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Review Article

Obstetrics and gynaecology in the era of COVID-19

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ABSTRACT

The World Health Organization has declared the outbreak of COVID-19 as a global pandemic. The alarming levels of spread and severity of the viral disease has resulted in significant morbidity and mortality. Women often face the highest risk of suffering devastating losses from the pandemic. Historically, women's health has always been inadequately represented in responses to global outbreaks. Resources are often funnelled away from women's health services towards targets perceived to be more important. Pregnant women with suspected, probable or confirmed COVID-19, should have access to obstetric and foetal medicine, neonatal care as well as mental health and psychosocial support, at facilities ready to tackle maternal and neonatal complications. In this article, we attempt to look at the challenges faced by gynaecologists because of this pandemic, and provide an overview on the current protocols in antenatal care, foetal care, childbirth, and oncological care.

Keywords: Antenatal care, COVID-19, Fetal medicine, Gynaecologic oncology, Pandemic, Women's health

INTRODUCTION

On March 11, 2020, the World Health Organization (WHO) declared Coronavirus disease (COVID-19) a global pandemic. The WHO called for governments of countries to take urgent and aggressive steps to stop the spread of the severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2), which was first identified in December 2019 in Wuhan, China.

Owing to the alarming rate of spread and severity of the disease; as of August 25, 2020, globally over 23 million people were infected and over 810,000 people have lost their lives. This pandemic has left communities around the globe struggling with overwhelmed healthcare

systems and large populations in quarantine. Global health authorities while battling the pandemic are also trying to prevent severe consequences for women's health.

Women are among the most vulnerable groups that face the highest risk of suffering devastating losses from the pandemic. Historically, women's health has not received much importance in the health response to global outbreaks. In order to throw light upon the myriad problems faced by a gynecologist, we have to further categorize these issues. Gynecologist often face predicaments in terms of antenatal care, fetal care and childbirth and finally in oncological care.

Since antenatal care is an essential service, maternity care providers should continue to provide client-centered, respectful skilled care to ensure continued support for women with multiple complex needs. Maternity care has been repeatedly shown to be essential, and studies have shown that if women do not have access to antenatal services they are at increased risk of maternal death, stillbirth, and other adverse perinatal outcomes.^{1,2} Women living with adversity including poverty, homelessness, substance misuse, being an asylum seeker, experiencing domestic abuse and mental health problems will continue to require timely expert support.³

Pregnant women with suspected, probable or confirmed COVID-19, should have access to woman-centred care, including midwifery, obstetric, foetal medicine and neonatal care, as well as mental health and psychosocial support, at a centre ready to care for maternal and neonatal complications.

IMPACT OF COVID-19 ON ANTENATAL CARE

According to available data, pregnancy is not known to increase the risk of contracting COVID-19.⁴ A British study has shown that the proportion of pregnant women hospitalised was similar to the proportion in the general population, and pregnancy was not associated with increased mortality, unlike in influenza.⁵ Most women experienced only mild or moderate symptoms like cough, fever, shortness of breath, headache, and anosmia.³ If the pregnant lady has co-morbid conditions such as diabetes, hypertension, obesity, or she is of advanced age, she is more likely to have a severe form of respiratory disease.⁶

Pregnancy is known to cause a hypercoagulable state, and there is emerging evidence suggesting that individuals with COVID-19 also develop hypercoagulable state. This combination could potentially increase the risk of maternal venous-thromboembolism.⁷ Reduced mobility resulting from self-isolation at home or hospital admission is likely to increase the risk further.³

The guidelines issued by the Indian Council of Medical Research (ICMR) and Royal College of Obstetricians and Gynaecologists (RCOG) advise women to attend routine antenatal care unless they meet self-isolation criteria like continuous cough or fever. WHO has recommended that antenatal or postnatal counselling and follow up should be conducted via alternative platforms such as telemedicine.⁸

IMPACT OF COVID-19 ON FOETAL MEDICINE

Due to the limited number of COVID-19 infected women who have gone into labour, there is insufficient evidence of it causing any foetal abnormalities or alteration of other foetal parameters of growth, amniotic fluid or Doppler indices. Currently, there is no evidence COVID-19 infection is associated with a higher risk of abortion. However, as with other systemic diseases which can

compromise maternal health, there is a possibility of preterm labour.⁶

According to RCOG, there is no increased risk of miscarriage or early pregnancy loss in relation to COVID-19. Currently, there is no evidence that the virus is teratogenic either.⁵ However, recent evidence has suggested that it is probable that the virus can be vertically transmitted, although the proportion of pregnancies affected and the risk to the foetus is yet to be determined.^{9,10}

With the current uncertainty regarding the potential effects of COVID-19 infection on foetus, the methods of providing a regular antenatal care, foetal ultrasound imaging and counselling has changed.¹¹ Most foetal therapies and screening are time bound and cannot be delayed. Only after routine triaging and risk assessment of COVID-19 transmission, should a reference to foetal medicine unit be considered.

