

Intensive Care Nursery House Staff Manual

Management of Infants Born through Meconium Stained Amniotic Fluid

BACKGROUND: In 10-20% of deliveries, there is meconium in the amniotic fluid. Aspiration of meconium results in respiratory distress that, in severe cases, can be life threatening. There is strong suggestive evidence that prevention of meconium aspiration, by its removal from the respiratory tract, can ameliorate or prevent the vast majority of cases of severe meconium aspiration syndrome (MAS). Recently reported data indicate that infants who are vigorous immediately after birth do not benefit from routine endotracheal intubation and suctioning to remove the meconium. The following are in accord with the “International Guidelines for Neonatal Resuscitation” (Pediatrics 106: E29, 2000).

A. For all infants born with meconium in the amniotic fluid:

1. All infants with meconium in the amniotic fluid, should have their nose, mouth and pharynx suctioned as soon as the head is delivered (intrapartum suctioning) regardless of whether the meconium is thin or thick.
2. If the amniotic fluid is merely colored or stained with meconium but there is no particulate meconium in the fluid, no further special intervention for meconium is indicated and the infant should receive routine resuscitation as indicated by the infant's condition.

B. For infants born with any particulate meconium in the amniotic fluid:

1. Assess the infant immediately after birth (in the first 15 sec after birth), before any drying or stimulation.
2. If the infant is depressed (*i.e.*, absent or depressed respirations, or heart rate <100/min, or decreased muscle tone in the first 15 sec after birth):
 - Immediately perform direct laryngoscopy, before drying or stimulating the infant.
 - Suction any meconium that is in the hypopharynx.
 - Then intubate the infant's trachea, apply suction directly to the endotracheal tube as it is withdrawn from the trachea.
 - If meconium is obtained, repeat the intubation and suctioning until little meconium is recovered or the heart is <60. **Do not intubate and suction more than three times.** Then proceed with routine resuscitation.
 - With a markedly depressed infant, it may be necessary to give positive pressure ventilation and proceed with resuscitation despite the presence of some meconium in the airway. In such an infant, intubate the trachea and suction only one time before giving positive pressure ventilation.
 - Suction catheters inserted through the endotracheal tube may be too small to accomplish initial removal of particulate meconium; subsequent use of suction catheters inserted through a tracheal tube may be adequate to continue removal of meconium.

3. If the infant is **vigorous** (*i.e.*, spontaneous respirations, **and** heart rate >100/min **and** good muscle tone in the first 15 sec after birth), use routine resuscitation procedures as indicated by the infant's condition. There is no evidence that routine intubation and tracheal suctioning of **vigorous** infants is beneficial.
 4. Meconium stained infants, who develop **apnea or respiratory distress** at any time during resuscitation, should receive **tracheal suctioning** before positive-pressure ventilation, even if they had been vigorous initially.
 5. **There is no evidence that lavage of the trachea is beneficial.** Conversely, it may facilitate movement of the meconium into the distal airways and worsen the infant's respiratory status.
- C. If **respiratory distress** develops in an infant born through meconium, that infant requires close observation and early intervention:
- Provide **liberal amounts of humidified oxygen** to maintain adequate systemic and alveolar oxygenation and **correct acidosis**, if present, to avoid development of Persistent Pulmonary Hypertension (See P. 87).
 - Obtain chest radiograph immediately.
 - Consider early insertion of an **umbilical arterial catheter** to monitor arterial **oxygenation** and **acid-base status**. Many infants who go on to have severe MAS appear relatively mildly affected for the first few hours of life.
 - If the infant requires assisted ventilation, **avoid high inspiratory pressures** in an attempt to prevent **pneumothorax**.
 - **Tension pneumothorax** is common with meconium aspiration syndrome and may occur with spontaneous breathing or assisted ventilation.