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Superfetation: A surrogate dilemma

Christos Spyroulis, Khadeeja Naqvi, Marco Gaudoin, Al-Inizi Shamma

ABSTRACT

Introduction: Surrogacy is a method of reproductive medicine when a woman carries and gives birth to a baby for another person or couple. This gives an opportunity to the commissioning parents who cannot have their own child for different reasons to have a child by providing their genetic material which is then implanted into the uterus of the surrogate mother. There are certain situations where surrogacy is indicated such as women with a medical condition that makes it impossible or dangerous for them to be pregnant such as congenital absent or malformed uterus, recurrent pregnancy loss and repeated in vitro fertilization (IVF) implantation failure. It is also a popular option for male same-sex couples and can be used by people who are single. Unquestionably it is a gift to couples who cannot have their own child and do not want to undergo adoption. However, there are numerous ethical, moral, and legal implications in theses pregnancies in addition to the fact that different national laws govern surrogacy across the world.

Case Report: We present a case of a 25-year-old surrogate mother, who had a single blastocyst transfer from a commissioning couple. She did not follow the instructions of abstaining from intercourse during the IVF cycle as advised by the IVF unit. She conceived with diamniotic dichorionic (DADC) twins of different gender. This made the whole situation complicated but interesting, since she turned out to be the biological mother of the female twin. These series of events gave rise to several ethical, emotional, and legal issues such as parentage, monetary compensation, and the impact of unintended pregnancy on the couples.

Conclusion: To our best knowledge, this is the first reported case of surrogate pregnancy carrying twins resulting from superfetation following single blastocyst transfer.

Keywords: DADC twins, Ethical dilemma, Superfetation, Surrogacy

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INTRODUCTION

Surrogacy is the process by which a woman enters an agreed arrangement with another person or couple to carry their genetically related pregnancy to term [1, 2].

Assisted reproductive techniques have extended the possibilities of procreating but at the same time have further complicated the issues like determination of filiation, monetary compensation, and complications surrounding unwanted pregnancy [2].

There are numerous ethical, moral, and legal implications of pregnancies resulting from surrogacy in addition to the questioning of gender, the exploitation, the psychological impact on both the commissioning, the surrogate mother and her family [1]. There are numerous differences regarding the law which governs surrogacy across the world and there are countries, such as Germany, where surrogacy is completely illegal. In the UK, altruistic surrogacy is legal and the surrogate mother is the legal mother of the child/children till the commissioning parents apply for adoption at the Minister of Internal Affairs [3].

We are presenting a case of a surrogate mother who had DADC twins of different gender following an IVF cycle with single blastocyst transfer. Due to the rare and complex nature of this case, we hereby present it to discuss the different difficulties we faced and how we dealt with them and how to avoid such a dilemma in the future. To our best knowledge, this is the first reported case of surrogate pregnancy carrying twins resulting from superfetation and assisted reproduction.

CASE REPORT

The intended parents required surrogacy as the woman had had a total abdominal hysterectomy and bilateral salpingo-oophorectomy for severe endometriosis. Hence, they required donor eggs (provided by an anonymous egg donor) and the male partner's sperm was used to create embryos. The embryos were quarantined and the male partner of the intended parents had undergone the post-quarantine screening as per Human Fertilisation and Embryology Authority (HFEA) regulations.

The surrogate was a 25-year-old Caucasian who had two previous normal deliveries; one of which was a surrogate pregnancy to a different couple. The surrogate mother was fit and healthy with no known morbidities.

The surrogate had a regular menstrual cycle and per the IVF unit's protocol, she underwent a natural-cycle frozen embryo transfer. The IVF clinic transferred a single blastocyst.

Early pregnancy ultrasound scans (US) at the IVF unit indicated twin pregnancy and chorionicity scan at 13 weeks confirmed DADC twin pregnancy. Antenatal clinic follow-up was arranged at the local hospital where all booking blood tests were normal and a follow-up plan was arranged. Another US was performed at the IVF unit at 16 weeks indicated that the twins were of different gender. This was also confirmed at the detailed anomaly scan at 20 weeks' gestation at the local hospital.

