Induction of Labor with Oxytocin: When Should Oxytocin Be Held?

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Abstract:

Objective: To determine whether there is an increase in the cesarean delivery rate and labor length in women undergoing induction when oxytocin is discontinued in the active phase of labor.

STUDY DESIGN: Prospective randomized controlled trial of women undergoing induction of labor with a singleton gestation during February 2009 – August 2011. Women were randomized to either oxytocin as routinely used (ROUTINE) or oxytocin with discontinuation (DC or DISCONTINUATION) once in active labor. Induction method and labor management were otherwise left at the discretion of the obstetrician. Analysis was by intention-to-treat.

RESULTS: 252 patients were eligible for study analysis: 128 patients randomized to ROUTINE and 124 patients randomized to DC. Cesarean delivery (CD) rate was similar between the groups (ROUTINE 25.0% [n=32] vs. DC 19.4% [n=24], p=0.28). There was a higher chorioamnionitis rate (ROUTINE 5.5% [n=7] vs. DC 12.5% [n=16], p=0.04) and slightly longer active phase in those randomized to DC. In adjusted analysis, the rate of chorioamnionitis was not different by randomization arm but was explained by a longer active phase of labor (AOR 1.27 [95% CI 1.10, 1.47], p<0.001).

CONCLUSION: Discontinuation of oxytocin once active labor is reached may decrease receipt of desanitation without significantly increasing the CD rate, but longer labor duration is associated with an increased risk of chorioamnionitis.

Methods:

Prospective randomized controlled trial of women undergoing induction with a singleton gestation >37 weeks at Lehigh Valley Health Network from February 2009 – August 2011. Women were randomized to either the ROUTINE group (oxytocin administered as an induction agent was continued once active labor was achieved) or the DISCONTINUATION group (oxytocin was discontinued once the patient was determined to be in active labor). Primary outcome was cesarean delivery rate between groups. Secondary outcomes included length of latent phase of labor, length of active phase of labor and maternal/neonatal outcomes. Institutional review board approval was obtained.

Induction method and labor management was otherwise at the discretion of the provider. Active labor was defined by both tocodynamometers (fetal contractions) and clinical assessment. The provider could restart oxytocin at any time in patients assigned to the DISCONTINUATION group if felt to be clinically indicated.

Inclusion criteria:

- Singleton gestation >37 weeks undergoing induction of labor with a singleton gestation
- African American
- Divorced/widow
- Marital status (%)
- Maternal age (years)
- Body mass index - kg/m²
- Alcohol use (%)
- Tobacco use (%)
- Any co-morbidity (%)

Exclusion criteria:

- Multiple gestations
- Previous cesarean delivery
- Documented fetal aneuploidy

Results:

- 128 randomized to ROUTINE group, 124 to DISCONTINUATION group.
- The most common method of induction in both groups was oxytocin.
- Oxytocin was restarted in the DISCONTINUATION group in 57 (47%) patients at the discretion of the provider.
- Cesarean delivery rate was similar between groups (ROUTEINe 19.4% vs. DISCONTINUATION 35%, p=0.28).
- The median length of the active phase of labor (3.0 hrs vs. 3.9 hrs, p=0.02) and rates of chorioamnionitis (5.5% vs. 12.5%, p=0.04) were higher in the DISCONTINUATION group.

Discussion:

- After controlling for potential confounders, oxytocin discontinuation did not increase the rate of cesarean delivery (AOR 0.52 [95% CI 0.14 – 1.89], p=0.32).
- The risk of chorioamnionitis was not increased due to discontinuation of oxytocin (AOR 1.42 [95% CI 0.47], p=0.50) and was related to multiparity (AOR 4.84 [95% CI 1.20, 20.4], p=0.03), length of the active phase of labor (AOR 1.27 [95% CI 1.10, 1.47], p<0.001), and the Bishop score (AOR 0.31 [95% CI 0.10, 0.98], p=0.05).
- Only length of the active phase of labor was significantly associated with an increased risk of chorioamnionitis (AOR 1.30 [1.07, 1.47], p=0.02) when controlling for the length of the active phase and number of cervical exams.