

Intermittent Bolus with Epidural Pumps

Another Possibility to help on the Labor Floor

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What methods do most people use?

- Straight Epidural with Continuous Infusion
 - 3-5 ml of 1.5% Lidocaine with 1:200,000 Epinephrine
 - 10ml/hr of solution
- Combined Spinal/Epidural with Continuous Infusion
 - 1ml of 0.25% Bupivacaine
 - 3-5 ml of 1.5% Lidocaine with 1:200,000 Epinephrine
 - 10ml/hr solution

Disclaimer

- I have had NO financial relationships with proprietary entities that produce health care goods and services.

Continuous Infusion

- After the epidural pump is started an initial bolus of 10ml of solution is delivered.
- Over the course of 1 hour 10 ml of solution is delivered
- The patient is able to use the PCEA button to deliver 6ml bolus of of solution.

Have you heard about

- Epidural Intermittent Boluses

Intermittent Bolus

- After an epidural is done an initial 10ml bolus is given of solution
- Patient will receive another 10ml Bolus, one hour after the initial bolus is given
- When the PCEA Button is pressed a 6ml Bolus of solution is delivered

Advantages of Epidural Intermittent Bolus

- PIEB vs CEI resulted in less epidural solution consumption while providing equivalent labor analgesia
 - A larger difference in volume delivered was noted in those in longer labor deliveries
 - Longer times noted from bolus to PCEA use
- PIEB vs CEI resulted in higher patient satisfaction (pain scores and satisfaction from post delivery survey)
- Less likely to have a motor blockade
 - Attributed to low concentration of epidural solution
 - This was seen during labor and also at full dilation with delivery

Advantages of Epidural Intermittent Bolus

- Less Epidural Consumption would result in less narcotic systemic absorption
- Reduces the incidence of fetal depression
- Better distribution of epidural solution
- Distribution with bolus results in solution being ejected from multiple orifices of catheter while continuous infusion results in solution exiting the proximal port of catheter
 - Results in a wider sensory blockade and improved analgesia
- Large volumes results in a more uniformed distribution of epidural solution
- PIEB associated with a lower incidence of instrumental vaginal delivery when compared with CEI, while providing equivalent labor analgesia
- Less anesthesia intervention was noted
- Lower incidence of top offs
- Lower incidence of time to top off

Concerns with Intermittent Boluses

- Late Decelerations
 - Were not seen to be from Intermittent Boluses
 - When presented to our anesthesia team it was shown that patients were not receiving Intermittent Boluses
- Hypotension
 - Limited cases of hypotension post bolus have been shown to anesthesia at this time.

Limitations when Introduced into System

- L&D Team was initially very resistant
 - Constant calls for patient complication not related to epidural
 - Hypotension
 - Late Decelerations
 - Found to never be related to the Intermittent Bolus Method
 - Very resistant to change
 - Not appropriately educated on how the method works with the patient
- Need for new equipment and cost to purchase new equipment
- Education in your anesthesia department
 - Ensuring all your staff are aware of the method and how it is utilized

A Randomized Comparison of Programmed Intermittent Epidural Bolus with Continuous Epidural Infusion for Labor Analgesia

Cynthia A. Wong, MD, John T. Ratliff, MD, John T. Sullivan, MD, Barbara M. Scavone, MD, Paloma Toledo, MD, and Robert J. McCarthy, PharmD

Department of Anesthesiology, Northwestern University Feinberg School of Medicine, Chicago, Illinois

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Programmed Intermittent Epidural Bolus Versus Continuous Epidural Infusion for Labor Analgesia: The Effects on Maternal Motor Function and Labor Outcome. A Randomized Double-Blind Study in Nulliparous Women

Giorgio Capogna, MD, Michela Camorcia, MD, Silvia Stirparo, MD, and Alessio Farcomeni, PhD

- PIEB resulted in a lower incidence of motor blockade during labor and at full cervical dilation
- PIEB associated with a lower incidence of instrumental vaginal delivery when compared with CEI, while providing equivalent labor analgesia
- PIEB resulted in less epidural solution consumption and lower incidence of PCEA use and Clinician Bolus (Top-Offs)
- Limitation of this study is that they focused on Nulliparous Women

Intermittent Epidural Bolus Compared with Continuous Epidural Infusions for Labor Analgesia: A Systematic Review and Meta-Analysis

Ronald B. George, MD, FRCPC,* Terrence K. Allen, MBBS, FRCA,† and Ashraf S. Habib, MB, ChB, MSc, MHS, FRCA‡

- Reduces local anesthetic usage
- Improves maternal satisfaction
- Improves/Reduces the need for Instrumentation use in delivery
- Decreases the need of Anesthesia Interventions (Less Top-Offs)

