

The use of propranolol in conjunction with oxytocin for induction of labor: a retrospective cohort study

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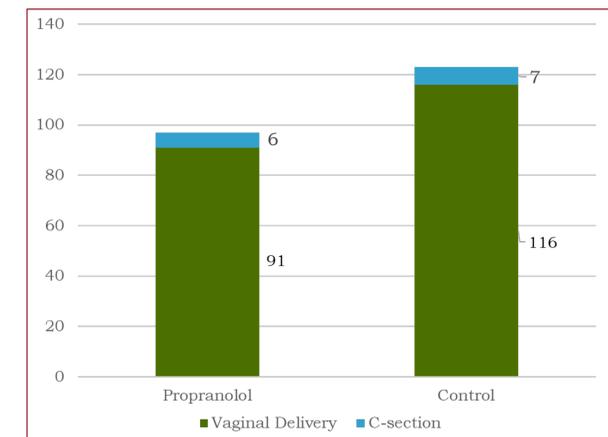
Introduction

- Any induction of labor is known to carry an increased risk of adverse outcomes, thusly we seek to lessen those risks where able.
- Beta receptors in the uterus inhibit contractility when stimulated
- Oxytocin is the most potent endogenous uterotonic. The amount needed to elicit uterine contractions in:
 - Nonpregnant women: 100 mU/min
 - 20 weeks gestation: 16 mU/min
 - 32 weeks gestation: 2-3 mU/min
 - Term: 1 mU/min
- There can be large release of catecholamines during active phase of labor – may interfere with role of Oxytocin to stimulate contractions and labor
- Prostaglandins rise prior to contraction; hence using Indomethacin to stop preterm labor
- Estrogens up-regulate uterine myometrial gap junctions and increase other uterotonic receptors
- Rupture of membranes releases mainly prostaglandins that help advance parturition
- Many studies have examined the use of Propranolol during inductions of labor and showed decreased rates of adverse outcomes, shortened labor time, and no harm to mother or child
- The process of parturition is a complex one that requires many hormones and processes working toward the ultimate goal of the birth of the child.

Methods and Materials

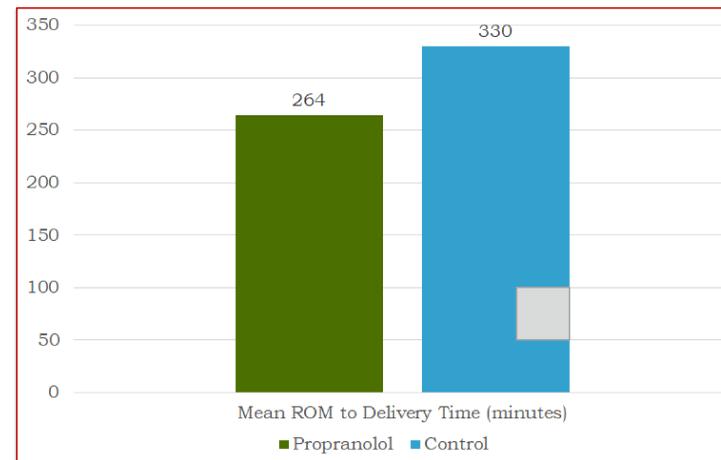
- We retrospectively evaluated term inductions that had received oxytocin infusion alone (control group) vs women who were given oxytocin + propranolol (Experimental group).
- Examine outcomes:
 - Delivery type (cesarean section or vaginal delivery)
 - Presence of postpartum hemorrhage
 - Time from rupture of membranes (ROM) to delivery.
- Exclusion criteria:
 - Multiple gestations, presenting to the hospital in spontaneous labor, or with spontaneous rupture of membranes prior to arrival.
 - Deliveries cesarean section analysis if the reason for the procedure was fetal distress and/or non-reassuring fetal heart tones.

Delivery Type



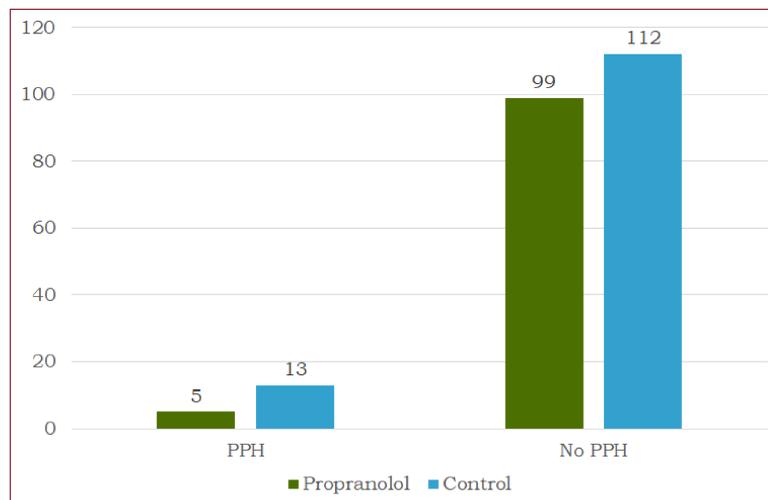
The Graph shows the total number of vaginal deliveries and c-section in the propranolol and control groups. There are no statistically significant differences between the Control and the Propranolol groups on the number/percent of babies by delivery type.

ROM to Delivery



The graph shows the difference in ROM to delivery with a P value of 0.102 with Two-Way Analysis of Variance (ANOVA). While not statistically significant, this was in keeping with other studies that showed a similar trend in decreased total labor times.

Postpartum Hemorrhage



The graph shows the difference in rates of postpartum hemorrhage with a P value of 0.143 with Chi Square Test of Independence analysis. While not statistically significant, we are still able to see that these are in keeping with similar studies that showed decreased rates of PPH when utilizing propranolol.

Results

- Statistical analysis was performed utilizing Chi Square Analysis or ANOVA
- Delivery type; vaginal versus cesarean: Control: N = 123; 116 (94.3%) delivered vaginally and 7 (5.7%) delivered via cesarean section. Experimental: N = 97; 91 (93.8%) delivered vaginally and 6 (6.2%) delivered via cesarean section. P = 1.00
- Postpartum hemorrhage (PPH): Control: N = 125; 112 (89.6%) did not have PPH and 13 (10.4%) did meet criteria for PPH. Experimental: N = 104; 99 (95.2%) did not have PPH and 5 (4.8%) did meet criteria for PPH. P = 0.143
- Time from ROM to delivery: Control: N = 119 had a mean time from ROM to delivery of 329.71 minutes. Experimental: N = 97 had a mean time from ROM to delivery of 263.66 minutes. P = 0.102

Conclusion and Future Directions

- Rupture of membrane to delivery time was shorter in the propranolol group, though not statistically significant.
- Postpartum hemorrhage rate was lower in the propranolol group, though not statistically significant.
- Findings coincided with prior studies overall but we were unable to demonstrate statistical significance due to various limitations.
 - Deficient power due to population size
 - Small amount of outcomes of relevance
 - Retrospective nature of the study
 - Provider variability
- Propranolol is of low risk and has high potential for benefit when combined with oxytocin for induction of labor.
- Further prospective studies are needed to continue research into this area.

References & Acknowledgements

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