

Changes and pregnancy outcomes of operative vaginal delivery training during COVID-19 pandemic

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OBJECTIVE:

We described the changes in training and compared the characteristics and outcomes of operative vaginal deliveries (OVDs) before and during the coronavirus disease 2019 (COVID-19) pandemic.

DESIGN: Retrospective cohort

METHOD:

- Deliveries by vacuum extraction (VE) and forceps over a four-year period (2018-2021) in an obstetric training unit in Hong Kong were analysed.
- Data retrieved from the local obstetrics electronic reporting system were reviewed. Only OVDs for singleton livebirth cephalic deliveries were included in the final analysis.
- The primary outcomes were the OVD rates and training opportunities in 2018-2019 (pre-COVID-19) and 2020-2021 during COVID-19 pandemic.
- The secondary outcomes were the comparison of demographic, medical and obstetric characteristics of women, as well as postpartum and neonatal outcomes of OVD training between pre-COVID-19 and COVID-19 periods.

Characteristic of OVD	Pre-COVID-19 period N = 799	COVID-19 period N = 696	P value*
	Mean ± SD, median (IQR) or number (%)		
Maternal age (year)	31.4 ± 4.98	30.9 ± 4.80	0.089
Primiparous	653 (81.7)	550 (79.0)	0.188
Gestational age (week)	39.0 ± 1.31	38.9 ± 1.30	0.086
Diabetic	99 (12.4)	96 (13.8)	0.422
Hypertensive	21 (2.6)	21 (3.0)	0.650
Antepartum haemorrhage	54 (6.8)	49 (7.0)	0.830
Induced labour	414 (51.8)	367 (52.7)	0.724
Operative vaginal delivery			
• Vacuum extraction	676 (84.6)	632 (90.8)	<0.001
• Forceps delivery	123 (15.4)	64 (9.2)	
Indication			
• Maternal disease or exhaustion	25 (3.1)	20 (2.9)	0.001
• Prolonged second stage	185 (23.3)	108 (15.5)	
• Fetal distress	589 (73.7)	568 (81.6)	
Birth weight (gram)	3130 ± 384	3090 ± 376	0.050
Outcome			
Blood loss (mL)	300 (200-300)	300 (200-350)	0.232
Postpartum haemorrhage	46 (5.8)	47 (6.8)	0.427
Perineal tear	7 (0.9)	14 (2.0)	0.063
Failed OVD	1 (0.1)	5 (0.7)	0.070
AS at 1 minute ≤ 5	18 (2.3)	10 (1.4)	0.246
AS at 5 minutes ≤ 7	6 (0.8)	8 (1.1)	0.426
Neonatal unit admission	284 (35.5)	290 (41.7)	0.015
Maternal hospitalization (day)	3 (2-4)	3 (2-4)	0.454

*: Independent t-test, chi-square test, Fisher's exact test, Mann-Whitney U test were used where appropriate

RESULTS:

- There were 6845 and 4772 singleton livebirth vaginal deliveries, of which 799 (11.7%) and 696 (14.6%) were OVDs in pre-COVOD-19 and COVID-19 periods, respectively.
- The number of trainees in the two study periods remained static (n=14), and number of overall OVDs among trainees decreased from 28.5 to 24.9 cases/trainee/year prior to vs during COVID-19 pandemic. However statistical analysis did not show significant difference in these changes.
- Both cohorts were comparable in maternal age, gestational week, parity, antepartum complications, and birth weight. The rate of fetal distress as the major indication for OVDs was higher during than before the pandemic (81.6% vs 73.7%, P=0.001).
- The choice of instrument by trainees varies, with 84.6% (676/799) and 90.8% (632/696) OVDs using VE during and before COVID-19 respectively (P<0.001).
- Comparison of postpartum and neonatal outcomes showed a significant increase in the rate of neonatal unit admission for newborns during and before COVID-19 (41.7% vs 35.5%, P=0.015), which was independent of the increasing rates of fetal distress and VE in collinearity analysis. The adjusted odd ratio of neonatal unit admission after OVDs during COVID-19 pandemic was 1.33 (95% confidence interval = 1.08-1.64).
- Incidences of postpartum haemorrhage, perineal tear, and Caesarean section for failed OVD, Apgar scores and maternal hospitalization duration were similar in two periods.

CONCLUSION:

- Despite of the falling number of deliveries during COVID-19 pandemic, the training opportunities of OVD did not significantly decrease.
- During COVID-19 period, an increased rate of neonatal unit admission for newborns was observed, but the effect was only modest. Incidences of other peripartum and neonatal complications remained low.