Section: Anaesthesiology

Original Research Article

OUTCOME OF REGIONAL ANAESTHESIA AMONG PREGNANT WOMEN WITH COVID 19 FOR CAESAREAN SECTION AT TERTIARY CARE CENTRE

Pravin Ubale[1], Anand Subhashrao Nirgude[2], Sona Dave[3], Esha Dharmesh Kodal[4], Anant Arunrao Takalkar[5], Divyajyoti Singh[6]

[1]Associate Professor, Department of Anaesthesiology, Topiwala National Medical college and Bai Yamunabai Laxaman Nair Ch. Hospital, Mumbai, Maharashtra, India.
[2]Associate Professor (Additional), Department of Anaesthesiology, Topiwala National Medical college and Bai Yamunabai Laxaman Nair Ch. Hospital, Mumbai, Maharashtra, India.
[3]Professor, Department of Anaesthesiology, Topiwala National Medical college and Bai Yamunabai Laxaman Nair Ch. Hospital, Mumbai, Maharashtra, India.
[4]Consultant at Cumballa Hill hospital, Mumbai, Maharashtra, India.
[5]Professor, Department of Community Medicine, MIMSR Medical College, Latur, Maharashtra, India
[6]Senior resident, Department of Anaesthesiology, Topiwala National Medical college and Bai Yamunabai Laxaman Nair Ch. Hospital, Mumbai, Maharashtra, India.

Received : 20/09/2023
Received in revised form : 17/10/2023
Accepted : 28/10/2023

Keywords:
Outcome of Regional Anaesthesia, pregnant women with Covid 19, caesarean section.

Corresponding Author:
Dr. Esha Dharmesh Kodal,
Email: eshakodal17@gmail.com

DOI: 10.47009/jamp.2023.5.6.10

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (6); 42-45

Abstract

Background: Obstetric care requires the collaboration of a multidisciplinary team. Due to its advantages, spinal anesthesia is preferred to general anesthesia. Regional anesthesia prevents airway manipulation and lessens general anesthesia-related problems. For COVID-19 patients, maintaining pulmonary function is beneficial. Prompt identification of patients at high risk of infection is important to limit the spread of infection to other parturients and healthcare workers. The objective is to study outcome of Regional Anaesthesia among pregnant women with Covid 19 for caesarean section at Tertiary care centre. **Materials and Methods:** This retrospective observational study was carried out at the Department Anaesthesia of TNMC & BYL Nair Hospital, a tertiary teaching hospital in Mumbai, Maharashtra from the period from 1st April 2020 to 31st August 2021. Patients in labor who gave consent and had a positive rRT-PCR result for COVID-19 were included in the study. **Result:** The mean age of the cases was 27.56 ± 5.45 years. The most common associated disease was gestational diabetes (16.00%) and the most common chief compliant was asymptomatic status (64.00%). Of the 400 cases studied, 37.50% were emergency C section with average duration of 61.23 minutes. Overall blood loss was 650.34 ml and fluid given was around 2.23 liters. Of the 400 cases, 42% were males with mean gestational weeks of 37.2 and Apgar score of 8.33. About 20% of the babies needed NICU admission in the present study. **Conclusion:** Though we had large case load of Covid positive patient, number of symptomatic patients were relatively less. With Successful spinal anaesthesia outcome was good in all of the patients. About 20% of the babies needed NICU admission in the present study.

INTRODUCTION

Despite the COVID-19 epidemic, peri-partum services are crucial. Due to COVID-19 and pregnancy's overlapping symptoms, obstetric anesthesia is difficult. Inadequate testing facilities, emergent cesarean deliveries, resource limitations, and exposure hazards exacerbate the challenges. Rapid detection of people at high risk was essential. Fever, exhaustion, a cough, shortness of breath, and a loss of smell are typical COVID-19 symptoms. Continuous monitoring and fluid management were essential to identify hypoxia and treat it effectively while avoiding fetal distress. Supplemental oxygen and early thought of assisted breathing are crucial. During patient transfers, extreme caution must be used. For both the mother and the fetus, COVID-19 increases infection risks and unfavorable outcomes. Obstetric care requires the collaboration of a multidisciplinary team. Due to its advantages, spinal anesthesia is preferred to general anesthesia. Regional anesthesia prevents airway manipulation and lessens general anesthesia-related problems. For COVID-19 patients, maintaining pulmonary function

is beneficial. With this overview into consideration, we conducted the present study to understand the outcome of regional anaesthesia among pregnant women with COVID-19 for caesarian section. Prompt identification of patients at high risk of infection is important to limit the spread of infection to other parturients and healthcare workers. The clinical features so far identified in association with COVID 19 include fever, fatigue, cough, myalgia, shortness of breath, sore throat, diarrhea, nausea, headache, and vomiting.[1] Sudden anosmia or hyposmia has also been reported.[2] Exposure to this pathogen predisposes both the mother and fetus to an increased risk of infection and severe adverse maternal and perinatal outcomes.[3] The Physiologic and immunologic changes during pregnancy increase maternal morbidity and mortality.[4]

Objective: To study outcome of Regional Anaesthesia among pregnant women with Covid 19 for caesarean section at Tertiary care centre.

