COMMENTARY

Obstetrics and COVID-19

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Abstract

Coronavirus disease (COVID-19) is caused by severe acute respiratory syndrome corona virus 2 (SARS-Cov-2), an RNA virus which has caused pandemic in the whole world. It has put an unprecedented burden on healthcare system globally, and neither obstetricians nor labour rooms are spared as deliveries and caesarean sections cannot be postponed. There is a threat of collapse of healthcare system in maternity wards and labour rooms due to risk for transmission to healthy patients, obstetricians, midwives and other staff. It is not possible to screen all pregnant women especially in developing countries but due to asymptomatic cases, risk of infection looms large. Many countries including India have declared lockdown to stop the transmission but delivery services have to continue. Proper planning and division of the healthcare system into COVID-positive and negative areas with separate staff can help minimise the spread and preserve precious resources. Hospital staff must protect themselves by wearing personal protective equipment (PPE) in COVID-positive and suspected cases.

Keywords: SARS-Cov-2, COVID-19, Pregnancy, Labour, Personal protective equipment, Caesarean section.

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Introduction

COVID-19 (Coronavirus disease 2019) caused by severe acute respiratory syndrome coronavirus-2 (SARS-Cov-2) was declared a 'pandemic' by the World Health Organization on 11th March 2020.[1,2. It has affected more than 2 million (2,241,359) people globally with more than 100,000 (152,551) deaths in at least 213 countries and the number is increasing each day. In India, coronavirus cases were 15,712 with 507 deaths on 19th April 2020, while in Pakistan there were 7,993 cases with 159 deaths.

Most countries including India have locked down their countries to avoid spread of the disease. Out-patient departments and elective surgeries have been stopped. However, obstetrics poses a unique problem as deliveries and caesarean sections cannot be stopped, so we need to learn to cope up with the challenge in an unprecedented situation to get the best possible maternal and perinatal outcome and at the same time to separate COVID-positive from COVID-negative patients and to avoid spread of infection to other patients, family members and more importantly to doctors, nurses and other medical staff.[1,2]

Prevalence of COVID-19 in Pregnancy

There is no evidence that pregnant women are more susceptible to acquire the disease than the general population. However, taking cue from other coronavirus infections like SARS and MERS (Middle East Respiratory Syndrome) infections which were more common in third trimester of pregnancy and that due to altered body immune system in pregnancy, there is chance of increased risk of COVID-19 in third trimester of pregnancy. Apart from other high risk factors for COVID-19 in general population, persons with low immunity, diabetes, chronic kidney disease, and pregnant women with congenital or acquired cardiac disease are especially vulnerable. There is increased risk of mental disorder and domestic violence in COVID-19 with pregnancy, for which they need to be particularly looked after.

Vertical Transmission

Although there have been only few case reports suggesting probability of vertical transmission, general consensus is that intrauterine transmission of SARS-CoV-2 is very rare. Not a single transmission occurred in 38 pregnant women with COVID-19 in China as reported by Schwartz et al.[3] Till now no confirmed cases of vaginal secretions with COVID-19 positivity or breast milk with COVID-19 positivity have been reported.[4-7]

Effect of COVID-19 on Pregnancy

According to currently available literature, there is no evidence that COVID-19 is teratogenic, and there is no increased risk of abortions or early pregnancy losses during pregnancy. It is not an indication for medical termination of pregnancy.[4-7] Previous epidemics of SARS and Middle East respiratory syndrome (MERS) resulted in poor obstetric outcomes in the form of increased maternal mortality and

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morbidity, maternal foetal transmission of virus and perinatal infections and death; however, till now no such outcome has been observed with COVID-19. Although there are some case reports of preterm birth with COVID-19 infection, it was not clear whether they were spontaneous or iatrogenic. There was some evidence of foetal compromise and pre-labour PROM in one report.[8]

