

# Psychological reactions after multifetal pregnancy reduction: a 2-year follow-up study

M.Garel<sup>1,4</sup>, C.Stark<sup>1</sup>, B.Blondel<sup>1</sup>, G.Lefebvre<sup>2</sup>,  
D.Vauthier-Brouzes<sup>2</sup> and J.R.Zorn<sup>3</sup>

<sup>1</sup>Epidemiology Research Unit on Women's and Children's Health, INSERM U 149, 16, Av. Paul Vaillant-Couturier, 94807 Villejuif Cedex, <sup>2</sup>Service de Chirurgie Gynécologique et Obstétrique, Groupe Hospitalier La Pitié-Salpêtrière and <sup>3</sup>Clinique Universitaire Baudelocque, Groupe Hospitalier Cochin, Paris, France

<sup>4</sup>To whom correspondence should be addressed

**This study had two objectives. Firstly we assessed the effects of multifetal pregnancy reduction on the mothers' emotional well-being and the relationship with the children during the 2 years following intervention. Secondly at 2 years we compared mothers who had a reduction with mothers who had not and had delivered triplets. The comparisons focused on the mothers' health and their relationship with the children. Women having had a reduction in two hospitals in Paris, between May 1992 and June 1993, were contacted just after intervention for a prospective study. In all, 18 women were included. At 1 and 2 years, 10 women participated. At 2 years, 10 additional women were included. The answers of these 20 mothers were compared to those of 11 consecutive mothers of 2 year old triplets, assessed by the same psychologist in a previous prospective study. Semi-structured interviews were conducted at home. The mothers' social characteristics, their parity, the children's condition at birth and 4 months were very similar between the reduction and triplet groups. One year after birth one-third of the women in the reduction group reported persistent depressive symptoms related to the reduction, mainly sadness and guilt. The others made medical and rational comments expressing no emotion. At 2 years all but two women seemed to have overcome the emotional pain associated with the reduction. The comparison with mothers of triplets indicated that the mothers' anxiety and depression, and difficult relationship with the children were less acute in the reduction group. These results presented some limitations, since a high number of women who miscarried or refused to participate in the follow-up were not assessed at 1 and 2 years. However, a majority of women who participated in the study 2 years after intervention seemed able to accept a multifetal pregnancy reduction to achieve parental goals.**  
*Key words:* multifetal pregnancy reduction/psychological consequences

in France. Because of health and social problems associated with multiple gestations of three or more fetuses, multifetal pregnancy reduction has developed. Although much is known about medical aspects of the intervention, the psychological responses of women, their subsequent bonding behaviour and the children's development have rarely been explored. It might be expected, however, that women undergoing multifetal pregnancy reduction are at risk for emotional problems. Most of them have a long history of infertility and having to terminate intensely desired fetuses might be experienced as very painful emotionally and provoke acute grief reactions. Moreover, since many studies have shown that grieving during pregnancy might compromise the bonding process, the relationship with the surviving children and their development might also be jeopardized.

The studies which have explored the psychological reactions of women after a multifetal pregnancy reduction have shown that the intervention was an emotionally trying process but that there were no long-term adverse effects on women's mental health (Nantermoz *et al.*, 1991; Vauthier-Brouzes and Lefebvre, 1992; Kanhai *et al.*, 1994; McKinney *et al.*, 1995; Shreiner-Engel *et al.*, 1995). When the pregnancy outcome had been successful, it seemed that the mother-child relationship was not hindered (Kanhai *et al.*, 1994; Shreiner-Engel *et al.*, 1995). The development of children born after a multifetal pregnancy reduction also appeared to be satisfactory (Brandes *et al.*, 1990; Kanhai *et al.*, 1994).

These studies, however, had some limitations. Most of them were retrospective. Patients were included at different moments varying from a few months to 6 years after the intervention. Moreover, patients after a multifetal pregnancy reduction were not compared to patients who did not undergo a reduction and carried a high order multiple pregnancy.