MATERIALS AND METHODS

This retrospective observational study was carried out at the Department Anaesthesia of TNMC & BYL Nair Hospital, a tertiary teaching hospital in Mumbai, Maharashtra. After receiving ethical approval and adhering to the Declaration of Helsinki and Good Clinical Practice (GCP) criteria, the retrospective data review covered the period from 1st April 2020 to 31st August 2021. Patients in labor who gave consent and had a positive rRT-PCR result for COVID-19 were included in the study. In addition, elective and emergency cesarean sections performed under neuroaxial anesthesia on patients 18 years of age and older were included in the study. Patients who could not provide their consent, those under the age of 18, those who had coagulopathies, neuromuscular or neurological conditions, peripartum cardiomyopathy, and those who had not undergone neuroaxial anesthesia were all excluded. No participants opted out of the research or withdrew. The traditional rRT-PCR test was used to diagnose COVID-19. Patients who tested negative for COVID-19 in the hospital received care in a different operating room from suspected and confirmed COVID-19 cases—the first willing COVID-19-negative case after each positive case was enrolled to keep operating circumstances comparable. For life-saving crises that were not part of the trial, a third operating room was set aside just for those situations. The patient's demographic information, medical history, signs and symptoms, laboratory results, and vital signs such as blood pressure, heart rate, ECG findings, respiratory rate, ETCO2, oxygen saturation, temperature, and oxygen requirements were all collected in a peri-operative chart.

RESULTS

We have included 400 COVID-19 pregnant mothers in the present study.

The mean age of the cases was 27.56 ± 5.45 years. The most common associated disease was gestational diabetes (16.00%) and the most common chief compliant was asymptomatic status (64.00%) [Table 1]

The most common symptoms reported were cough (25.50%), shortness of breath (19.50%) and sore throat (14%) in the present study.

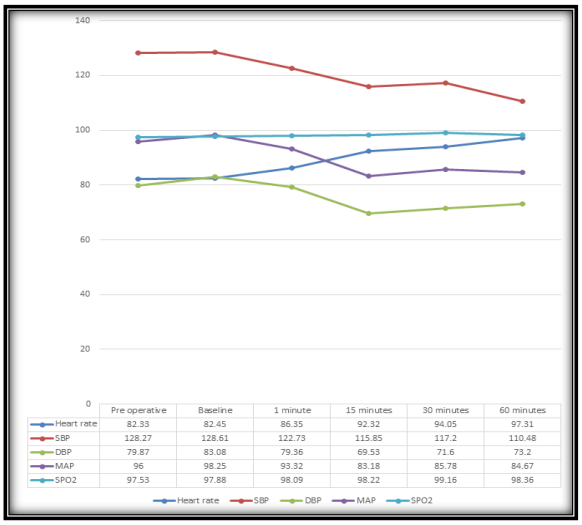

Figure 1: changes in heart rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure and oxygen saturation at different time intervals

Table 1: Demographic, clinical and laboratory profile of present sample

Parameter	Frequency	Percentage
Age group		
<20	34	8.50
21 to 25	165	41.25
26 to 30	144	36.00
>30	57	14.25
Associated diseases		
Gestational diabetes mellitus	64	16.00
Hypertension	12	3.00
Pregnancy induced hypertension	35	8.75
Bronchial Asthma	16	4.00
Thyroid diseases	28	7.00
Clinical profile		
Asymptomatic	256	64.00
Cough	102	25.50
Myalgia	50	12.50

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Sore throat	56	14.00
Shortness of breath	78	19.50
Fatigue	54	13.50
Runny nose	46	11.50
Headache	38	9.50
Dizziness	16	4.00
Gastro intestinal symptoms	22	5.50
Loss of taste	12	3.00

Table 2: Operative data and intra operative events

Characteristics	Frequency/ Mean	%/ SD
Emergency C section	150	37.50
Duration of C-section (Minutes)	61.23	11.22
Blood loss [ml]	650.34	156.88
Fluid given [ml]	2232.12	554.22

Table 3: Neonatal Characteristics

Neonatal Characteristics	Frequency/ Mean	%/ SD
Gender		
Male	168	42.00
Female	232	58.00
Gestational age	37.2	2.4
APGAR score	8.33	2.32
NICU admission	80	20.00

