

Recent advances in IVF: Improvisations and innovations

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Abstract

Since its inception in 1978, the rapidly progressive field of IVF has achieved many milestones. Technologies like ICSI, Blastocyst Transfer, Laser Assisted Hatching, Cryotechniques allowing freezing of gametes, reproductive tissues and embryos have exponentially grown to acquire a major share in the routine protocols of IVF Cycles world-wide. But still the reproductive success of an IVF cycle is limited creating an unmet need for consistent innovations and researches. Therefore, this article reviews recent advances, newer techniques and future prospects in field of ART all targeting to reduce failures and complications like OHSS and multiple pregnancies.

Many researches are ongoing to improve the oocyte quality and maturity specially in older women and poor responder by novel stimulation protocols, donor and autologous mitochondrial transfer, ovarian rejuvenation PRP (platelet-rich plasma) therapy, IVM (in-vitro maturation), GV Nuclear transfer.

An increasing trend towards e-SET (euploid Single Embryo Transfer) is possible with pre-implantation genetic screening (PGS) for best embryo selection but limited by it's invasive in nature and inaccuracy in case of genetic mosaicism. Newer noninvasive modalities like Time lapse imaging and EMBRACE (embryo analysis of culture environment) helps to prioritize transfer of embryo with maximum implantation potential increasing clinical pregnancy rate.

Recent meta-analyses demonstrate that Endometrial thickness alone has poor predictive value for pregnancy. Recent advancement like ultrasound measurement of sub endometrial wave frequency and microarray analysis of putative implantation-associated gene expression, the so-called endometrial receptivity array (ERA) improves the endometrial receptivity and thus the implantation rate. Multiple microfluidic

devices have developed like SPARTAN (Simple Periodic ARray for Trapping and Isolation) to select healthiest and fasted sperms. The article concludes by discussing controversial topic of Crispr-Cas9 a gene editing splicing techniques and the use of Artificial Intelligence in customising and tailor-making babies which opens a plethora of possibilities but demanding clinical and ethical debates in long run. mean marks) among children conceived after fertility treatment.

Biography:

Dr. Neha Singh completed her MBBS from SNMC, Agra. She has Obstetrician & Gynecologist at SRN Hospital in the year 2013-2016 and Nehru Hospital in the year 2016-2017. She has also Senior Consultant Gynecologist & Fertility Expert in Indira IVF Group. Also, she is ex- Mentee American Center for Reproductive Medicine, Cleveland Clinic, Cleveland, Ohio. She had Masters in Obstetrics & Gynecology with more than 6 years' experience in the field. Specialist in IVF and Assisted Reproductive Technologies. Committed to deliver results with full passion and spirit.

[International conference on Reproductive Health, Infertility and IVF](#), Webinar, September 21-22, 2020.

Abstract Citation:

Neha Singh, Recent advances in IVF: Improvisations and innovations, IVF Health 2020, International conference on Reproductive Health, Infertility and IVF; Webinar, September 21-22, 2020.

(<https://ivf.healthconferences.org/abstract/2020/recent-advances-in-ivf-improvisations-and-innovations>)