Reduction of multifetal pregnancies to twins does not increase obstetric or perinatal risks

A.J.Antsaklis¹, P.Drakakis, G.P.Vlazakis and S.Michalas

1st Department of Obstetrics and Gynaecology, Department of Fetal Maternal Medicine, University of Athens Medical School, ‘Alexandra’ Maternity Hospital, Athens 115 28, Greece

¹To whom correspondence should be addressed

Selective reduction in cases of multiple fetuses is used more often nowadays due to the increased number of multiple pregnancies resulting from assisted reproduction. In this retrospective study, we investigated whether twin pregnancies derived from fetal reduction carry a higher obstetric and perinatal risk compared to standard twin pregnancies. We found that the rate of miscarriage was 10.6% in the reduction group (n = 158) compared to 9.5% in the controls (n = 135). Mean gestational age at delivery was 35.7 weeks in the reduction group versus 35.1 weeks in the control group. Mean neonatal weight at birth was 2.260 g (800–3.750 g) in the reduction group compared to 2.240 g (540–3.360 g) in controls. Perinatal mortality rate was 49.3‰ after reduction and 42.0‰ in the control group. There was no statistically significant difference in any of the above parameters. Therefore, multifetal pregnancy reduction to twins does not appear to increase obstetric or perinatal risks.

Key words: multifetal reduction/multiple pregnancies/obstetric outcome/perinatal outcome

Introduction

Most multifetal pregnancies are problematic gestations either because of the high number of fetuses or because of the presence of genetic disease in one fetus. Multiple gestations have become more commonplace, reflecting the increasing usage of assisted reproductive technologies.

Despite the use over quite a long period of prenatal diagnosis, many associated medical, ethical and legal questions are still unresolved (Antsaklis et al., 1984). The selective reduction of multiple fetuses is routinely performed in Prenatal Medicine Centers, but its effects on the evolution of pregnancy are still unresolved (Hartoov et al., 1998). The method used was transabdominal intracardiac injection of 1–3 ml of potassium chloride. One week after reduction an ultrasound was performed. Blood coagulation tests were not performed routinely.

The control group consisted of 135 twin pregnancies conceived either naturally or after assisted reproduction which were followed up in our Clinic for various reasons without being a selective group. The vast majority of patients in both groups were primiparous.

Statistics

Data were compared with the χ²-test or z-test for proportions where appropriate.

Results

In our study we assessed miscarriage rate, gestational age at birth, mean neonatal weight, perinatal mortality rate and proportion of Caesarean sections, both in the study group and in the control group (Table I).

When we compared patients who had reductions of triplets and quadruplets (n = 146) in the 10th week of gestation with those in the 11th, no significant difference was observed in miscarriage rate, mean gestational age at delivery, mean neonatal weight at birth or perinatal mortality rate. Therefore, all the patients were considered as one group, as was the case with other studies (Groutz et al., 1996).

The miscarriage rate (earlier than week 26 of gestation) for both fetuses was 10.6% in the reduction group, and occurred at a mean gestation week of 21.3 weeks, i.e. >10 weeks after...
Table I. Outcome of twins obtained by selective reduction of higher order pregnancies compared with control twin pregnancies

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Selective reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no. of patients</td>
<td>135</td>
<td>158</td>
</tr>
<tr>
<td>Miscarriage rate (%)</td>
<td>9.5</td>
<td>10.6</td>
</tr>
<tr>
<td>Mean gestational age at delivery (w)</td>
<td>35.1 ± 0.75 w</td>
<td>35.7 ± 0.85 w</td>
</tr>
<tr>
<td>Deliveries beyond 37th week (%)</td>
<td>45.9</td>
<td>43.0</td>
</tr>
<tr>
<td>Mean (range) neonatal weight at birth (g)</td>
<td>2240 (540–3360)</td>
<td>2260 (800–3750)</td>
</tr>
<tr>
<td>Perinatal mortality rate (%)</td>
<td>42.0</td>
<td>49.3</td>
</tr>
<tr>
<td>Caesarean section rate (%)</td>
<td>83.7</td>
<td>82.9</td>
</tr>
</tbody>
</table>

*Mean ± SEM.*

There were no significant differences between any paired values in the table; t-test for proportions for percentages, χ²-test for the rest.

