

# ACOG

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# Committee Opinion



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## Amnioinfusion Does Not Prevent Meconium Aspiration Syndrome

*ABSTRACT: Amnioinfusion has been advocated as a technique to reduce the incidence of meconium aspiration and to improve neonatal outcome. However, a large proportion of women with meconium-stained amniotic fluid have infants who have taken in meconium within the trachea or bronchioles before meconium passage has been noted and before amnioinfusion can be performed by the obstetrician; meconium passage may predate labor. Based on current literature, routine prophylactic amnioinfusion for the dilution of meconium-stained amniotic fluid is not recommended. Prophylactic use of amnioinfusion for meconium-stained amniotic fluid should be done only in the setting of additional clinical trials. However, amnioinfusion remains a reasonable approach in the treatment of repetitive variable decelerations, regardless of amniotic fluid meconium status.*

Meconium-stained amniotic fluid is a common obstetric situation, occurring in 12–22% of women in labor (1, 2). Meconium aspiration syndrome is a major complication in the neonate. This syndrome occurs in up to 10% of infants who have been exposed to meconium-stained amniotic fluid, with significant morbidity and mortality.

Amnioinfusion has been advocated as a technique to reduce the incidence of meconium aspiration and to improve neonatal outcome. Although generally considered safe, reported complications associated with amnioinfusion include uterine hypertonus, uterine rupture, placental abruption, chorioamnionitis, non-reassuring fetal heart rate tracing, maternal pulmonary embolus, and maternal death (3). The purported benefit of amnioinfusion for the dilution of meconium-stained amniotic fluid is dilution of thick clumps of meconium. However, a large proportion of women with meconium-stained amniotic fluid have infants who have taken in meconium within the trachea or bronchioles before meconium passage has been noted and before amnioinfusion can be performed by the obstetrician. Furthermore, meconium aspiration syndrome is hypothesized to predate labor in many cases (4). Studies were performed to evaluate whether prophylactic amnioinfusion for meconium-stained amniotic fluid would be beneficial and if it would decrease the incidence of meconium aspiration syndrome (5–18).

The initial trials of amnioinfusion generally consisted of small studies that randomized women with moderate to thick meconium-stained amniotic fluid to receive prophylactic amnioinfusion or no amnioinfusion. These studies suggested that women receiving amnioinfusion had fewer operative deliveries and fetuses with significantly less distress and less meconium below the vocal cords (5–11). Two meta-analyses also found that amnioinfusion significantly reduced the frequency of meconium aspiration syndrome and the incidence of meconium below the vocal cords in fetuses of pregnant women with meconium-stained amniotic fluid treated with amnioinfusion (12, 13).

A randomized trial in women with meconium-stained amniotic fluid evaluated prophylactic amnioinfusion versus therapeutic amnioinfusion for variable decelerations occurring after enrollment (14). The authors found no differences in operative deliveries, fetal distress, Apgar scores, the incidence of meconium below the fetal vocal cords, or umbilical artery blood pH values between the groups. There were four cases of meconium aspiration syndrome; three occurred in the prophylactic amnioinfusion group. Of the women receiving standard care, only 16% required therapeutic amnioinfusion for repetitive severe variable decelerations. These findings are consistent with studies evaluating institutional protocols of routine prophylactic amnioinfusion for thick meconium that found that meconium aspiration syndrome continued to occur at the same rate, with no improvement in neonatal outcome (15–17).

A large, international, multicenter trial randomized 1,998 women in labor at 36 weeks of gestation or later with thick meconium-stained amniotic fluid to amnioinfusion or no amnioinfusion, after stratification according to the presence or absence of variable decelerations (18). The number of women enrolled in this well-conducted study was greater than in all other prior studies combined. The authors found that amnioinfusion did not reduce perinatal death (0.5 % in both groups) or moderate or severe meconium aspiration (4.4 % versus 3.1 % in controls), nor was there a significant reduction in cesarean delivery (31.8 % versus 29.0 % in controls). Although the absence of benefit from amnioinfusion occurred whether or not there were variable decelerations, the study did not have adequate power to definitively determine if amnioinfusion was efficacious in the subgroup of women with decelerations.

Based on current literature, routine prophylactic amnioinfusion for meconium-stained amniotic fluid is not recommended. Prophylactic use of amnioinfusion for meconium-stained amniotic fluid should be done only in the setting of additional clinical trials. Data are not available on whether amnioinfusion for fetal heart rate decelerations in the presence of meconium-stained amniotic fluid decreases meconium aspiration syndrome or other meconium-related morbidities. However, amnioinfusion remains a reasonable approach in the treatment of repetitive variable decelerations, regardless of amniotic fluid meconium status (19).

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