However, high risk pregnancies (for example, previous child with known single gene disorder, non-invasive prenatal testing high risk for T21/T18/T13, COVID-19 positive, pre-GDM with poor perinatal glycaemic control, suspected major foetal anomaly, reduced foetal movements) that require foetal therapy need to be seen immediately.^{12,13}

Change in ultrasound visits

Instead of a routine viability scan, a first trimester ultrasound can be done between 11-14 weeks. This scan can be used to date the pregnancy, confirm viability, exclude major structural abnormalities, assess nuchal translucency, and simultaneously blood can be drawn for routine antenatal, biochemical, or non-invasive prenatal screening.¹⁴

If there are no obstetric high-risk factors, growth scans can be done at 34-36 weeks instead of the routine timing of 32 weeks. In case of lethal anomalies, the option of termination of pregnancy should be offered after discussion with the obstetric team.

Reduced appointments and triaging can result in delay of target scan. In low risk mothers, adequate reassurance should be made that the chance of missing a major problem is low. This can be done through teleconsultation, as the risk of travelling during a pandemic could potentially be higher than detecting a problem on an ultrasound.

Fetal therapy and procedures

A study has shown that SARS-CoV-2 was not detected in amniotic fluid or umbilical cord blood of women with COVID-19.¹⁵ Minimally invasive procedures like amniocentesis may be preferable to chorionic villus sampling.¹⁴ A COVID-19 screening for the mother needs

to be done before taking up the procedure. If found to be positive, then the procedure should be delayed.

A symptomatic mother may need further clinical evaluation using imaging modality like X-ray or chest CT. The most common adverse effects due to high-dose radiation exposure that occurs during chest imaging, especially CT scan are foetal growth restriction, microcephaly and intellectual disability.¹⁶⁻²⁰

Pregnant women with suspected or confirmed COVID-19 infection who are either asymptomatic or recovering from mild illness, should be monitored with 2-4 weekly ultrasound assessment of foetal growth and amniotic fluid volume, with umbilical artery Doppler if necessary.²¹

Foetal medicine units must periodically review number of cases detected locally and adjust their guidelines and services accordingly. A pre-procedure counselling regarding the increase in scanning time due to PPE usage, difficulty in operating the probes with the PPE, increase in inter-scan intervals due to fumigation, probe cleaning procedures, reduced number of appointments and delay in scheduling them, missing the first trimester screening and option for non-invasive method of screening should be explained.

MANAGEMENT IN A PREGNANT WOMAN

If a pregnant woman has been exposed to SARS-CoV-2, clinical examination and RT-PCR (SARS-CoV-2) on deep nasopharyngeal and pharyngeal samples need to be done.²² If the mother is asymptomatic, we have to advise home monitoring of temperature and respiratory symptoms. If SARS-CoV-2 negative, we can cease monitoring. However, if she is SARS-CoV-2 positive, we need to advise isolation at home for 14 days.

If the expectant mother has a temperature of $>38^{\circ}\text{C}$ and has respiratory symptoms, she is to be monitored at hospital. She should be in an isolation room with negative pressure (IRNP). If SARS-CoV-2 negative, we can advise home isolation for 14 days with self-monitoring. If symptoms persist, retest her. However, if she is SARS-CoV-2 positive, we need to hospitalise her for maternal and foetal surveillance. Even her delivery should preferably take place at a tertiary care centre.²²

At the time of admission, staff wearing appropriate personal protective equipment (PPE) should be present at the entrance of the maternity unit and provide these women with a surgical face mask. Until the woman is isolated in a suitable room, this mask should not be removed. Isolation rooms should have a defined area for staff to don and doff PPE with bathroom facilities. Only essential staff should enter the room and visitors should be strictly kept to a minimum. All clinical areas that are used must be cleaned after use.

