

Assisted reproductive technology and risk of adverse obstetric outcomes in dichorionic twin pregnancies: a systematic review and meta-analysis

Q4 Jiabi B. Qin, M.D., Ph.D.,^{a,b} Hua Wang, M.D.,^a Xiaoqi Sheng, M.D.,^c Qiong Xie, M.D.,^a and Shiyong Gao, M.D.^d

^a Division of Medical Genetics, ^c Pediatric Rehabilitation, and ^d Reproductive Center, Maternal and Child Health Hospital of Hunan province; and ^b State Key Laboratory of Medical Genetics, Central South University, Hunan, People's Republic of China

Objective: To examine whether dichorionic twin pregnancies after assisted reproductive technology (ART) were at higher risk of adverse obstetric outcomes compared with those conceived naturally.

Design: Meta-analysis.

Setting: University-affiliated teaching hospital.

Patient(s): Dichorionic twin pregnancies conceived with ART and naturally.

Intervention(s): Studies comparing obstetric outcomes in dichorionic twin pregnancies conceived by ART and naturally were identified by searching PubMed, Google Scholar, Cochrane Libraries, and Chinese databases through July 2015 with no restrictions. Either a fixed-effects or a random-effects model was used to calculate the overall combined risk estimates. Subgroup analysis was performed to explore potential heterogeneity moderators.

Main Outcome Measure(s): Maternal complications and adverse pregnancy outcomes.

Result(s): Fifteen cohort studies involving 6,420 dichorionic twins after ART and 13,650 dichorionic twins conceived naturally were included. Most of maternal complications were similar in both groups, but placenta previa (relative risk [RR] = 2.99, 95% confidence interval [CI] 1.51–5.92; $I^2 = 0$) was significantly more common in the ART group. For neonatal outcomes, the ART group experienced higher risk of preterm birth (RR = 1.13, 95% CI 1.00–1.29; $I^2 = 75\%$), very preterm birth (RR = 1.39, 95% CI 1.07–1.82; $I^2 = 71\%$), low birth weight (RR = 1.11, 95% CI 1.00–1.23; $I^2 = 61\%$), and congenital malformations (RR = 1.26, 95% CI 1.09–1.46; $I^2 = 26\%$). In addition, the ART group had a higher proportion of elective cesarean sections (RR = 1.79, 95% CI 1.49–2.16; $I^2 = 60\%$), but had a similar proportion for emergency cesarean sections. Relevant heterogeneity moderators have been identified by subgroup analysis. No evidence of publication bias was observed.

Conclusion(s): The rates of placenta previa, elective cesarean section, preterm birth, very preterm birth, low birth weight, and congenital malformations were significantly higher in dichorionic twin pregnancies after ART. (Fertil Steril® 2016; ■: ■–■. ©2016 by American Society for Reproductive Medicine.)

Key Words: In vitro fertilization, intracytoplasmic sperm injection, neonatal outcomes, obstetric outcomes, dichorionic twins

Discuss: You can discuss this article with its authors and with other ASRM members at <http://fertilityforum.com/qinj-risks-assisted-twin-pregnancies-metaanalysis/>



Use your smartphone to scan this QR code and connect to the discussion forum for this article now.*

* Download a free QR code scanner by searching for "QR scanner" in your smartphone's app store or app marketplace.

Received October 15, 2015; revised December 15, 2015; accepted December 22, 2015.

J.B.Q. has nothing to disclose. H.W. has nothing to disclose. X.S. has nothing to disclose. Q.X. has nothing to disclose. S.G. has nothing to disclose.

J.B.Q. was supported by the Project Funded by China Postdoctoral Science Foundation (2015M572248) and Hunan Provincial Science and Technology Plan Project (2015RS4055).

Reprint requests: Jiabi B. Qin, M.D., Ph.D., Division of Medical Genetics, Maternal and Child Health Hospital of Hunan province, 53 Xiangchun Road, Changsha, Hunan 410008, People's Republic of China (E-mail: qinjiabi123@hotmail.com).

Fertility and Sterility® Vol. ■, No. ■, ■ 2016 0015-0282/\$36.00

Copyright ©2016 American Society for Reproductive Medicine, Published by Elsevier Inc.

<http://dx.doi.org/10.1016/j.fertnstert.2015.12.131>

In the past 36 years, assisted reproductive technology (ART), such as IVF and/or intracytoplasmic sperm injection (ICSI), has become a widespread option for the treatment of human infertility. More than 200,000 babies are born worldwide each year by ART (1, 2), and at present, approximately 5 million babies are born as a result of all forms of conception (3). Twin pregnancies resulting from ART have increased worldwide in recent years because of increased requests for ART and the transfer of two or three embryos to achieve a higher pregnancy rate (PR) (4). This increase has occurred despite efforts aimed at limiting the incidence of multiple pregnancies after ART by using single ET (5). Pressure to achieve higher PRs with infertility treatment has resulted in an unacceptably high multiple pregnancy rate (6). The final effect is reflected by data showing that 21.8% of all deliveries after ART occur in pregnancies with more than one fetus (7).

