

greater in magnitude than that associated with the choice of trial of labor. These increased risks are not offset by a substantive reduction in the risk of neonatal morbidity.

Composite adverse outcomes per pregnancy

	Elective cesarean in first pregnancy				Trial of labor in first pregnancy			
	1st pregnancy	2nd pregnancy	3rd pregnancy	4th pregnancy	1st pregnancy	2nd pregnancy	3rd pregnancy	4th pregnancy
Maternal outcomes	0.830%	1.148%	1.973%	5.777%	0.541%	0.558%	0.768%	1.606%
Neonatal outcomes	0.126%	0.307%	0.312%	0.368%	0.154%	0.354%	0.356%	0.363%

109 The association between mid-trimester cervical length and cesarean delivery at term

Emily Miller¹, William Grobman¹

¹Northwestern University, Obstetrics and Gynecology, Chicago, IL

OBJECTIVE: An ultrasonographically diagnosed short cervix has been associated with an increased risk of preterm birth, but the obstetric consequences of longer cervical lengths have been less well defined. The objective of this study was to determine the association between cervical length and cesarean delivery among women at term.

STUDY DESIGN: This is a cohort study of women with a singleton gestation who underwent routine mid-pregnancy transvaginal cervical length assessment and delivered at term. Women who underwent planned cesarean delivery without intent to labor were excluded from analysis. Women were grouped into quartiles based on cervical length, and the association of their cervical length quartile with cesarean delivery was determined in both univariable and multivariable analysis.

RESULTS: 5806 subjects were included in this analysis, of whom 58.1% were nulliparous. There were multiple differences among women in the different cervical length quartiles (Table). The frequency of cesarean delivery among the cohort was 18.9%. As cervical length increased, the chance of cesarean delivery increased as well (14.7%, 19.5%, 19.1%, and 22.4% from the 1st through 4th quartiles, respectively). After controlling for potential confounding factors, cervical length quartile remained significantly associated with an increased odds of cesarean for the second (aOR 1.49, 95% CI 1.18-1.88), third (aOR 1.47, 95% CI 1.16-1.85) and fourth (aOR 1.89, 95% CI 1.50-2.38) quartiles, compared to the first quartile. This relationship held true for nulliparous as well as multiparous women.

CONCLUSION: Increasing mid-trimester cervical length is associated with increasing frequency of cesarean delivery in both nulliparas and multiparas. Preparatory uterine changes that enable successful labor may be initiated as early as the mid-trimester.

Population characteristics and cervical length per quartile

	1st quartile n=1479	2nd quartile n=1456	3rd quartile n=1479	4th quartile n=1392	p value
Cervical length	3.6 (3.3-3.8)	4.2 (4.1-4.3)	4.7 (4.6-4.9)	5.5 (5.2-5.9)	<0.001
Maternal age	30.8 ± 5.6	31.2 ± 5.4	31.4 ± 5.3	31.6 ± 5.2	<0.001
Smoker					0.015
Never	1255 (87.9%)	1277 (91.2%)	1297 (90.6%)	1193 (89.4%)	
Former	151 (10.6%)	109 (7.8%)	127 (8.9%)	132 (9.9%)	
Current	32 (2.5%)	47 (3.4%)	47 (3.4%)	62 (4.8%)	
Mode of conception					0.067
Spontaneous	1342 (96.6%)	1334 (96.0%)	1322 (95.9%)	1227 (94.3%)	
IUI	13 (0.9%)	8 (0.6%)	10 (0.7%)	12 (0.9%)	
IVF	35 (2.5%)	47 (3.4%)	47 (3.4%)	62 (4.8%)	
Race/ethnicity					<0.001
White	671 (55.0%)	732 (60.2%)	772 (61.8%)	651 (56.0%)	
Black	181 (14.8%)	113 (9.3%)	117 (9.3%)	115 (9.9%)	
Latina	264 (21.6%)	269 (22.1%)	281 (22.5%)	309 (26.6%)	
Other	104 (8.5%)	103 (8.5%)	80 (6.4%)	87 (7.5%)	
Nulliparous	871 (58.9%)	821 (56.4%)	787 (53.2%)	686 (49.3%)	<0.001

Median (IQR), mean ± SD, or n (%).