These findings resulted in an ethical dilemma especially as single blastocyst transfer was undertaken. The surrogate mother admitted that during the IVF treatment she had unprotected sexual intercourse despite being advised not to. Since we have not come across such a case before; discussions between the IVF consultant and the obstetrician were undertaken trying to solve this dilemma. The IVF unit confirmed from their lab records that it definitely was a single embryo transfer and the obstetric consultant discussed this dilemma with the genetics department at the local Tertiary Centre. The plan was for buccal DNA test to be taken from the intended father, the surrogate mother and both babies 24 h after delivery to conclude paternity.

Antenatal follow-up was uneventful with normal growth scans for both babies at the 50th centile for gestational age. The surrogate mother presented in advanced preterm labor at 32 weeks' gestation. She was 5–6 cm dilated with ruptured membranes of the first gestational sac. Despite the first baby being a cephalic presentation and the second a breech presentation, she wanted to be delivered by an urgent caesarean section (CS). After informing the neonatal team, an uncomplicated CS was performed. Both babies were in good condition and transferred to the neonatal unit at the local hospital. The results of the DNA test confirmed that the baby boy was of the intended parents and the girl was of the surrogate mother. Therefore, the commissioning parents, after applying for adoption as per the UK law, took the boy whereas the baby girl remained with the surrogate mother.

DISCUSSION

A surrogate is a woman who is willing to help intended parents (heterosexual or same-sex couples in a marriage, civil partnership or living together/co-habiting in an enduring relationship) to create families by carrying children for them [4]. At least one of the intended parents should be genetically related to the unborn child [4]. A surrogate may or may not have a genetic relationship to the child that she carries for a couple. Surrogates generally do not prefer to be referred to as "the mother" or "parent" of the child [4]. According to the Department of Health and Social care guideline, surrogacy should be completely voluntary, and the genetic couple should only compensate for the logical expenses needed during pregnancy such as clothes, potential extra medical appointments, etc. [3, 4]. The law which governs surrogacy stays that the surrogate mother has all the rights of motherhood and can terminate the pregnancy at any point till 23+6/40 for medical reasons. She is the legal mother of the child at delivery which practically means that if she changes her mind and does not want to give the baby back to the genetic parents; she has the right to keep the baby even though genetically is not hers. Therefore, the genetic parents in order to take the baby home, they need to seek a parental order and subsequently make an application for adoption at the home office [3, 4].

Infertility affects around 10–15% of couples worldwide [5]. Surrogacy is of two types: gestational (host or "full" surrogacy), in which the genetic material comes from the intended parents and none from the surrogate mother. The other type is classic/straight/partial surrogacy, in which the surrogate mother is the biological mother of the child and she conceives either by IVF/self or artificial insemination with the intended parent's semen sample and by using her own eggs. In this case the surrogate mother is willing and agrees legally to give the child to the partner of the biological father [3, 4]. Commercial surrogacy, which is surrogacy for financial reasons is prohibited internationally since it can increase the possibility of women's trafficking [4]. Article 21 of the of the Additional Protocol to the Convention for the Protection of Human Rights and Dignity of the Human Being defines that the human body and its parts cannot

be a source for financial gain [4]. There are numerous reasons for the commissioning couple to choose surrogacy as a solution to their infertility problems such as absent or malformed uterus as in Rokitansky syndrome or previous hysterectomy or severe uterine synechiae [1, 3]. It can also be the option in different medical conditions which could endanger the life of the commissioning mother, such as severe pulmonary hypertension [3].

Genetic counseling is usually performed prior to surrogacy in cases of classic surrogacy and the intended parents are usually offered psychological evaluation/ counseling prior to the process [4–6]. Due to potential conflicts of interest between the intended parents and the surrogate mother, each side should receive medical care from different physicians [6]. The ethical dilemma arising from the process of surrogacy is usually highlighted by the possibility of breaking the biological bond between the biological mother and the child [7]. There is also the possibility of the surrogate mother to connect emotionally with the child which can lead to her unwillingness to give the child to the commissioning parents [7]. Another dilemma is how surrogacy can affect the family of the surrogate mother and her employer considering the need for sick and maternity leaves [7]. Another issue that arises from surrogacy is that it can lead to a high-risk pregnancy as a result of artificial reproductive technique leading to multiple pregnancy with all its the consequences [8].

Due to all these ethical dilemmas, the increased risk of complications that arise from surrogacy and the increased costs to healthcare systems in order to manage these complications, western countries like Germany, Sweden, Norway, and Italy do not recognize any surrogacy agreements [9].

