

Severe maternal morbidity associated with cesarean delivery in the periviable period

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Background

- Severe maternal morbidity (SMM) is increasing in the U.S.
- Preterm birth is highly associated with SMM.
- Certain obstetric interventions aimed at improving neonatal outcomes may result in significant maternal morbidity.¹
- Cesarean delivery in the periviable period, defined as birth occurring between 20 0/7 and 25 6/7 weeks' gestation, is controversial given uncertain neonatal benefit.¹

Objective

- To determine the rate of SMM among women who delivered a periviable neonate.
- To compare SMM based on mode of delivery (cesarean vs vaginal).

Methods

- Single center retrospective cohort study of all periviable deliveries occurring at UCMC between 2012-2021.
- Differences in individual and composite SMM between the cesarean and vaginal births were compared using t-test and chi squared test.
- Multivariate logistic regression was performed to estimate the association between cesarean delivery and SMM.

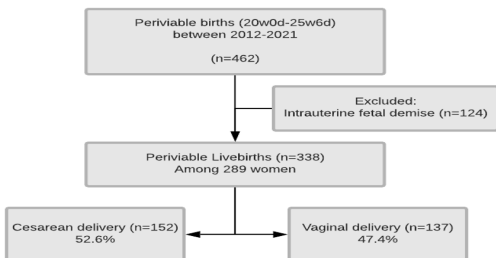


Figure 1: Flow Diagram of Study Population

Results

Severe Maternal Morbidity Among Periviable Deliveries

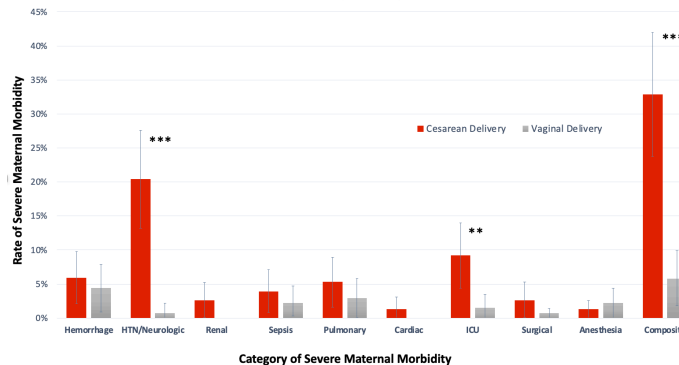


Figure 2: Rate of severe maternal morbidity stratified by mode of delivery. Categories defined by ACOG's Obstetric Care Consensus No. 5.². (***=P<0.001, **=P=0.001 to 0.01)

Obstetric Interventions Performed by Mode of Delivery

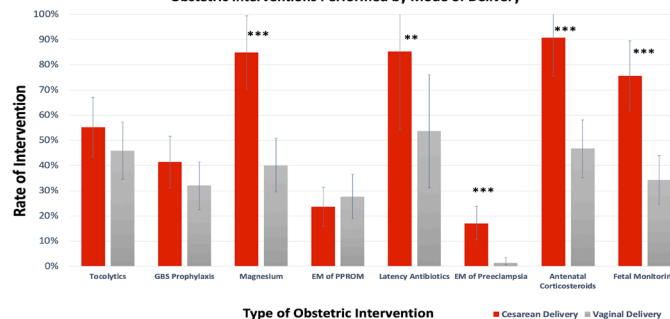


Figure 3: Rate of obstetric interventions received stratified by mode of delivery. EM: expectant management, (***=P<0.001, **=P=0.001 to 0.01)

Results

- Among women who had a periviable birth, 20.7% experienced an SMM event.
- The cesarean rate was 52.6% among all periviable births in our study population.
- The cesarean birth cohort had a higher rate of composite SMM compared to the vaginal delivery cohort (32.9% vs 5.8%, p<0.001, RR 7.9, 95% CI 3.6-17.4).
- After adjustment for confounding influences, cesarean remained significantly associated with SMM (aRR 3.8, 95% CI 1.2-12.3) in a multivariate analysis.
- Obstetric interventions performed for neonatal benefit were more common among the cesarean cohort. These included magnesium, latency antibiotics, expectant management of preeclampsia, corticosteroids, and fetal monitoring.

Conclusions

- 1 in 5 women who delivered in the periviable period experienced a severe maternal morbidity.
- Cesarean delivery was highly associated with hypertensive and neurological SMM events, ICU SMM events, and a nearly 4-fold increase in composite SMM after adjustment of confounding influences.

Future Directions

- Determine the correlation between mode of delivery and neonatal mortality/morbidity among periviable births.

References

- American College of Obstetricians and Gynecologists; Society for Maternal-Fetal Medicine. Obstetric Care consensus No. 6: Periviable Birth. *Obstet Gynecol*. 2017 Oct;130(4):e187-e199.
- Severe maternal morbidity: screening and review. *Obstetric Care Consensus No. 5*. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2016;128:e54-60.