110 Evidence to support the safety and efficacy of vaginal delivery of twins gestation complicated by very low birthweight of second twin

Eran Barzilay¹, Hila de Castro¹, Jigal Haas¹, Eyal Sivan¹, Eyal Schiff¹, Shali Mazaki-Tovi¹, Yoav Yinson¹

¹Sheba Medical Center, Tel-Aviv University, Obstetrics and Gynecology, Tel-Hashomer, Israel

OBJECTIVE: To determine whether neonatal outcome is associated with the mode of delivery in very low birthweight twins.

STUDY DESIGN: This was a retrospective cohort study. Inclusion criteria included: 1) twin gestation; 2) second twin birthweight of ≤1500 grams. Exclusion criteria included: 1) gestational age at delivery of less than 24 gestational weeks 2) fetal demise of one or both twins. A total of 206 twin gestations met the criteria and patients were classified into 2 groups according to the planned mode of delivery: 1. Cesarean delivery (n=152) and 2. Vaginal delivery (n=54). In the vaginal delivery group 24 pairs were cephalic-cephalic, 28 pairs were cephalic-non cephalic, and 2 pairs were non cephalic- non cephalic. The rates of Apgar score <7 at 5 minutes and cord blood PH<7.1 in either twin A or B were determined in the two groups.

RESULTS: The mean gestational age at delivery was 31 weeks in the cesarean delivery group compared to 30 weeks of gestation in the vaginal delivery group (p=0.01). However, the mean birthweight of both twins was similar among the two groups (Twin A: 1452 grams vs. 1358 grams, p=0.18 and Twin B: 1186 grams vs. 1182 grams, p=0.9 respectively). There were no significant differences between the cesarean and vaginal delivery groups in the rates of low Apgar score (Twin A: 4.0% vs. 1.9%, p=0.5 and Twin B: 9.7% vs. 3.7%, p=0.2) and cord PH < 7.1 (Twin A: 2.4% vs. 0%, p=0.3 and Twin B: 1.7% vs. 0%, p=0.4). A sub-group analysis of the vaginal delivery group revealed comparable rates of cesarean section (8.3% Vs 3.3%, p=0.4) as well as neonatal Apgar score < 7 among the cephalic-cephalic and cephalic-non cephalic groups (Twin A: 4.2% vs. 0%, p=0.3 and Twin B: 0 vs. 6.7%, p=0.2).

CONCLUSION: Vaginal delivery of very low birthweight twins is a safe regardless of second twin presentation. This information should provide reassurance for pregnant women and clinicians alike.

111 Decreased sleep duration in the third-trimester is not associated with excessive gestational weight gain

Kristin Knight¹, Eva Pressman¹, Lorelei Thornburg¹

¹University of Rochester, OB/GYN, Division of Maternal-Fetal Medicine, Rochester, NY

OBJECTIVE: Obesity and excessive gestational weight gain (GWG) are significant public health problems that lead to an increased incidence of adverse perinatal outcomes. Decreased sleep duration is associated with increased rates of obesity in non-pregnant populations as well as with prolonged weight retention in postpartum women. We sought to determine if there is an association between decreased sleep duration and excessive GWG.

STUDY DESIGN: We conducted a prospective cohort study of non-diabetic women with singleton gestations from Feb 2011–Mar 2012. Maternal weight gain, 3rd-trimester sleep habits (collected over 7 days), and fetal/neonatal biometry were collected. Cohorts were defined as sleeping <7 and ≥7 hours/night on average. Student's T-test, Mann-Whitney U, and Chi-square analysis were used to compare groups.