We set up a prospective qualitative study in order to assess the emotional state of women during the 2 years following a multifetal pregnancy reduction. Our first objective was to appreciate the different stages and evolution of their psychological reactions. A second objective was to compare, 2 years after delivery, the emotional well-being and the relationship with the children of women who underwent a reduction with those of women who did not and had delivered triplets. For this part of the study we used the data obtained in a previous prospective survey on the psychosocial consequences of a triplet birth, whose design had been very similar to the present survey (Garel and Blondel, 1992).

## Introduction

As a result of the increasing use of infertility treatments, the incidence of high order multiple pregnancies has risen sharply

## Materials and methods

All women who had a multifetal pregnancy reduction in the Clinique Baudelocque and La Pitié Maternity Hospital in Paris between May

1992 and June 1993 were contacted for a prospective study. If they agreed to participate a semi-structured interview was conducted just after intervention. There was no refusal and 18 women were included in the study. Interviews were conducted at home by the same psychologist (M.G.) at each trimester of pregnancy and 4 months, 1 year and 2 years after delivery. The interviews included questions about the woman's emotional state, her attitudes about the reduction and the relationship with the children. In order to control for subjective factors during the content analysis, each interview was analysed by two psychologists (M.G. and C.S.) who compared and discussed their findings. The detailed protocol of the study and the results of the assessments made after the intervention, during pregnancy and 4 months after delivery have been published previously (Garel *et al.*, 1995). For different reasons eight women were lost to follow-up. Three women had been excluded during pregnancy: two had miscarried and one had moved abroad. At 4 months, three women refused to continue to participate because they felt too upset to talk about what they remembered as a very distressing experience and one had moved. At 1 year, one woman, who had previously shown acute emotional pain, did not answer the letters asking for an interview. Thus at 1 year, the sample consisted of 10 women. All of them agreed to participate at 2 years and were interviewed at home, except one woman who was living overseas and was interviewed by telephone.

In order to increase the number of patients assessed 2 years after delivery, additional women were included. All consecutive women having had a multifetal pregnancy reduction in the same hospitals and whose children should have had their second birthday between May 1992 and June 1993 were contacted by letter and asked to participate. In all, 21 women were eligible. Of these, two women had miscarried and refused to participate, five women could not participate because they were living too far away and two women did not answer. Two women explicitly refused, one because she did not want to talk about what she recalled as a very distressing experience, the other because she 'could not cope with her twins' and was not available for an interview. Finally, 10 women participated and had an interview at home, at 2 years, with the same psychologist (M.G.).

The answers of mothers included in the follow-up and those of mothers having had only one assessment 2 years after birth were very similar; thus at the last stage of the analysis, information from the two subsamples was pooled (20 women). Their answers have been compared to those made by 11 mothers of triplets, assessed in a previous prospective study about psychosocial consequences of a triplet birth (Garel *et al.*, 1994a,b). Eleven consecutive mothers having delivered triplets between 1988 and 1990 in the clinique Baudelocque in Paris had been followed from birth to 2 years after birth. One family did not participate because one triplet had died from a severe malformation shortly after birth. The study design included interviews at home conducted by the same psychologist (M.G.), using semi-structured interviews very similar to those used for women having had a reduction. No refusal and no patient lost to follow-up had been recorded.

### Population

The medical and demographic characteristics of the 18 women included in the prospective study have been described in a previous publication (Garel *et al.*, 1995). The majority of the 10 women still included in the study at 1 and 2 years had a high or intermediate socio-economic status, according to their husbands' occupational activity (8/10). They were between 28 and 39 years old (mean = 33). The majority were primiparas (8/10). The mean duration of infertility period before this pregnancy was 5 years (minimum 2, maximum 12). All pregnancies had been initiated after in-vitro fertilization (IVF). Before intervention, eight women were carrying

triplets and two women were carrying quadruplets. In all cases, the intervention aimed at reducing to a twin pregnancy but three women lost one embryo after intervention and had a single pregnancy. At the end of pregnancy, seven women delivered twins and three women delivered a singleton. The gestational age of the twins was between 31 and 39 weeks (mean value = 36), while the singletons were full-term. Four months after delivery, in the mothers' opinions, all the children's current health was good.

