### Policy Statement

Amnioinfusion is a procedure used to attempt to resolve repetitive or complicated variable fetal heart rate decelerations. These decelerations are thought to be caused by umbilical cord compression related to decreased amniotic fluid volume.

Amnioinfusion has not been show to reduce the risks of meconium aspiration and should therefore not be used for this purpose.

### Definition

Amnioinfusion refers to the instillation of fluid into the amniotic cavity through a transcervical intrauterine pressure catheter once membranes have ruptured.

Decelerations are considered to be repetitive uncomplicated and complicated variables if:
- Deceleration to less than 70 BPM lasting greater than 60 seconds.
- Loss of variability in the baseline FHR and in the trough of the deceleration.
- Biphasic decelerations.
- Prolonged secondary accelerations (overshoots greater than or equal to 20 BPM and/or lasting more than 20 seconds).
- Slow return to baseline.
- Continuation of baseline rate at a lower level than prior to deceleration.
- Presence of fetal tachycardia or bradycardia.

Abnormal if repetitive and greater than or equal to 3 complicated variables occur.

Reference: Fundamentals of Fetal Health Surveillance pg. 220

### Purpose

- To provide guidelines for the safe administration of fluids into the uterine cavity.
- To attempt to improve neonatal outcome.

### Responsibility

The insertion of intrauterine pressure catheter and initial infusion of fluids into the uterine cavity is the responsibility of an Obstetrician, or Chief Obstetrical Resident under the direction of an Obstetrician.

### CONSENT

It is the responsibility of the Obstetrician and/or Chief Obstetrical Resident to obtain patient consent. The following is to be documented in the patient chart by the physician:
- Explanation of the procedure to the patient and her support person.
- Discussion of risks, benefits and alternatives.
  - Risks: fetal heart rate abnormalities, polyhydramnios, infection, abruption, prolapsed cord, uterine rupture, fluid embolism, maternal cardiac or respiratory failure from fluid overload
  - Benefits: significant reduction in cesarean section, improved neonatal Apgars and cord blood gases (Cochrane 2010)
  - Alternatives: expectant management, possible cesarean section
- Monitoring of the patient is done by Obstetrician, Resident and Registered Nurse during the initial bolus of the infusion.
- Ongoing monitoring of the patient is done by a Registered Nurse.
- Patient receives 1:1 constant care.
ORDERS
It is the responsibility of the Obstetrician and/or Chief Resident to document specific orders for the administration of fluids by amnioinfusion as recommended in this document.

Administration of amnioinfusion per specific orders must specify:
   a) Volume, type of fluid, infusion rate for initial bolus
   b) Volume and infusion rate for ongoing infusion
   c) Indications for discontinuing the procedure
   d) Monitoring of the patient as specified in the protocol

Contraindications

UTERINE
- Abruption
- Diagnosis or suspected placenta previa
- Intact membranes
- Polyhydramnios
- Cervix less than 2cms dilated
- Uterine hypertonus - resting tone on IUPC > 25mmHg
- Known uterine anomalies

INFECTION
- Active communicable infections (HIV, HSV, HCV, HBV)
- Suspected chorioamnionitis

FETAL
- Multiple Gestation
- Known fetal anomalies
- Non-vertex presentation
- Previous fetal scalp sample result with pH less than 7.2
- Late decelerations
- Fetal tachycardia
- Minimal or absent variability (less than or equal to 5 BPM for 40-80 minutes or less than or equal to 5 BPM for greater than 80 minutes)
  - Fundamentals of fetal health surveillance 2009 p. 151
- Impending delivery

Equipment
- Koala IUPC (Intrauterine Pressure Catheter with cord connector)
- Fetal monitor with internal monitoring capability
- Alaris Pump
- Alaris tubing used for straight infusion
- 1000mL lactated ringer’s (LR) at room temperature
  - LR is shown to reduce fetal electrolyte abnormalities over sodium chloride 0.9%
- Soakers or incontinent pads weighed prior to placement under patient
- Portable ultrasound machine if requested
- Functioning NIBP and Oxygen Mask Equipment
- 10mL syringe
- Fluid warmer (if gestation less than 37 weeks or suspect intrauterine growth restriction)

Prerequisites
Prior to amnioinfusion, the following are required:
- Transfer of care to obstetrician
- Continuous fetal monitoring
- Intravenous access established
- 1:1 nurse/patient ratio
- Portable ultrasound available if requested.
- OR team aware of starting amnioinfusion and OR theatre available.

Procedure

1. Obstetrician / Chief Resident Responsibilities
1.1 Explain procedure to patient and her coach as noted previously
1.2 Perform an ultrasound if feasible
1.3 Insert the IUPC. Ensure it has been zeroed to air
1.4 Ensure resting tone is not greater than 25 mmHg
1.5 Ensure that fluid is draining from vagina. If no fluid present, gently push up on fetal head to allow release of fluid. If no fluid loss after initial bolus, stop infusion and wait until vaginal loss is seen to ensure IUPC is in the amniotic cavity.
1.6 Initial bolus infusion – 500 mLs
1.7 Ongoing infusion 120-180 mLs/hr to a maximum of 1000 mLs or noted improvement of fetal heart tracing.

