

Infertility Treatment in COVID-19 Pandemic

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Abstract

The Coronavirus pandemic has had a great impact on various health sectors including pregnancy and infertility treatments like in vitro fertilization (IVF), in utero insemination (IUI), ovulation-induction, laparoscopy, hysteroscopy, and assisted reproductive techniques (ART). Due to the current situation in the COVID-19 pandemic and the relaxation permitted by the government, allowing nonessential services in a gradual manner, infertility services are being resumed according to the guidelines set by the ministry of health and family welfare. To meet the demands of current situation, the patient and the staff should be triaged. Only those patients should be undertaken who are tested or screened negative. Diagnostic evaluation is done using RT-PCR and the testing should be done at the commencement of treatment, that is, on day 2 of IVF/intracytoplasmic sperm injection (ICSI) cycle. Repeat test is done before the hCG trigger. The husband also needs testing at least once during the cycle, preferably at the start of the cycle. If the donor tests positive for COVID-19, the cycle should be cancelled. Universal good practices should be followed in laboratory also by each staff, which includes use of proper personal protective equipment (PPE) like eye protectors, FFP-2 or N-95 face masks, double gloves, shoe covers, disposable impermeable gowns, and face shields. The sanitization of the laboratory environment, equipment and devices should be done with appropriate nonembryotoxic disinfectants at the end of each procedure. COVID-19 has actually changed the way infertility treatment is being provided, keeping in view the safety of both the doctors and the patient.

Keywords

- ▶ artificial reproductive technique (ART)
- ▶ COVID-19
- ▶ infertility
- ▶ IVF

Introduction

The first case of COVID-19 in India was reported on January 30, 2020. The outbreak was declared a global pandemic by World Health Organization. The symptoms may be mild flu-like, including fever, dry cough, muscle pain, tiredness, and loss of smell, and in advanced cases, breathlessness. Some individuals may have very mild or no symptoms and may go unnoticed despite infection. Most young people who become infected experience mild illness and recover, but for some it can be more severe.¹ The Coronavirus pandemic has had a great impact on various health sectors, including pregnancy and infertility treatments like in vitro fertilization (IVF), intrauterine insemination (IUI), ovulation-induction, laparoscopy, hysteroscopy, and assisted reproductive techniques (ART).

Currently very little is known about the impact of COVID-19 on reproduction and pregnancy. There are reports of women who have tested positive for COVID-19 delivering

babies free of disease. This data is reassuring but caution should be taken as interpretation is linked to a small number of cases. **Young women without any progressive pathology planning a pregnancy in the COVID-19 era should delay until after the pandemic.**

Many infertility patients and pregnancies have been struggling because of the disruption caused by the COVID-19 pandemic.

Many would-be-parents and those planning to conceive through ART (IUI, IVF, intracytoplasmic sperm injection (ICSI), and ovulation-induction) are going through an emotional rollercoaster, owing to this undercurrent of uncertainty. Those with infertility endure many anxieties, uncertainties, feeling of helplessness, and fear about the future, and now there is the COVID-19 pandemic on top of it all.

Due to current situation in the COVID-19 pandemic and the relaxation permitted by the government,

allowing nonessential services in a gradual manner, infertility services are being resumed according to the guidelines set by the ministry of health and family welfare. **Infertility and IVF services should be reopened, especially for patients with decreased ovarian reserve and those requiring fertility preservation such as cancer survivors after proper counseling and individualizing a case.**² The regulations are based on the understanding of COVID-19 and shall change with the evolving scientific, political, and economic situations.

A thorough counseling should be done about all the issues related to treatment, including the potential risks involved during the COVID-19 pandemic, even the risk of getting COVID-19 infection in pregnancy. The couple should be given the decision to proceed or postpone the cycle. The clinic, too, should follow policy on selecting and prioritizing patients. The couple should be informed about the additional expenses that would be incurred for COVID-19 testing. The information on the effect of COVID-19 on infertility and early pregnancy is limited, but no evidence that the infection increases risk of fetal malformations or risk of abortions is known to date.³ All discussions and planning to be completed 2 weeks in advance. Couples are advised to follow social isolation for 2 weeks prior to the day of starting of treatment. This counselling should be done via telecommunication to limit social interaction.

Practice Management

To meet the demands of the current situation, the patient and the staff should be triaged. Sufficient clinical staff, nurses, and embryologists are required, and a backup team should be available in case any staff member is suspected of or tested positive for COVID-19 and needs quarantining. Staff in the clinics should also undergo similar screening and triaging. Only those patients should be undertaken who are tested or screened negative. The triage questionnaire is provided in **Appendix A**.