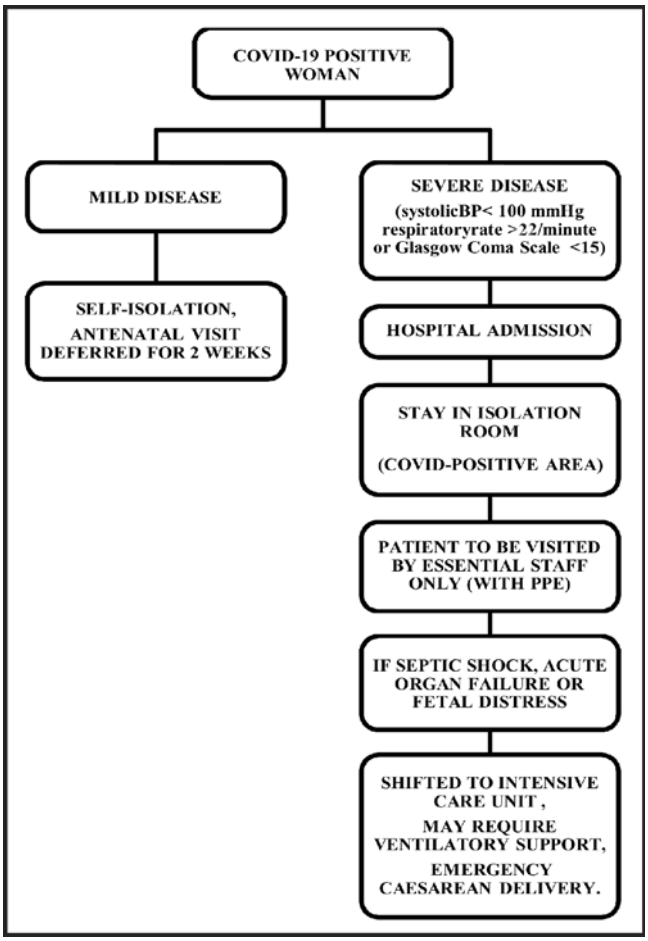
Effect of Pregnancy and Childbirth on COVID-19

Liu et al in their study on pregnancy and perinatal outcome of women with COVID-19 pneumonia observed that pregnancy and childbirth did not aggravate the course of symptoms or CT features of COVID-19 pneumonia.[9] Hence evidence suggests that pregnancy in spite of its immunocompromised status has no adverse effect on course of COVID-19 infection.

Management of Antenatal Care in COVID-19 Pregnancy (Flowchart 1)

Capanna et al with their extensive experience from Europe have recommended preparation of an obstetric unit during the epidemic of COVID-19 with quick reorganisation tips and advice to triage the patients.[10]

Although Sutton et al and Breslin et al in their study in New York found 13.7% COVID-19 positive cases in universal screening, it is still not recommended.[11,12] Pregnant women, especially those with heart disease and COVID-19 infection, are more vulnerable to have serious disease though most women tend to have mild disease only. As per general advice for COVID-19 infections, social distancing and self-isolation is crucial to avoid spread of infection. Routine antenatal visits, ultrasounds and routine investigations can be postponed to 2-3 weeks till the patient self-isolates at home and becomes better. Antenatal care visits should be minimised to 4 visits at 12, 20, 28 and 36 weeks of gestation. The patient can ring the doctor or midwife and advice can be sought on phone. Ultrasound or antenatal visit and other investigations can be deferred till 14 days of resolution of acute illness. However, if the woman has severe disease such as low blood pressure (systolic< 100 mmHg), respiratory rate of >22/minute or Glasgow Coma Scale score of <15, she should be referred to hospital and must be admitted in intensive care unit. The hospital should be aware of the patient's COVID-19 positive status prior to her arrival. She should preferably come by her own private vehicle or by ambulance after informing them about her status so that ambulance driver and staff can wear personal protective equipment (PPE). On reaching the hospital gate, she should be received by staff wearing PPE. The patient should be given surgical face mask and escorted to an isolation room (or COVID-positive area). She should remain in the isolation room throughout her stay and only essential staff should enter her room with minimum visitors. The staff entering should have PPE to protect themselves.



Flowchart-1: Management of antenatal care in COVID-19 pregnancy.

