Risks and complications of assisted conception

INTRODUCTION

No medical treatment is entirely free from risk and infertility treatment is no exception. It is important, however, to appreciate that most patients go through IVF and other assisted conception treatments without any problems at all.

The risks associated with infertility treatment can be considered over six categories:

- The risks associated with the drugs used to stimulate ovaries
- The surgical risks associated with egg collection
- Laboratory issues and risks
- The risks associated with pregnancy
- The risks of an abnormal pregnancy
- Psychological and emotional risks

RISKS OF AN ABNORMAL PREGNANCY

To date there have been over a million babies born following IVF and ICSI treatment worldwide. In the UK between 1 and 2% of all babies are conceived following IVF and related cycles.

Concerns have been raised about the possible risk to children born as a result of these treatments because of the preparation of eggs and sperm during the process.

Many studies have reported the incidence of a baby with an abnormality, but most have been too small or of insufficient quality to provide a reliable answer.

One recent study has reviewed much of the available data and has concluded that:

- the risk of a baby with an abnormality arising following natural conception is 5.8%,
- the risk of a baby with an abnormality following assisted conception treatment rises to 8.3%.

There is also data to suggest that children born to men who themselves have structural abnormalities of the testes and penis (eg. hypospadias where the opening of the penis is on the underside or at the base of the penis and undescended testes) may, unsurprisingly, be more likely to have these conditions themselves. Therefore, parental rather than treatment factors seem to play a part in some of the increased risk of abnormality with assisted conception treatments.

There is no conclusive data otherwise to link IVF with any specific abnormality although some recent studies have shown an increase in 'imprinting' disorders. Imprinting disorders are a rare group of disorders which can affect growth, development and metabolism with a lifelong impact on quality of life. Examples of these disorders are Angelman and Prader-Willi syndromes. We have two complete sets of chromosomes, one from each parent with equal expression from genes from each parent. Imprinting is when expression is from one parent only.

These are normally very rare disorders, and the recent data indicates that, although they may be increased as a result of IVF, they are still very rare.

At this time, we cannot conclusively say whether or not there is a cause and effect relationship between IVF / ICSI and specific abnormalities. It is clear that if such risks exist it is relatively small and that further monitoring of children resulting from IVF/ICSI, and related technologies, is necessary to really answer this question.

Risks of ICSI

Some men with severe sperm abnormalities will have a genetic basis for this, usually an abnormality of the Y chromosome. This is likely to be inherited by male offspring following ICSI.

In addition, men with sperm problems tend to have a larger proportion of sperm that have chromosomal abnormalities (aneuploid) than do men with normal sperm production. It is not surprising therefore that there is some data to suggest that the risk of chromosome abnormalities, including abnormalities of the sex chromosomes, is increased following ICSI.

The overall risk of new chromosome abnormalities is about 3%. Therefore, there may be a risk of passing on infertility problems and any disorder associated with the chromosome abnormality to a future child. Some recent studies have quoted the risk of birth defects in patients requiring ICSI to be 9.9%. When corrected for parental factors the risk of birth defects is lower but still slightly increased. Again, parental factors seem to be contributing heavily to the risk of abnormality and not necessarily the treatment techniques. It must be stressed that not all patients treated with ICSI are in these specifically higher risk categories as this technique is used in a number of different situations.

Extensive data has been reported from large multi-centre studies looking at development of children born after ICSI compared to normally conceived controls. Thus far the data has been very reassuring. Many studies are still on-going, and we will continue to monitor these closely.

Miscarriage rates may also be increased following ICSI and there is data to suggest this increases in proportion to the severity of male infertility.

Follow up data is currently limited as ICSI conceived children are still very young. We cannot be fully certain that there will be no problems in older children or the next generation. In conclusion it is important that the couple is aware of and accepts the potentially increased risk of having a child with a birth defect before undergoing ICSI treatment, the mechanism of which is not entirely clear though parental rather than treatment factors seem to play a large part in this.

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Embryo cryopreservation and frozen embryo transfer

This technique has been carried out since 1985. Although the number of babies born after freezing and thawing is considerably less than by IVF, there is no evidence of any increased incidence of abnormalities in babies born following replacement of thawed embryos. Indeed, some recent studies have shown babies born from frozen embryos seem to have a lower rate of birth defects than from fresh cycles embryo replacement. It has been suggested that this may be due to genetically compromised embryos being less likely to survive the thawing process.