How are maternal and neonatal outcomes impacted by the contemporary practice of operative vaginal delivery?

Perineal lacerations appear to remain a major driver of maternal morbidity following operative vaginal delivery (OVD), while the absolute risk of neonatal trauma appears low, according to an analysis of data from an observational study that included 1,326,191 live births or stillbirths (2013-2019) in Canada. However, it is important to distinguish relative risks between different birth scenarios with attention to the referent group in the second stage of labor. In addition, with declining rates of OVD, clinician experience is a concern. An updated understanding of these factors can aid in developing risk-reduction strategies while preserving OVD as an alternative to cesarean delivery (CD).

Muraca GM, Boutin A, Razaz N, et al. Maternal and neonatal trauma following operative vaginal delivery. CMAJ. 2022;194:E1-E12. doi: 10.1503/cmaj.210841.

EXPERT COMMENTARY
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Operative vaginal delivery is used to achieve and expedite safe vaginal birth while avoiding CD and its associated morbidities.[1,2] Despite support from the American College of Obstetricians and Gynecologists (ACOG) for the use of OVD as an alternative to CD, OVD was used in only 3% of all US births in 2013, a shift from approximately 30% in 1987.[1,3] Reported complications of OVD are biased by the level of experience of the operator, changes in practice, and by misinterpretation of the counterfactual.[1]

Outcomes of OVD should be compared with appropriate reference groups, namely, with second-stage CD births rather than with spontaneous vaginal births.[4] With decreasing rates of OVD, evidence of contemporary data is needed on appropriately compared perinatal outcomes.[4]

FAST TRACK

Despite ACOG support for the use of OVD as an alternative to CD, OVD was used in only 3% of all US births in 2013, a shift from approximately 30% in 1987

Details of the study

Muraca and colleagues conducted an observational cohort study of births in Canada between 2013 and 2019 to assess the incidence of maternal and neonatal trauma following OVD. They used composites defined a priori—stratified by instrument, region, level of obstetric care, and institutional OVD volume.

Results. Among 1,326,191 live or stillbirths, 2.9% were attempted forceps deliveries and

The authors report no financial relationships relevant to this article.

doi: 10.12788/obgm.0176

WHAT THIS EVIDENCE MEANS FOR PRACTICE

While it is important to understand perinatal outcomes following OVD in a contemporary cohort, utilizing the correct cohort and reference group is critical.[4] Risks for maternal and neonatal trauma follow OVD; however, outcomes vary based on appropriate selection of OVD candidates and adherence to recommended national guidelines.[1,4] The infrequency of OVD raises concerns regarding adequate training for obstetricians, which should be prioritized so that they can offer OVD as a safe alternative to CD birth.[3]

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FAST TRACK

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8.4% were attempted vacuum deliveries. Following forceps delivery, the maternal trauma rate was 25.3% (95% confidence interval [CI], 24.8%–25.7%), and the neonatal trauma rate was 9.6 per 1,000 live births (95% CI, 8.6–10.6). Following vacuum delivery, maternal and neonatal trauma rates were 13.2% (95% CI, 13.0%–13.4%) and 9.6 per 1,000 live births (95% CI, 9.0–10.2), respectively. Maternal trauma was driven by higher order perineal lacerations. Some association was seen between increased forceps volume and decreased maternal trauma rates.

The authors concluded that in Canada, rates of maternal and neonatal trauma following OVD are higher than previously reported in consensus statements.

Study strengths and limitations

This large contemporary study uniquely stratified perinatal outcomes following OVD. The outcomes are well defined and meaningful, but some limitations affect the generalizability of the findings.

First, stillbirths were included for the maternal composite outcome, yet the incidence of this within the study population is not reported. Operative vaginal deliveries that involve stillbirths can be complex; a subgroup analysis excluding these would aid in interpretation.

Second, complicated OVDs, including sequential use of forceps and vacuum and OVDs from midpelvic station, were included; ACOG recommends against both these practices in routine circumstances due to known increases in maternal and neonatal morbidity.[1] As such, the inclusion of these OVDs may bias results away from the null.

Finally, despite discussing the role of episiotomy, the episiotomy rate in this cohort is not reported.

Despite these limitations, the study by Muraca and colleagues is a positive step forward toward understanding the role of OVD in contemporary obstetric practice, and it uniquely ascertains the impact of OVD volume outcomes that previously had been an elusive exposure ●

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