**Clinical Guideline**

**POSTERIOR FOSSA TUMOUR RESECTION – POSTOPERATIVE MANAGEMENT OF PAEDIATRIC PATIENTS**

**SETTING**  
Paediatric Intensive Care Unit (PICU)/ Daisy Ward / Bluebell Ward, Bristol Royal Hospital for Children (BRHC)

**FOR STAFF**  
All medical and nursing staff

**PATIENTS**  
Children

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**Background**

- Children with posterior fossa (PF) tumours commonly present with headaches, vomiting and squint (features of raised intracranial pressure), developmental regression.
- Features of raised intracranial pressure are often as a result of obstructive hydrocephalus, which is a **neurosurgical emergency**.
- High risk of: **bulbar dysfunction** (clearing secretions, maintaining an unobstructed airway and swallowing safely), **bradycardias, apnoeas and hypoventilation**. Treatment in these circumstances is intubation and ventilation. If they deteriorate, there is high risk of respiratory arrest and aspiration pneumonitis.
- These patients have undergone extremely long (up to 12 hours) prone surgery, they will also have facial and **airway swelling** – head up positioning is important. The neurosurgical team will have prescribed high dose IV dexamethasone with ranitidine cover.

**Pre op Management:**

- Most PF tumour patients will have already had surgery for hydrocephalus management (an endoscopic third ventriculostomy (ETV) and Omaya reservoir (which may be on external drainage) or an external ventricular drain (EVD)). They should all be on Daisy-HDU.

**Post op PF Tumour Resection Management:**

- All children will be admitted to Daisy-HDU or PICU post-operatively.
- All children will return from theatre with good IV access, arterial line and urinary catheter in-situ. Most will also have a CVP line and an NG tube.
- It is imperative that the pink operation note and the green HDU handover sheet are read and assimilated, alongside the anaesthetic chart which will have recent medications and fluid volumes recorded. All require a full set of post op bloods including a clotting screen and fibrinogen level.
- PF tumours are complex to resect (they can be very close to/within the brainstem and involve cranial nerves). As a result, cardiovascular instability may occur, the patients may lose bulbar function and develop post fossa syndrome (cerebellar mutism).
- Hypertension **should not** be treated as new set autoregulation is occurring (check NIBP), and hypotension can be to the detriment of cerebral perfusion. However, hypertensive surges can result in haemorrhage/haematoma. Any new neurological deficits should be
discussed urgently with the neurosurgical team and urgent CT scan may be required.

- All children should be nursed 30 degrees head up. Meticulous neuro obs at least hourly for the first post op night are required.
- IV Fluids should be restricted to 70% maintenance as the patients risk cerebral oedema with extra fluid. They will tend to retain water (stress response with increase ADH). Plasmalyte (148mmol/l) or 0.9% Sodium Chloride (154 mmol/l) are acceptable fluids. Children under 10kg should have 5% glucose with Plasmalyte.
- They should be NBM unless stated otherwise by neurosurgical team, pending SALT assessment.
- These patients may have diplopia post-op as ophthalmoplegia is common.
- Vomiting is common but should settle. Avoid sedating antiemetics such as droperidol and cyclizine as they may result in iatrogenic reduction in GCS.
- NCA/PCA is commonly used for the first post op night. Minimal/ no background opiate infusion should be run on these patients. **NSAIDs are contraindicated for at least 48 hours.**

**D0 (first 24 hours):**

This is when complications are most likely to occur and it is therefore paramount that hourly neuro observations are undertaken. **Clinical deterioration requires rapid assessment and urgent escalation to neurosurgical team - see rapid return to theatre guideline (referenced).** Airway compromise due to post op brainstem swelling or less commonly haematoma/ haemorrhage is a life-threatening emergency.

Possible complications:

- Seizures are unusual with posterior fossa surgery, but can occur due to pneumocephalus from surgery, or metabolic disturbance (hyponatraemia and hypoglycaemia need to be excluded).
- Arrhythmias – specifically sinus bradycardia/tachycardia related brainstem to oedema
- Respiratory depression – increasing oxygen requirement is likely to be due to brainstem oedema and not of primary respiratory aetiology
- Secretion pooling in oropharynx causing airway comprise and hypercarbia (which will cause worsening cerebral oedema)

**D1 (24-48 hours post-operative):**

- Post-operative bloods the morning following surgery (FBC/Clotting/U&Es)
- Pain team review and weaning of opiates as able, catheter to be removed if possible.
- SALT assessment if required and NG meds in the interim
- Intravenous fluids to be weaned off (can have NG fluid/ feed)
- Space to 2 hourly neuro observations if stable
- If stable, consider removing arterial line

Post-op pyrexia common D1/D2 – almost always systemic inflammatory response and centrally driven. Therefore, if patient clinically well it is sufficient to do bloods and cultures and inform the neurosurgical team. Pyrexia >38.5 is more suspicious of infective aetiology. CRP will be >100 in all cases and will not differentiate SIRS/ sepsis.

**D2 (>48 hours post operatively):**

Step down if stable to Bluebell ward, ensure central line removal and only one peripheral
cannula in-situ. Consider laxatives if constipation present. A steroid weaning plan should be in place.

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**RELATED DOCUMENTS**
- Rapid Escalation to theatre guideline
- Brain attack guideline

**AUTHORISING BODY**
- Paediatric HDU governance group

**QUERIES**
- Consultant Anaesthetic Consultant on ext 27888.