



What is the significance of the head-to-body delivery interval in shoulder dystocia?

A longer interval may be more likely to lead to persistent brachial plexus injury and neonatal depression, according to this observational case-control analysis.

Lerner H, Durlacher K, Smith S, Hamilton E. Relationship between head-to-body delivery interval in shoulder dystocia and neonatal depression. *Obstet Gynecol.* 2011;118(2 Pt 1):318-322.

► EXPERT COMMENTARY

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Shoulder dystocia is a well-described obstetric complication that occurs in approximately 1% of deliveries.¹ It has been associated with adverse maternal outcomes as well as adverse perinatal outcomes, including fracture, nerve palsy, and hypoxic ischemic encephalopathy.

Although multiple risk factors for shoulder dystocia have been described, experts have not yet been able to combine them into an accurate, discriminating, clinically useful shoulder dystocia prediction model; therefore, shoulder dystocia remains an unpredictable event.² We also lack a strategy to prevent shoulder dystocia. Because we cannot predict or prevent it, a provider's response to shoulder dystocia, once it occurs, is seminal, in terms of management.

Details of the study

As Lerner and colleagues concisely state, when shoulder dystocia occurs, there is a need for caution in the application of force during maneuvers and a “countervailing

need to achieve delivery.” It is in a provider's interest, then, to have knowledge of whether there is a time at which that countervailing need to achieve delivery takes on greater relative significance.

In an effort to address this issue, the authors examined the relationship between the duration of shoulder dystocia and neonatal depression (defined as the need for cardiopulmonary resuscitation or intubation; a pH level below 7.0; an Apgar score below 6 at 5 minutes; or death).

In their study, 127 births involving uncomplicated shoulder dystocia (i.e., no evidence of neonatal trauma or depression) from a single institution were compared with 55 births involving complicated shoulder dystocia (i.e., the occurrence of brachial plexus palsy with or without neonatal depression).

Lerner and colleagues found a correlation between the duration of shoulder dystocia and the extent of neonatal complications. For example, the median interval from head-to-body delivery for uncomplicated births was 1.0 minute; for births complicated by brachial plexus palsy alone, it was 2.0 minutes; and for births complicated by brachial plexus palsy and neonatal depression, the interval was 5.3 minutes ($P < .001$). There was no single cutoff, however, that was completely discriminating with regard to whether neonatal depression would occur.

FAST TRACK

The median interval from head-to-body delivery in uncomplicated births was 1.0 minute, compared with 2.0 minutes for births complicated by brachial plexus palsy alone, and 5.3 minutes for births complicated by both brachial plexus palsy and neonatal depression

Strengths and weaknesses of the trial

As the authors note, one limitation of their study is a lack of precision in the recorded duration of shoulder dystocia cases, given that “it appears that clinicians often rounded” the stated times.

Other types of bias that may have affected the findings include:

- **Selection bias.** In an observational study such as this, it is typically ideal to draw the cases and controls from the same underlying population in an effort to limit the occurrence of other potentially confounding factors, both known and unknown. In this study, however, the uncomplicated cases came from one institution over 10 years, whereas the complicated cases came from a medicolegal database one author had accumulated over 15 years. Because these clearly are very different populations, the reported association between head-to-body delivery interval and brachial plexus palsy or neonatal depression may be related to characteristics other than, or in addition to, duration of the dystocia. For example, there may have been complicated cases that did not result in legal action. If the duration of the dystocia is in any way related to the chance that medicolegal action occurs, the relationship between duration and the presence of complication will be affected.
- **Ascertainment bias.** Because this study lacked a standard approach to the recording of duration, ascertainment bias may have affected the results. It is possible, for example, that the knowledge that a complication did or did not occur could have affected whether the duration was recorded or how much time was documented.

WHAT THIS EVIDENCE MEANS FOR PRACTICE

The data published to date,^{3,4} including this study, should offer some reassurance to obstetric care providers. Long-term adverse outcomes are uncommon in shoulder dystocia. Even intermediate outcomes such as neonatal depression, when they do occur, appear to be uncommon when the shoulder dystocia is of relatively short duration.

When shoulder dystocia does occur, however, providers should maintain situational awareness, being cognizant of the time that elapses, so that the continuation of appropriate and coordinated maneuvers can be ensured.

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Complications of shoulder dystocia are rare

Ultimately, the primary question posed in this article is difficult to answer. Although shoulder dystocia occurs in approximately 1% of births, major adverse perinatal outcomes occur in only a fraction of these cases. That fact means that an event such as permanent brachial plexus palsy or neonatal depression, let alone actual hypoxic ischemic encephalopathy, occurs only in the context of thousands of births. 📌

References

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