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Challenges in pregnancy and post-delivery management in COVID -19 Era

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Abstract
The Covid-19 pandemic is a global crisis. Knowledge is evolving in every aspect of this novel infection. Pregnancy is an immune compromised state; hence it could be more susceptible to COVID-19 infection. There is an urgent need for triaging pregnant patients for antenatal visits and delivery. The guidelines need to be tailored according to the local situation. Some procedures are urgent, while some can be deferred. In this situation antenatal visit has been minimized to three from eight minimum ANC visits. With strict application of the guidelines for the infection prevention, COVID-19 testing, antenatal visits and delivery were managed in seven non COVID-19 pregnancy till her post delivery period in this pandemic era. It is important to take protective measures by health care workers as well as by patients to protect against Covid-19 infection.
Since this corona virus (SARS-CoV-2) emerged as a fresh, new and novel infection, studies are limited hence this small study might be helpful in the management of non COVID-19 pregnancy cases in present Covid-19 pandemic.

Keywords: Pregnancy, COVID-19, guidelines, pandemic

Introduction
The novel corona virus (SARS-CoV-2) is a new strain of corona virus causing COVID-19; first identified in Wuhan City, China, it has become an unabating global health threat [1]. On 11 February 2020, WHO announced a name for the new corona virus disease: COVID-19. The COVID-19 strain of corona virus infection has a high rate of transmission by respiratory droplet and through fomites [2]. A study showed that stool samples continued to exhibit presence of viral particles for a mean of 29 days after the first symptoms which is longer than that of samples from the respiratory tract [3]. This reiterates the need for hygiene and safe sanitation in general COVID-19 infection was declared as a pandemic by the World Health Organization on 11 March 2020 [4]. Most pregnant women will present with mild symptoms and have a similar course of disease as normal adults with COVID-19 infection. At present there is no robust evidence that pregnant women are more likely to become infected than other healthy adults. For the low risk, uninfected woman, at present, the recommended strategy for antenatal care is to defer routine visits [5]. They can consult the healthcare provider telephonically or through a web platform for minor ailments and queries. Three minimum visits at 12, 19 (anomaly scans) and at 32 weeks pregnancy are recommended instead of eight. To manage these situations many guidelines have come up starting from routine care to emergency management. These guidelines are dynamic and keep changing according to the local situation and evolving knowledge about this virus. We followed our institute guidelines which are based on ICMR & Ministry of health and Family Welfare, Government of India.

Material & methods
Present study was conducted at Level III hospital of Uttar Pradesh. Pregnancy cases who were registered and delivered between 1st April 2020 to 15th May 2020 at General Hospital, SGPGIMS, Lucknow were enrolled for this study. Total number of women delivered during this period was seven (n = 7). The inclusion criteria were:
1. COVID -19 test should be negative
2. Term pregnancy
3. Obstetrical indications for admission and cesarean section
4. No severe respiratory problems

The institute guidelines were followed to manage pregnancy cases during antenatal, delivery and postnatal period. We admitted the antenatal cases after negative COVID-19 test to the designated ward. All seven cases were undergone Cesarean section for obstretrical indications. Testing for COVID-19 in pregnancy was done according to the ICMR Guideline. Test methods used was the RT-PCR (Real time polymerase chain reaction) test from nasopharyngeal swab and the reports are usually available within 24 hours. Timing of COVID-19 test was before admission and within 5-7 days of delivery.

Measures taken for Pregnant Women to Prevent COVID-19 during admission: Hand hygiene, Respiratory hygiene, Avoiding touching the face and maintaining distance (social distancing) practiced.

Consent: In the routine consent taken at the time of admission, treatment procedures, delivery or surgery, the probable chances of COVID-19 infection during this pandemic while in hospital and its consequences and the precautions taken to avoid the infection were added.

Precautions taken by healthcare workers (HCW) during delivery**:** All the staff / Health care workers (HCW) involved took standard precaution with N-95 mask and face shield & dialysis kit / HIV kit during cesarean sections. During surgery bipolar cautery was used rather than monopolar to avoid aerosol. Minimal staff were involved in delivery. Early cord clamping and immediately handing over the baby to pediatrician for observation were done. All women were given spinal anesthesia except one who was given combined epidural and spinal anesthesia. The waste were disposed off according to norms. In post-operative period mother & baby were kept for 3 to 4 days to observe any illness. Detail of study has been given in Table no-1 and Table no-2.