Epidural Continuous Infusion

10 ml/hr



Epidural Intermittent Bolus

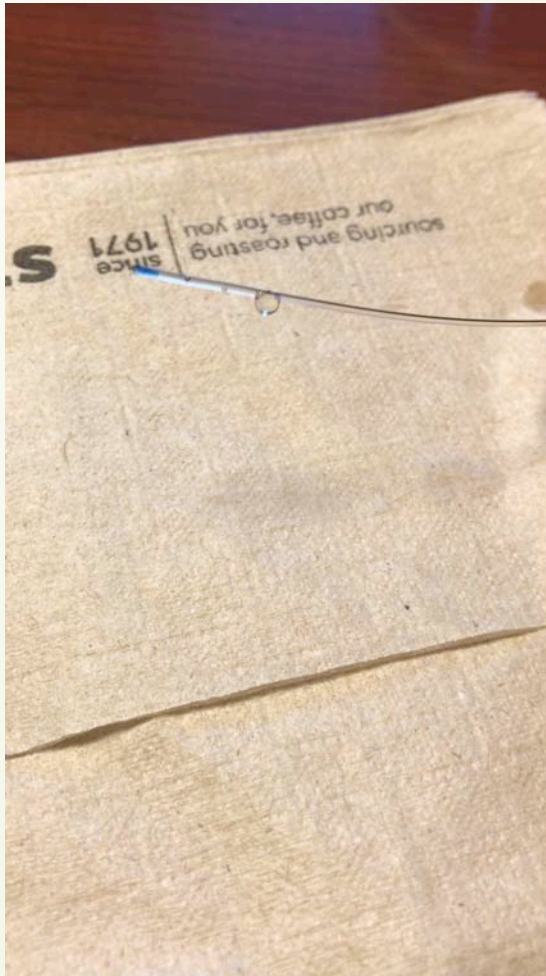
10 ml/hr
Bolus Interval 1 Hour



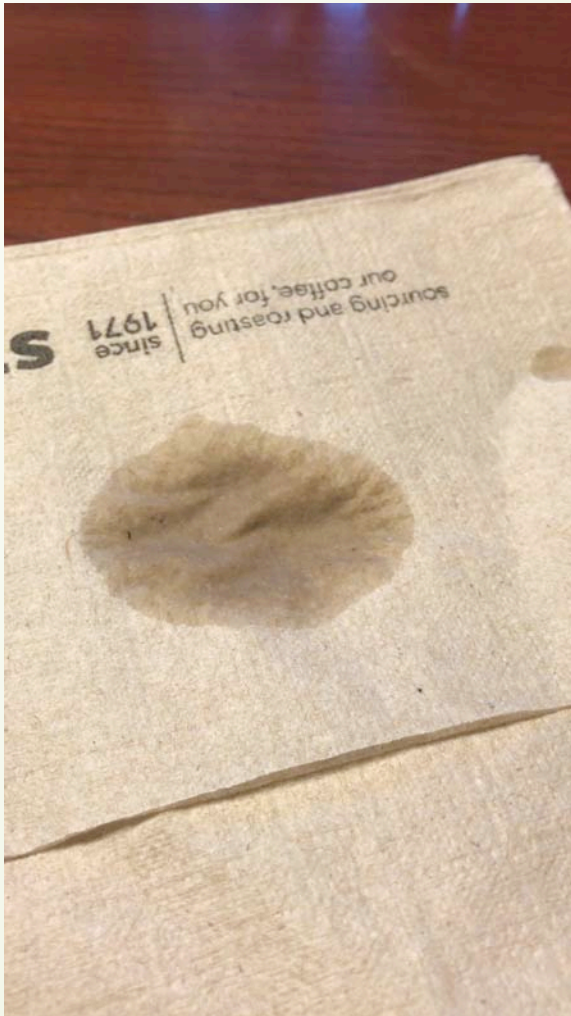
What should I do if we do not have pumps

- There are many methods of ways to fix epidurals so that they work to anesthesia's benefits
- Keep in mind that the Continuous Infusion's biggest limitation is the pressure being driven leads to solution only being delivered through the proximal port

- Overall we would like to get a greater spread of our solution in the epidural space.
- Using a low concentration solution with a higher volume will always get your patient more comfortable than a higher concentration solution.
 - Better nerve root coverage
 - Less side effects of hypotension



Top-Off Bolus
with 10ml
Syringe



Top-Off Bolus
with 3ml Syringe

Review

- Intermittent Epidural Bolus Infusion
 - Positive
 - Greater spread of medication solution in the epidural space
 - Less need for rescue boluses or top-offs
 - Decrease in workflow from Anesthesia Team
 - Greater patient satisfaction
 - Decreased Motor Blockade
 - Decreased chance of vaginal instrumentation
 - Negative/Neutral
 - Staff education and recognition of process
 - Possible need for new equipment
 - Alternate method of epidural rescue dose

Questions

