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Obstetrics

Restructuring fetal medicine services in a low-resource setting during the COVID-19 pandemic: Experience from a tertiary care fetal medicine center

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KEYWORDS: Amniocentesis; COVID-19 pandemic; Pregnancy; Prenatal invasive diagnostic procedures; Ultrasound; Vertical transmission

Prenatal diagnosis and invasive fetal therapy, being a highly specialized aspect of antenatal care, are available only in select centers and present unique challenges during the COVID-19 pandemic. The tests are specific to gestational age, making time of vital importance. The impact of these interventions on the fetus in the setting of COVID-19 is unclear, posing challenges in balancing the risks and benefits of such interventions. Experience and key strategies for providing timely fetal medicine care during the pandemic are highlighted below.

1 | SCHEDULING APPOINTMENTS AND SCREENING BEFORE FETAL INTERVENTIONS

At the outset of reorganization, pregnant women with scheduled appointments were contacted and reassured. They were screened telephonically for symptoms before calling them to the facility for

counseling and testing. Part of the genetic counseling was also done telephonically and appointments rescheduled accordingly.

New appointments were scheduled via telemedicine in consultation with the genetics division and were prioritized based on gestational age and indications. New appointments and follow-up visits were strategically scheduled to avoid crowding of the waiting area and to ensure social distancing. Patients were instructed to limit the number of attendants, wear a mask, and practice hand hygiene and social distancing. Telephonic screening about their symptoms, history of significant travel, contact or occupational exposure or residence in a cluster, and presence of other risk factors was carried out.¹ In case of a positive screen, the clinical urgency of the intervention was reviewed. If the procedure could be safely postponed, the patient was advised to self-isolate for 14 days based on local guidelines and the appointment rescheduled for 2 weeks later.² If the pregnant woman had symptoms of COVID-19, it was decided that maternal symptoms would dictate further course. In mildly symptomatic patients or asymptomatic

patients from COVID-19 hotspots, testing for COVID-19 was advised before the procedure, which was in accordance with the Indian Council of Medical Research guidelines for testing.³ In the presence of severe symptoms, optimization of maternal health was considered a priority. When in doubt, advice from infectious disease personnel was sought.

2 | TESTING FOR COVID-19 BEFORE FETAL INTERVENTIONS

A vital concern in patients undergoing fetal interventions was the risk of vertical transmission, although a review of the current literature presented no evidence of vertical transmission.⁴ In addition, no data were available regarding fetal complications if the infection was contracted in the first and second trimesters when the majority of invasive procedures are performed. Moreover, the risk to healthcare personnel was greatly reduced as most fetal procedures are performed under local anesthesia only. All these factors re-emphasized a history-based screening.

3 | FETAL INTERVENTIONS: GENERAL CONSIDERATIONS

As most invasive prenatal diagnostic procedures are time-bound with respect to gestational age, these were continued as before. Lifesaving fetal interventions such as intrauterine transfusions (IUT) were also continued.⁵ Despite limited evidence, amniocentesis, where transplacental needle passage is prevented, may be preferable compared to chorionic villus sampling (CVS), where a potential risk of transplacental viral transmission may be present.⁶ Only essential healthcare personnel participated in the procedures, for which a detailed roster was prepared.

Personal protective equipment (PPE) including a surgical gown, N-95 mask, gloves, and goggles/face shields were used during all interventions. If the patient was suspected of having COVID-19 infection on screening, the procedure was performed after testing and a coverall made of recyclable material was used in addition to the previously mentioned PPE.

A stringent cleaning and disinfection protocol for all equipment and ultrasound machines was implemented.⁷ A hand-sanitizing station was installed outside the fetal medicine theater. Mopping of floors with 1% sodium hypochlorite solution along with dusting and cleaning of all surfaces was also done on a regular basis and a checklist was maintained.

4 | FETAL INTERVENTIONS DURING THE COVID-19 PANDEMIC: EXPERIENCE DURING THE LOCKDOWN

The invasive prenatal diagnostic and therapeutic procedures performed at the study institute during the lockdown period are listed in

TABLE 1 Procedures performed during the lockdown period.

Procedure	April 2020	May 2020	Total
Chorionic villus sampling	9	9	18
Amniocentesis	7	7	14
Cordocentesis	1	0	1
Intrauterine blood transfusions	12	6	18
Total procedures	29	22	51

Table 1. CVS was the most common procedure performed, with common indications being previous baby affected with thalassemia major, Duchenne's muscular dystrophy, or spinal muscular atrophy.

Of the 51 patients who underwent procedures, three resided in COVID-19 hotspots and were advised to undergo COVID-19 testing before the procedure; however, none tested positive.

4.1 | Situations extraordinaire

Eighteen IUTs were performed. IUTs posed difficulty due to the requirement of freshly donated blood and blood donations had become sporadic during the lockdown. In a noteworthy example concerning a patient with a history of previous multiple fetal demise requiring IUT, no blood was available despite the center's best efforts. At this juncture, a resident doctor with the blood type O-negative volunteered to donate blood and made the IUT possible. This highlights the rare human quality of empathy and the ability to go beyond the call of duty.

In conclusion, fetal medicine services are essential for pregnant women. With effective screening, contingent testing, and rational use of PPE, these can be performed safely without additional risk to the mother, fetus, and healthcare personnel.

AUTHOR CONTRIBUTIONS

AR: Development of the intellectual content, manuscript design, writing and final approval of the manuscript. KAS: Conception of the idea, development of the intellectual content, manuscript design, writing and final approval of the manuscript. VD: Development of the intellectual content, Manuscript design, Final approval of the manuscript.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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Racial and ethnic disparities in severity of COVID-19 disease in pregnancy in the United States

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Throughout the COVID-19 pandemic, limited racial and ethnic data have been published about the prevalence and severity of the disease in pregnant women. Ethical approval for this study was obtained from the Brigham and Women's Hospital Institutional Review Board. The present study reviewed the cases of women at an academic hospital-based obstetrics practice diagnosed with COVID-19 during pregnancy or within 8 weeks postpartum and abstracted data from electronic medical records including demographics, pregnancy, neonatal, and COVID-19 outcomes.

From March 14, 2020 to May 1, 2020, 44 pregnant or recently postpartum women were diagnosed with COVID-19 in our practice by positive polymerase-chain-reaction (PCR) testing for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The racial and ethnic disparities in COVID-19 outcomes are evident in disease incidence and severity. The majority of these patients belonged to racial or ethnic minority groups. Hispanic women represented 48% of the

cases and non-Hispanic Black women represented 34% of the cases. This is particularly notable given the clinic patient population is 30% non-Hispanic Black, 30% Hispanic, 20% non-Hispanic White, and 15% Asian. Of the nine women who required hospitalization for COVID-19, eight identified as non-Hispanic Black or Hispanic. Of the five patients with severe or critical disease,¹ two were non-Hispanic Black women and two were Hispanic women. Of the two pregnant women who required intensive care unit (ICU) admission and mechanical ventilation, one was non-Hispanic Black and the second was Hispanic (Table 1). These disparities in COVID-19 disease severity resulted in a total of 25 inpatient days for the five Hispanic women admitted for COVID-19, and 31 inpatient days for the three non-Hispanic Black women admitted for severe disease. For the two patients who were critically ill, they together experienced 14 days in the ICU and 25 days of mechanical ventilation.