Results

All 7 cases delivered by lower segment cesarean section for obstetrical indications. The observations were:

1. Difficulty during surgery due to personal protective equipment (PPE) - once we geared up with PPE kit, vision through goggles and face shield was markedly hampered, felt discomfort in long standing during surgery.
2. No sign & symptoms (fever, cough, breathing difficulty) of infection in mother and baby during hospital stay.
3. Two babies were shifted to NICU for few hours: one for mild Transient Tachypnea of the newborn (TTN) with hypoglycemia and the other for icterus. On 3rd to 4th postnatal day, both mothers and their babies were discharged with proper instruction of baby immunization, breast feeding and to follow proper measures to prevent COVID -19 infection once they are back home.

Discussion

The greatest tool to prevent COVID-19 infection in the general population and for pregnant women is Social Distancing. As per the Government of India advisory, this is a non-pharmaceutical infection prevention method and control intervention implemented to avoid/decrease contact between those who are exposed to the pathogen and those who are not, so as to stop or slow down the rate and extent of disease transmission in a community.[6] Some important aspects for the pregnant woman in India from this advisory are:

1. Disinfection of surfaces to reduce fomites related spread.
2. For women working outside the house, it is preferable to implement work from home strategy.
3. Keeping a distance of at least 1 meter in various necessary social interactions and activities.
4. Avoid non-essential travel. If travel is undertaken, it is preferable to use a private vehicle. If public transport is used, distance should be maintained.
5. Avoid gatherings and functions to celebrate the 7-month milestone, which is a common cultural practice.
6. Minimize visitors from coming to meet the mother and newborn after delivery.

We followed the same precautionary measures with our pregnancy & post-delivery cases.

For the asymptomatic and uninfected woman at present, the recommended strategy for antenatal care is to defer routine visits [8]. They can consult the healthcare provider telephonically or through a web platform for minor ailments and queries. We implemented this via telephone and through our telemedicine services.

In settings where the pregnant woman is confirmed or suspected to have COVID-19 infection and presents in labour or is undergoing a surgical procedure, there is a need to follow these and some enhanced measures using personal protective equipment (PPE) to prevent acquiring infection through respiratory droplets. The PPE should therefore include masks such as the N95 respirator (ideally fitted to size) and face protection by a face shield or at least goggles and other measures [7]. Here in all elective case, universal precautions were taken keeping in mind that all surgical cases are potential case of COVID-19. With thorough and adequate use of PPE and other protective measures, the experience in Singapore and Hong Kong has been that there was no transmission to healthcare workers [8].

Clinical presentation of COVID-19 in pregnancy: With mean incubation period (from exposure to the appearance of clinical features) is 5 to 7 days, most infected people will show features latest by 11 days of exposure [9]. Pregnant women don't appear to be more susceptible to consequences of infection of COVID-19 than general population [10]. Most pregnant women will have mild to moderate flu-like symptoms of cough, sore throat, and fever. Pregnant women, especially those with obesity, elderly and with associated medical diseases (diabetes, asthma, etc) are more susceptible for more sever illness.

Testing for COVID-19 in pregnancy: Currently, as per revised guidelines by the Indian Council for Medical Research (ICMR), testing for pregnant women should be done as per the ICMR testing strategy. The revised ICMR guidelines included pregnant women residing in clusters/containment areas or in large migration gatherings/evacuees centre from hotspot districts presenting in labour or likely to deliver in the next five days should be tested even if asymptomatic [11].

Test methods and facilities: At present CDC & ICMR recommends collection of a nasopharyngeal or oropharyngeal swab specimen to test for COVID-19 [15]. COVID-19 is detected by reverse-transcription polymerase chain reaction (RT-PCR). The test should be performed from a center which is authorized by the Government of India and state governments. Our hospital (SGPGIMS) is a well-recognized center and caters most of the neighboring districts samples. Reports are generally available in 24 hours. Repeat test is indicated only if clinically warranted. However, false negative tests are known to occur to the rate of 10-30% even with two serial swabs tested by the RT-PCR technique. In the near future, testing may be conducted by

