which carries a significant risk of persistent neurological injury for the infant and consequent medicolegal implications for the clinician, continuous audit and high levels of awareness and training for all birth attendants should now be standard practice.

305 The influence of parity on maternal and neonatal outcomes in shoulder dystocia

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OBJECTIVE: Shoulder dystocia (SD) is an obstetric emergency which may have adverse long term effects for both mother and baby. It is an unpredictable event however some risk factors have been identified. We sought to examine the influence of parity on adverse outcomes in a large series of consecutive cases of SD.

STUDY DESIGN: This is a prospective observational study carried out from January 2005 to December 2010 at a tertiary referral centre where over 9000 women delivery annually. Shoulder dystocia was defined as failure to deliver the shoulders at the first attempt in singleton cephalic vaginal deliveries. Details of maternal demographics, intrapartum characteristics and neonatal outcomes were recorded prospectively on a computerized database. Maternal and neonatal outcomes were compared in nulliparous versus mulitparous labors.

RESULTS: During the study period there were 51,919 deliveries and 453 cases of SD, giving an incidence of 8.7/1000. Of the cases examined 214/453 (47.4%) cases occurred in nulliparas and 239/453 (52.6%) in multiparas. Nulliparous patients with SD were more likely to be induced (37% vs.26%; $p = 0.02$), had significantly smaller babies (4019 +/− 423g vs. 4338 +/−475g; $p < 0.001$) and longer labors (501 219 min vs. 277 219 min ; $p < 0.001$). Nulliparous mothers were significantly more likely to suffer anal sphincter damage (9.8% vs. 3.8%; $p = 0.01$). Infants born to nulliparous mothers following SD were more likely to have an Apgar score <7 at 5 min (7.9% vs. 2.9% $p = 0.02$), with a trend towards higher neonatal unit admission rates (16.8% vs. 10.5%; $p=0.05$). However no significant difference was noticed in either the incidence of Erbs palsy or hypoxic ischemic encephalopathy.

CONCLUSION: Though significant differences were noted in intrapartum characteristics and short term perinatal morbidity when multiparous and nulliparous groups were compared, no difference was seen in long term adverse neonatal outcome.

306 Prediction of cesarean section in women with an unfavorable cervix at term

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OBJECTIVE: To identify indicators that quantify the risk of cesarean section in women with an unfavorable cervix in whom labor is induced.

STUDY DESIGN: This was a secondary analysis of the randomized controlled trial, the PROBAAT study (NTR 1646), that compared induction of labor with a transcervical Foley catheter with induction with prostaglandins in term women with an unfavorable cervix. We prospectively collected the outcome (cesarean section) and its potential predictors (the Bishop score with its five components, maternal and prengancy characteristics). Potential predictors associated with cesarean section in univariable analysis ($p \leq 0.50$) were included in a multivariable model. Backward selection was used to develop a prediction model, predictors with a $p \leq 0.157$ remained in the final model. We used ROC analyses and calibration plots to assess the predictive accuracy of the model.

RESULTS: We included 1036 women. The overall cesarean section rate was 21%. Independent predictors of the risk for cesarean section were maternal age (years) (OR 1.06, 95% CI 1.03-1.10), maternal height (cm) (OR 0.94, 95% CI 0.91-0.96), BMI (OR 1.65 to 2.97 in different categories, overall p-value 0.057), nulliparity (OR 7.14, 95% CI 11.1-4.35), indication for labor induction (Table 1, overall p-value 0.09), and no dilation (OR 1.35, 95% CI 1.89-0.98). The final model using these parameters had an area under the ROC-curve of 0.75 (95% CI 0.71-0.79), with good calibration (Figure 1).

CONCLUSION: In women with an unfavorable cervix in whom labor is induced, the risk of cesarean section can be predicted by combining maternal age, BMI, maternal height, parity, reason for labor induction, and dilation. This prediction model could be a useful tool for clinical decision making and patient information.

Table 1. Univariable and multivariable analysis

Candidate predictor	Univariable OR (95% CI)	Multivariable OR (95% CI)
Dilation (none vs. any) *	1.47 (1.96-1.11)	1.35 (1.89-0.98)
Consistency of cervix*		
Moderately soft vs. stiff	0.97 (0.72-1.33)	Not selected
Soft vs. stiff	0.62 (0.29-1.31)	
Engagement* (Hodge 2 vs. Hodge 1)	1.53 (0.73-3.23)	Not selected
Maternal age	1.04 (1.01-1.07)	1.06 (1.03-1.10)
BMI		
20-25 vs <20	1.65 (0.84-3.24)	1.50 (0.74-3.07)
25-30 vs <20	2.21 (1.12-4.39)	2.25 (1.09 – 4.64)
30-35 vs <20	2.49 (1.18-5.27)	2.81 (1.25 – 6.33)
>35 vs <20	2.97 (1.37-6.42)	3.04 (1.31 – 7.08)
Maternal height	0.94 (0.92-0.96)	0.94 (0.91-0.96)
Gestational age*	1.12 (1.03-1.23)	Not selected
Parity (nulliparous vs. multiparous)	5.00 (7.69-3.33)	7,14 (11.1-4.35)
Indication for induction ^		
Hypertensive disorders	1.46 (0.89-2.41)	0.58 (0.33 – 1.05)
Oligohydramnion	2.43 (1.03-5.74)	1.09 (0.41-2.88)
IUGR	0.87 (0.39-1.93)	0.41 (0.17-1.03)
Decreased fetal movements	0.96 (0.27-3.62)	0.13 (0.02-1.08)
Maternal disease	1.40 (0.60-3.27)	0.79 (0.30 – 2.09)
Post term pregnancy	1.83 (1.11-3.00)	0.98 (0.55 – 1.73)
Diabetes	1.93 (0.98-3.80)	0.79 (0.35 – 1.77)
Other indication	0.86 (0.18-4.05)	1.00 (0.18 – 5.50)

