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## **Loop electrosurgical excision of the cervix and subsequent risk for spontaneous preterm delivery**

The present Ph.D.-thesis, originating from the Department of Viruses, Hormones and Cancer at the Danish Cancer Society, included three separate studies on loop electrosurgical excision procedure (LEEP) in treatment of cervical intraepithelial neoplasia and the subsequent risk for preterm delivery. In the first and second study we investigated the association between LEEP and subsequent risk for preterm delivery in singleton and twin pregnancies, respectively. In the third study the association between cone depth after LEEP and subsequent risk for preterm delivery in singleton pregnancies was examined.

The study population forming the basis for the studies consisted of all deliveries in Denmark over a 9 year period, 1997–2005. Data on the deliveries and cervical procedures were obtained from the population-based Medical Birth Registry, the National Patient Registry, the Danish IVF registry and the Danish Registry of Pathology. All data were edited and merged into a single database, for a total of 566,428 deliveries. The record of each delivery consisted of the mother's personal identification number and information on the registered pregnancy and delivery, such as date of delivery, gestational age, parity and smoking during pregnancy. Furthermore, for each record we had information on previous cervical procedures, such as biopsies and conisations.

In the first study, 552,678 singleton deliveries were eligible for analysis. We were able to include 8180 deliveries subsequent to LEEP, of which 530 were preterm. Our results showed an increased risk for preterm delivery subsequent to LEEP, with an OR of 2.07 (95% CI, 1.88–2.27). When dividing preterm delivery into moderately preterm (32–36 weeks), very preterm (28–31 weeks) and extremely preterm (21–27 weeks), the risk for preterm delivery

subsequent to LEEP was present for all three groups (OR, 1.89 (95% CI, 1.71–2.09), OR, 3.28 (95% CI, 2.56–4.19) and OR, 3.16 (95% CI, 2.27–4.40), respectively).

In the second study, 9868 twin deliveries were eligible for analysis. We were able to include 166 deliveries subsequent to LEEP, of which 72 were preterm. Compared to a twin delivery not preceded by a LEEP, we found an increased risk for preterm delivery subsequent to LEEP, with an OR of 1.58 (95% CI, 1.16–2.14). Dividing preterm delivery into moderately preterm, very preterm and extremely preterm, the risk for preterm twin delivery subsequent to LEEP was only statistically significant for the most preterm categories (OR, 1.36 (95% CI, 0.96–1.93), OR, 2.34 (95% CI, 1.29–4.25) and OR, 2.50 (95% CI, 1.19–5.24), respectively).

In the third study, we found an increasing risk for preterm delivery with incremental cone depth, with an estimated 6% increase in risk per each additional millimetre of tissue excised (OR, 1.06; 95% CI, 1.03–1.09). This was independent of severity of the cone histology and time since LEEP.