Nucleic Acid Amplification Test (NAAT) or by serological testing. NAAT is a gold standard test. It is expensive and involves the risk of multiplication of viral particles. Serological testing is faster and cheaper. At a population level, serological testing may be more feasible to see the prevalence. Also, after 3 weeks of infection, the RT-PCR would be negative, but serology would give the diagnosis [12]. We are doing only RT- PCR to diagnose COVID-19. Other derangements seen with COVID-19 infection are leucopenia, lymphocytopenia, mild thrombocytopenia, mild elevation of liver enzymes and other acute infection markers. Co-infection with other common respiratory pathogens and the common cold virus are often seen with COVID-19. CT scan and other imaging modalities usually show patterns consistent with atypical pneumonia. In cases where an X-Ray is taken or a CT scan is needed for a pregnant woman, there should be provision of an abdominal shield to protect the fetus from radiation exposure. An informed consent regarding risk of corona virus infection for any procedure should be taken from the pregnant woman and her relatives. We included this important aspect to our routine surgical consent.

At present, in India, all symptomatic patients who have a positive test for COVID-19 are being isolated. The criteria for isolation and quarantine are the same for pregnant women and the general population. These criteria, duration and measures may be changed with the passage of time as per advice of the Government of India [13]. Cleaning and maintenance of facilities and medical equipment should be done as per guidelines. Our waste disposal was in accordance with the protocol.

Preliminary research suggests that the infection is not transmitted from the mother to child by placental transfer or through secretions in the genital tract. In one study including a total of 9 pregnant women with confirmed COVID-19 pneumonia, all of the newborns, who were delivered via cesarean section, tested negative for the corona virus, and there were no traces of the virus in the mother's amniotic fluid, cord blood or breast milk [14]. Babies of all seven mothers who delivered at our hospital were healthy except for minor routine neonatal issues and did not show any sign/symptoms of COVID-19 infection.

Postnatal Care and Advise to the mother infected with COVID-19

The mother should be encouraged to maintain the good practices of hygiene related to the puerperium and hand hygiene. She should consume a healthy and nutritious diet to recover from the infection and build immunity. The discharge card from the maternity unit should have advice about COVID-19 infection in addition to the usual post-delivery instructions. It should emphasize social distancing and to report if symptoms of acute respiratory illness (SARI) arise after delivery. We put emphasis on these measures during postnatal period and on discharge.

Conclusions

The COVID-19 pandemic has created major dilemmas in all areas of health care delivery, including pregnant women due to evolving and limited knowledge. Pregnant women makes an important and vulnerable group of our society and are bound complete the journey till delivery. If we take proper precautions and follow guidelines the risk of COVID-19 infection can be minimize and non-COVID-19 pregnancy can be managed safely even in this pandemic.

Key points

1. Avoidance of emergency due to lack of manpower
2. Anesthesia preferably - neuraxial preferred and avoidance of general anaesthesia due to risk of exposure to aerosol
3. Labour Analgesia to be avoided.
4. Minimize the number of HCW in operation theater

Table 1

Cases	Age (years)	Parity	Associated condition	Mode of delivery	Anesthesia	Covid test	Indication for LSCS
1	33	Primigravida	Hypothyrodism	LSCS	CSE	Negative	39week pregnancy with PET + CPD
2	32	Primigravida	Nil	LSCS	SA	negative	38 week pregnancy with leaking P/V +oligohyhramnios
3	24	Primigr-avida	Hypothyroidism	LSCS	SA	Negative	40week 2days Pregnancy + free floating head+ unfavorable cervix
4	34	Primigr-avida	hypothyroidism	LSCS	SA	Negative	40week1day pregnancy with failed IOL
5	25	Secondgravida (P1)	Rh -ve	LSCS	SA	Negative	39w6d pregnancy with NPL
6	30	Second gravida (P1)	Nil	LSCS	SA	Negative	39week pregnancy +previous C/Swithin 1year + PUPPPs
7	29	Primigr-avida	PET	LSCS	SA	Negative	39 week pregnancy with PET with IUGR

Table 2

Baby No	Baby-Weight (Kg)	APGAR at 1minute	Day -1	Day -2	Day -3	Day -4
1	3.4 Kg	9	well	well	discharged	-
2	2.5kg,	7	TTN Hypoglycemia	well	well	discharged
3	2.6 kg,	10	well	well	well	discharged
4	2.6 kg,	10	well	well	well	discharged
5	2.5 kg,	8	Well Icterus +	S bilirubin =10 Kept on phototherapy	S bilirubin =7 Baby back to mother side	discharged
6	3.5 kg,	10	well	well	discharged	-
7	2.7 kg	9	well	well	well	discharged

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