Once admitted, assessment of the severity of COVID-19 symptoms should be done. The assessment should be done by a multidisciplinary team which includes an infectious disease or medical specialist.²²

In pregnant women suspected to be COVID-19 positive, there should be no delay in starting therapy.³ The use of tocolytics is contraindicated in preterm labour and use of beta-mimetic agents should be avoided if there is pulmonary involvement. Use of glucocorticoids have been associated with an increased risk for mortality in patients with influenza.⁶

The timing of delivery should not be altered due to the COVID-19 infection.⁶ The National Institute for Health and Care Excellence (NICE) recommends avoiding induction of labour where it is not medically indicated and suggested on improving provisions for outpatient induction of labour.²³ According to WHO, interventions to accelerate labour and childbirth (like augmentation, episiotomy, operative vaginal birth) should only be undertaken if medically justified and based on the clinical condition of mother and foetus.

Intrapartum services should be provided in a safe way, while keeping staffing requirements to a minimum and retaining the ability to provide emergency obstetric, anaesthetic and neonatal care when needed.³ Adequate counselling of mother, minimising number of people in the labour room, providing proper PPE for staff and adherence to strict hygienic practices are also of utmost importance.

According to WHO, mode of birth should be based on obstetric indications and the woman's preference, and caesarean section should only be undertaken when medically justified and based on maternal and foetal condition. Federation of obstetric and gynaecological societies of India (FOGSI) guidelines have mentioned that there is no evidence to favour one mode of birth over another.

A study has observed negative viral test results in vaginal secretion specimens, suggesting that a vaginal delivery may be a safe delivery option.²⁴ In the same study, neonatal throat swabs were also negative. Taken together, these findings suggest that the risk of vertical transmission from pregnant women to newborn delivered by caesarean section is low.

Even though presence of COVID-19 infection is not an indication for caesarean section, universally COVID-19 positive women have been undergoing caesarean section when they present in labour. There is no proven scientific rationale for offering caesarean section due to COVID-19 infection.²⁵ Unless the woman's respiratory condition demands urgent delivery, mode of birth should not be influenced by the presence of COVID-19.⁶ In case a woman has respiratory involvement due to COVID-19 infection, the second stage of delivery should be

shortened to reduce maternal efforts and prevent maternal exhaustion.

There has been contention regarding the timing of clamping the cord. The American College of Obstetricians and Gynecologists (ACOG) recommends immediate cord clamping, whereas RCOG and WHO recommends delayed cord clamping.²⁶ Delayed umbilical cord clamping is recommended to improve maternal and infant health. There is insufficient evidence to show that delayed cord clamping increases the possibility of viral transmission from mother to newborn.³ The proven benefits of a 1 to 3-minute delay in clamping the cord outweighs any unproven harms.

Starting prophylactic antibiotics is also strongly recommended. As the team needs to don PPE, there may be some delay in starting the emergency caesarean and this should be explained to the patient and family. Post-op care should include principles of isolation room and barrier nursing with universal standard precautions.

IMPACT OF COVID-19 ON THE NEWBORN

Newborns of confirmed or suspected COVID-19 mothers present a new set of challenges for clinicians, especially when it comes to preventing perinatal transmission of the virus. The American academy of paediatrics committee on foetus and newborn highlighted that there is no data available to determine the possibility of transplacental transmission of the virus, any maternal body fluids carrying the Coronavirus, and any maternal, intrapartum and neonatal factors causing perinatal transmission.²⁷

The available data suggests low rates of peripartum transmission and does not provide answers on the possible in-utero transmission of SARS-CoV-2 from expectant mothers with COVID-19 to their newborns. This gives us no means to determine the possible risks. Neonates born to pregnant women with confirmed COVID-19 or with test-pending at the time of delivery should be considered as persons under investigation.²⁸

At the time of delivery

Delivery of a baby born to a COVID-19 mother increases the chances of maternal virus aerosols. In case of neonatal resuscitation and stabilisation, clinicians should use the PPE to prevent exposure to maternal virus aerosols and to neonatal aerosols generated. Infants born to COVID-19 women should be tested for SARS-CoV-2 at 24 hours. If the baby is still in the postnatal ward, then the test should be done at 48 hours after birth.²⁸

Maternal and newborn separation

The infected mother and her newborn should be temporarily separated to lower the risk of postnatal infection caused due to the mother's respiratory secretions. This precautionary separation should be

informed to the mother and discussed with her family before delivery.