*at study entry
^ compared to elective induction

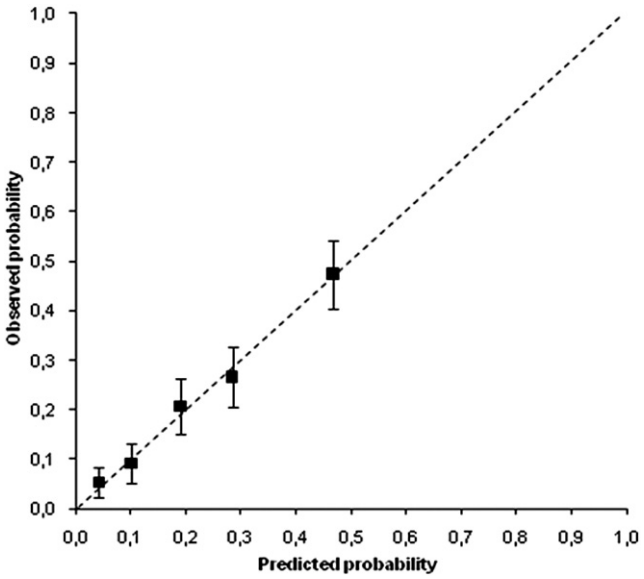

Figure 1. Calibration plot, showing the average observed CS rate (Y-axis) against the average calculated CS rate (X-axis), in five risk groups. In case of perfect calibration all points would be on the diagonal.

307 A comparison between vaginal misoprostol and a combination of misoprostol and Foley catheter for cervical ripening and labour induction in early third trimester pregnancy

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OBJECTIVE: To compare the efficacy of two different techniques for cervical ripening and labour induction in early third trimester pregnancy.

STUDY DESIGN: This is a randomized controlled clinical trial. Two hundred pregnant women in early third trimester were enrolled in the study. They had either intrauterine fetal death or severe preeclampsia which necessitated pregnancy termination but patients refused cesarean delivery due to low chance of postnatal survival. Subjects were randomized into two groups: in group 1: an Intrauterine Foley catheter was inserted plus 4 doses of misoprostol 50μg every 6 hours. In group 2: Misoprostol only was administered in a dose of 50μ every 6 hours.

RESULTS: There was significant shortening of the interval from induction to establishment of active phase in nulliparous women in the first group (P=0.003) with significant reduction of induction to delivery time interval in both nulliparous and multiparous women in the same group more than that in the misoprostol group (P=0.006 and 0.001 respectively). The number of cesarean deliveries due to failed induction were significantly reduced in the first group among nulliparous women (P=0.02) in comparison to group 2. There were no cases of chorioamnionitis or postpartum endometritis in women used Intrauterine Foley catheter.

CONCLUSION: A combination of Intrauterine Foley catheter plus misoprostol was more effective than misoprostol alone in cervical ripening and labour induction in early third trimester pregnancy.

308 Impact of maternal BMI on induction of labor

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OBJECTIVE: To determine the impact of increasing maternal BMI on rates of induction of labor and risk of cesarean delivery over time.

STUDY DESIGN: Retrospective cohort study of birth records linked to hospital discharge data for all live born singleton infants ≥37 weeks gestation born to Missouri residents from 1993-2006. Chi-square tests were used to compare dichotomous outcomes and Cochrane-Armitage test of trend was used to assess statistical significance over time. Multivariable regression adjusted for maternal age, race, education, insurance, parity, level of prenatal care, smoking status, and infant gender.

RESULTS: There were 930,954 births meeting study criteria with an overall induction rate of 27.3% (n=253,825). The rate of induction rose significantly over time from 19.1% in 1993 to 32.4% in 2006 (p-value <.0001) (Figure). Increasing maternal BMI was significantly associated with an increased risk of induction compared to normal weight women for both overweight (aOR 1.24, 95% CI 1.22, 1.25) and obese women (aOR 1.43, 95% CI 1.41, 1.45). Underweight was protective against induction (aOR 0.84, 95% CI 0.82, 0.86). Compared to normal weight women undergoing induction, underweight women were less likely to require cesarean (aOR 0.63, 95% CI 0.57, 0.69) while overweight (aOR 1.57, 95% CI 1.51, 1.63) and obese women (aOR 2.50, 95% CI 2.41, 2.59) were at significantly increased risk of cesarean following induction.

CONCLUSION: The rates of induction of labor have increased over time but appear to be static. Increasing maternal BMI is a significant risk factor for induction of labor, and as maternal BMI increases, the risk of cesarean delivery following induction also increases.