# Perinatal outcome of twin pregnancies after early transvaginal multifetal pregnancy reduction

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**Objective:** To compare the pregnancy outcomes of twin pregnancies following early transvaginal multifetal pregnancy reduction (MPR) with nonreduced twin gestations.
**Design:** Prospective cohort study.
**Setting:** Two tertiary medical centers.
**Patient(s):** A cohort of 77 multiple pregnancies after reduction to twins and 78 dichorionic-diamniotic nonreduced twins.
**Intervention(s):** Early fetal reduction.
**Main Outcome Measure(s):** Pregnancy outcome.
**Result(s):** Triplet pregnancies reduced to twins (n = 55) and nonreduced twin pregnancies (n = 78) had comparable outcomes. The rates of preterm delivery ≤32 weeks (1.9% vs. 1.4%) and ≤34 weeks of gestation (15.1% vs. 19.2%) were similar among both groups. There was no difference in the mean gestational age (36.54 vs. 36.35 weeks) or mean birth weight (2,365 vs. 2,365 g) between the two groups. Similarly, there was no significant difference in the incidence of gestational diabetes (15.1% vs. 14.1%) and intrauterine growth retardation (IUGR; 1.9% vs. 9%) between the two groups. The incidence of gestational hypertension was higher in the study group (24.5% vs. 9%), but it was not associated with an increased risk for prematurity or IUGR.
**Conclusion:** The perinatal outcome of twin pregnancies after early transvaginal fetal reduction from triplets seems to be comparable to the outcome of nonreduced twin pregnancies. (Fertil Steril® 2014;101:1344–8. ©2014 by American Society for Reproductive Medicine.)
**Key Words:** MPR, transvaginal fetal reduction

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The incidence of multifetal pregnancies has increased dramatically over the past three decades, mainly due to the widespread use of ovulation induction agents and assisted reproduction techniques. This trend has been of great concern owing to the adverse perinatal outcomes associated with these pregnancies (1, 2). Many studies have demonstrated that multifetal pregnancy reduction (MPR) of triplets and quadruplets to twins results in improved pregnancy outcome compared with triplet and quadruplet gestations managed expectantly, including increased perinatal survival and decreased incidence of preterm birth (2, 3).

Several methods of MPR have been reported. Currently, transabdominal intrathoracic injection of potassium chloride at 11–14 weeks is more widely used. Another evolving technique is transvaginal fetal aspiration performed at 6–8 weeks of gestation.

Early transvaginal embryo aspiration is a simple and relatively safe method for MPR. The overall pregnancy loss rate associated with early embryo aspiration is comparable to procedures performed later at gestation (4–6).

To date, only a few studies have focused on the early and late complications of MPR performed at 6–8 weeks of gestation.

The aim of this study was to compare the pregnancy outcomes including fetal loss rate, the incidence of preterm labor hypertensive diseases of pregnancy, and intrauterine growth

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retardation (IUGR) between twins after early transvaginal MPR (weeks 6–8) and nonreduced dichorionic twins. Our hypothesis was that pregnancy outcomes after early multifetal reduction are similar to the outcomes of nonreduced twins.

## MATERIALS AND METHODS

The study was approved by the local Institutional Review Board. This is a prospective cohort study performed in two tertiary medical centers: Chaim Sheba Medical Center and Assuta Medical Center. The study group included a cohort of 77 twin pregnancies after early MPR. We prospectively enrolled all women who underwent early first trimester transvaginal reduction between 6 and 8 weeks of gestation from triplets and higher order gestations to twins between January 2005 and December 2011. All patients underwent counseling regarding the risks and benefits of undergoing multifetal reduction, and most were advised to reduce the number of embryos to two, depending on previous obstetric history, religious beliefs, and patient preference. Twenty-one patients who underwent reduction to one embryo were excluded from the study. All the reductions were performed by two highly skilled physicians.

