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Abstract

/v (CE š] o] ð e a s m e n t is the inability to become pregnant (š CE months of intercourse without } v š CE } o] ð e a s m e n t no birth control methods. /v À š CE } o] ð e a s m e n t a form of Assisted Z % CE } µ š] o] ð e a s m e n t Technology (ART) and the most ((š] o] ð e a s m e n t } v month, egg retrieval or follicular • % } CE š] o] ð e a s m e n t minor surgery, /v À š CE } o] ð e a s m e n t) of gametes,] v • u] v š] o] ð e a s m e n t } v] v • CE š] o] ð e a s m e n t } v best quality sperm with the best quality eggs, (CE š] o] ð e a s m e n t } v culture or cleavage-stage embryos, % CE r] u % o v š] o] ð e a s m e n t } v diagnosis, and embryo transfer to the woman's uterus [13,14]. If the chance of (CE š] o] ð e a s m e n t } v Intra Cytoplasmic Sperm / v i š] o] ð e a s m e n t } v (ICSI) procedure the sperm is directly injected into the cytoplasm of an egg. IVF as a breakthrough in the treatment of] v (CE š] o] ð e a s m e n t } v provides the best opportunity of having a child using their own eggs. IVF can be more successful than other forms of ART such as Intrauterine /v • u] v š] o] ð e a s m e n t } v method. Although the procedure of IVF has many advantages for a couple who would be unable to have a baby, it has some disadvantages. The review aims to update the % } š] o] ð e a s m e n t } v and risks at] ((CE š] o] ð e a s m e n t } v in the IVF process.

Keywords: /v (CE š] o] ð e a s m e n t } v ; CE š] o] ð e a s m e n t } v ; Pregnancy; Embryo culture; Advantages; Disadvantages

sperm are placed next to the egg in an environmentally controlled chamber in a laboratory [10]. & CE š] o] ð e a s m e n t } v process in which one of the sperm is placed next to the egg to form a diploid cell, known as zygote [11,12].

In the IVF, there are several steps including hormonal • š] u µ o e š] o] ð e a s m e n t } v with exogenous gonadotropins or similar substances to release more than one healthy egg in a month, egg retrieval or follicular • % } CE š] o] ð e a s m e n t } v minor surgery, /v À š CE } o] ð e a s m e n t } v of gametes,] v • u] v š] o] ð e a s m e n t } v] v • CE š] o] ð e a s m e n t } v best quality sperm with the best quality eggs, (CE š] o] ð e a s m e n t } v culture or cleavage-stage embryos, % CE r] u % o v š] o] ð e a s m e n t } v diagnosis, and embryo transfer to the woman's uterus [13,14]. If the chance of (CE š] o] ð e a s m e n t } v Intra Cytoplasmic Sperm / v i š] o] ð e a s m e n t } v (ICSI) procedure the sperm being directly injected into the cytoplasm of an egg with a u] CE } % } v to provide (CE š] o] ð e a s m e n t } v (š CE š] o] ð e a s m e n t } v IVF or ICSI, once sperm-egg fusion happens, the (CE š] o] ð e a s m e n t } v for an embryo is cultured for 2-6 days and transferred to the same or another woman's womb [17,18] (Figure 1). (š CE CE š] o] ð e a s m e n t } v treatment, at the same š] u m d r e than one embryo may be put into the uterus of a female [19]. Embryo Transfer (ET) number is dependent on the various variables such as maternal age and egg quality and (CE š] o] ð e a s m e n t } v Although the procedure of IVF has many advantages for a couple who would be unable to have a baby, it has some disadvantages. This review aims to update the % } š] o] ð e a s m e n t } v and risks at] ((CE š] o] ð e a s m e n t } v in the IVF process.

Introduction

/v (CE š] o] ð e a s m e n t } v is a biological inability to achieve pregnancy (š CE months or more of unprotected intercourse [1]. The development of /v À š CE } o] ð e a s m e n t } v & CE š] o] ð e a s m e n t } v improved the management of female] v (CE š] o] ð e a s m e n t } v and used to overcome CE % CE } p r o s t i t u t i o n s [2,3]. IVF is a complex series of procedures used to treat] v (CE š] o] ð e a s m e n t } v prevent P v š d i s o r d e r s [4,5]. IVF as a form of Assisted Z % CE } µ š] o] ð e a s m e n t } v Technology (ART) and a major breakthrough in embryo transfer is the joining of a woman's egg and a man's sperm outside the body,] v À š CE } o] ð e a s m e n t } v " i n v i t r o f e r t i l i z a t i o n " [6]. In 1978, the (] CE š] o] ð e a s m e n t } v 'IVF baby' was born using natural IVF by Louise Brown [7]. Since then, IVF outcomes improved and provided large numbers of women the possibility of becoming pregnant and increased their chances [8,9]. In š CE } o] ð e a s m e n t } v 50,000 or more swimming

