COVID-19 caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has had an immense impact on human life, economic state, and healthcare, including reproductive health. Although much research is still needed to clarify the global impact of the COVID-19 pandemic on human health, the molecular mechanisms of infection have been widely investigated (Fig. 1), leading to the synthesis of vaccines. Even with the introduction of the vaccine, the need for robust safety measures is crucial in reducing the transmission of the novel coronavirus as outlined by the American Society for Reproductive Medicine (ASRM) Taskforce guidelines [1,2].

As countries around the world have adopted measures to contain the pandemic, continuity of care for patients with diseases other than COVID-19 is becoming a big challenge. Reproductive health services are one of the services which were postponed during the COVID-19 pandemic [3]. The decision to disrupt fertility services was supported by the lack of sufficient data about the effect of COVID-19 on reproductive health and was intended to be a precautionary measure. Although there is a pressing need to preserve health from contagion, this has particularly impacted a vulnerable group of patients, who urgently need andrological services, such as patients who have been diagnosed with cancer and need to begin their treatment without further delay. It is well known that many of the chemotherapeutic drugs may result in a significant reduction in sperm production and in some cases complete azoospermia [4]. Hence, these men have a very tiny window of opportunity to cryopreserve their sperm and therefore, semen testing and sperm cryopreservation were categorized as essential services [5]. Although Gacci et al (2021) reported a significantly higher percentage of cryptozoospermia in men who had recovered from COVID-19 as compared to the general population, this effect on male reproductive health cannot be confirmed due to the small sample size and limited statistical power of this study [6]. It remains unclear if cross-contamination is possible between stored tissues from COVID-19 infected and non-infected samples. Based on
these considerations, semen samples collected from COVID-19 positive patients must be handled with great caution and processed in a manner similar to that of samples obtained from seropositive patients.

The Andrology Laboratory at Cleveland Clinic implemented safety measures based on the recommendations of professional reproductive societies such as ASRM Taskforce Updates [1-3,7], Society for Male Reproduction and Urology (SMRU) in collaboration with the Society for the Study of Male Reproduction (SSMR) under the guidance of the SMRU and SSMR joint committee [8], Center for Disease Control (CDC) [9] and the recommendations by the Cleveland Clinic Institutional COVID-19 Task Force [10]. These guidelines were prepared in response to the pandemic with the intent of offering sperm banking services and semen analysis. The safety measures were strictly followed by staff members and patients, and these included: wearing of a facemask covering both the mouth and nose, eye protection (Face Shields or Goggles) and physical or spatial distancing of at least 6 feet apart. Social and physical distancing signages were posted in the Clinic as a reminder for all employees and patients. Furthermore, patients are screened for COVID-19 symptoms by using a questionnaire. In fact, at the time of scheduling the appointment over the phone, each patient was asked to answer questions to identify any possible risk of COVID-19 infection, and the presence of symptoms. The patient answers these questions again at the time of their visit, along with temperature checks to mitigate the risk to other patients as well as to the healthcare providers, including the laboratory and clinical staff. To prevent the chances of accidental contact between patients, the Cleveland Clinic policy is to schedule each appointment on a one-hour time slot and not to allow accompanying persons in the laboratory premises, except in such cases where the patient is a minor or needs special assistance. The screening of the Cleveland Clinic employees includes daily temperature scan as well as the completion of a health symptom screening questionnaire using a mobile responsive app called “COVID Pass”. Based on the individual’s input and response, an immediate notification is received that informs if an employee is cleared or not cleared to enter the onsite work location. In case the caregiver reports having symptoms, such as fever, severe cough or shortness of breath, they will not be cleared to work. Further, laboratory personnel are also specifically instructed to practice rigorous personal hygiene, including washing their hands frequently with soap and water for at least 20 seconds, especially after being in a public place, or after coughing, or sneezing. Other precautions adopted by the Andrology laboratory include decontamination of the laboratory, work stations and patient areas at the start of each procedure and again after any procedure by using decontaminants that meet the Environmental Protection Agency (EPA) criteria for use against COVID-19 virus. Testing or processing of all semen samples for sperm banking has to be conducted under a biosafety level (BSL)-2 hood, as a universal precautionary approach for infection control.

Strategies for the safety of patients and caregivers instituted during this pandemic are critical for mitigating the viral spread. Appropriate hand-washing, screening procedures, patient masking and physical distancing, staggered appointments, appropriate personal protective equipment, disinfecting protocol, and stringent enforcement of these policies can keep patients and staff safe in the andrology laboratory setting.

Acknowledgements

Authors are thankful to the artists from the Cleveland Clinic’s Center for Medical Art & Photography for their help with the illustration.
Conflict of Interest

The authors have nothing to disclose.

Author Contribution

Conceptualization: AA, Supervision: AA. Writing – original draft: All authors. Writing – review & editing: All authors.

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