

Saad Khalil Memorial Junior Fellow Quality Improvement Challenge

Project Submission Form

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Project Title:		
Should ACOG reconsider guidelines for management of prolonged second stage of labor?		
1. Please describe the quality problem or issue:		
<p>ACOG recommends allowing at least 2 and 3 hours in the second stage of labor for multiparous and nulliparous women, respectively. An additional hour should be allowed for women with an epidural. At our institution, second stage of labor is managed based on these guidelines; however, there is increased morbidity with minimal gain for patients with prolonged second stage despite having standardized multidisciplinary huddles.</p>		
2. AIM Statement:		
<p>ACOG guidelines for management of prolonged second stage of labor need to be readdressed in the face of this increased maternal and neonatal morbidity.</p>		
3. Team Members (please include title and role):		
Name	Title	Role
Bijal Parikh	MD	Primary Author
Emily Schlussel Markovic	MD	Co-investigator
Farrah Naz Hussain	MD	Co-investigator
Guillaume Stoffels	MA,MS	Statistician
Lois Brustman	MD	Principal Investigator

4. Abstract:

Background:

In 2014, in an effort to decrease the rising cesarean section rate in the United States, ACOG and SMFM published guidelines for the management of labor. It was recommended that second stage be at least 2 and 3 hours for multiparous and nulliparous women, respectively. An additional hour should be allowed for women with an epidural. A specific absolute maximum length of time spent in the second stage of labor beyond which all women should undergo operative delivery has not been identified. Multiple retrospective and prospective observational research has shown that laboring mothers should have additional time to push, given that rates of vaginal birth are high and overall rates of complications are low. At our institution, due to several poor obstetric outcomes in the face of a prolonged second stage of labor, we decided to review our own data. The goal of this study is to describe the consequences of prolonged second stage of labor on maternal and neonatal outcomes.

Methods:

This retrospective cohort study included 700 women with a singleton term pregnancy who delivered between March 2018 to March 2020; 350 patients with prolonged second stage labor and 350 patients with normal second stage, who were matched for age and parity. We reviewed patient medical records and collected demographic and delivery outcomes. Prolonged second stage of labor was defined as greater than 3 hours. The primary outcome is a binary composite of maternal adverse outcomes, which was defined as postpartum hemorrhage, 3rd or 4th degree perineal laceration, episiotomy, emergency C-section, chorioamnionitis, endometritis, or ICU admission. Multivariable linear and logistic regression models were created in which demographic variables were adjusted for as confounders. A result was considered statistically significant at the $p < 0.05$ level of significance.

Results:

Patients with prolonged second stage of labor had a significantly higher incidence of composite maternal adverse outcome (36 vs. 18%, $p < 0.0001$), compared to patients in the normal group. Also, patients in the prolonged group had a significantly higher rate of C-section (38 vs. 2%, $p < 0.0001$ on omnibus test) or operative delivery (23 vs. 13%, $p < 0.0001$ on omnibus test) than patients in the normal group. Newborns in the prolonged group had an increased incidence of respiratory distress (12 vs. 3%, $p < 0.0001$) and meconium aspiration (2.9 vs. 0.3%, $p = 0.006$), compared to the normal group. The rate of NICU admission was higher in the prolonged group compared to the normal group (7 vs. 3%, $p = 0.03$). On multivariable analysis, after adjusting for maternal age, pregravid BMI, GA at delivery, epidural, oxytocin, fetal position, induction, and multiparous, patients in the prolonged group had a significantly higher likelihood of a maternal adverse outcome compared to patients in the normal group (OR 2.4, 95% CI: 1.6, 2.6; $p < 0.0001$).

Sustainability plans:

Women with term, singleton pregnancies with prolonged second stage of labor have a significantly higher likelihood of a maternal and fetal adverse outcome compared to patients in the normal group. Our data suggests that the ACOG/SMFM guidelines for management of second stage need to be readdressed in the face of this increased morbidity. There are a significant number of cases where the risks of this practice seem to outweigh the benefits. Our next step is to present our findings at a systems departmental quality improvement meeting and encourage new policy formation. Our goal is to identify patients at high risk for complications and increase surveillance by having more efficient huddles, improved documentation, and increased utilization of second opinions to prevent adverse maternal and neonatal outcomes.