Use of the enzyme-linked immunosorbent assay (ELISA) antibody test for COVID-19 is usually not reliable at this time. So, diagnostic evaluation is done using RT-PCR and the **testing should be done at the commencement of treatment, i.e., on day 2 of IVF/ICSI cycle at the center where COVID-19 test takes more than 24 hours. The test can be done 1 to 2 days prior.**⁴

Repeat test is done before the hCG trigger. **The husband also needs testing at least once during the cycle, preferably at the start of the cycle.**⁴ Before embryo transfer, COVID-19 testing is done approximately 1 to 2 days prior to the procedure. In case either partner turns positive on tests, they should help in contact tracing in keeping with the national policy. If a patient comes out to be positive, the cycle should be cancelled.

Earlier surrogacy and donor cycles were not permitted. According to the latest July 2020 ASRM guidelines, third party

reproduction can be permitted after taking into account the local disease prevalence and adherence to travel restrictions. Under exceptional circumstances, oocyte cryopreservation and semen cryopreservation should be considered. In case of donor, similar testing protocols should be followed after through history taking. However, if the donor tests positive for COVID-19, the cycle should be cancelled. Segmentation of donor and recipient treatment should be considered due to the high prevalence of COVID-19.

All diagnostic tests like semen analysis, hysterosalpingography (HSG), and office hysteroscopy should be done taking adequate precautions with personal protective equipment (PPE).⁵ **COVID-19 testing should be done for all patients undergoing infertility-related procedures such as semen analysis, HSG, hysteroscopy, laparoscopy, ovulation-induction, intrauterine insemination.**⁶ Elective laparoscopy should ideally be avoided as aerosolization takes place during anesthesia and release pneumoperitoneum. It is done based on the principle of priority and urgency of fertility treatment, taking all available precautions such as use of specially designed smoke evacuators where abdominal smoke is evacuated through hypochlorite solution.^{7,8}

According to the IFS-ISAR-ACE guidelines, for the treatment cycle, triage negative and confirmed COVID-19 negative patients are to commence IUI/IVF cycle. Even for the controlled ovarian stimulation in IVF cycles, protocols with minimal visits for scan and blood samples to be followed, which may include fixed antagonist protocol. Similarly, for IUI cycles, lower dose of gonadotrophins is used. Whenever there is a doubtful situation, cancel or freeze all policy is applied

Oocyte retrieval can be done under IV sedation or propofol for minimal risk to anesthetist. Adequate PPE should be worn for all the cases. Interval between the cases should be minimum to allow disinfection of OT. Disinfection of operation theater, transfer room and IVF laboratory equipment like incubators, aspiration pumps should be done as per infection guidelines. Embryo transfers should be performed in low-risk or asymptomatic patients.⁸

In case ovarian hyper stimulation syndrome (OHSS) develops, then the chest physicians and intensivists are involved earlier and repeat COVID-19 testing is done, as the picture may be confusing with the disease. In recovered COVID-19 patients, IVF cycle should be undertaken only after appropriately reviewing the patient.⁹

Staffing and Equipment

Universal good practices should be followed in laboratory also by each staff, which includes use of proper PPE like eye protectors, FFP-2 or N-95 face masks, double gloves, shoe covers, disposable impermeable gowns, and face shields. The number of individuals at a time in a facility should be minimized. Other norms such as social distancing and hand hygiene should be followed at all times. Discussion meetings can be held over Zoom or other virtual platforms.

Handling Specimen from COVID-19 Infected Individuals

Semen freezing is only advisable in indicated cases and not as regular backup. A separate tray should be used to receive the semen samples and the exterior should be washed and sanitized before it reaches the laboratory. All body fluids including follicular fluid and semen should be used as a potential source of SARS-CoV-2. Appropriate semen processing techniques should be adapted to reduce viral load. Ideally, an offsite semen sample collection policy should be followed. High-security vapor storage tanks should be used for cryopreservation.

The sanitization of the laboratory environment, equipment and devices should be done with appropriate nonembryotoxic disinfectants at the end of each procedure. Based on staffing level, wherever possible, facilities should arrange at least two teams that should alternate to limit the virus spread in the event of an operator being infected. The practice of counseling of the patients by the laboratory personnel should be minimized and should be done via telecommunication if unavoidable. UVC light has the most energy and destroys the genetic material inside viruses and microbes, so it is used for disinfection. UVC can be preferably used in IVF laboratories, taking all precautions, because its use can be dangerous to skin and keeping in mind that all the gametes are placed in incubators at the time of its use.

COVID-19 has actually changed the way infertility treatment is being provided, keeping in view the safety of both the doctors and the patient. Extensive guidelines and new protocols need to be set up, so that patient care can be provided with minimum risks.

Conflicts of Interest

None declared.

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