[Figure 1] depicts the changes in heart rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure and oxygen saturation at different time intervals. The pre-operative heart rate was 82.33 beats/min, which significantly increase intra operatively to 86.35 beats/min at 1 min, 92.32 beats per/min at 15 minutes, 94.05 beats/min at 30 minutes and 97.31 beats/min at 60 minutes. ($p<0.001$) The pre-operative systolic blood pressure was 128.27 mmHg, which significantly decreased intra operatively to 122.73 mmHg at 1 min, 115.85mmHg at 15 minutes 117.2 mmHg at 30 minutes and 110.48 mmHg at 60 minutes. ($p<0.001$) The pre-operative diastolic blood pressure was 79.87 mmHg was stable till 1minute intra operatively and later significantly decreased intra operatively to 69.53 mmHg at 15 min, 71.6 mmHg at 30 minutes and 73.20 mmHg at 60 minutes. ($p<0.05$) The pre-operative mean arterial pressure was 96.00 mmHg, was stable till 1minute intra operatively and later significantly decreased intra operatively to 83.18 mmHg at 15 min, 85.78 mmHg at 30 minutes and 84.67mmHg at 60 minutes. ($p<0.05$) pre-operative oxygen saturation levels were around 97.83% and increased till 60 minutes intra operatively to 98.36%. [Figure 1]

Of the 400 cases studied, 37.50% were emergency C section with average duration of 61.23 minutes. Overall blood loss was 650.34 ml and fluid given was around 2.23 liters. [Table 2]

Of the 400 cases, 42% were males with mean gestational weeks of 37.2 and Apgar score of 8.33. About 20% of the babies needed NICU admission in the present study. [Table 3]

DISCUSSION

Neuraxial anesthesia is the preferred method of administering anesthesia and pain relief during labor for women due to the higher risks associated with general anesthesia, such as maternal complications and mortality. COVID-19 poses additional risks for these patients, increasing the likelihood of severe respiratory complications, especially in symptomatic cases. Moreover, there is a risk of transmitting the virus to the anesthesia provider during airway manipulation, considered a high-risk aerosolization procedure leading to a potential viral transmission.

In a present study, the most commonly reported symptoms among COVID-19-positive patients were cough (25.50%), shortness of breath (19.50%), and sore throat (14%). During the surgical procedures, the patients remained stable regarding vital parameters. Neonatal Intensive Care Unit (NICU) admission was required for 20% of the babies, and emergency C-sections were performed for 37.50% of the cases. However, no deaths were reported in the study. Another study by Guzey NA et al,[5] examined 254 pregnant women who tested positive for COVID-19. Among them, 63% were asymptomatic, while 37% experienced symptoms. The most common symptom reported was cough (19.3%), while diarrhea was the least common (2%). The study divided the cases into two groups: Group A, which consisted of asymptomatic patients (63%), and Group S, which consisted of symptomatic patients (37%). The ratio of newborns with an Apgar score greater than 7 in Group S was 77.7%, compared to 90.0% in Group A ($p=0.025$). Complications occurred in 3.1% of the patients in the COVID-19 process, including cavernous sinus thrombosis, toxic ischemic hepatitis, and splenic infarction in Group S and post-COVID sarcopenia in one patient in Group A. One patient from Group A was readmitted to the hospital due to dyspnea two days after discharge and was discharged after a week of treatment. Additionally, two patients, one from each group, underwent re-laparotomy within 24 hours due to postoperative bleeding, and a blood transfusion was performed during the second

ISSN (O): 2687-5365; ISSN (P): 2753-6556

operation. One patient from Group S required a blood transfusion due to bleeding during the operation.

In a study by Jisha M et al,[6] out of 157 COVID-19-positive patients who underwent lower segment cesarean section (LSCS), 16 presented with symptoms such as fever, cough, dyspnea, rhinitis, headache, and palpitation. Among them, six were preterm. Two patients who experienced a fall in oxygen saturation were admitted to the Intensive Care Unit (ICU), and one required Non-Invasive Ventilation (NIV). No deaths were reported. In another study conducted by Wani R et al,[7] out of 142 COVID-positive patients who underwent LSCS, only 16.1% (23 patients) showed symptoms associated with COVID-19. The study compared the need for ventilator ICCU support between COVID-positive and COVID-negative groups. It was found that 3.47% of COVID-positive and 0.25% of COVID-negative patients required ventilatory/ICCU admission. The maternal mortality rate was 0.7% among COVID-positive patients (1 out of 142), compared to 0.13% among COVID-negative patients (1 out of 787). A study by Sahin et al,[8] evaluated 1416 pregnant women with COVID-19, including 1400 singletons and 16 twins. Among them, 1.8% were admitted to the ICU; maternal mortality was observed in 0.4% of the cases. Pregnancy complications were present in 16.1% of the cases, with preterm labor being the most common complication (2.9%). The study also noted that mild and severe/critical cases of COVID-19 were more prevalent in the first and second trimesters, respectively, while hospitalization rates were highest in the third trimester. The rates of pregnancy complications, maternal mortality, and NICU admission were similar between the groups. Ababneh O et al,[9] reported in their study that out of 31 COVID-19 patients, 71% had no other medical conditions, while 25.8% underwent emergency cesarean sections. The sensory level of the spinal block after 10 minutes was different between the COVID-19-positive and control groups (T8 vs. T4, respectively). However, there were no significant differences in heart rate, systolic, diastolic, and mean arterial pressure during the operation. Neonatal admission to the NICU was higher among COVID-19-positive patients (36.4%) than the control group (11.8%). Postoperative complications did not differ significantly between the two groups. Furthermore, there were no significant differences in heart rate, systolic blood pressure, diastolic blood pressure, and mean arterial pressure during the operation, but oxygen saturation was significantly lower among COVID-19-positive patients. In a study by Jan M et al,[10] all pregnancies were singleton, and none of the patients required a switch to general anesthesia. Out of the total, 110 patients were mildly symptomatic or asymptomatic, while five patients had severe symptoms and needed intensive care unit care before and after the operation. Seven patients experienced spinal hypotension and received vasopressor treatment. Thrombocytopenia was insignificant in any patients, and none developed symptomatic thromboembolism. There were no reported cases of vertical transmission, and all babies had a birth weight greater than 2500 g and good Apgar scores.

Conducting the study at a single tertiary care center may limit the representativeness of the findings. The results may not be applicable to other healthcare settings or populations with different demographics. Without a control group of pregnant women without COVID-19, it becomes challenging to determine the specific impact of COVID-19 on the outcomes of regional anesthesia for cesarean section. A control group would provide a basis for comparison. Without a control group of pregnant women without COVID-19, it becomes challenging to determine the specific impact of COVID-19 on the outcomes of regional anesthesia for cesarean section. A control group would provide a basis for comparison.

CONCLUSION

Though we had large case load of Covid positive patient, number of symptomatic patients were relatively less. With Successful spinal anaesthesia outcome was good in all of the patients. About 20% of the babies needed NICU admission in the present study. We have not experienced any critical incidents during caesarean section as well as postoperative complications in our patients.

REFERENCES

1. Wang D, Hu B, Hu C, Zhu F, Liu X, Zhang J, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus–infected pneumonia in Wuhan, China. JAMA 2020;323:1061-9.
2. COVID-19 Anosmia Reporting Tool [Internet]. American Academy of Otolaryngology-Head and Neck Surgery. 2020 [cited 2020 May 30]. Available from: https://www.entnet.org/content/reporting-tool-patients-anosmia-related-covid-19.
3. Xia H, Zhao S, Wu Z, Luo H, Zhou C, Chen X. Emergency Caesarean delivery in a patient with confirmed COVID-19 under spinal anaesthesia. Br J Anaesth. 2020;124(5):e216-e218. doi:10.1016/j. bja.2020.02.016
4. Ashokka B, Loh M-H, Tan CH, et al. Care of the pregnant woman with COVID- 19 in labor and delivery: anesthesia, emergency cesarean delivery, differential diagnosis in the acutely ill parturient, care of the newborn, and protection of the healthcare personnel. Am J Obstet Gynecol. Published online April 5, 2020. doi:10.1016/j. ajog.2020.04.005
5. Aydin Guzey N, Uyar Turkyilmaz E. Evaluation of 254 caesarean section with COVID-19 in terms of anaesthesia and clinical course: 1- year experience. J Anesth. 2022;36:514-23
6. M Jisha, M Mohan David. Symptomatic COVID-19 Positive Parturients Posted for Lower Segment Caesarean Section. Journal of clinical & diagnostic research. 2022;16(12): UR01-04
7. Wani R et al. Int J Reprod Contracept Obstet Gynecol. 2022 May;11(5):1477-1482
8. Sahin et al. Management of Pregnant Women with COVID- 19: A Tertiary Pandemic Center Experience on 1416 Cases. Journal of Medical Virology 2021;94(5)
9. Ababneh O et al. Perioperative Outcomes in COVID-19 Obstetric Patients Undergoing Spinal Anesthesia for Cesarean Section: A Prospective Observational Study. Healthcare 2022, 10(1),
10. Jan M et al. Elective Cesarean Section in Obstetric COVID-19 Patients under Spinal Anesthesia: A Prospective Study. Anesth Essays Res. 2020 Oct-Dec; 14(4): 611–614

ISSN (O): 2687-5365; ISSN (P): 2753-6556