The 10 additional women included in the 2 year assessment did not differ from those of the prospective study with regard to their age, their socio-economic status, their parity and gestational age at birth. Seven women delivered twins and three had singletons. The main difference between the two samples concerned the number of embryos before intervention: in the sample assessed only at 2 years, seven women out of 10 were carrying quadruplets before intervention, whereas the three others carried triplets.

The mothers' socio-economic status, their parity, duration of infertility, the children's condition at birth and at 4 months were very similar between the reduction and triplet groups. None of the triplets presented either health problems or psycho-motor delay at 2 years. The type of infertility treatment used to achieve the pregnancy differed slightly, since two women in the triplet group had received ovarian stimulation and one pregnancy had been spontaneous. Three women carrying triplets had considered a multifetal pregnancy reduction but at that time the intervention was not performed in cases of triplet pregnancy.

### Results

#### *Consequences of multifetal pregnancy reduction from the decision to 4 months after birth*

For all women the decision to reduce the number of embryos had been a very stressful, emotionally painful and frightening experience (Garel *et al.*, 1995). A majority of women (12/18) reported feelings of guilt and the impression of facing a complex, paradoxical situation. Six mothers out of 18 expressed no emotions, using a neutral, technical language, in favour of the reduction. In their answers they mentioned the medical reasons they had received from the physicians.

The decision seemed to have been easier when the women had received full information and comprehensive support from their doctor and had the conviction that they must follow his/her advice.

After intervention nearly half the mothers had experienced acute psychological distress, mainly sadness, feelings of guilt and fright about the risk of losing the remaining embryos. The others felt relieved about having finished with the intervention, using medical justifications.

During pregnancy, except for two women who miscarried and were excluded from follow-up, only three women continued to report anxiety and guilt related to the reduction. A majority of women made no negative comments about the intervention. Their main preoccupation was to ensure the optimal development of the much-wanted pregnancy. Because of the heaviness of a twin pregnancy, they expressed feelings of relief about their decision.

Four months after birth, one mother out of two expressed guilty feelings and grief about the missing children, imagining their looks and gender. They said that the living children (or child) were reminders of the loss of the others. The other

women expressed no emotions using medical and rational explanations.

#### *Consequences of the reduction 1 year after birth*

Ten mothers were still included in the study. Among them, seven mothers made neutral and rational comments about the reduction. This attitude had always been observed for four of them: from the beginning of the study they had used a technical, rational language, expressing no emotion. For them, the reduction was part of the whole process of assisted reproductive techniques. One woman said: 'We had to make this choice. We have these two, they are alive and in good health. We had to take the decision in order to have them live'. The other three women had formerly expressed emotional distress, but, at 1 year, the intensity of their negative reactions had diminished considerably. These three women already had a child and they said that the reduction procedure allowed their goals for a completed family. They pointed out the healthy outcome of the children and also reported relief as they explained how difficult it was to parent simultaneously a first child plus twin infants.

At 1 year, three women explicitly reported persistent depressive symptoms related to the reduction. From the start of the study, they had reported acute psychological distress, mainly a severe level of sadness and guilt. One of them, for instance, mentioned her fear of punishment and the possibility of the terminated embryos removing her living child: 'When A. is sick I am terrified. I fear that 'they' might call him back, that he goes away with them. I did something very bad, you know, I killed them... I did something very bad'.

#### *Consequences of the reduction 2 years after birth*

Nine women out of 10 seemed to have overcome the emotional pain associated with the reduction. They considered the intervention as a 'sad' event which they would rather have avoided but the parenting of the children and their normal development were at the centre of interviews. Mothers said that the achievement of parental goals facilitated grief resolution: 'We had good reasons to take this decision. It was the only way to have our children'. Time has passed: 'The reduction belongs to the past, I rarely think about it'. For one woman, however, the reduction was still associated with dysphoric feelings. For her, not only the procedure but the whole process of IVF had been a very painful experience. She reported a strong disagreement with her husband, who she felt had pressurized her to use assisted reproduction techniques.