The increased rate of twins born as a result of ART is “the most serious complication” of ART treatment (8). It is well documented that twin pregnancies (either monochorionic or dichorionic) have a poorer maternal and neonatal outcomes than singleton pregnancies (9, 10), with higher rates of perinatal morbidity and mortality (11, 12). In addition, consistent evidence from meta-analyses (13–17) has shown that singleton pregnancies after ART are at greater risk of adverse obstetric outcomes than those conceived naturally. However, data are conflicting on the outcomes of ART twin pregnancies compared with spontaneously conceived (SC) twin pregnancies. Most studies comparing ART and SC twin pregnancies reported similar perinatal outcomes (5, 18–23). Some studies (4, 11, 24–26) reported a higher risk of poor perinatal outcomes for ART twins. Even other studies (27, 28) found better perinatal outcomes after ART. Differences in the study population and management methods of twin pregnancies, and especially whether or not monochorionicity was considered as a risk factor for adverse outcomes, are the main reasons for the inconsistent findings.

It is well known that the occurrence of monochorionicity among twin pregnancies after ART is quite rare compared with SC twin pregnancies (about 2% vs. 22%, respectively), and monochorionic pregnancies have worse perinatal outcomes (21, 29, 30). Theoretically, the lower proportion of monochorionic twins in pregnancies from ART may somewhat offset the adverse effect of ART in twins. Therefore the chorionicity should be considered as an intermediate that modifies the relation between ART and adverse obstetric outcomes in twin pregnancies. Although several studies (4, 5, 11, 20, 21, 31–40) have been performed to address whether dichorionic twin pregnancies after ART have greater risk of adverse outcomes compared with those conceived naturally, their results are often inconsistent. Not long ago, we have performed a meta-analysis to compare obstetric risks of twin pregnancies from ART versus spontaneous conception (41). However, at that time, we did not take chorionicity into account when evaluating the relation between ART and poor outcomes. The present study aimed at examining whether dichorionic twin pregnancies after IVF and/or ICSI have a higher risk of

adverse obstetric outcomes compared with those conceived naturally by conducting a systematic review and meta-analysis.

MATERIALS AND METHODS

Literature Search

We performed a meta-analysis according to the MOOSE guidelines (42). The present study was approved by the Institutional Review Board of Maternal and Child Health Hospital of Hunan province. The studies that compared maternal and neonatal outcomes in dichorionic twin pregnancies conceived by ART and spontaneously were identified by searching PubMed, Google Scholar, Cochrane Libraries, China Biology Medicine disc (CBMdisc), Chinese Scientific Journals Fulltext Database (CQVIP), China National Knowledge Infrastructure (CNKI), and Wanfang Database through July 2015 with no restrictions. We used the following search terms: assisted reproductive technology/ART, assisted conception, assisted reproduction, in vitro fertilization/IVF, test tube baby, intracytoplasmic sperm injection/ICSI, artificial insemination, intrauterine insemination/IUI, cervical canal insemination, embryo transfer, frozen embryo transfer, pregnancy/birth outcome, complication, maternal/neonatal/perinatal/obstetric outcome, adverse/poor outcome, mortality/morbidity, preterm/low birth weight, congenital malformation/anomalies/birth defect, and twin. In addition we reviewed references in seminal papers, review articles, and medical textbooks. We did not search gray literatures and conference abstracts, and did not contact authors of the primary studies for additional information.

Outcome Measures

The main outcome measures for the present study were maternal complications and adverse pregnancy outcomes. The maternal complications involved were pregnancy-induced hypertension or preeclampsia, gestational diabetes mellitus, placenta previa, placental abruption, premature rupture of membranes, antepartum hemorrhage, postpartum hemorrhage, oligohydramnios, polyhydramnios, and cesarean sections. The adverse pregnancy outcomes involved were: preterm birth (PTB; defined as birth at <37 weeks of gestation); very PTB (VPTB; defined as birth at <32 weeks of gestation); low birth weight (LBW; defined as birth weight <2,500 g); very LBW (VLBW; defined as birth weight <1,500 g); small for gestational age (SGA; defined as birth weight <10%); perinatal mortality (defined as stillbirth, fetal death, or neonatal death); congenital malformations (CM; defined as abnormalities that were probably of prenatal origin, including structural, chromosomal, and genetic defects); intrauterine growth restriction (IUGR; defined as growth below the third percentile for gestational age); neonatal respiratory distress syndrome (NRDS); and admission to neonatal intensive care unit (NICU). Because variations in the definition of outcome measures exist across countries and cultures, it is extremely difficult to define uniform standards. The early literatures did not always define

Download English Version:

<https://daneshyari.com/en/article/6178454>

Download Persian Version:

<https://daneshyari.com/article/6178454>

[Daneshyari.com](https://daneshyari.com)