



### 1 MULTIPLE BIRTHS AND IVF

One in four pregnancies derived from IVF results in a twin birth, twenty times the rate compared with natural conception. While many twin pregnancies are uncomplicated, it is clear that the hazards for women and their children as a result of complications linked to multiple pregnancies are significantly increased. Multiple birth nowadays is recognised as the single biggest risk to the health and welfare of children born after IVF.

#### 1.1 What risks can women with multiple pregnancy face?

- Miscarriage risk will be increased
- High blood pressure occurs in 20% - 30% (1-5% in mothers of singletons)
- Diabetes occurs in 12% of women carrying twins (4% in singletons)
- Bleeding in pregnancy both before and after birth can also be a problem with twins
- Caesarean section is very common among twin births because of complications

Even the less serious problems associated with twins can mean more hospital visits and the need for admission to hospital, sometimes for long spells.

#### 1.2 What are the risks for babies associated with multiple pregnancy?

With twin pregnancies 44% will deliver prematurely and may have health problems. This results in very small babies who need intensive care within a neonatal unit for many weeks. Depending on their weight, maturity and other factors some babies do not survive. The possibility of long term handicap for twins is around six times higher than the risk associated with single baby pregnancies. There is also a higher risk of one or more babies having an abnormality and early pregnancy screening is much more difficult in a multiple pregnancy.

#### 1.3 Effects on the Family

Not only are the pregnancy, delivery and first few months difficult, parents' chronic tiredness, anxieties and tensions can put a lot of strain on relationships. No matter how wanted these babies are, the task of looking after more than one is extremely demanding, especially in the early years. These babies are more prone to illness and are more likely to have learning difficulties. The financial costs are also very high.

### 2 THE NUMBER OF EMBRYOS TO BE TRANSFERRED IN IVF

For the reasons outlined above we believe that a multiple pregnancy should not be regarded as the ideal outcome after IVF treatment. These children should be afforded the maximum chance of a healthy start in life.

The direct link between the number of embryos transferred during IVF treatment and the chance of a twin pregnancy is clear. The only way to reduce multiple birth rates after IVF is to transfer only one embryo at a time to those women at most risk of having twins. Elective single embryo transfer and the freezing of any additional suitable embryos is the way in which we can make a difference.

#### 2.1 Is Single Embryo Transfer Suited to all Patients?

Not all patients will be suited to a single embryo transfer. Patients at most risk of having a twin pregnancy after replacement of two embryos will be:

- younger patients, particularly those in their first and second treatment cycle
- patients with high numbers of good quality embryos
- patients who have had pregnancies in the past

We will confirm the numbers of embryos to be transferred in your own treatment with you after the fertilisation results and subsequent embryo quality is known.

#### 2.2 How do we tell which Embryo is Best Suited for Transfer?

An embryo that has developed for 2 - 3 days after fertilisation is known as a *cleavage stage* embryo. Cleavage stage embryos are the type most commonly used for IVF in the UK at present. The alternative is to leave the embryo for 5 – 6 days, when it is known as a *blastocyst*. The embryologist has to select the embryo that is most likely to implant and produce a successful outcome. They do this by applying a system of grading, using criteria for cleavage stage embryos such as:



- the number of cells present
- how fast the cells are dividing
- whether the division is even
- whether there are any fragments of cells present

Different grading schemes are used for embryos when they reach the blastocyst stage (around day 5 of their development). After the grading system has been applied to the embryos, the best one is selected for transfer.

### 2.3 Extended Culture (Blastocysts)

The ability to grow embryos for five days to the blastocyst stage of development, rather than the traditional two to three days is one of the ways that laboratories can use to identify the best embryos i.e. the embryos with the highest potential for implantation. For some couples we may, offer the possibility of extending the period of culture to 5 days. For some patients however, a Day 3 transfer may be preferred so a flexible approach is used.

Blastocyst transfer can be highly successful for some groups of women, however there are some drawbacks. For example:

- If you opt for blastocyst transfer, you may not get any embryos that develop to the blastocyst stage. If this happened an embryo transfer could not take place.
- Since not all embryos will develop to blastocyst stage there may also be fewer embryos to freeze.
- If your embryos do develop to the blastocyst stage and multiple blastocyst transfer is used, you are at greater risk of producing twins.

### 2.4 What will happen to Embryos not used in the first Embryo Transfer?

Any embryos that are considered to be of good quality will be frozen and stored for use in future treatment. Not all embryos survive freezing and subsequent thawing, so when you come for your next treatment cycle, we may have to thaw more embryos than can be transferred.

### 2.5 Is fertilisation of eggs always successful?

Occasionally fertilisation problems occur following IVF or ICSI. Fertilisation is a complex biological process and low or failed fertilisation can be caused by sperm factors, egg factors or a combination of both. Poor fertilisation can occur when there are a large numbers of eggs but a complete failure of fertilisation is fortunately rare.

## 3 THE ABERDEEN PROTOCOL

The number of embryos to be transferred will be discussed with you at your first clinic appointment and again on the day of embryo transfer as the quality of the embryos on this day is important in the decision regarding the number to transfer.

We take very careful account of clinical and laboratory factors in reaching a recommendation on the number of embryos to be replaced in a treatment cycle.

## 4 OTHER SOURCES OF INFORMATION ABOUT SINGLE EMBRYO TRANSFER

The Human Fertilisation and Embryology Authority has, with a number of professional organisations, produced a very useful web-site. It contains a lot of information which will help you understand the factors which will influence the decision on how many embryos would be appropriate to replace in your own individual circumstances. We would strongly advise you to look this up.

<http://www.oneatatime.org.uk/index.htm>