In the control group, the miscarriage rate was 9.5% (P > 0.05).

In the reduction group delivery occurred at a mean gestational age of 35.7 weeks, compared with 35.1 weeks for the control group (P > 0.05). In the reduction group 43% of patients delivered at 37 weeks or beyond, 69% of the deliveries were beyond 34 weeks, 26% were between 28 weeks and 34 weeks and only 4.5% were before 28 weeks. In the control group, 46% delivered beyond 37 weeks (P > 0.05), with 62% of the deliveries beyond 34 weeks, 35% between 28 weeks and 34 weeks and 3% before 28 weeks.

In the reduction group the mean neonatal weight at birth was 2.260 g (ranging from 800 to 3,750 g), while in the non-reduction group, twins had a mean weight of 2.240 g (ranging from 540 to 3,360 g) (P > 0.05).

The perinatal mortality rate was 49.3% in the reduction group, that is 14 neonates out of 284 that were born died in the early neonatal period because of prematurity. The overall perinatal mortality rate was 42.0% (P > 0.05).

A total of 83% of patients in the reduction group and 84% in the non-reduction group underwent Caesarean section. No patients in the reduction group had any evidence of consumptive coagulopathy during follow-up.

**Discussion**

An increased number of multifetal pregnancies is an inevitable consequence of ovarian stimulation regimens (Loutradis and Drakakis, 1995). There is a tendency, nowadays, to transfer a smaller number of embryos (a maximum of three) in order to reduce the incidence of unwanted multifetal pregnancies.

Reduction procedures in multifetal gestations are inevitable since it has been established that the obstetric outcome for triplets or a higher number of fetuses is significantly worse than that for singleton or twin gestations (Newman et al., 1989; Petrokovsky et al., 1989; Collins and Bleyl, 1990; Lipitz et al., 1994; Manzur et al., 1995). The exact number of fetuses that should be left in the uterus is uncertain. Although singletons have longer gestations and lower morbidity compared to twin gestations, the latter are more feasible for the vast majority of multifetal pregnancy reductions since the number of fetuses left should be greater than the final number desired (Dommergues et al., 1991; Evans et al., 1992).

At the start of this study, one question was whether premature delivery was related to the initial number of embryos implanted or the final number of fetuses growing in the uterus. Our study suggests that, since there was no statistically significant difference in gestational age at delivery between control twins and twins obtained by reduction, prematurity is a consequence of the number of fetuses in the uterus and is not related to the amount of placental tissue left after the reduction.

Both groups of patients had the same obstetric outcome according to perinatal mortality, gestational week at delivery, weight of neonates at birth and miscarriage rate. Many years of practice has made the technique of multifetal pregnancy reduction a very safe procedure.

Some studies have shown a constant decreased weight at birth in the reduction group (Alexander et al., 1995). Other studies found a difference in the mean gestational age at birth (Meglar et al., 1991) and some studies found both (Groutz et al., 1996; Sebire et al., 1997). None of these results were observed in our study. Similarly, the rate of miscarriage (10.6%) was in the lower regions of the range reported in the literature (4–33%) (Berkowitz et al., 1988). It must be noted that early abortions, premature births and fetal growth retardation are not prevented by fetal reduction (Boulot et al., 1990).

The number of Caesarean section in both groups was rather high and in the majority of cases it was due to the patient’s decision. This was influenced by the amount of effort required to achieve a pregnancy by assisted reproduction.

In a reduction procedure, both the medical aspect and the psychological cost must be considered. Sadness and guilt may persist for a long time in some patients, although the majority tolerates the procedure well. The vast majority of patients seems to reconcile the concept that the termination of one or more fetuses preserves the lives of those remaining (Kanhai et al., 1994; Garel et al., 1995, 1997; Schreiner-Engel et al., 1995). The religious faith of the parents may lead to a denial of reduction (Lipitz et al., 1994). Although selective reduction has enabled many patients to continue successfully an otherwise high risk pregnancy, the legal issue and ethical aspects are unresolved (Check et al., 1993; Evans et al., 1996). Ethical consideration must be remembered in order to prevent abuse of this procedure.

**References**


A.J. Antsaklis et al.


Received on March 18, 1998; accepted on January 27, 1999