Even if the patient is a suspected case, precautions are needed. She should be tested for COVID-19 by nasopharyngeal or pharyngeal samples and samples to be sent for reverse transcriptase-polymerase chain reaction (RT-PCR). She would be labelled a suspected case if there is clinical or radiological evidence of pneumonia (X-ray or CT scan chest can be done with abdominal shielding), acute respiratory distress syndrome (ARDS) or fever of $\geq$39.8°C with at least one of the following: acute persistent cough, hoarseness, nasal discharge, congestion, shortness of breath, sore throat, wheezing or sneezing and or lymphopenia on complete blood count. Use of steroids is avoided as they can aggravate the disease. Steroids are to be used only if advantages outweigh the disadvantages, such as in cases of preterm labour. If the patient develops severe failure or criteria of septic shock, acute organ failure or foetal distress, she

should be shifted to intensive care unit and may require ventilatory support and/or emergency caesarean delivery.

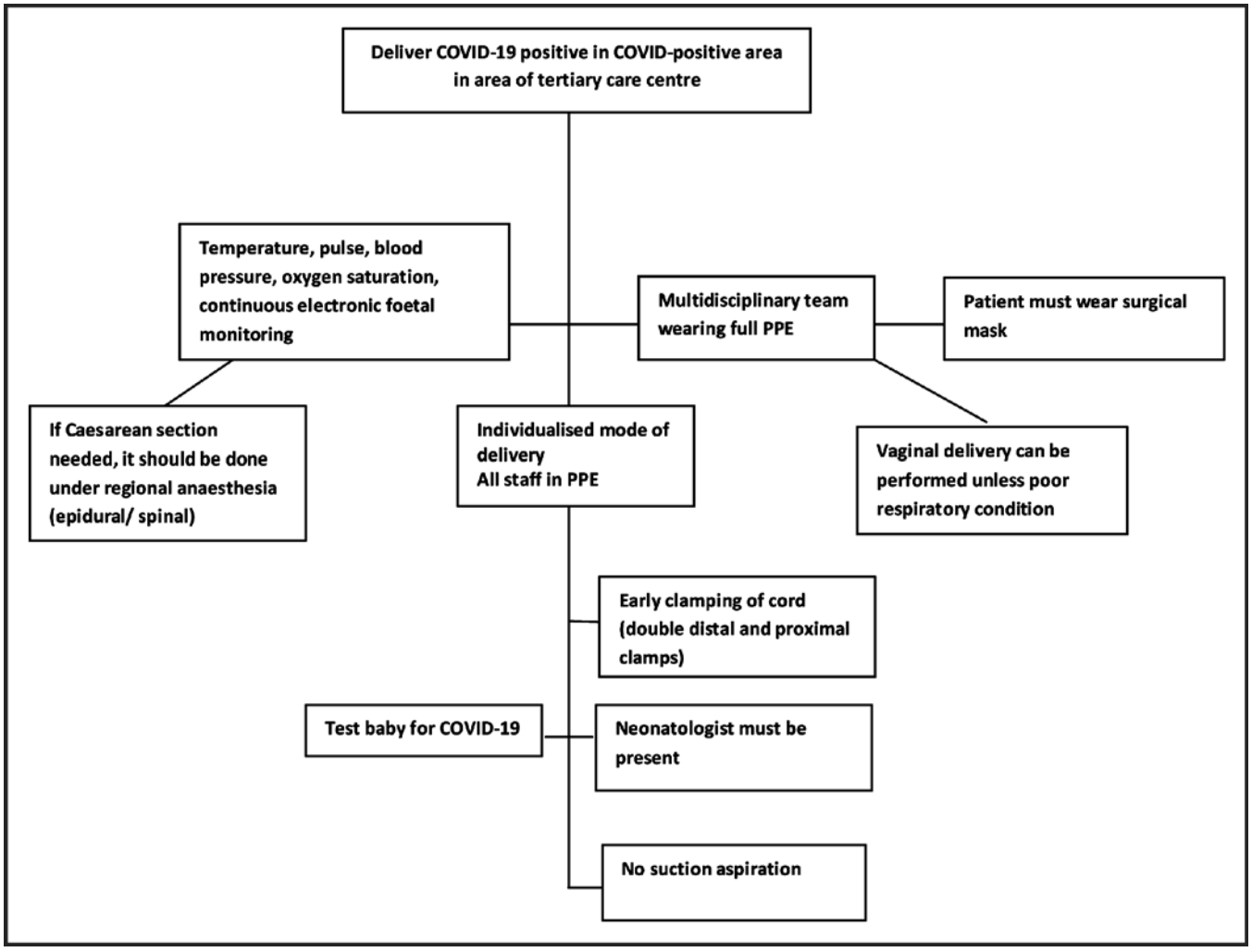
Management of Labour in COVID-19 Positive Patients (Flowchart 2)