RESULTS: 35 women sleeping <7 hours/night were compared with 124 women sleeping ≥7 hours/night in the 3rd trimester. The average nightly sleep duration was 6.2 hours and 8.7 hours, respectively (p<0.001). Demographic characteristics were similar in both groups. There were no significant differences in overall weight change (38 vs. 32 lbs, p=0.15) or incidence of weight gain exceeding that recommended by the IOM (65.7% vs. 61.3%, p=0.63). Those sleeping <7 hours/night had a higher percentage of total weight gain in the 1st trimester (23.6% vs. 14.2%, p=0.03), however the percentages of total weight gained in the 2nd and 3rd trimesters were similar. There were

no differences in estimated fetal weight, birthweight, or gestational age at delivery.

CONCLUSION: Unlike non-pregnant populations, sleep duration during pregnancy, when measured in the 3rd trimester, is not associated with excessive GWG. This is likely due to altered physiology in pregnancy and additional factors contributing to sleep disruption. Additional data, especially sleep characteristics in the 1st and 2nd trimesters, is needed to further evaluate a possible association between sleep duration and weight gain in pregnancy.

112 Is there a difference in the risk profile of women who develop thrombo-embolic events in the puerperium or later in life?

Maor Waldman¹, Eyal Sheiner¹, Ilana Shoham Vardi²

¹Soroka University Medical Center, Department of Obstetrics and Gynecology, Beer-Sheva, Israel, ²Ben Gurion University of the Negev, Department of Epidemiology and Health Services Evaluation, Beer-Sheva, Israel

OBJECTIVE: Venous thrombo-embolic events (VTE) (mainly pulmonary embolism [PE] and deep vein thrombosis [DVT]) are currently the primary cause for maternal death in the developed world. The study objective was to identify whether risk factors for VTE during the puerperium are different from these of thrombo-embolic events developed later in life during more than 10 years of follow-up.

STUDY DESIGN: A nested case-case study was designed, comparing women who experienced VTE in the puerperium period to women who experienced such an event over a period of a more than a decade. The study included women (n=316) with VTE from a cohort of 48,319 women that gave birth between the years 1987-1998 and had a follow up period until 2011. Multiple logistic regression model was constructed in order to define independent risk factors associated with early (6 weeks) vs. late thrombo-embolic events.

RESULTS: VTE during puerperium occurred in 81 women, and in 235 within at least 10 years after the puerperium. Patients encountered VTE during the puerperium had more PE events (n=16, 19.8%) and less DVT events (n=42, 51.9%), compared with the late VTE group (PE n=15, 6.4%; DVT n=159, 67.7%; p<0.001).

While baseline characteristics of the two VTE groups were similar (table), women undergoing cesarean section (CS) in the delivery preceding the VTE were more likely to develop early VTE (OR=1.8, 95% CI=1.05-3.2, P=0.032). Using a multivariate analysis, controlling for confounders such as maternal age, CS was noted as an independent risk factor for early vs. late VTE (adjusted OR=1.9; 95% CI 1.1-3.5; p=0.023).

CONCLUSION: The risk profile of both earlier and late VTE are similar, except for cesarean section which is an independent risk factor for early (vs. late) VTE. Women encountered venous thrombo-embolic event during the puerperium are more likely to suffer from pulmonary emboli than women encountering VTE after the puerperium.

Index pregnancy characteristics by time of VTE occurrence

variable	In puerperium (n=81)	After puerperium (n=235)	P value
Cesarean section	34.6%	20.9%	0.013
Recurrent abortions	7.4%	7.7%	0.941
Maternal age	31.3±6.2	31.1±6.4	0.816
Gestational diabetes mellitus	7.4%	9.4%	0.594
Hypertensive disorders	12.3%	12.3%	0.99
Placental abruption	2.5%	1.3%	0.458
Low birth weight (<2500)	13.6%	13.2%	0.929

113 Placenta accreta in a previous pregnancy and its significance on subsequent births

Tamar Eshkoli¹, Eyal Sheiner¹, Adi Y Weintraub¹, Gershon Holcberg¹, Fernanda Press¹

¹Soroka University Medical Center, Ben-Gurion University of the Negev, Obstetrics and Gynecology, Faculty of Health Sciences, Beer-Sheva, Israel

OBJECTIVE: To investigate the perinatal outcomes of women that had a placenta accreta in a previous pregnancy.

