Analgesia Following Cesarean Delivery

"Sometimes it takes a painful experience to make us change our ways" (Proverbs 20:30)

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At first glance it seems that Orbach-Zinger et al., in their anesthesia survey reported in this month's issue of *IMAJ* [1], lament the failure of Israeli obstetric units to adopt neuraxial morphine – the most effective analgesic option for post-cesarean delivery analgesia. On closer inspection, a myriad of concerns related to maternal post-CD analgesia management are revealed: failure to reliably measure post-CD pain, lack of analgesic management protocols, limited safety oversight, and inadequate utilization of effective multimodal postoperative analgesics (such as non-steroidal anti-inflammatory drugs and paracetamol).

Orbach-Zinger et al. are to be commended for their quest to examine post-CD analgesic management, exposing this much neglected area of women's health care. Severe and untreated acute post-CD pain may be associated with delayed functional recovery and persistent incisional pain, as recently reviewed by Lavoie and Toledo [2]. Post-CD pain can also negatively impact maternal-neonatal interactions as well as breastfeeding [3]. With over 30,000 babies per annum born via CD in Israel [4], there are potentially very costly consequences with inadequately managed acute and chronic post-CD pain [2,3]. Pain associated with CD is also a major anesthetic concern for expectant mothers prior to surgery [5].

The most striking finding in the Orbach-Zinger survey is the failure of the majority (72%) of Israeli units to even measure post-CD pain. Without pain monitoring, how can we appreciate women's pain needs or know if our drug therapy is working? The Joint Commission on Accreditation of Healthcare Organizations in the United States views postoperative pain as the "fifth vital sign," and this Commission as well as the National Institute of Clinical Excellence in the United Kingdom recommend maintaining postoperative pain scores consistently below 3/10 or 30/100 [6,7]. Notwithstanding the challenge of meeting these targets [8], only 21% of the surveyed Israeli units achieved this analgesic goal.

A principal finding of this Israeli survey is the uncommon use of intrathecal opioids for post-CD analgesia, utilized in only 7/25 (28%) of units. In the USA, 79% of units administer intrathecal morphine (doses ranging from 50 to 200 μg) [9]. Neuraxial opioids is the favoured analgesic route for post-CD analgesia according to the American Society of Anesthesiologists' Obstetric Anesthesia Practice Guidelines [10], providing superior postoperative pain relief compared to intravenous opioids [11]. Intrathecal morphine is currently considered the gold standard single-dose neuraxial post-CD opioid, affording effective and prolonged (up to 36 hours) post-CD analgesia [12].

Compounding the lack of pain measurements outlined in the survey is the limited monitoring for respiratory depression. Postoperative monitoring is essential for the safe application of neuraxial opioids. In the obstetric population, clinically significant respiratory depression is very rare following low dose (100–200 μg) intrathecal morphine [12]. Potential opioid-related side effects can be minimized by utilizing low doses. Neuraxial morphine has an analgesic ceiling (50–200 μg intrathecally and 2–4 mg epidurally); larger doses may increase side effects without adding significant analgesic benefit [11,12]. A history and physical examination directed at identifying risk factors [12] should be performed in all patients prior to administration of neuraxial opioids [13].

American Society of Anesthesiologists guidelines recommend that respiratory monitoring after single-dose neuraxial morphine be performed at least every hour for the first 12 hours, then every 2 hours for the next 12 hours. Many hospitals in the United States, however, do not fully comply with these guidelines [9]. Postoperative respiratory depression is challenging to measure. Current monitoring technology (pulse oximetry oxygen saturations, apnea alarms, end-tidal carbon dioxide monitors) and/or clinical observations (respiratory rate, sedation scores) are unreliable and inconvenient [14]. Respiratory rate and level of sedation (the most commonly utilized respiratory monitors among Society of Obstetric Anesthesia and Perinatology members) are considered adequate for the evaluation of respiratory depression in low risk post-CD women [9,13,15]. However, women at risk for respiratory depression should be monitored for adequate oxygenation and ventilation following neuraxial opioid administration [13].

Clinicians should appreciate that respiratory depression from neuraxial opioids is no more likely to occur than it would

CD = cesarean delivery

with systemic morphine [16]. Avoiding neuraxial opioids may necessitate more systemic opioids post-CD to achieve analgesia and therefore actually *increase* the incidence of respiratory depression. Although monitoring guidelines may deter clinicians from using neuraxial opioids for post-CD analgesia, clinical evaluations as outlined above are relatively simple and achievable. Current evidence and expert opinion suggest that the analgesic benefits derived from small doses of neuraxial opioid for post-CD analgesia outweigh the rare risk of associated respiratory depression [15,17].

Post-CD analgesia strategies must be multimodal [2], a strategy few Israeli units employ. A CD practice survey of Society of Obstetric Anesthesia and Perinatology members reported routine regular administration of non-steroidal anti-inflammatory drugs in 81% of survey responders, as compared to 44% in Israel [9]. NSAIDs are effective for post-CD pain (especially visceral cramping pain), reduce opioid analgesic requirements by 30–50%, and decrease opioid-related side effects (nausea, pruritus, sedation), as reviewed by Lavoie and Toledo [2]. Paracetamol is also opioid-sparing and additive when combined with NSAIDs [2]. An example of a multimodal analgesic approach includes intrathecal morphine 100 μg plus scheduled NSAIDs (e.g., ibuprofen 600 mg every 6 hours) and paracetamol (e.g., 650 mg every 6 hours). Breakthrough pain can be managed with oral opioids (e.g., oxycodone, tramadol). Such a strategy necessitates refractory pain modalities such as intravenous opioids and transversus abdominis blocks in only 5–10% of women [18].

The survey generates a compelling dichotomy. Given that 68% of Israeli units forgo post-CD respiratory monitoring, should Israeli women receive state-of-the-art neuraxial opioids for their post-CD pain? The evidence-based recommendation to use neuraxial morphine post-CD requires concurrent introduction to basic patient monitoring (e.g., pain scores and respiratory rate/sedation scores hourly for the first day after surgery). The introduction of such monitoring may not necessarily increase nursing and clinician workload. We suspect much nursing time is currently spent managing breakthrough pain – time that could be diverted to clinical assessments of women.

While the survey may have some methodological flaws, it is unique in the 100% response rate and that data were obtained from *all* 25 units offering labor and delivery anesthesia/analgesia services in Israel. National surveys in the United States and Europe suffer from limited geographic analysis, restricted generalizability, and low response rates [9,19,20]. Current analgesic care of post-CD women in Israel is outside standards set in other developed countries. A lack of specialist training in obstetric anesthesia may contribute to the suboptimal care; the survey of Orbach-Zinger and co-authors found better analgesic use and pain assessments in units managed by obstetric anesthesia specialists. The new obstetric anesthesia fellowship program in Israel has the potential to facilitate improvements in the clinical care of pregnant and postpartum women.

We hope this national survey will stimulate a prompt upgrade of Israeli post-CD analgesia care. The first step is to introduce regular assessment of women's pain postoperatively, followed by implementation of evidence-based analgesic post-CD protocols. Before units can proclaim that their women do well post-CD and are pain free, they need to actually record pain and anesthetic outcomes. Any implementation of evidence-based analgesic strategies must occur concurrently with adequate analgesic and safety monitoring. Hopefully this survey will quell the status quo of ignoring or not prioritizing postoperative analgesic needs among women giving birth by CD.

NSAID = non-steroidal anti-inflammatory drug

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