The answers provided by the 10 additional women, who had only one interview 2 years after birth, were very similar to those of the women who had participated in the follow-up. A large majority (nine women) mentioned that the intervention had been a very distressing experience. At 2 years, they expressed some feelings of sadness and guilt but without emotional pain. For them, the reduction was a necessity: 'I had no choice, I am too tiny. I would have lost all of them, or I would have died... maybe?'. They also recalled the medical reasons given by the doctors to justify the need for intervention. At the time of interview, they said that they rarely thought about the intervention spontaneously. They felt that

the parenting of twins was difficult enough and having triplets or quadruplets seemed an impossible task. Their living children 'have helped to push away thoughts about the dead embryos'. One woman expressed emotional distress in relation to the reduction 2 years after birth. She mentioned persistent dysphoric feelings and guilt about the 'killing' of the embryos. She vividly described her deep disturbance about the coexistence of live and dead bodies during her pregnancy. Although she wished to have another child, she hesitated to recommence IVF treatment because of fear of a multiple gestation and a reduction.

#### *Comparison of mothers having had a reduction with mothers of triplets at 2 years*

At this stage of the analysis, the sample of women having had a reduction included 20 women. Their answers have been compared to those of 11 mothers of triplets.

##### *The mothers' health*

In the reduction group the mothers' health varied with the number of children born at the same time. All 14 mothers of twins said that parenting of twins was sometimes a heavy burden. Three reported physical fatigue and experienced symptoms such as asthenia, helplessness, tension and/or irritability but did not require medical treatment. Among the six mothers who had had a singleton, one had severe symptoms and took antidepressants. However, even in these difficult cases, comments about the pleasure of the presence of the children moderated their complaints. The remaining mothers estimated that they were in good health.

Eight out of the 11 mothers of triplets had reported considerable fatigue and stress. Four women suffered with anxiety and depressive symptoms and had consulted a doctor, and three of them used antidepressants or tranquillizers (Garel *et al.*, 1994a).

##### *The marital relationship*

In all couples the birth of (a) much-wanted child(ren) had changed the marital relationship but difficulties were linked with the number of children born at the same time. The answers indicated that the challenge was mostly difficult for couples with triplets. All mothers of triplets felt that the situation represented a threat to the stability of the couple and had induced marital difficulties. However, no divorce was reported in either group.

##### *Organization of everyday life*

All mothers in the reduction group had been in employment before the birth of their children. At 2 years, nine women had resumed full-time work and three part-time work. Four pairs of twins and two singletons were in a day care centre. Two singletons were cared for by their grandmother and three mothers of twins employed a nanny in their home. Twins were cared for by their unemployed father in one case. In all, four mothers of twins out of 14 complained about lack of domestic help and especially about poor co-operation from their husbands.

One mother of triplets had resumed full time work and three mothers part-time work. The triplets were in a day care centre in one case; the others were cared for at home by a nanny. At 2 years, six out of 11 mothers of triplets complained about

lack of help. Help was not available from health services, friends, or family. This situation created fatigue and stress.

#### *The relationship with the children*

Two out of 14 mothers of twins and two out of six mothers of singletons already had a first child. One mother of twins had spontaneously started a new pregnancy and was 5 months pregnant at the time of interview.

As expected, the relationship between mothers and children differed with the number of children born at the same time. Four mothers of twins complained about conflicts between the children: jealousy and fighting. They felt unable to cope with the aggressive and/or wild behaviour which contributed to their fatigue and feelings of helplessness at the end of the day. Two of them already had a first child. However, they reported enjoying the presence of the children and described moments of joy interacting and playing with them. At 2 years all mothers of triplets had complained about their inability to cope with their children's behaviour. Feelings of frustration and guilt at not being able to enjoy the presence of intensely desired children were not expressed by mothers of twins in the reduction group, whereas they were frequently mentioned by mothers of triplets and caused intense psychological distress (Garel *et al.*, 1994b).

