A population based evaluation of the mode of delivery in association with infertility treatment from 1990–2012

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**Background:** Infertility treatment is an opportunity for a considerable number of couples with a variety of disorders but associated with a higher obstetric risk. It is reported that the incidence of hypertensive disorder in pregnancy, preeclampsia, gestational diabetes mellitus, placenta previa, placental abruption and premature delivery is increased in women with infertility treatment. This study refers to population based data and investigates the development of the mode of delivery associated with infertility treatment over the last 23 years.

To clarify the association between infertility treatment and mode of delivery, in comparison to CS in general, this paper examines the data of the HEPE over the last 23 years (1990 to 2012).

**Patients and Methods:** All 1 202 557 deliveries examined in Hesse, Germany, between 1990 and 2012 were assessed. 2.2% of the study population, 26 761, had a delivery subsequent to infertility treatment based on the Hessian Perinatal Registry (HEPE). An evaluation in this subgroup was performed investigating the associations between the mode of delivery and the gestational week and the mother’s age.

**Results:** A continuous and significant (p < 0.01) increase of cesarean section (CS) rates subsequent to infertility treatment as well as a conversely also significant (p < 0.01) reduction of vaginal operative and spontaneous deliveries associated with infertility treatment between 1990 and 2012 was found (Fig. 1). Furthermore, the preterm delivery rate and the proportion of deliveries of parturients older than 35 years in association with infertility treatment have been raised over the last years (Fig. 2). Rates of full-term deliveries and deliveries of women younger than 35 years maintained during the observation period (Fig. 2).

**Limitations:** The population-based data of the HEPE provide a large number of deliveries; still these data are limited. The data of all deliveries from 1990 to 2012 in Hesse, Germany, are including multiple pregnancies. The item “infertility treatment” of the HEPE comprises the information of IVF, ICSI and cryo-transfer and therefore a lack of differentiation is accepted.

**Conclusion:** The rate of cesarean section is continuously rising over the last 23 years with regard to parturients subsequent to infertility treatment. The CS rate is significantly higher compared to women with a spontaneous pregnancy and in comparison to the data from 20 years ago. Most recently, the number of CS exceeded the number of vaginal deliveries in Hesse subsequent to infertility treatment for the first time (Fig. 1).

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**Fig. 1** Trends of the mode of delivery – all pregnancies vs. pregnancies in association with infertility treatment.

**Fig. 2** Trends of delivery rates (all deliveries) associated with infertility treatment.