Reproductive BioMedicine Online (2016) ■■, ■■–■■

www.sciencedirect.com
www.rbmonline.com

ARTICLE

Outcome of early versus late multifetal pregnancy reduction

Jigal Haas [a,*,†], Eran Barzilay [a,†], Ariel Hourvitz [a], Jehoshua Dor [a], Shlomo Lipitz [a], Yoav Yinon [a], Mor Shlomi [a], Adrian Shulman [b,c]

[a] *Department of Obstetrics and Gynecology, Chaim Sheba Medical Center, Tel-Hashomer, Ramat Gan, Sackler School of Medicine, Tel-Aviv University, Israel;* [b] *Department of Obstetrics and Gynecology, Meir Medical Center, Kfar Saba, Israel;* [c] *Department of Obstetrics and Gynecology, Assuta Medical Center, Tel Aviv, Israel*

* Corresponding author. *E-mail address:* jigalh@hotmail.com (J. Haas). † The first two authors contributed equally to this paper.

Jigal Haas obtained his MD degree in 2006 as a graduate of the Sackler Faculty of Medicine in Tel-Aviv. He is currently working at the IVF unit, Department of Obstetrics and Gynaecology at the Sheba Medical Center, Tel-Hashomer, Israel.

Abstract Multifetal pregnancy reduction (MPR) is an accepted method of reducing complications of triplet pregnancies and higher-order multifetal pregnancies. Eighty-three pregnancies that underwent early (68 weeks) transvaginal MPR were compared with 125 pregnancies that underwent late (11–14 weeks) transabdominal MPR. Rates of pregnancy loss, preterm delivery, gestational diabetes and hypertensive disorders were similar among both groups. Early MPR was associated with a lower risk for small for gestational age newborns (6.5% versus 19.2%; $P = 0.034$; OR 0.32; 95% CI 0.11 to 0.92) and a higher risk for single-fetus loss (6% versus 0.8%; $P = 0.041$; OR 10.58; 95% CI 1.1 to 101.94). Preterm delivery rates seemed to be similar between the two groups. In MPR from triplets, an apparent benefit was observed for early MPR in preterm deliveries before 37 weeks, whereas, in MPR from high-order pregnancies, a benefit was observed for late MPR in deliveries before 32 weeks. Perinatal outcomes of twin pregnancies after early and late MPR seem to be grossly similar. Optimal timing for multifetal reduction depends on other factors, namely, the selectivity of the procedure and patient's preference.

KEYWORDS: multifetal pregnancy reduction, transvaginal fetal reduction, abdominal fetal reduction, perinatal outcome

http://dx.doi.org/10.1016/j.rbmo.2016.08.015
1472-6483/

Introduction

The incidence of multifetal pregnancies has increased dramatically over the past 3 decades, mainly because of 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 (Elster, 2000; ESHRE, 2000).

High-order multifetal pregnancy has been previously shown to increase perinatal morbidity and mortality, mainly resulting from preterm deliveries, as the rate of preterm delivery before 32 weeks has been reported to increase from 1.6% in singleton pregnancies to 11.9% in twins and to 36.1% in triplets (Martin et al., 2003; Sunderam et al., 2015). Since the introduction of multifetal pregnancy reduction (MPR), it has become an important tool in controlling the rate of multiple pregnancies (Evans et al., 2014). Many studies have shown that MPR of triplets and quadruplets to twins has improved obstetric outcomes compared with triplets and quadruplets gestations managed expectantly, including increased perinatal survival and decreased rates of preterm birth (Antsaklis and Anastasakis, 2011; Drugan et al., 2013; Elster, 2000).

Several methods of MPR have been reported. Currently, transabdominal intrathoracic injection of potassium chloride at 11–14 weeks is the method more widely used and is considered to be safe.