Literature Review

With the advent of ART, IVF as a breakthrough in the treatment of] v (CE š] o] ð e a s m e n t } v provides the best opportunity of having a child using their own eggs [21]. The advantage of IVF is achieving a successful pregnancy in women with blocked or damaged fallopian tubes, in unexplained or undiagnosed] v (CE š] o] ð e a s m e n t } v management for women with cancer, women with menopause or premature ovarian failure, women with endometriosis, % š] o] ð e a s m e n t } v with • W } o Ç Q u a n t i t y Syndrome (PCOS), and % š] v š • with a low ovarian reserve or people who would be unable to bear a child [22,23]. Male factor] v (CE š] o] ð e a s m e n t } v has a much higher chance of the live birth IVF success rate than in other cases of IVF [24,25]. IVF can be more successful than other forms of ART such as Intrauterine /v • u] v š] o] ð e a s m e n t } v method

that involves sperm directly into a woman's cervix, fallopian tubes, or uterus to facilitate pregnancy [26,27]. IUI can be a useful option for single women and same couples to become parents. If IUI has not been successful, IVF with donor sperm can provide a great opportunity for helping couples who wish to have a child [28-30]. IVF with fewer drugs can decrease the risk of side effects, and some women who are at high risk for Ovarian Hyperandrogenism Syndrome (OHSS) [31-33]. IVF with WCE r] u% o' vs Y Diagnosis (PGD) and WCE r] u% o' v Y Screening (PGS) can also help to prevent genetic problems and inherited diseases such as Cystic Fibrosis (CF), Duchenne's Muscular Dystrophy (HD), Down's syndrome, and muscular dystrophy to improve the chances of a successful outcome [34,35]. With the permission of the biological parents, unused embryos can be donated for human Embryonic Stem Cell (hESC) research, or to help other people who would be unable to have a baby [36-40]. Therefore, IVF is the most powerful treatment available that can help couples overcome various types of infertility and give a good chance of success (Figure 1).

In Intra Cytoplasmic Sperm Injection (ICSI) procedure the sperm is directly injected into the cytoplasm of an egg with a microneedle to penetrate the egg shell (Figure 2).

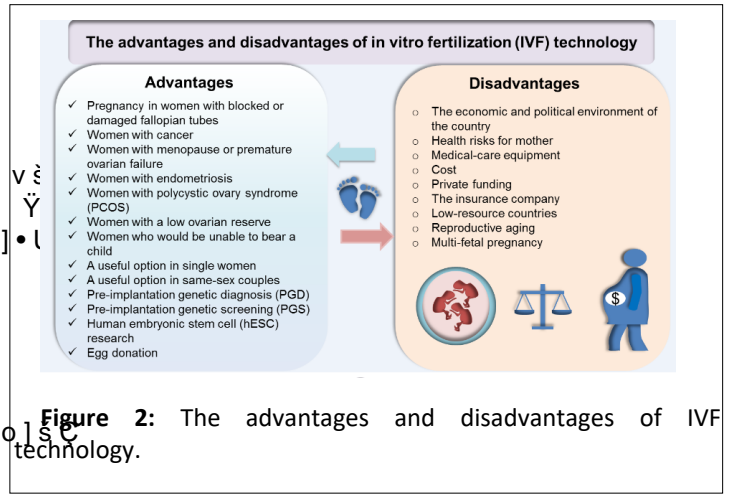


Figure 2: The advantages and disadvantages of IVF technology.

Discussion

Variables such as the economic and social environment of the country, the health care level, and medical-care equipment can be important to accessing IVF treatment [42]. Despite the development of IVF more than 30 years ago, the cost as an important element and a barrier to accessing IVF treatment remains high. IVF is an expensive treatment in most parts of the world. The average cost of one fresh IVF cycle in the United States costs around \$12,000. If you require further ART, the cost will be higher as much as \$15,000 via private funding. IVF treatment in the United Kingdom and Australia costs per IVF/ICSI cycles is around \$5,000-6,000 that is available in a range of prices [43]. IVF in developing countries is limited to people who can afford the cost involved. In resource-poor countries, a large majority of the population do not have private health insurance, because the insurance company only covered the diagnosis, not treatment. In recent years, there has been growing interest in strategies to enhance the level of mother care in low-resource countries [44,45].