Neonatal care after maternal separation

Infants that are born at or near term, and seem to be doing well at birth may be kept in a separate area from newborns unaffected by maternal COVID-19. Newborns are to be bathed within a reasonable period after birth so as to eliminate any possible viral presence on skin. Newborns that need intensive neonatal care should be kept in a single patient room with the potential for negative room pressure (or other air filtration systems).

Even after hospital discharge, a confirmed COVID-19 mother should follow some standard precautionary measures and avoid proximity to the infant. Relative who will take care of baby at home may be identified for baby care as early as possible to avoid delay in baby discharge.²⁹ If a newborn requires neonatal care, the physician should advise strict physical separation between the infected mother and the infant.

Breastfeeding

Studies conducted so far do not provide any evidence of breast milk containing SARS-CoV-2.³⁰ Infected mothers can express breast milk but only after exercising appropriate breast and hand hygiene. She must use properly cleaned breast pump and accessories.

Mother should wear a well-fitting mask and a gown or towel to cover her clothes before feeding. Mother should wear disposable gloves if possible. A designated caregiver for the infant should feed the baby milk collected in a clean bottle. The caregiver should ensure the pump and accessories are cleaned after every use using disinfectant wipes and hot soapy water.

IMPACT OF COVID-19 ON GYNAECOLOGIC ONCOLOGY

Is it safe for my sister to come to the hospital? What about her treatment? asked the relative of a newly diagnosed case of endometrial adenocarcinoma. Such questions have become all too common during this pandemic. This pandemic has caused a wave of anxiety and fear among patients throughout the world, mostly among those with chronic illness and more specifically, those with cancer.

The WHO-China Joint commission report was among the first to highlight the details of COVID-19 infection and its fatality. It was noted that older individuals (above 60 years), and those with co-morbidities had a higher risk of mortality.³¹ Cancer is known to weaken the immune system, both the innate and acquired immunity. The immunosuppression is even more marked in those undergoing chemotherapy, radiation or surgery for treatment, making them more susceptible to various

infections.³²⁻³⁵ Thus, contracting COVID-19 infection will further worsen the prognosis. This was substantiated by a multicentric study revealing adverse outcomes in individuals with both cancer and COVID-19 infection, with a death rate of 11.43%.³⁶

Another report from China has retrospectively analysed the clinical features, treatment and outcome of three women with gynaecological cancers who tested COVID-19 positive. Two of them were recovered, while one succumbed to it, thus reinforcing that women with gynaecological malignancies are susceptible for COVID-19 infection and can deteriorate rapidly.³⁷

Another important concern to address is the risk of delay in diagnosis and treatment. A study analysing the effect of delay in treatment of cervical cancer patients, showed a 2.31 times increased risk of mortality when there was delay of more than or equal to 4 months than those who underwent timely treatment.³⁸

As for endometrial cancer, a period of more 6 weeks delay from diagnosis to treatment was considered to have a negative impact on survival.³⁹ Ovarian malignancy also showed similar detrimental outcome to overall survival with delay in treatment of more than 6 weeks, especially in those with advanced stage of the disease.⁴⁰

Paradoxically, delaying chemotherapy or surgery worsens prognosis, but both modalities cause immunosuppression, thereby increasing the risk of COVID-19 infection.^{33,24,41} Aerosol generating procedures during surgery such as intubation for general anaesthesia further increases the risk of transmission of the virus.^{42,43}

In patients with pre-invasive lesions or slow growing cancers, postponement of surgery may be considered. Laparoscopic surgeries should be discouraged during this outbreak.⁴⁴ Type and stage of cancer, other medical comorbidities and prevalence of COVID-19 cases in the area should be taken into consideration while prioritizing cases, planning treatment, and finalizing whether early treatment or delaying treatment would improve survival outcome.⁴⁵

To assist oncologists in this decision-making process, many centres have provisionally put up guidelines. British Gynaecological Cancer Society developed a framework for managing various type of gynaecological cancers. The Society of Gynecologic Oncology also put up guidelines for surgical prioritization, classifying indication for gynaecological surgeries into urgent, semi-urgent and non-urgent.^{46,47}

Urgent/emergent; urgent procedures refer to procedures that is acutely time-sensitive and performed when the patient is medically stable. Emergent procedures refer to those performed without delay to preserve life or limb. These are performed immediately. These include surgeries for viscus perforation, closed-loop bowel or

colonic obstruction, incarcerated hernia with gynaecologic tumour, vaginal, uterine or pelvic haemorrhage, molar pregnancy, and pelvic mass with torsion or with urinary or intestinal obstruction.