The answers given by mothers of singletons about the mother-child relationship differed according to whether they already had a first child or not. The two mothers whose child was single were anxious about their inability to loosen the bond with the child and regretted a too-close relationship. They explained that their overprotective behaviour was caused by an overwhelming anxiety about their child's health and emotional well-being. Two mothers of triplets had reported the same attitudes. These comments were not made by mothers of singletons who had another child.

## **Discussion**

For a majority of women, multifetal pregnancy reduction was experienced as stressful and distressing. Terminating much desired embryos represented a paradoxical decision which provoked intense feelings of sadness and guilt. However, after acute emotional pain, most of those women who were still included in the study 2 years after delivery seemed to have overcome their difficulties. The medical reasons given by the physicians to justify the need for intervention, the heavy burden of parenting twins and the achievement of parental goals facilitated grief resolution. At 2 years, most women recalled the reduction as a sad but necessary intervention but they did not show persistent emotional distress. The comparison with mothers having delivered triplets indicated that, 2 years after delivery, the mothers' psychological health and the relationship with the children were more satisfactory in the reduction group.

On the whole, our findings about the persistent psychological reactions of women after a multifetal reduction seemed rather reassuring. However, our observations presented some limitations. First the overall sample size was small. This was initially linked with the low frequency of the studied phenomena (triplet births and multifetal pregnancy reductions). Owing to

this we were able to use a qualitative method and to provide in-depth and longitudinal information about sensitive questions. This approach allowed us to obtain a description and understanding of complex, often contradictory reactions not amenable to quantitative methods.

A second limitation was the number of women who were not included in the follow-up. Four women in total did not participate because they aborted the entire pregnancy. It might be expected that they would have reported very negative feelings. In one retrospective study assessing the emotional reactions and attitudes of women who had undergone a reduction, Shreiner-Engel *et al.* (1995) found that patients who had aborted the entire pregnancy mourned and grieved their fetuses considerably longer than delivered patients. Similarly, McKinney *et al.* (1995) observed that patients who had miscarried after a reduction reported higher rates of depressive symptoms than those who had a successful pregnancy. Moreover, in both our prospective and retrospective study, five women explicitly refused to have an interview about what they recalled as a traumatic experience. Their explanations always indicated major difficulties in thinking over and talking about the event. Three other women, still living at the same address, did not answer the letters asking for an interview. It is highly probable that the non-participation of all these women, representing almost one-third of the eligible sample, led to an underestimation of the negative reactions to the intervention. There was no refusal in the prospective study of families with triplets. On the contrary, we noticed that reporting their difficulties and sharing their negative feelings with the researcher provided some kind of support to the mothers. We postulate that the decision to undergo a reduction had represented a much more acute life-crisis associated with deep anxiety and guilt feelings which made some mothers too uneasy to talk about their experience.

Another limitation in our conclusions resulted from the duration of the follow-up. Two years after delivery might seem too short a period of time. What would happen, for instance, to the parents' thoughts and attitudes when confronted with difficulties of any kind with the growing children? Longer-term consequences devolving upon the surviving co-sibs also remain unknown. French psychoanalysts have reported a few cases of psychological difficulties in older children born after a multifetal pregnancy reduction (Molenat, 1992; Missonnier, 1995). During the sessions the mothers had associated the children's troubles, mainly nightmares, with their own emotional distress related to the intervention.

All published studies have found that for a majority of women, the reduction had no effect on the process of mother-child bonding, during and after pregnancy (Kanhai *et al.*, 1994; Shreiner-Engel *et al.* 1995). In our study we also noticed that most mothers reported happiness about having had a successful pregnancy and healthy children; no severe disorder in mother-child relationship, possibly linked with the reduction, was mentioned. However, these conclusions have to be considered with some reservation. The method of assessing the quality of relationship with the infants was rather simplistic and only based upon the answers made by the mothers. Moreover, as we mentioned before, some difficulties might occur later.