The procedure was performed with the patient in the lithotomy position, with an empty bladder, and with same equipment that was used for transvaginal ultrasound–guided oocyte recovery. Under general anaesthesia using propofol 1% (Fresenius), the vagina was cleaned with povidone iodine. The embryos were then visualized using either a 7.5-MHz transvaginal ultrasound transducer (Philips Ultrasound Machine, Hd9) or a 5-MHz transvaginal ultrasound transducer (General Electric, Logic 200 Alpha Ultrasound Machine) to verify their number, position, size, and heart activity. The smallest embryo and/or the embryo that was located in a position with the easiest access route was selected for embryo reduction. The entire procedure was done using an echo tipped needle (18 gauge) with a matching stylet (the embryo transfer set was the Towako Transmyometrial set from Cook Medical). For an anteverted uterus, the needle was inserted through the anterior fornix and the anterior uterine wall to the intended gestational sac. For a retroverted uterus, the needle was inserted through the posterior fornix and, respectively, the posterior uterine wall. The stylet was removed only when the tip of the needle was adjacent to the embryo. While withdrawing the stylet, we paid special attention to the fetal position; we completely removed the stylet only if the fetus was attached to the tip of the needle. If the fetus did not attach sufficiently, we repositioned the needle. Once the stylet was entirely removed, we completed the procedure using a 10-/20-mL syringe until complete fetal aspiration was observed. The use of a KCl and/or NaCl solution, or injection into the sac of other chemical substances, was avoided. Women were discharged from the clinic after bed rest and an average observation period of 120 minutes. Patients who were at a high risk for infection received 875 mg of Augmentin (amoxicillin clavulanate) every 12 hours for 3 days. No analgesics were prescribed. A follow-up ultrasound was carried out within 1 week. All patients underwent subsequent prenatal routine follow-up.

The control group included 78 women with dichorionic diamniotic twins who conceived via IVF treatments at our department during the same time period without undergoing fetal reduction. Data on all the patients were collected from the obstetrical and neonatal computerized medical charts.

The rates of early miscarriage, pregnancy loss before 24 weeks, preterm delivery $\leq$32 weeks and 34 weeks of gestation as well as pregnancy complications such as gestational diabetes, gestational hypertension, and IUGR were compared between the two groups. Comparison of continuous variables between the two groups was conducted using Mann-Whitney *U*-test or Student's *t*-test as appropriate. The $\chi^2$ or Fisher's exact test were used for comparison of categorical variables.

$P<.05$ was considered statistically significant. Statistical analyses were conducted using the IBM Statistical Package for the Social Sciences (IBM SPSS v.19; IBM Corporation Inc.).

## RESULTS

During the study period, 77 patients with multiple pregnancies underwent early reduction to dichorionic diamniotic twins at 7–8 weeks of gestation and were included in the study. Out of the 77 patients, 49 conceived after IVF treatments, 20 after ovulation induction with gonadotropins, and eight after egg donation. The control group included 78 women with dichorionic diamniotic twin pregnancies who conceived via IVF treatments. The mean gravidity (2.04 vs. 2.42; *P*=NS) and mean parity (0.49 vs. 0.52; *P*=NS) were similar between the two groups.

Table 1 presents the demographic and perinatal outcome of triplet pregnancies reduced to twins (n = 55) compared with nonreduced twin pregnancies (n = 78).

**TABLE 1**

**Perinatal outcome comparing triplet reduced to twin pregnancies with nonreduced twin pregnancies.**

| | Triplets reduced to twins (n = 55) | Nonreduced twins (n = 78) | *P* value |
|---|---|---|---|
| Maternal age (y), mean ± SD | 35.12 ± 6.11 | 31.7 ± 4.15 | <.01 |
| Gestational age at delivery (wk), mean ± SD | 36.54 ± 1.73 | 36.35 ± 2.02 | NS |
| Birth weight (g), mean ± SD | 2,365 ± 423.95 | 2,365 ± 435 | NS |
| Early pregnancy loss <24 wk (%) | 2 (3.6) | 0 (0) | NS |
| Preterm delivery ≤32 wk (%) | 1 (1.9) | 5 (6.4) | NS |
| Preterm delivery ≤34 wk (%) | 8 (15.1) | 15 (19.2) | NS |
| Gestational diabetes (%) | 8 (15.1) | 11 (14.1) | NS |
| Gestational hypertension (%) HTN | 13 (24.5) | 7 (9) | 0.02 |
| IUGR | 1 (1.9) | 7 (9) | NS |
| Missed abortion of one fetus | 4 (7.5) | 4 (5.1) | NS |

*Note:* Gestational hypertension includes pregnancy-induced hypertension and preeclampsia. IUGR = under 10th percentiles.

*Haas. Early fetal reduction pregnancy outcome. Fertil Steril 2014.*