STUDY DESIGN: We retrospectively compared all subsequent singleton cesarean deliveries (CD) of women with a previous placenta accreta, with CD of women with no such history, during the years 1988-2011.

RESULTS: Out of 34,567 singleton CD that occurred during the study period, 0.1% (n=30) were of women with a previous placenta accreta. Recurrent placenta accreta occurred in 23.3% (7/30) of patients with placenta accreta in their previous pregnancy. Previous placenta accreta was significantly associated with uterine rupture, peripartum hysterectomy and the need for blood transfusions. Nevertheless, increased risk for adverse perinatal outcomes such as low Apgar scores at 5 minutes and perinatal mortality was not found in these patients (table).

CONCLUSION: A pregnancy following a previous placenta accreta is at increased risk for adverse maternal outcomes such as recurrent accreta, uterine rupture and peripartum hysterectomy. However, adverse perinatal outcomes are not demonstrated.

Selected pregnancy and perinatal outcomes of patients with and without a previous placenta accrete

	Previous placenta accreta (n=30)	No previous accreta (n=34567)	OR	95% CI	P
Uterine rupture	3.3	0.3	9.9	1.348-73.810	0.005
Hysterectomy	3.3	0.2	18.02	4.18-134.151	<0.001
Blood transfusions	16.7	4.0	4.8	1.827-12.505	<0.001
Placenta previa	6.7	2.8	2.5	0.599-10.593	0.19
Preterm delivery (<37wks)	26.7	18.4	1.6	0.72-3.635	0.24
Low birth weight (<2500gr)	20	17.1	1.2	0.495-2.963	0.67
Apgar5<7	3.3	3.2	1.1	0.144-7.753	0.96
Perinatal mortality	3.3	1.9	1.8	0.245-13.217	0.56

Data are presented as percentages.

114 A proportion score of pelvic and neonatal head circumference is highly predictive of instrumental delivery and cesarean section due to cephalo-pelvic disproportion

Gadi Liberty¹, Lina Linov², Irena Sionov¹, Alona Koval², Bord Ilia¹, Eyal Anteby¹

¹Barzilai Medical Center, Obstetrics and Gynecology, Ashkelon, Israel,

²Barzilai Medical Center, Radiology, Ashkelon, Israel

OBJECTIVE: To evaluate the risk for instrumental delivery (ID) and cesarean section due to cephalo-pelvic disproportion (CS-CPD), according to maternal pelvic CT parameters, and neonate weight and head circumference.

STUDY DESIGN: We studied patients who delivered at term a singleton fetus in vertex presentation, and had underwent an abdominal CT in our institution. Pelvimetry was performed retrospectively. We analyzed the relation between maternal pelvic parameters, neonatal weight and head circumference (HC), and the mode of delivery.

RESULTS: We enrolled 111 cases: 84 patients had NVD, 7 had ID and 20 had CS-CPD. The neonatal HC was significantly larger in ID and CS-CPD in comparison to NVD (34.9±1.1, 34.9±2.5 and 33.8±1.7 cm, respectively, p=0.03). The transverse diameter of the mid pelvis was significantly smaller in ID and CS-CPD in comparison to NVD (9.5±1.1, 9.8±0.9 and 10.4±0.8 cm respectively, p=0.002). We expressed the composed A-P and lateral parameters of the pelvic inlet, mid and outlet, with a "naive formula" of estimated ellipse circumference (EEC). The mid pelvic EEC was significantly smaller in ID and CS-CPD in comparison to NVD (32±2.6, 33.5±3.5 and 34.8±2.3 cm