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PLANNED CESAREAN VERSUS PLANNED VAGINAL DELIVERY: COMPARISON OF LOWER URINARY TRACT SYMPTOMS

Hypothesis / aims of study
To compare the prevalence and risk of lower urinary tract symptoms in healthy primiparous women with normal full-term pregnancies, in relation to vaginal birth or elective cesarean section up to nine months after delivery.

Study design, materials and methods
We performed a prospective controlled cohort study including 220 women delivered by elective cesarean section and 215 by vaginal birth. Inclusion criteria were first time delivery, singleton fetus (with cephalic presentation for women planning vaginal childbirth), 37-42 completed gestational weeks, body mass index <30 at start of pregnancy, non-smoking and fluency in the Swedish language. Exclusion criteria included maternal or fetal complications during pregnancy, prematurity, breech presentation (for women planning vaginal childbirth) and inadequate knowledge of the Swedish language. All subjects received an identical questionnaire on lower urinary tract symptoms (definitions in compliance with the definitions set forth by the International Continence Society) in late pregnancy, at three and nine months postpartum. Response rate was over 85 %. The questionnaire on lower urinary tract symptoms have previously been used by our research team and has been found reliable, valid, and sensitive to change. Statistical analysis was performed using *STATISTICA* software (StatSoft Inc., Tulsa, OK). The Mann–Whitney *U* test for inter-cohort comparisons and the Wilcoxon signed rank test for intra-cohort were used for comparisons on non-parametric ordinal and continuous numerical data. Variables showing statistical significance at univariate regression were tested in a stepwise multivariable regression model to assess the interaction of co-variates on the risk for lower urinary tract symptoms.

Results
220 subjects underwent elective cesarean section and 215 subjects underwent vaginal delivery. Following childbirth, the 3-month questionnaire was completed by 389 / 435 subjects (89 %) and the 9-month questionnaire by 376 / 435 subjects (86 %). Women delivered by emergency cesarean section were excluded from the study. A pretrial power calculation determined that a sample of at least 150 subjects in each arm was necessary to demonstrate a 20% increase in prevalence of stress urinary incontinence symptom with $\alpha<0.05$ and $\beta=0.8$. In the vaginal delivery cohort, all lower urinary tract symptoms increased significantly at nine months follow-up. The prevalence of stress urinary incontinence (SUI) after vaginal delivery was significantly increased both at three ($p<0.001$) and nine months ($p=0.001$) follow-up when compared to cesarean section. In a multivariable risk model, vaginal delivery was the only obstetrical predictor for SUI (RR 8.9, 95% CI 1.9-42) as well as for urinary urgency (RR 7.3 95% CI 1.7-32) at nine months follow up. A history of SUI at baseline (OR 5.2, 95% CI 1.5-19) and at three months follow-up (OR 3.9, 95% CI 1.7-8.5) were independent predictors for SUI at nine months follow-up.

Interpretation of results
Our main results are in agreement with other prospective controlled studies reporting an increased severity of stress urinary incontinence after vaginal delivery compared to elective cesarean section at short term follow-up. The majority of patients in our study experienced mild to moderate symptoms, however, the bother frequency turned more severe after vaginal delivery, as did the need for protective pads. At antenatal counseling of women, the moderately increased risk for post partum stress urinary incontinence following vaginal delivery should be weighed against morbidity associated with cesarean section.

Concluding message
Vaginal delivery is associated with an increased risk for stress urinary incontinence symptoms nine months after childbirth in healthy primiparous women when compared to elective cesarean section.

References

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