Delivery in such situations should be preferably in a tertiary care centre with multidisciplinary team (obstetricians, neonatologists, anaesthetist, infectious diseases or medical specialist, midwife or nurse) with one person (usually obstetrician) designated as team leader. Maternal observations like temperature, pulse, blood pressure and oxygen saturation are monitored every 3-4 hourly (hourly for sick patient). Labour should be confirmed. Unnecessary induction should be avoided. Continuous electronic foetal monitoring is recommended throughout the duration of labour. Oxygen can be started and oxygen saturation is kept to >94%. Any evidence of sepsis, or of premature rupture of membranes with sepsis, should be investigated and treated with suitable antibiotics as per protocol of the hospital.

Mode of Delivery

All the staff attending to the patient must wear full PPE. Although most cases have been delivered by caesarean sections, vaginal delivery can be performed unless poor respiratory condition demands urgent delivery. When caesarean section is indicated, epidural or spinal anaesthesia are safe in COVID-19 positive pregnancies and are encouraged. Routine instrumental delivery is not recommended. Individualised decision should be made and instrumental delivery is advised if a symptomatic woman is becoming exhausted or hypoxic.

If caesarean section is performed, it should be preferably done under spinal anaesthesia with all the staff wearing PPE. If general anaesthesia is required (failure or non-effective regional), it becomes a very high risk as this is an aerosol generating procedure (AGP) which significantly



Flowchart-2: Management of labour in COVID-19 positive case.

increases the risk of transmission of coronavirus to the attending staff. In such cases, all staff in theatre should wear PPE. The scrub team should scrub and don PPE before the general anaesthesia is commenced. The PPE includes FFP-2 or 3 facial filter, disposable water repellent long sleeved gown, double gloves, goggles, disposable head gear and shoes. The patient must wear surgical mask. After the procedure, PPE must be doffed as per the protocol and disposed with appropriate standards. Labour partner is allowed only if the patient has no obvious symptoms, otherwise he must remain at home. No partner is allowed inside operation theatre during caesarean section. Early clamping of cord (double distal and proximal clamps) is recommended. Neonatologist with PPE must be present. No aspiration with suction device should be done. Baby should be tested for COVID-19.

Postnatal Management

There is limited data available on postnatal management of babies of COVID-19 mothers. Although Chinese studies have advised separate isolation of infected mother and her baby for 14 days, it is not universally accepted. There is risk of transmission of virus to the baby from mother through infectious respiratory secretions. Temporary separation of mother and baby is recommended until mother becomes negative, and this should be discussed with mother. If in separate rooms, then expressed breast milk after taking all precautions (using a separate breast pump, hand hygiene before and after expression) is given to the baby. If mother and baby are in same room, then they should be 6 feet away from each other with curtain (physical barrier) between them. If mother is breast feeding, then she must wear facemask and practise hand hygiene before each feeding or close contact with the baby.

Discharge

Once the general condition of the patient is stable and newborn is COVID-negative, early discharge is encouraged. All vaccinations to the newborn are to be completed. Neonatal monitoring and follow-up should be arranged. Patient should be encouraged to visit for follow-up if there is any problem. Suitable contraception is advised.

Conclusion

The pandemic of COVID-19 has put tremendous pressure on healthcare systems of all countries especially obstetricians and labour rooms as deliveries and caesarean sections cannot be postponed. Proper planning of maternity care by triaging and separating COVID-positive and negative women can preserve personnel, equipment and hospital infrastructure. Use of protective measures in COVID-positive areas is mandatory. Judicious use of resources is required to tackle this unprecedented crisis.

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