2. Nursing Responsibilities (1:1 constant care required)
2.1 Identify patient with 2 patient identifier policy.
2.2 Confirm patient and her coach is aware of procedure, risks, benefits and alternatives are explained by the physician
2.3 Assemble equipment
2.4 Prepare equipment for the infusion
   A Fluid infusion
       • Prime plain IV Alaris tubing with room temperature lactated ringer’s.
       • Set up IV in the pump. Chose basic infusion
       Set VTB1 @ 499 mLs
Push Volume duration and set to 30 minutes.

B Prime the IUPC catheter as per directions in IUPC guidelines.
- Ensure the IUPC has been zeroed to air by connecting the cord to the monitor and keeping the IUPC end open to air, push the zeroed button.
- Connect the IUPC to the monitor
- Record uterine resting tone and ensure it is less than 25 mmHg.

C Assist the physician with the insertion of the IUPC.
- Connect the IUPC to the IUPC super cable. Note resting tone.
- Secure IUPC to patient’s leg with waterproof tape.
- Place patient in left lateral position and ensure pads are under her.

D Start the bolus infusion as ordered.
- Initiate ongoing monitoring as noted in this document.

**Procedure**

3. Procedure for infusion

3.1 Bolus infusion

A Attending obstetrician to remain in Labour & Delivery and OR team on alert for potential cesarean section.

B Infuse 500 mLs of fluid
- Check for vaginal loss and weigh pads
- If no fluid, physician to gently push up on the fetal head to allow for release of amniotic fluid.
- If there is no fluid loss after 500 mLs has been infused, STOP the infusion and wait until vaginal loss is seen as IUPC may be outside the amniotic cavity.
- Resting tone of the IUPC should be less than 25 mmHg during the infusion.
- If greater than 25 mmHg, stop infusion and notify physician.

3.2 Ongoing infusion
- Once initial bolus complete, change infusion to a rate of 120 mLs/hr – 180 mLs/hour to a maximum of 1000 mLs infused including the initial 250 mLs.
- The physician may order the infusion to be stopped if the fetal heart tracing improves before the 1000 mLs is infused.
- If the fetal heart tracing has not improved with the administration of 1000 mLs of infused fluid in total, discontinue the infusion and precede to alternative management strategies.

4.0 Maternal Assessment Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Initial Bolus</th>
<th>Ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 BP</td>
<td>Q 15 minutes</td>
<td>Q 1 hour</td>
</tr>
<tr>
<td>2 PULSE</td>
<td>Q 15 minutes</td>
<td>Q 1 hour</td>
</tr>
<tr>
<td>3 RESPS</td>
<td>Q 15 minutes</td>
<td>Q 1 hour</td>
</tr>
<tr>
<td>4 TEMP</td>
<td>Prior to initiation</td>
<td>Q 1 hour</td>
</tr>
</tbody>
</table>
### Amnioinfusion through Intrauterine Catheter

<table>
<thead>
<tr>
<th></th>
<th>5 UTERINE RESTING TONE must be less than 25mmHg</th>
<th>Q 5 minutes Q 15 minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 COLOUR – Vaginal fluid</td>
<td>Q 15 minutes Q 30 minutes</td>
</tr>
<tr>
<td></td>
<td>7 ODOUR – Vaginal fluid</td>
<td>Q 15 minutes Q 30 minutes</td>
</tr>
<tr>
<td></td>
<td>8 MATERNAL DISCOMFORT</td>
<td>Initial prior to Bolus Q 30 minutes</td>
</tr>
<tr>
<td></td>
<td>9 MATERNAL SHORTNESS OF BREATH</td>
<td>Initial prior to Bolus Q 30 minutes</td>
</tr>
<tr>
<td></td>
<td>TOTAL FLUID INTO AMNIOTIC CAVITY</td>
<td>Q 15 minutes Q 30 minutes</td>
</tr>
<tr>
<td></td>
<td>1gm = 1mL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL FLUID OUT OF AMNIOTIC CAVITY</td>
<td>Q 15 minutes Q 30 minutes</td>
</tr>
<tr>
<td></td>
<td>1gm = 1mL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FLUID BALANCE (In – Out = Balance)</td>
<td>Q 15 minutes Q 30 minutes</td>
</tr>
<tr>
<td></td>
<td>&lt; 250mL during maintenance</td>
<td></td>
</tr>
</tbody>
</table>

** Note assessment of all parameters 1-9 prior to commencement of initial bolus **

### OBSERVE FOR POSSIBLE ADVERSE OUTCOMES

**Fetal**
- Fetal bradycardia
- Fetal tachycardia

**Uterine**
- Polyhydramnios
- Infection
- Abruption
- Uterine tachysystole (hypertonia)
- Prolapsed cord
- Uterine rupture

**Maternal**
- Fluid embolism
- Amniotic Fluid Embolism
- Maternal cardiac or respiratory failure

### Safety

**Notify physician of abnormal findings:**
- Change in fetal heart rate patterns to atypical or abnormal (Bradycardia)
- Resting tone is greater than 25mmHg
  - Stop infusion first
- If fluid balance on pads is less than the volume infused into the amniotic cavity
  - Stop infusion
- Vaginal bleeding
- Severe abdominal pain

**Documentation should include:**
- Patient consent in Progress Notes by physician
- Physician and/or Resident managing procedure
• Start time, infusion amount of bolus infusion and rate of maintenance infusion
• Amount of weighed loss of fluid on pads
• Uterine activity and resting tone
• Colour amount and odor of amniotic fluid
• Vital signs
• Fetal heart rate interpretation

References


Edmonton Zone, Women's Health Policy & Procedure Individual Privileging and Required Skills for Family Practitioners with Obstetrical Privileges, January 2012