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In-vitro maturation of oocytes for fertility treatment and preservation of fertility

IVF today is very successful and livebirth rates/cycle started may exceed 50% in women <35 years old. However, these good results are achieved with increased multiple pregnancy and OHSS. The use of antagonist protocol with agonist trigger reduces significantly, but not totally prevents the risk of OHSS. The only way to prevent OHSS completely is if ovarian stimulation is not done. In 1999, we published our first results of IVM when we obtained over 80% maturation rate of immature oocytes collected and a 40% livebirth rate/cycle started. Today, IVM can be done for patients at high risk of developing OHSS, those who are previous poor responders or produced poor quality embryos for no obvious reasons; as an alternative to FSH/hMG IUI and also for fertility preservation. In IVM treatment withdrawal bleeding is induced and U/S performed to identify the number of follicles in the ovaries since pregnancy rate with IVM correlate directly with number of oocytes retrieved. U/S is repeated when the largest follicle is between 10-14 mm and on that day hCG 10000 IU is given and egg collection performed 38 hours later and in almost 20 years we never observed a single case of OHSS. Current clinical pregnancy rates per cycle started reached 50% in young women. Obstetric outcomes in IVM are comparable to IVF and spontaneous pregnancies. The first successful IVM cycles combined with PGS and percutaneous PESA have already been reported by our team. We have found aneuploidy rates to be similar in IVM and IVF embryos and patients can achieve repeated live births with IVM treatment. Cancer survival rates have improved significantly and a growing number of women face infertility resulting from gonadotoxic oncologic treatment. Whole ovary freezing has only been succeeded in animals. Patients exposed to gonadotoxic agents for the treatment of non-oncologic diseases such as SLE and autoimmune diseases, who are undergoing surgery for endometriosis and who suffer from genetic disorders such as Turner syndrome and fragile-X pre-mutation face similar risks. IVF followed by embryo cryopreservation is regarded as the only established method for fertility preservation in female cancer patients; however, concerns about IVF/embryo freezing include: exposure to supraphysiologic estrogen levels, need for a male partner or donor sperm and legal, ethical, religious issues related to embryo cryopreservation in general. IVM avoids treatment delay or exposure to increased E2 levels associated with IVF and, combined with embryo or oocyte vitrification, provides previously unavailable options, such as immature oocyte collection in the luteal phase for some patients, and improves the services provided by a fertility preservation program. Primary-care physicians and oncologists should be made aware of the available fertility preservation options in order to allow referral of their patients, if desired, to an ART center that offers the full range of fertility preservation options. We have preserved fertility for over 300 women with various medical conditions. In a clinical trial of IVM and oocyte vitrification, we achieved a live-birth rate of 20% and the birth of the first four healthy babies in the world.

Biography

Seang Lin Tan: Graduate of Singapore University (1977), Howard Eddey Gold Medal by Royal Australasian College of Surgeons (1978); MRCOG Gold Medal by RCOG (UK)(1983); undertook REI fellowships with Prof. Howard Jacobs and Prof Robert Edwards (Nobel Laurate 2010) . He founded London Women's Clinic, UK with Prof. Edwards and served as James Edmund Dodds Professor and Chairman of the Department of ObGyn at McGill University (1994 to 2010). He was founding President of International Society of IVM, founding President of the Global Chinese Association of Reproductive Medicine and Vice-President of the International Society of IVF. He has published close to 300 peer reviewed articles, 15 books and hundreds of presentations and book chapters. Department of Obstetrics and Gynecology, McGill University, and OriginElle Fertility Clinic and Women's Health Clinic, Montreal, Canada

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