

Comparing delivery outcomes of concurrent use of mechanical dilation with low dose versus medium dose pitocin versus balloon catheter only

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Abstract

PURPOSE: The most effective method of inducing labor is unclear, as studies comparing labor induction methods are variable and results are conflicting. We conducted a retrospective chart review to compare delivery outcomes following induction of labor with concurrent use of mechanical dilation with Pitocin at various rates versus mechanical dilation only.

METHODS: This is a retrospective cohort study reviewing patients who underwent induction of labor with mechanical dilation between January 1, 2017 to July 31, 2021 at Bayfront Health St. Petersburg. IRB approval was obtained prior to review. Patients included in the study were singleton pregnancies delivering after 36 weeks gestation with the use of mechanical dilator for cervical ripening. Medical records were reviewed for patient demographics, cervical exam upon admission, length of time mechanical dilator was used, use of pitocin, starting time of pitocin, time to and mode of delivery. Different rates of Pitocin use were reviewed including low dose pitocin defined as 1mU/min increased no more than 1mU/min every 30-60 minutes, and medium dose pitocin at 1-2 mU/min increased no less than 1-2 mU/min every 15-30 minutes. For further analysis, data was stratified by time between mechanical dilation and starting time of Pitocin, use of additional cervical ripening techniques, and other categorical data.

RESULTS: In total, 159 charts met inclusion criteria, of which there were 79 vaginal deliveries (50%) and 79 cesarean sections (50%). Mechanical dilation was used concurrently with low dose pitocin in 47% of inductions while medium dose pitocin was used in 48% of inductions. Only 5% of inductions used mechanical dilation alone. Mechanical dilation with low dose pitocin resulted in a vaginal delivery rate of 49% (37/75) and a cesarean section rate of 51% (38/75). Mechanical dilation with medium dose pitocin resulted in a vaginal delivery rate of 54% (41/76) and a cesarean section rate of 46% (35/76). Mechanical dilation without use of pitocin resulted in a vaginal delivery rate of 25% (2/8) and cesarean section rate of 75% (6/8). On subset analysis, we found that the rate of vaginal delivery with immediate versus delayed initiation of pitocin with mechanical dilator use was 54% and 46% respectfully. Further statistical analysis is currently pending.

CONCLUSION: While there is a large amount of variability in the use of mechanical dilation for induction of labor, we did note some differences in delivery outcomes. Vaginal delivery rates were found to be higher than cesarean delivery rates for patients who underwent cervical mechanical ripening performed concurrently with pitocin use when compared to mechanical dilation alone. It appears medium dose pitocin has a slightly higher vaginal delivery rate and slightly lower cesarean delivery rate when compared to low dose pitocin. When delivery outcomes are further stratified by time, where pitocin was

either started at the time of mechanical dilation or delayed more than one hour, the overall vaginal delivery rate is highest in those who received immediate medium dose pitocin (55%), and lowest in those who received delayed low dose pitocin (47%). Additional aggregate data shows no difference between comparative groups and primary out-comes. Further studies are planned with a larger population.