When there was a single child in the family, i.e. a first-born singleton after a reduction, we noticed that the mothers reported being more anxious and overprotective than mothers who already had a child or had twins. Overprotectiveness has been previously observed with parents of children born after infertility treatments (Weaver *et al.* 1993), or after the death of a twin (Lewis and Bryan, 1988) but to our knowledge, no study took into account either the effects of the number of pre-existing children in the family or the role of a multifetal reduction. It is thus probable that mothers having had a single child born after infertility treatments, or after spontaneous abortion of one twin following a multifetal reduction, accumulated risk factors associated with anxiety and overprotective behaviour. It is questionable to consider that multifetal pregnancy reductions to singletons are ethically acceptable because of their biological advantages, as concluded by Brambati and Tului in a recent study (Brambati and Tului, 1995). Research on the medical consequences of multifetal pregnancy reduction to singletons should include the assessment of its psychological components.

When comparing families after a multifetal reduction with families with triplets at 2 years, we found that the mother's psychological health, the relationship with the children and the organization of the everyday life were considerably more favourable in mothers who had had a multifetal pregnancy reduction. The comparison showed that families with triplets had much more acute psychosocial problems than families who underwent a reduction. In fact, this difference was probably underestimated, since we had a rather select sample of triplets. The families belong to rather high or intermediate socio-economic status and the children presented no sequelae of prematurity: neither health problems nor psycho-motor delay (Garel *et al.*, 1994b).

The less optimal results in families with triplets was not surprising, since all published studies on triplets have emphasized the considerable strain on daily life associated with the mother's psychological distress (Goshen-Gottstein, 1980; Botting *et al.*, 1990; Harvey and Bryan, 1991; Robin *et al.*, 1991). Today, the situation has changed, since a reduction is proposed to mothers carrying three embryos. It is not known, however, if the degree of difficulties and emotional distress of mothers of triplets who choose not to have a reduction differ significantly from those of mothers who had no such choice.

Another study compared women who underwent a reduction with those pregnant after infertility evaluation or treatment but who conceived a single fetus or twins and thus did not consider fetal termination (McKinney *et al.*, 1995). The patients were assessed by telephone interview within 1 year after the reduction (either during pregnancy or a few months after delivery). The interviews were screened for psychiatric symptomatology and psychiatric disorders. There was no difference between groups in the frequency of Major Depressive Disorder (DSM-III R criteria). In both groups, the higher rates of depression occurred in cases of miscarriage of the entire pregnancy. The lack of difference between the reduction and the control group was probably linked to the type of measure used which concerned severe psychiatric disorder. In our study we did not observe that the mothers who underwent a reduction had an

increased risk of psychiatric disorders. However, their reactions indicated that the procedure they had to go through had represented an emotionally painful experience.

We have often been surprised during interviews after a reduction by the medical and rational language used by many women, who expressed no emotion. Leiblum *et al.* (1990) previously observed that most infertility patients are ready to endure any reproductive risk in order to achieve a biological pregnancy. McKinney *et al.* (1995) suggested that, for a majority of women, the reduction is part of the assisted reproduction treatment and that in most cases the 'brief crisis' of multifetal reduction was emotionally less painful than the long-term stresses of infertility. These authors postulate that patients who are in the late stage of infertility treatment may be 'self-selected as especially healthy, persistent and psychologically hardy'. More recently, Goldfarb *et al.* (1996) noticed that couples embarking on IVF or intrauterine insemination are inclined towards fetal reduction in the case of a high order multiple pregnancy.

Multifetal pregnancy reduction is a complex issue. On the whole, our results were consistent with those published by others, who found that it is a highly stressful event but that a majority of women were able to accept the termination of some fetuses to achieve parental goals. However, from an ethical point of view it seems highly questionable to consider multifetal pregnancy reduction as an acceptable part of infertility treatment. The lack of knowledge about its longer-term psychological consequences, and the probable specific characteristics of those patients who are able to endure the stresses of infertility treatments at any costs must moderate our conclusions. In order to avoid such situations, existing practices which operate to prevent high order multiple conceptions should be reinforced.

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