Therefore, the development of low-cost and simple IVF treatment is urgent in areas with limited resources. Public funding (full, or partial) and the provision of health insurance for IVF treatment can remove the remaining barrier to IVF by covering the cost of egg-freezing [46]. There are several strategies to reduce cost in IVF including simplifying IVF procedures, decreasing the cost of ovarian stimulation, decreasing the need for IVF related equipment in the laboratory. Research has shown that IVF is not an effective treatment due to the aging of oocytes and has low success rates less than 20% per cycle in women 40 and beyond [47]. So, these women by using their own oocytes do not benefit from ART procedures. Although IVF side effects vary depending upon the treatment, the risk of a failed pregnancy or the risk of uterine infection should be considered as an adverse effect of IVF for a single treatment. Therefore, it should be necessary to improve treatment and reduce the remaining barrier.

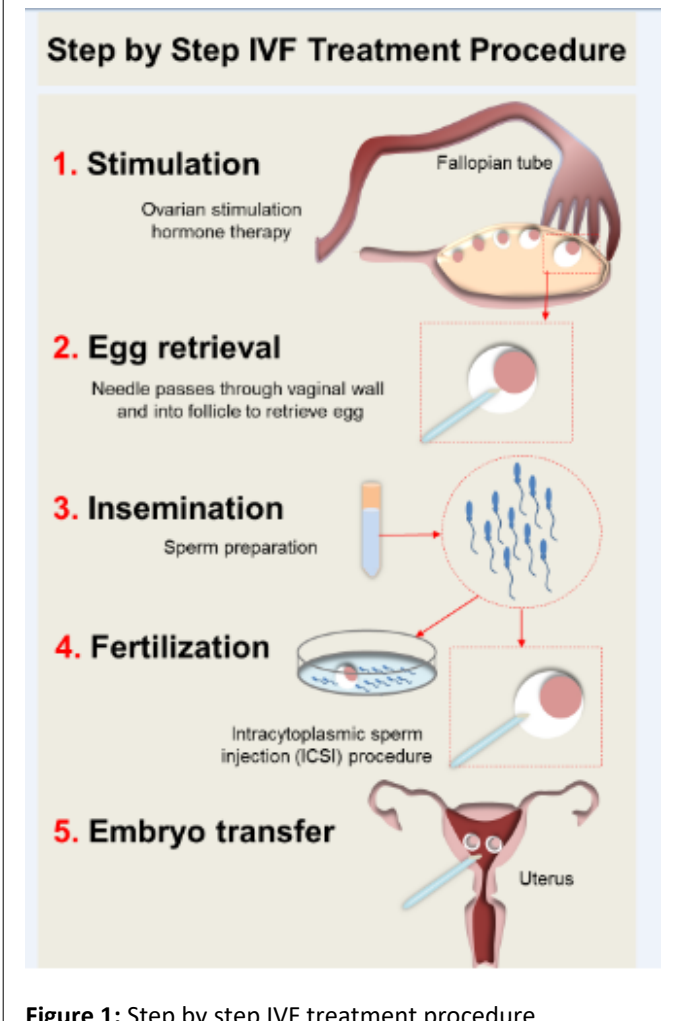


Figure 1: Step by step IVF treatment procedure.

In the IVF, there are several steps including hormonal stimulation to release more than one healthy egg in a month, a needle through vaginal wall and into the ovary for egg retrieval, injection of the highest quality sperm with the best quality eggs, in vitro fertilization and embryo transfer to the woman's womb [41]. If the chance of

Conclusion

To date, IVF has increased the treatment of]v(CE š]o]š]C used to overcome CE %oCE} problems or prevent P v š] disorders. Several basic issues and]v š CE À v š]o]v to be elucidated to facilitate ((š]IVF treatment, especially for individuals of lower socioeconomic backgrounds who cannot ((} many of the health care. IVF, unlike other medical procedures, is • š]o] expensive for most and the management of each }v]š] presents many challenges.

Declaration of Interest

The authors declare no conflict of interest.

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