

Association between Opioid Use after Intrapartum Primary Cesarean Delivery and Repeat Cesarean Delivery after Failed Trial of Labor: A Short Commentary

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SHORT COMMENTARY

Opioid-sparing multimodal analgesia is best practice for post-cesarean pain management. Varying obstetrical scenarios, such as operative vaginal deliveries, intrapartum cesarean deliveries and failed trial of labor after cesarean (TOLAC), may increase the odds for severe pain. Specifically, failed TOLAC combines two distinct obstetric circumstances (i.e., intrapartum and repeat cesarean) each known to increase the pain experience and the amount of opioid used after cesarean delivery.

We recently published a retrospective cohort study designed to compare the opioid use during the hospital stay among women undergoing a primary intrapartum cesarean delivery with that among women undergoing a repeat cesarean delivery in the setting of an attempted TOLAC [1]. Contrary to our hypothesis, we found that the median total oxycodone dose used during in-hospital stay (usually 72 hours) was lower (p-value 0.049) among women with a failed TOLAC (12 mg) compared to women undergoing a primary cesarean delivery (20 mg).

Another finding was that women with a failed TOLAC were also found to have a shorter total duration of intrapartum labor analgesia (time between combined spinal-epidural analgesia and cesarean delivery) than women with a primary intrapartum cesarean delivery (median duration 10 versus 14 hours, respectively; $p < 0.001$), suggesting that longer duration of labor prior to cesarean delivery may be a driver for increased post-cesarean pain and opioid use.

Prolonged duration of labor may result in a variety of factors contributing to increased nociception and hyperalgesia, such as may occur during induction of labor with prostaglandins or as a result of disrupted sleep patterns. Poor preoperative sleep quality has been associated with severe post-cesarean pain and increased intake of analgesics [2], a longer duration of labor resulting in increased fatigue and sleep deprivation may also have contributed to our findings.

There are other possible explanations for our unanticipated results, bearing in mind that our cohort is of small size, and that our study should be viewed as a proof of concept, rather than a mechanistic

investigation. First, women with no previous cesarean delivery are more likely to have received uterotonic agents for induction of labor (prostaglandin E_2 or $F_2\alpha$), which is important in this context since labor induction as opposed to spontaneous onset of labor has been associated with worse pain trajectories, likely secondary to the release of pro-inflammatory neuropeptides causing hyperalgesia [3,4].

Indeed, in our cohort, women undergoing a TOLAC were not exposed to prostaglandins, while a subset of women undergoing a primary intrapartum cesarean delivery likely received prostaglandins to induce labor. Conversely, women with a previous cesarean delivery might have expectations of recovery that influence their pain perception and management choices, such as avoiding opioids for breakthrough pain due to their experience or knowledge of unwanted side effects [5].

Finally, women's emotions and experience during labor will impact their recovery, and we hypothesized that the unmet expectation of women with a failed TOLAC, likely undergoing an unwanted cesarean delivery for the second time, would negatively impact their pain perception; however this remains speculative since we did not prospectively evaluate women's expectations nor did we assess their short or long term psychological recovery.

Overall, our findings are reassuring and may help obstetricians counseling women about the risks and benefits of TOLAC as established by the American College of Obstetricians and Gynecologists (ACOG) [6]. Indeed, recent data suggests that up to 32% of women attempting a TOLAC will subsequently require an intrapartum repeat cesarean delivery [7].

CONCLUSION

Finally, we believe our study highlights the need for more personalized post-cesarean pain guidelines that take into account

- The specific obstetric scenario resulting in the indication for a cesarean delivery,
- The patient's unique characteristics and pain history and
- The outcomes deemed important for postpartum recovery, of

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which opioids use is one aspect.

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