Reproductive technology set to grow further

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WHILE the world is still waiting to see the first cloned baby allegedly born into the Raelian community some months ago, last month it witnessed the 25th birthday celebration of the world's first test-tube baby.

Test-tube baby is a layman's term referring to babies conceived through fertilisation conducted in a glass test tube, or better known as in vitro fertilisation and embryo replacement (IVF, for short). *In vitro* is Latin for "in glass."

It is now an established method to overcome cases of infertility, generally defined as the inability to conceive a child despite trying for a year. In other words, a male or female unable to have children now stands a better chance to have one.

There are many reasons for infertility. In the female infection of the cervix, obstruction of the uterine (fallopian) tubes, and abnormalities in the uterus could be some of the factors.

In general, failure of ovulation is common, though ovaries may be stimulated to produce ova by giving gonadotrophic hormones or by drugs that simulate their action in the body.

In the male, the factors include absence or inadequate production of sperm, and the clumping of sperm (agglutination) with impaired mobility due to sperm antibodies in the male serum in some individuals.

Infertility can also be caused by environmental factors including chemicals known as endocrine disruptors that could result in bodily hormonal imbalance.

Otherwise, lifestyles leading to stress and habits such. as smoking and substance abuse can also influence one's fertility status.

Before IVF, methods used were generally mechanical in nature targeted at aitificially inseminating the eggs (ova) by injecting sperm into the womb. It was also done by removing any blockage at the fallopian tubes that prevent fertilisation from taking place.

But all these changed in 1978 when innovative approaches based on biochemical and hormonal mechanisms were introduced.

These bold steps were introduced by two pioneering doctors at Bourn Hall Clinic, near Cambridge, Robert Edwards and Patrick Steptoe. They had both worked together since 1968 to perfect the in vitro fertilization of human embryos for 10 years.

Steptoe, a gynaecologist and reproduction biologist, died in 1988. By then IVF was beginning to capture the medical field by providing better "cures" for infertility.

Typically, through IVF techniques, several ova (produced after inducing ovulation by giving the appropriate medications) were then obtained from the surface of the ovaries by a technique known as laparoscopy.

The ova was then placed in a suitable culture medium to which sperms are added so that fertilisation could take place.

If succesfull, the fertilised egg (four to eight cells in size) was transferred to the uterus via the vagina and cervix. If pregnancy did not occur, the process may be repeated.

Nowadays, chances of successful pregnancy are at least one in two attempts. Some claim 60-70 per cent success rate as the techniques get perfected.

The IVF technique has since been progressively improved giving rise to many other similar infertility treatments.

One example is GIFT (Gamete Intra-fallopian Transfer techniques), or a similar technique dealing with fertilised egg, called zygote, thus ZIFT.

Another is Intracytoplasmic Spend Injection (ICSI) usually meant for couples with low sperm count or poor sperm quality.

While all these are readily accepted as medical breakthroughs today, it was not so in the 1970s when the method was first applied to the Brown family.

It cause an international uproar, branding the attempt as unethical and immoral. It reportedly took some 80 attempts before the first IVF baby was successfully conceived by "mixing" the sperm and egg in a laboratory

(presumably glass) Petri dish containing specially researched culture medium.

As a result, on the morning of July 25, 1978, the first test-tube baby was born by Caesarian section at a hospital in Oldham, north England.

Louise Joy Brown, "the baby of the century", turned 25 years last month.

The world was taken by surprise (not unlike the announcement made by the Raelians) except that the blue-eyed, blonde baby girl was made public.

Louise was regarded as a 'miracle' baby by many segments of the society. Some feared she would grow up abnormally.

Even Louise admitted she used to wonder how she was conceived at the earlier stages of her life, when there are still few test tube babies.

But now, not anymore as the number of successful IVFs and related births exceed a million worldwide.

More importantly, the birth marked the beginning of another scientific landmark in the treatment of infertility.

In no time, an entirely new medical subspecialty, generally known as Assisted Reproduction Technology, was introduced.

But despite this advances, much of the ethical issues remain. For one, the question of ownership of eggs that have been fertilised, especially frozen for storage, remain controversial.

Another is the issue of surrogate motherhood, the use of another person's womb to implant the fertilised egg. Some dubbed the practice as "womb renting." In many places, it is illegal to adopt such practices.

With the advent of prenatal screening for inherited disease and selective termination, IVF can be used to promote "eugenics"— the "science that deals with all influences that improve the inborn qualities."

However, as history has shown, it has been misused to create a stock of pure human breed.

It culminated in Hitler's Germany, where those deemed "unfit" were deliberately eliminated in large numbers to pave the way for the propagation of so-called superior human species.

Whatever the case, the development of reproductive technology is set to grow, especially in the genomic era where the opportunity to medically innovate is much greater.

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