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VAGINAL DELIVERY PARAMETERS AND URINARY INCONTINENCE

Aims of Study
Parity is an established risk factor for female urinary incontinence among young and middle-aged women. Cesarean section increases the risk of incontinence compared with the nulliparous state, and vaginal delivery further increases the risk. However, whether specific delivery parameters are independent risk factors is debated in the litterature. The aim of this study was to investigate the effect of nine delivery parameters on urinary incontinence. The nine parameters were birth weight, gestational age, head circumference, breech delivery, injuries in the delivery channel, forceps delivery, vacuum delivery, epidural anesthesia and functional delivery disorders. The latter is a collective term for prolonged delivery (lasting more than 24 hours), cervical dystocia, uterine atonia, and attenuation of contractions, among others.

Methods
Data on urinary incontinence from the Norwegian EPINCONT study (a large cross-sectional population study) were linked to data from the Medical Birth Registry of Norway. Women under 65 years of age, who had had vaginal deliveries only (n=11,397) were included. Any incontinence was the main outcome variable. A validated severity index was used to identify women with slight, moderate or severe degree of incontinence. The questionnaire was also constructed to identify type of incontinence (stress, urge or mixed type). Multiple logistic-regression analyses were performed for the following outcomes: any incontinence, moderate or severe incontinence, stress incontinence, urge incontinence and mixed incontinence.

Results
In the adjusted analyses, a statistically significant association was observed between any incontinence and birth weight $\geq$4000 grams with an odds ratio of 1.1 (95% confidence interval 1.0-1.2). For moderate or severe incontinence there was a significant odds ratio of 1.3 (95% confidence interval 1.1-1.6) for functional delivery disorders. For stress incontinence there was a significant odds ratio of 1.2 (95% confidence interval 1.1-1.3) for birth weight $\geq$4000 grams and a significant odds ratio of 1.2 (95% confidence interval 1.0-1.5) for epidural anesthesia. For urge incontinence there was a significant odds ratio of 1.8 (95% confidence interval 1.0-3.3) for head circumference $\geq$38 cm. Forceps and vacuum deliveries carried a non-significantly lower risk of incontinence than normal deliveries for most outcome variables.
For primiparous women, the pattern was the same as for the material all over: None or only weak effects could be found. Also for women with two deliveries the overall pattern was that specific delivery parameters did not represent major risk factors for urinary incontinence.

Conclusions
The effects were too weak to explain a substantial part of the association between vaginal delivery and urinary incontinence. Future research should aim at identifying parameters which have not been yet investigated.