Semi-urgent; these are performed in order to preserve the patient's life or prevent expected progression of disease or morbidity. These are performed in 1-4 weeks. These include cases of established cancer diagnosis when high suspicion exists, grade 1 endometrial cancer when hormonal therapy is contraindicated or not possible, all stages of high-grade uterine cancers, cervical and vulvar cancers, advanced ovarian cancer, abdominopelvic masses concerning for malignancy, symptomatic gynaecologic cancer in pregnancy requiring surgery, patients with recurrent disease without non-surgical options, and symptomatic patients with inoperable primary or recurrent cancer requiring palliative cancer procedures.

Non-urgent; procedure are deemed non-urgent if progression of disease or symptoms, or readmission within 3 months is unlikely, or if non-surgical treatments are available. These include benign-appearing ovarian cysts or masses, VAIN (vaginal intra-epithelial neoplasia)/VIN (vulvar intraepithelial neoplasia) 2-3, CIN (cervical intraepithelial neoplasia) 2-3, CAH/EIN (complex atypical hyperplasia/endometrial intra-epithelial neoplasia), grade 1 endometrial cancer when hormonal therapy is not contraindicated, and completion surgery for early-stage.

Highest priority should be given for surgical treatment of aggressive cancers with an increased predilection for early metastases and symptom progression. This is especially important to prioritize those that can be managed in a minimally invasive/short stay manner.

Availability of ICU and ventilators during this period is another concern. Most of these resources have been diverted towards managing COVID-19 cases. Major surgeries or procedures on high-risk patient with other medical comorbidities which may requiring ICU care is best postponed. Patients with advanced cancers and those intended for palliative treatment, surgery best postponed for them and instead neoadjuvant and palliative chemotherapy respectively.

The current exponential rise of cases is causing shortage of resources, especially PPE for healthcare workers. Increase in strain on the manpower in the health care sector is another concern. Many health care workers have tested positive for COVID-19 leading shortage of staff and longer working shifts and rising tension at the workplace. Anxiety of patients has also led to rising incidents of violence against doctors.

Patients should be provided emergency contact numbers and given pamphlets providing information about the disease, symptoms and measures to protect

themselves.^{48,49} Considering the current crisis, the Medical Council of India has released guidelines for telemedicine consults.⁵⁰

IMPACT OF COVID-19 ON WOMEN'S HEALTH

Historically in a pandemic, resources are often funnelled away from reproductive health services towards targets perceived to be more important.⁵¹ However even in these trying times, keeping the spotlight on women's health is vital, as safe pregnancies and childbirth depend on functioning and accessible health care systems.

Like China, India had announced a complete lockdown of all activities from 24 March 2020 to contain the spread of COVID-19.⁵² The poorly planned lockdown has caused unprecedented hardships for several vulnerable groups, including pregnant women and cancer patients.

Scientifically sound strategies need to be implemented in order to mitigate the potentially catastrophic fallout of this pandemic. We have seen the effect of the 2014-2016 Ebola outbreak in West African nations. In Sierra Leone, the Ebola outbreak caused maternal deaths to soar back to rates observed during the Sierra Leone civil war (1991-2002).⁵³ The country is still struggling to recover from the effects of that outbreak. We need to ensure the same is not true for our country when the effects of COVID-19 become clear.

We need to prioritise continued access to family planning care, maintenance of supply chains, and targeted information campaigns about the transmission of COVID-19.

CONCLUSION

While it is right to focus on the management of COVID-19 to mitigate the long-term consequences, we should also continue to focus on providing adequate safe and appropriate obstetric and gynaecological care. The lockdown has forced the entire nation to remain indoors for months; this could see an increase in the number of pregnancies in the coming months which will test the limits of our health system. Due to the lack of access to health care during the lockdown many women would not have gone to their doctors for timely screenings. This could result in a higher number of women diagnosed with more advanced cancers. Lockdowns, travel restrictions, supply chain disruptions, the huge shift of health resources to combat COVID-19 and fear of infection continue to prevent many women and girls from care. The national and state bodies should anticipate this in the light of the current pandemic and issue appropriate guidelines. To allay the anxiety and concerns of patients and relatives, they should be counselled and educated about the disease and about measures to protect themselves and when to seek treatment.

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