Fontan Operation (Extra-Cardiac, Non-Fenestrated) Guideline

Admit to CVICU

POD #0

- **Sedation**
  - Refer to CVICU Pain and Sedation Protocol
- **Respiratory**
  - PEEP 3
  - SIMV-PRVC
  - SIMV-PC
  - Consider INO if evidence of pulmonary hypertension (Refer to Patient Care Policy I-1004 Inhaled Nitric Oxide (INO) Protocol)
  - Early extubation
  - Utilize extubation readiness testing
- **Cardiac**
  - Vital sign goals
  - HR < 120
  - Oxygen saturation > 90%
  - Blood pressure per age normal
  - Temperature control/avoidance of fever
  - Fontan pressure < 10 mmHg
  - Monitor for low cardiac output syndrome
  - Consider milrinone infusion
  - Consider epinephrine infusion
  - Monitor Fontan pressure
  - Continuous atrial ECG monitoring for 6 hours and then PRN
- **GI**
  - Start clears 2 hours after successful extubation
- **Heme**
  - Monitor for bleeding
- **Monitor and trend Etiometry T3 data**

POD #1

- **Fluid management**
  - Negative fluid balance goal
  - Furosemide 1 mg/kg IV q 8 hours
  - Chlorothiazide 1 mg/kg po bid when taking po
  - Fluid restrict to 80% maintenance while chest tubes are in place
  - Spironolactone 1 mg/kg po bid when taking po
  - Consider enalapril in consultation with cardiologist when taking po
- **Wean milrinone infusion to off**
- **Advance diet**
  - Low fat
  - Consult Nutrition
- **Minimize positive pressure ventilation**
  - Wean HFNC
  - Keep NC 0.5 LPM minimum while CTs in place
- **Wean off INO**
  - Refer to Patient Care Policy I-1004 Inhaled Nitric Oxide (INO) Protocol
  - Consider oral sildenafil
- **Discontinue arterial line**
- **Discontinue bladder catheter**
- **Discuss anticoagulation requirements and timing of initiation with surgeon and cardiologist**
- **Analgesia and anxiolysis**
  - Refer to CVICU Pain and Sedation Protocol
  - Consider ketorolac in consultation with surgeon
  - Wean off dexmedetomidine
  - Ambulate
  - Establish normal sleep-wake cycle

POD #2 - 5

- Consider changing to oral diuretic regimen
- Consider removing CTs when total output is < 2 mL/kg/day
- Transition to oral pain medication PRN
- Complete discharge teaching

Discharge Criteria

- CTs out for > 24 hours with clear chest radiograph the day of discharge
- Discharge teaching complete
- Discharge echocardiogram complete
- Pain controlled on oral medication
- Ambulatory (age per normal)
- Normal sinus rhythm unless cleared by EP, cardiologist and surgeon

Common Complications

- **Tamponade**
  - Consider fluid bolus
  - Consider echocardiogram
  - Notify cardiologist
  - Notify surgeon
  - Consider bedside/catheterization lab drainage
- **Junctional ectopic tachycardia**
  - Refer to Junctional Ectopic Tachycardia Guideline
- **Systemic hypotension and low Fontan pressure**
  - Consider volume resuscitation
  - Consider PRBC transfusion if anemic
  - Consider vasopressin infusion
  - Consider assessing for adrenal insufficiency
- **Hypotension and high Fontan pressure**
  - Consider INO initiation and pCO₂ goal
  - 35-40 mmHg (Refer to Patient Care Policy I-1004 Inhaled Nitric Oxide (INO) Protocol)
  - Consider sedation
  - Consider paralysis
  - Consider hemodynamic instability
  - Consult with cardiologist and surgeon
  - Consider urgent catheterization lab diagnosis and intervention
  - Consider echocardiogram
  - Consider epinephrine infusion
  - Consider milrinone infusion
- **Heart block**
  - Consider A-V temporary pacing
  - Minimize dexmedetomidine use
- **Bleeding**
  - Consider checking CBC
  - Consider PRBC transfusion
  - Measure coagulation panel and replace factors as indicated
  - Consider Factor 7 administration
  - Perform TEG
  - Call surgeon
- **Chylothorax**
  - Refer to Chylothorax Guideline

Patient Education

- Refer to CVICU unit specific education

Clinical Practice Guideline Created By:
Robert B. Kelly, MD, FAAP – CVICU Medical Director
Fontan Operation (Extra-Cardiac, Non-Fenestrated) Guideline

References