Another evolving technique is transvaginal fetal aspiration carried out at 6–8 weeks of gestation. Previous studies have found that the overall pregnancy loss rate associated with early embryo aspiration is comparable to procedures carried out between 11 and 14 weeks of gestation (Coffler et al., 1999; Dechaud et al., 1998; Itskovitz-Eldor et al., 1992). Insufficient data, however, are available on the obstetric outcome of early transvaginal MPR compared with transabdominal MPR.

The aim of this study was to compare obstetrical outcomes between twins after early transvaginal MPR (6–8 weeks) and twins after late MPR (11–14 weeks).

Materials and methods

This retrospective cohort study was conducted between 2005 and 2012. It included pregnant women who underwent MPR in Chaim Sheba Medical Center or Assuta Medical Center, and continued follow-up in Chaim Sheba Medical Center. The study groups included 83 twin pregnancies that underwent early MPR carried out at 6–8 weeks and 125 twin pregnancies that underwent late MPR carried out at 11–14 weeks of gestation. In both groups, reductions were carried out from triplets and higher-order gestations. Exclusion criteria included reductions to monochorionic twins and reductions to one embryo. All the patients were counselled about the risks and benefits of undergoing multifetal reduction, and were advised to reduce the number of embryos to one or two, depending on previous obstetric history, religious beliefs and patient's preference. All the reductions were carried out by highly skilled physicians with at least 5 years' experience in multifetal reduction. The early and late MPR procedures were carried out as previously described (Haas et al., 2014; Hershko-Klement et al., 2013). Obstetric outcomes assessed in this study included fetal loss, preterm delivery, hypertensive diseases of pregnancy and intrauterine growth restriction.

Early reduction

Early MPR was carried out between 6 completed weeks and 7 + 6/7 weeks of gestation. The patient was placed in a lithotomy position, with an empty bladder, using the same equipment used for transvaginal ultrasound guided oocyte recovery. Under general anaesthesia using propofol 1% (Fresenius, Graz, Austria), the smallest embryo, located in a position with easiest access route, or both, was selected for embryo reduction. An echo tipped needle (18 gauge) with a matching stylet was used. 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 the posterior uterine wall. The stylet was removed only when the tip of the needle was adjacent to the embryo. While withdrawing the stylet special attention was paid to the fetal position; the stylet was completely removed only if the fetus was attached to the tip of the needle. If the fetus was not sufficiently attached, the needle was repositioned. Once the stylet was removed, the procedure was completed using a 10 or 20 ml syringe until complete fetal aspiration was observed. The use of a KCl 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 observation period of 120 min.

Late reduction

Late MPR was carried out between 11 and 14 weeks of gestation, after establishing nuchal translucency. Fetuses with an abnormal nuchal translucency were selected for reduction. If all fetuses were found to have a normal nuchal translucency, the fetuses located in a position with the easiest access route were selected for embryo reduction. About 5–7 ml potassium chloride (2 mEq/ml) was injected into the fetal thorax using a 21-gauge spinal needle. In all cases, transabdominal ultrasound guidance was used until asystole was observed.

Data collection and analysis

Data on all the patients were collected from the obstetrical and neonatal computerized medical charts. The rates of early spontaneous abortion, pregnancy loss before 24 weeks, preterm delivery 32 weeks or earlier and 34 weeks of gestation as well as pregnancy complications such as gestational diabetes, gestational hypertension and intrauterine growth restriction (birthweight below the 10th percentile for gestational age) were compared between the two groups. The study was approved by the local Institutional Review Board committee on 6 December 2015 (reference number 1746-14-SMC).

Comparison of continuous variables was conducted using student t-test or Mann–Whitney U test, as appropriate. Chi-squared or Fisher exact test were used for comparison of categorical variables. Logistic regression was used for multivariate analysis. Significance was accepted at $P < 0.05$. Statistical analyses were conducted using the IBM Statistical Package for the Social Sciences (IBM SPSS v.20; IBM Corporation Inc, Armonk, NY, USA).

Please cite this article in press as: Jigal Haas, et al., Outcome of early versus late multifetal pregnancy reduction, Reproductive BioMedicine Online (2016), doi: 10.1016/j.rbmo.2016.08.015