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, thus we seek to lessen those risks where able.
- Beta receptors in the uterus inhibit contractility when stimulated.
- Oxytocin is the most potent endogenous uterotropic. 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 a 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.
- Prostaglandins that help advance parturition.
- 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.

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 (92.8%) 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 263.66 minutes. P = 0.102
- Delivery type; vaginal versus cesarean: Control: N = 123; 116 (94.3%) delivered vaginally and 6 (6.2%) delivered via cesarean section. P = 1.00
- Small amount of outcomes of relevance
- Deficient power due to population size
- 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

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.