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The World Health Organization (WHO) considers Infertility as a 'disease of human reproductive system'. Around 186 million individuals are affected due to infertility globally with an impact on their personal and social life. Depending on whether pregnancy has been attained in the past, infertility can be considered Primary Infertility i.e. when a pregnancy has never been achieved or secondary infertility- when at least one prior pregnancy has been achieved.

Ideal fertility care should comprise of prevention, diagnosis and treatment of infertility. Due to cost involved, fertility care is rarely given priority in national universal health coverage benefit packages. In May 2014, considering the high cost involved in advanced Assisted Reproductive Technology (ART) treatment: In-vitro fertilization (IVF); the Contributory Health Services Scheme (CHSS) permitted reimbursement of expenses to a great extent to infertile couples in whom conventional treatment had failed. This conventional treatment in many cases includes least invasive, effective, simple relatively cheap first line basic ART procedures like Intra-uterine insemination (IUI).

Although the Department of Gynaecology at BARC Hospital, provided preventive and diagnostic measures including treatments like ovulation induction, the facility of basic ART procedure of IUI was not available in-house. As a result, many patients had to undergo multiple cycles of IUI at their own expense. To prevent direct referral to high cost advance procedure of IVF, bypassing the adequate trial of basic IUI procedures and prior to labelling a case as clear failure to conventional treatment it was essential to provide this dedicated ART facility with in-house IUI services. Hence, in July 2017, the Fertility Clinic was inaugurated at BARC Hospital.

The clinic has been approved for all ART procedures under PCPNDT act by the Government of Maharashtra. At present, IUI procedures are performed at this clinic. IUI is an OPD procedure which does not need anaesthesia.

In patient selection criteria for IUI, patent fallopian tube and presumptive proof of ovulation is mandatory with other indications being mild male factor, cervical factor, immunological factor or unexplained infertility. Ovulation is induced to time ovulation and follicular monitoring is performed to assess the response. Injection hCG 10,000 International Units (IU) is given once follicular size is at least 18 mm in diameter and endometrial thickness is more than 6 mm. IUI is usually timed 36 to 40 hours post hCG administration.

Normally, semen contains spermatozoa in seminal plasma. Seminal plasma leads to reduction in sperm motility. Semen needs to be processed prior to IUI so as to remove decapacitating factors, reduce concentration of reactive oxygen species, remove leukocytes and immature sperms which account for cytotoxic factors. The aim of sperm preparation is to isolate sperm fraction that contains highly motile, mostly morphologically normal sperms free of other debris and cells.

IUI is the procedure of deposition of this processed sperm isolate, directly in to the uterus at the anticipated time of ovulation. The rationale of IUI is to expose oocyte to more sperms near the site of fertilization and improve chances of conception.

The Fertility Clinic is equipped with a consulting room, semen collection room, semen processing laboratory (IUI lab) and a dedicated IUI room for performing procedures under aseptic precautions.

Consulting room: The room has privacy for interviewing and examining the couple. It is computerized for maintaining records of investigations, treatment and procedure details. Facility for follicular monitoring prior to and after ovulation induction is available in the consulting room. The procedure of IUI is performed in this consulting room.

Semen collection: Considering the psychological stress at the time of semen collection, a dedicated room has been established which ensures enough privacy and an appropriate environment where the husbands come only after a prior appointment. It is located close to IUI lab and has attached wash basin and washroom facility. For the procedure of semen collection a sterile, wide mouthed, non-toxic and disposable container is provided in the clinic.

IUI lab: A sterile area is necessary for semen processing close to semen collection room and consulting room where the actual insemination procedure is performed. Ultraviolet light is used to create a sterile area in the laboratory.

Good laboratory practice (GLP) guidelines as described internationally along with safe disposal of biological waste are strictly followed in the laboratory. The equipments include phase contrast microscope, test tube warmer, centrifuge machine, stainless steel top workstation with sterile laminar flow hood and a refrigerator.

Semen analysis is performed using phase contrast microscope, which has 10x, 20x, 40x and 100x objectives. Semen is examined for count, motility, morphology and other components such as pus cells. Although expensive, a very accurate Makler Counting Chamber is used for this purpose.

A stainless-steel top workstation equipped with sterile laminar flow hood is used to effectively minimise contamination at the process of sperm preparation.

The data obtained till December 2021 shows that 528 patients were registered at fertility clinic, 4269 follicular studies were done and 559 IUI cycles were performed with success rate of 16.24%. M. Schorsch et al analyzed 4246 insemination cycles and reported overall pregnancy rate between 7.5 and 10% in women aged up to 40 years, even with several insemination cycles [1]. Success of IUI program of fertility clinic goes to expertise, clean environment, proper instruments, disposables, media, standard protocols and strict quality control. The clinic aims to provide more advanced ART treatment in future.

Reference

[1] Schorsch M., Gomez R., Hahn T., Hoelscher-Obermaier J., Seufert R., Skala C. Success Rate of Inseminations Dependent on Maternal Age? An Analysis of 4246 Insemination Cycles. *Geburtshilfe Frauenheilkd.* 2013 Aug; 73(8):808-811. doi: 10.1055/s-0033-1350615. PMID: 24771935; PMCID: PMC3859121.

A Phase Contrast Microscopy Semen Analysis

B IUI Room

C Sonography: Folliculometry

D IVF Workstation, Digital heating blocks
Stereozoom Microscope