Debate: Urgent Cesarean Delivery for Failure to Progress in Labor: Patchy Block with Epidural – Plan is to Administer a Spinal

CON: Single-Shot Spinal

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Objectives

Upon completion of this presentation, participants will be able to:

1. Appreciate potential predictors of failed epidural “top-up” for cesarean delivery.
2. Describe the potential hazards of performing a full-dose single-shot spinal (high spinal, cardiovascular collapse) and concerns of under-dosing with a reduced-dose single-shot spinal anesthetic in this setting.
3. Discuss the benefits and limitations of various options (epidural, combined-spinal epidural (CSE), single-shot spinal, continuous spinal anesthetic, general anesthesia) for managing a failed epidural “top-up” for cesarean delivery.

Summary: The reported incidence of block failure following a “top-up” of a labor epidural for cesarean delivery is 1.7 - 8%. This block failure rate may be much higher in the urgent/emergent setting. The Royal College of Anaesthetists guidelines state that the conversion rate from regional to general anesthesia should be < 1% for elective cesarean delivery and < 3% for non-elective cesarean delivery. The most consistent predictor of failed “top-up” of labor epidurals for cesarean delivery is prior requests for boluses to treat inadequate labor analgesia. Other less consistent predictors are duration of labor and patient factors including height, weight, and younger parturients. The use of CSE has been found to lower the incidence of block failure following “top-up” of labor epidurals for cesarean delivery. Non-obstetric anesthesiologists have higher rates of general anesthesia in this setting compared with obstetric anesthesiologists.

In the setting of a failed epidural “top-up” for cesarean delivery options include: manipulate or replace epidural, single-shot spinal, CSE, continuous spinal, general anesthesia or performing the cesarean delivery with local anesthetic. Factors affecting the anesthetic decision include the urgency of surgery, fetal and maternal condition, presence of a non-reassuring fetal heart trace, maternal airway and BMI, extent of block failure and surgical requirements.

Removing the epidural after a failed “top-up” and performing single-shot spinal anesthesia for cesarean delivery has a number of potential problems. The ideal dose of spinal local anesthetic in this setting is difficult to predict. Too small a dose will result in patient discomfort, block failure and later conversion to general anesthesia. Studies show that an adequate initial block height to pin-prick obtained with low spinal doses does not guarantee adequate surgical anesthesia. Too large a dose will result in adverse maternal effects (high spinal, hypotension and nausea). There are a number of case reports of high spinals in the setting of a single-shot spinal after a failed epidural “top-up” as well as after standard labor epidurals without a prior “top-up”. The incidence of high spinals in this setting ranges from 0.8% to as high as 11%. In the SOAP SCORE database, 12/23 (52%) of reported high spinals were associated with spinal anesthesia after failed epidurals. Although techniques to avoid high spinal in this setting (no epidural boluses 30 min preceding spinal, reduced spinal dose and patient left sitting for 2 min) have been proposed, the safety of any of these modifications are unproven. In my opinion, patients undergoing cesarean delivery after failed epidural “top-up” of their labor epidural are ill-suited for a single-shot spinal anesthetic technique. Preferably, any spinal dose should be used as part of a catheter-based technique (e.g. CSE technique). My preference would be to use a CSE neuraxial technique in this setting. The CSE technique allows adequate surgical anesthesia to be obtained initially with a reduced spinal dose AND the ability to extend the block later (with additional boluses of local anesthetic via the epidural catheter).

Key Points:

1. A full-dose single-shot spinal anesthesia for cesarean delivery after failed epidural “top-up” has a number of potential hazards related to either a dose reduction (patient discomfort, block failure and conversion to general anesthesia) or to excessive dosing (high spinal, hypotension and nausea).
2. A CSE technique allows the initial spinal dose to be reduced without concern for block failure and facilitates neuraxial blockade extended if required.

Key References: