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# SARS-CoV-2 in pregnancy: maternal and perinatal outcome data of 34 pregnant women hospitalised between May and October 2020

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## Abstract

**Objectives:** To report clinical data on maternal outcome, mode of delivery and immediate neonatal outcome in women infected with COVID-19.

**Methods:** Retrospective data collection.

**Results:** A total of 8.6% of the total population of hospitalised SARS-CoV-2 positive pregnant women were admitted to a critical care unit. The premature birth rate for births before 34+0 weeks of gestation among pregnant women who tested positive for SARS-CoV-2 was 7.1%. One newborn (3.6%) tested positive for SARS-CoV-2 two days after birth and showed symptoms.

**Conclusions:** Pregnant women with COVID-19 seem to be at higher risk of invasive ventilation, admission to a critical care unit and preterm birth, and should therefore be considered a high-risk-population.

**Keywords:** COVID-19; maternal outcome; neonatal outcome; pregnancy; SARS-CoV-2.

## Introduction

In Austria, pregnant women are still not considered a high-risk group [1, 2] despite numerous international publications covering the effects of covid-19 on them and on their neonates [3–6]. The key to providing superior perinatal care in an evolving pandemic scenario is data on infection and admission rates and clinical outcomes. In early March

a Standard Operating Procedure was established within the Vienna Hospital Association which holds seven obstetric departments and oversees between 13,000 and 14,000 births per year. The Department of Gynaecology and Obstetrics in the Clinic Ottakring was designated as a COVID-19 specialised obstetric department for Vienna. Since then, when a transfer has been possible, all pregnant women in Vienna who planned their delivery within the Vienna Hospital Association and who reached a viable gestational age with a SARS-CoV-2 positive test result, have been treated in the Clinic Ottakring. Included in this study are 28 women who tested positive for SARS-CoV-2 and gave birth in the Clinic Ottakring and seven pregnant women who needed hospitalisation but were able to be discharged still pregnant after recovering from COVID-19.

## Methods

Clinical data was collected from 35 pregnant women who tested positive for SARS-CoV-2 and were hospitalised between 11th May and 14th October 2020 in the Clinic Ottakring. Informed consent was obtained from all individuals included in this study.

## Results

A total of 35 women eligible for the study were hospitalised in the Clinic Ottakring with 28 women delivering their babies during hospitalisation and seven women discharged after recovering from COVID-19, yet still pregnant. All participants tested positive for SARS-CoV-2 using polymerase chain reaction (PCR). The mean age was 28.9 (range 20–38) years. Most women were asymptomatic, with only nine (25.7%) presenting with symptoms of COVID-19. Out of this group, three (8.6%) required oxygen support and were admitted to a critical care unit and two of them needed intubation (5.7%). The characteristics of the population is shown in Table 1.

Since there is no evidence to suggest that caesarean sections offer a better outcome for COVID-19 positive patients [7], vaginal delivery is the primary approach undertaken in the Clinic Ottakring. Figure 1 shows the delivery

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mode for the patients included in this study. In 13 out of 28 cases, a caesarean section was performed (47%). In comparison, the mean rate of caesarean sections in the Clinic Ottakring for 2019 was 27.6%. An elective caesarean section was performed in eight cases (29%), in six cases the indication was not related to COVID-19 infection, but in two cases the indication was the critical condition of the mother, both caesarean sections were performed in general anaesthesia, one in 28+5 weeks the other in 32+0 weeks gestational age. In three cases the women underwent primary caesarean section because of a previous caesarean section, in one case the indication was a breech presentation at term, in one case the indication was a suspected macrosomia and one case showed a pathological pattern of cardiotocography (CTG) without contractions and therefore underwent an elective caesarean section. For none of the women who attempted vaginal delivery, any emergency caesarean section was necessary, however, in two cases (7%) a vacuum extraction was performed because of pathological CTG. Secondary caesarean section occurred in five cases (18%), in four cases the indication was a pathological CTG during labour in one case a patient who had had a caesarean section previously, decided not to attempt a vaginal delivery in the early stages of labour.

Data on the neonatal outcome is shown in Table 2. Preterm birth before 34 weeks gestational age occurred in two cases (7.1%) and in both cases an elective caesarean section was performed because of the mother's critical condition. Both were transferred to neonatal intensive/

intermediate care. All newborns were tested for SARS-CoV-2 multiple times after birth. The tests immediately after birth were all negative. One newborn tested positive for SARS-CoV-2 in the second test on third day of life and presented a fever up to 38.5 °C. No perinatal death occurred in the population eligible for this study. After admission to the delivery room, all patients who tested positive for SARS-CoV-2 were given a briefing about possibilities, risks and possible complications for the newborn regarding rooming-in with the mother by paediatricians. 85.7% decided for rooming-in with their newborn, two mothers decided for postpartum separation.

## Discussion

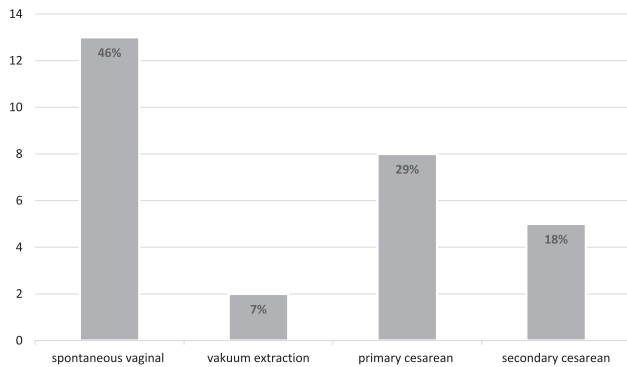
Although most pregnant women presented as asymptomatic for COVID-19, the number of women who need critical care seems high, especially considering that these women are young and without medical preconditions. The figures of admissions to critical care units / intensive care units in our study were comparable to larger international reports [8]. The premature birth rate for births before 34+0 weeks of gestation among pregnant women who tested positive for SARS-CoV-2 was 7.1% in this study. Even if we cannot proof significant correlation between COVID-19 and preterm delivery because of the low case numbers the premature birth rate is clearly higher than among the total population of pregnant women in Austria, which was 2.1% in 2019 [9]. This matches results of recent larger reviews [6, 8]. Therefore, pregnant women with COVID-19 seem to be at higher risk of invasive ventilation, admission to a critical care unit and preterm birth, and should be considered a high-risk population.

**Table 1:** Characteristics of the population.

	Total population of hospitalised SARS-CoV-2 positive pregnant women n=35	Women who delivered while SARS-CoV-2 positive n=28	SARS-CoV-2 positive women discharged still pregnant n=7
Mean age, years	28.9 (20–38)	28.7 (20–38)	29.6 (23–38)
Mean gestational week, when tested positive	39+0 weeks	39+4 weeks	30+6 weeks
COVID-19 symptoms	9 (25.7%)	5 (17.9%)	4 (57.1%)
Intensive care	3 (8.6%)	2 (7.1%)	1 (14.3%)
Intubation	2 (5.7%)	2 (7.1%)	0
Corticosteroids	3 (8.8%)	2 (7.1%)	1 (14.3%)
Remdesivir	2 (5.7%)	1 (3.6%)	1 (14.3%)
Death	0	0	0

**Table 2:** Neonatal outcome.

	n=28
Mean birth weight	3345 g
Preterm births <34 weeks	2 (7.1%)
Mean pH (n=22)	7.22
pH ≤ 7.10	4 (14.3%)
1 min APGAR ≤ 7	2 (7.1%)
SARS-CoV-2 positive (PCR)	1 (3.6%)
Transfer in NIMC/NICU	2 (7.1%)
	(2 transferred to NICU, other 2 transferred to NIMC only for separation at the request of the mother)
Perinatal death	0 (0%)
Rooming in with mother	24 (85.7%)



**Figure 1:** Delivery mode.

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**Informed consent:** Informed consent was obtained from all individuals included in this study.

**Ethical approval:** Research involving human subjects complied with all relevant national regulations, institutional policies and is in accordance with the tenets of the Helsinki Declaration (as revised in 2013), and has been approved by the authors' Institutional Review Board.

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