

Monochorionic-diamniotic twins resulting from the transfer of a single embryo in a woman with decreased egg reserve: A case report

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Summary

Purpose: To report the first case of identical twins born to a woman with decreased oocyte reserve having a single embryo transfer (ET).

Methods: Minimal stimulation with gonadotropins (no more than 75 IU/day of human menopausal gonadotropins) for a few days followed by oocyte retrieval.

Results: The woman, aged 37, had seven in vitro fertilization (IVF) cycles with minimal or no gonadotropin stimulation. An embryo was formed in four of seven retrieval cycles (57.1%). She conceived on her seventh cycle and delivered monochorionic diamniotic twins. This pregnancy was achieved with the transfer of six embryos over eight cycles (counting a hyperstimulated cycle performed previously in another IVF center following traditional controlled ovarian hyperstimulation).

Conclusions: This case demonstrates that successful pregnancies are possible with single embryo transfers in women with decreased egg reserve including identical twins.

Key words: Identical twins; Hypergonadotropism; Single embryo transfer.

Introduction

Several studies have suggested a very poor outcome following in vitro fertilization-embryo transfer (IVF-ET) in women with elevated day 3 serum follicle stimulating hormone (FSH) levels [1-5]. However recently data has been presented showing reasonable ongoing/delivered pregnancy rates varying from 21.7% in women age 40-42 up to 30.8% in women aged 36-39 following single ET despite decreased oocyte reserve [6]. In fact there have been two reported deliveries following transfer of single embryos despite imminent menopause, including a 42-year-old woman [7, 8].

A case is described of a woman with elevated day 3 serum FSH who successfully delivered identical twins despite transfer of only a single embryo following IVF.

Case Report

A 37-year-old woman presented with a history of successfully conceiving after only two months of unprotected intercourse three years before; she delivered by cesarean section. Because of secondary infertility she went to another infertility center. After ten months of treatment with follicle maturing drugs and intrauterine insemination this IVF center attempted IVF-ET. However despite traditional controlled ovarian hyperstimulation (COH) she only had one embryo transferred and she failed to conceive. The infertility specialist refused to do more IVF cycles with her own oocytes and recommended donor oocytes. The couple wanted to continue to try with their own oocytes and still wanted to continue with IVF and came to our infertility center.

Her baseline day 2 serum estradiol (E2) was 24 pg/ml with a serum FSH of 17 mIU/ml. In her first IVF cycle with our facility only one antral follicle was seen on ultrasound. The follicle was allowed to develop naturally with a short course of 75 IU human menopausal gonadotropin x four days. A mature oocyte was retrieved but because her endometrial thickness was only 7 mm at the time of human chorionic gonadotropin (hCG) it was decided to freeze the embryo at the 2 pronuclear stage. Fertilization was accomplished by intracytoplasmic sperm injection (ICSI).

Using a similar protocol she again had only one mature oocyte retrieved on her second IVF cycle but it failed to fertilize. For cycle 3 a single mature oocyte again was retrieved using natural follicle development with a boost of hMG. A 9-cell symmetrical non-fragmented embryo was transferred but she failed to conceive. Her endometrial thickness had reached 10 mm. In cycle 4 she again retrieved a single mature oocyte which failed to fertilize.

The regimen changed in cycle 5 with 75 IU hMG beginning day 6 with 250 µg of ganirelix added with a 14 mm follicle. Her serum E2 reached 651 pg/ml and two mature oocytes were retrieved. They both fertilized and she transferred two 8-cell embryos on day 3 with < 25% fragmentation but she failed to conceive. A similar regimen was used in cycle 6 and one mature oocyte was retrieved but she failed to fertilize.

In cycle 7, hMG 75 IU was only given on days 8 and 9 at 75 IU per day. Ganirelix was also given on these two days. The hCG injection was given on day 10 and oocyte retrieval of one mature oocyte was on day 12. She transferred a 7-cell embryo without any fragmentation three days later. She conceived this cycle. Forty-five days from the retrieval ultrasound revealed a single gestational sac with two yolk sacs and two viable embryos seen in the uterus. Subsequent ultrasounds confirmed monochorionic-diamniotic twins. She successfully delivered full-term twin girls. Her day 3 FSH this cycle was 10 mIU/ml.

Discussion

This couple was willing to undergo eight oocyte retrieval cycles to achieve a pregnancy with their own gametes. Only for the first cycle at another center did she have controlled ovarian hyperstimulation but she produced no more embryos than natural or minimal stimulation cycles. She still has one frozen embryo in storage.

The woman achieved a pregnancy with a total of six embryos transferred which would be the equivalent of conception after two IVF cycles of three embryos transferred each time.

Failure to develop an embryo occurred in three of eight (37.5%) cycles which was a similar finding in the larger series of IVF-ET with minimal or no gonadotropin stimulation [6]. In this case, one difference was the use of a small amount of ganirelix.

The purpose of presenting this case is two-fold: first to present the first case of identical twins born from a single ET in a woman with decreased oocyte reserve and second to illustrate that persistence may result in the ultimate outcome desired by the couple. Though one may be surprised that a woman would subject herself to eight IVF cycles, it must be realized that the major sacrifice in IVF-ET cycles is the risk of ovarian hyperstimulation. This was not a factor for this woman. Also expense becomes an issue but there is considerable saving of money from a medication standpoint by using minimal or natural cycles. Also, though up to each individual IVF center, retrieval of a single oocyte would require so much less laboratory work that the actual procedure could be performed at a much lower price.

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