongoing seizures consider adding a different antiepileptic drug and may need thiopentone
  - BP management - consider CVC placement for vasopressors
  - Urinary catheterisation
  - May need a CT scan (prepare and consider switching to TIVA)
  - Level 2/3 critical bed available as may need prolonged monitoring/ventilation

### Differential Diagnosis

- Awake- Dystonia/shivering (hypothermia), non-epileptic seizures, anxiety spells, migraine, headaches, syncope
- GA - Dystonia/shivering (if not paralysed)