

Incidence of vasa previa and velamentous cord insertion in IVF/ICSI pregnancy: a meta-analysis

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Objective

Velamentous cord insertion (VCI) is one of the most important risk factor of vasa previa (VP). VP is a rare and lifethreatening condition in which prenatal ultrasound diagnosis can prevent severe injuries and perinatal death. Impaired placentation with an increased risk of placenta praevia or abnormally invasive placenta has been reported for pregnancies obtained by IVF/ICSI technique, however in this group the risk of VCI and VP remains unclear. The aim of the study is to assess the risk of VP and VCI related to the IVF/ICSI technique when compared to spontaneous pregnancies.

Methods

Ten cohort and case-control studies were selected from literature and included in the analysis. In all cases, histological examination of the placenta was performed and documented. Meta-analysis was conducted to estimate the pooled unadjusted odds ratio (OR) with a 95% confidence interval (CI) using the random effect model. Statistical heterogeneity among studies was evaluated by I^2 value and chi-squared-based Q-test. A p-value > 0. 10 for the Q-test or an I^2 value less than 50% revealed no obvious heterogeneity across the studies.

Results

The total VP events were 16/5535 (0. 3 %) and 21/88974 (0. 02 %) in the IVF/ICSI and spontaneous conception groups, respectively, and the pooled estimated OR for VP was significantly increased in the IVF/ICSI group as compared to spontaneous conceptions (OR=8. 12; 95% CI 1. 17-56. 41; p=0. 03; I^2=88%; p=0. 0002; including singletons and twins). Excluding one study that reported data only for twins, the pooled estimate OR for VP remained high (Events IVF/ICSI: 8/1997; Spontaneous: 13/82884; OR=18. 95; 95% CI 6. 61-54. 34; p<0. 00001; I^2=29%; p=0. 24). The pooled estimate OR for VCI was also significantly increased in the IVF/ICSI group as compared to spontaneous conceptions (Events IVF/ICSI: 675/16541; Spontaneous: 9740/709725; OR=2. 66; 95% CI 1. 91-3. 70; p<0. 00001; I^2=84%; p<0. 00001; including singletons and twins). Sub-analysis for VCI in singletons presented a significant difference between IVF/ICSI and naturally conceived pregnancies (Events IVF/ICSI: 520/13055; Spontaneous: 9569/635872; OR 2. 56; 95% CI 1. 71– 3. 84; I^2=84%; p<0. 00001; including only singletons).

Conclusion

Pregnancies obtained by IVF/ICSI methods present an increased risk of VP and VCI, as compared to spontaneous conceptions. Routine screening for VCI and VP in this high-risk group is likely to have a significant impact on prenatal management and postnatal outcome of affected pregnancies.