Superfetation is the simultaneous occurrence of more than one stage of developing offspring in the same animal by the formation of a fetus while another fetus is already present in the uterus [10, 11].

Superfetation in humans is an extremely rare situation in which a woman becomes pregnant a second time with another fetus in the face of an ongoing pregnancy. It is characterized by the fertilization and the implantation of a second oocyte in a uterus already containing the product of a previous conception. Such babies usually share a birthday, as it is medically necessary in most cases to induce labor or to deliver them by CS, but gestationally, one baby is “older” than the other. This can happen naturally or during the process of assisted reproduction [11].

So far up to 10 such cases have been roughly reported in different medical journals. Due to the fear of liability most of these cases have been kept confidential [10, 11]. If superfetation is the result of assisted conception, clinic protocols usually advise patients to refrain from sexual intercourse/use barrier protection during IVF cycles [10]. Frozen embryo transfers can either be using the surrogate’s natural menstrual cycle or using hormone replacement therapy (HRT), in which case the surrogate’s natural menstrual cycle is suppressed [10]. If a patient fails to follow her doctor’s order, very rarely, such a complication can arise similar to the case we present here.

In this regard, one case has been reported where the outcome was remarkably similar to the case we present here [12]. In 2017, an American woman who had agreed to act as a surrogate for a Chinese couple gave birth to two babies initially believed to be twins. It was only discovered through genetic testing that one of the babies was, in fact, the biological son of the surrogate. Doctors confirmed that the birth-mother had become pregnant with her and her partner’s child roughly three weeks after becoming pregnant with the Chinese couple’s child. After a long custody battle, the child was returned to the biological parents [12]. One debatable issue in such cases is the parentage of the child. The intended parents would have received a court order during pregnancy, naming them as the legal parent of both twins. Yet the court order was based on false facts (i.e., both children were not genetically related to the surrogate). In this scenario, it could be questioned whether the court order even stand. Since the surrogate was genetically related to one of the babies, one can argue that legally she should be the genetic and the uterine mother. Establishing paternity may be easy with one genetic test, but the issue is not simple and easy for the court. What happens if non-custodial parents have been “parents” to a child for 15 years only to learn later that they were not the biological parents. Should they get monetary compensation for the child support? These are some difficult questions to be answered by the policy makers and judges.

Due to the complexity and unexplored areas of this matter, it is necessary to examine every aspect of surrogate motherhood including the medical, ethical, and legal aspects. The intended parents in our case after knowing that the surrogate twins were of different gender, worried that both of the twins were actually genetically related to the surrogate and the single blastocyst that was transferred never implanted in the first place. A full delivery plan with arrangement of paternity test with the genetics department solved the issues post-delivery in our case and avoided any further problems. To our knowledge, this is the first case of twin pregnancy resulting from superfetation via surrogacy during assisted conception using a frozen embryo.

A surrogacy pregnancy is considered as a high-risk emotional experience because many of surrogate mothers may face negative experiences. The stress and consequences involving an unintended pregnancy can also be overwhelming. It is also a risk factor for poor maternal mental health which includes perinatal depression, stress, and lower levels of psychological well-being and life satisfaction [4, 6]. This not only affects the newborn, but it can affect the dynamics of the whole family. The question whether the surrogate mother can have a termination of someone else’s child if she changes her mind and does not want to go through the twin pregnancy raises major anxieties.

CONCLUSION

Regardless all the ethical issues that may arise in such complicated surrogacy cases, the final decision should be based on professional principles and rules of medical practice. Assisted reproductive techniques have provided couples struggling with infertility the possibility of «having a child." However, science does not address the moral and legal issues inherent in the application of such techniques. The key to avoiding these situations in the future is education-being sure everyone understands the risks involved, and the importance of following the clinic's recommendations. Hopefully, these cases are rare enough that we do not need to start adding a superfetation clause to all gestational carrier contracts. Where controversies do arise, legislative regulation of surrogate motherhood should always consider the best interests of the child as paramount. This includes care of physical and mental health, and the right of the child to know its biological origin and ensure its future by providing the necessary parental care.

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Author Contributions

Christos Spyroulis – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Khadeeja Naqvi – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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Authors declare no conflict of interest.

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All relevant data are within the paper and its Supporting Information files.