Current Management of Labour Analgesia – Epidural or CSE, Bolus or Infusions?

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“It is better to debate a question without settling it than to settle a question without debating it”

“Those who never retract their opinions love themselves more than they love truth”
It’s good news…

- ALL techniques for initiation and maintenance of neuraxial analgesia in labour work…
  …really well!
  …really often!

- So not surprising that showing differences between techniques is challenging and hence there is wide variation in practice

- In such areas ‘best evidence’ may fail to give you the answers to help define all your practice
History of CSE for labour analgesia

- From a time of ‘traditional’ epidurals
- Concern about obstetric intervention – slowing labour, oxytocin augmentation, instrumental delivery, Caesarean section rate
- Mobilisation in labour was perceived as desirable and worthwhile

- ‘Low dose’ epidural solutions worked fine without the spinal component and were mobile – this helped define new epidural standard
So what are we actually comparing?

- CSE - bupivacaine (up to 2.5mg) with fentanyl (up to 25mcg) then bupivacaine 0.1% with fentanyl 2mcg/ml (LDM) epidurally by infusion/bolus

- Epidural - up to 20 mls LDM then as above

- Much confusion exists over claimed benefits of CSE and over risks - both have been exaggerated
CSE has some clear advantages

- Faster onset - is 5-10 minutes clinically important?

- Fewer early failures - where epidural has higher failure rate such as scoliosis, obesity, poor LOR or for the inexperienced epiduralist

- Reliable sacral analgesia - when sacral blockade is required or for rapidly progressing labour
CSE might have other benefits but many are inconsistently demonstrated in studies

- Lower pain scores?
- Fewer rescue top-ups?
- Fewer one-sided blocks?
- Reduced need for late resiting of epidural?
- Fewer failures when topping up for Caesarean?
- Less motor block??
- Higher maternal satisfaction??
- Anaesthetist satisfaction?
CSE has some clear disadvantages

- Pruritis more frequent and severe
- Early fetal bradycardia more frequently seen
  Both are associated with spinal opioid, and possibly dose-related.

- Dural Puncture Epidural - CSE with no spinal injection
CSE might have other theoretical or potential problems but evidence lacking

- Higher risk of meningitis?
- Higher risk of post dural puncture headache??
- More maternal hypotension??
- Conus damage??
- Drug error or contamination??
- ‘Untested’ epidural catheter??
- Higher risk of neurological injury??
NAP 3
The 3rd National Audit Project of
The Royal College of Anaesthetists

MAJOR COMPLICATIONS OF CENTRAL NEURAXIAL BLOCK IN THE UNITED KINGDOM

REPORT AND FINDINGS
JANUARY 2009
NAP 3 – what should I conclude?

- ‘Considering the relatively small number of combined spinal epidurals performed the number of associated reports of harm is concerning’
- ‘Two of the deaths followed its use’

- 4 of the 30 ‘pessimistic’ permanent harm cases followed CSE, but only 4 of the 30 were obstetric (2 after CSE classified as 1 nerve injury and 1 miscellaneous)
- Epidural 0-3.4 vs CSE 1-22 (or 0-11.8 optimistic) harm events per 100,000 in obstetrics based on 161,000 and 25,000 cases
- 1 death due to iv bupivacaine administered on ICU
- The other death followed a bupivacaine ‘epidural’ infusion running on an unmonitored patient after inadvertent dural tap
INSIDE THIS ISSUE:
The AAGBI Harrogate Cycle Ride for Guy
The Deprivation of Liberty Safeguards
Designing an International Anaesthesia Machine
Conference Geek (CG) has written this short piece in the space of three days and two seminars. Every word has been written during the interminable minutes between the time a talk was supposed to end and the time it actually did. CG could, perhaps, have learnt to play the violin instead, but thought this might be more useful (and, indeed, tuneful).

Random thoughts of a conference geek - over-runs

CG really doesn’t like speakers who over-run.

I love to clear out of the room. This is not about lectures that are cut short - none of that sort has the charm. Love the criminal stuff - it’s about the people who deliver them.

Speakers who over-run are giving you, the paying audience, a number of messages.

1. I am an important person - you should listen to me for 50 minutes, and even luckier, do so for 60 minutes.
2. I have nothing but contempt for the poor organisar. They were very fortunate that I happened to be there when they messed up and that I was willing to leave the show while the show was in progress.
3. I am a very busy person. I’ve given this talk 100 times before, usually at much bigger meetings and audiences over in foreign lands, and I certainly don’t have time to cut it down just to fill in what the organisar wanted.
4. My stuff is important. I’ve been dealing with this stuff for the last 30 years, and I don’t really see the organisars think I could possibly summarise it in a 50-minute talk.
5. Everyone else’s stuff is unimportant - it’s not my stuff, so it doesn’t matter.
6. The other speakers aren’t important. They’re not me, so they can’t be important. Particularly if I’m just a bunch of ninnies waiting to sprout some minutes too early, they can further their unimportant causes which will never match the glory of mine.
7. I have an email to write. In the blood pressure of the organiser, who is just a local consultant, for whom introducing me is the highlight of her medical career, and who, being a decent chap, gives pause to interrupt me.
8. In particular, I have no respect for my audience. If they have, the unorthodox systems, turned up because they are interested in some other topic listed to be delivered during this session, that is their problem, not mine.

Mal Morgan, past President of the AAGBI, told of a conference he attended where a very tall speaker, reading verbatim from a sheaf of notes, ran on and on through the time allotted for questions and well into the lunch break. As the audience grew more restless, the Chair tried the usual tricks. He coughed, he looked at his watch, he stood up, he walked back and forth in a meaningful manner, and the speaker carried on. Finally, the Chair walked over to the podium, took out his cigarette lighter and set fire to the speaker’s notes. Everyone cheered and went off for a late lunch.

This sort of dramatic approach may not always be appropriate, but there are ways for conference organisers and Chairs to handle these people. Organisers should consult speakers on several occasions over the preceding months, each time reminding them of how many minutes have been allocated for their talk, whether this includes time for audience questions and who is doing what at the other ends of their sessions. Feedback forms should include a specific space for true/false marking. Thank you letters, often signed by speakers in their appreciation columns, should include a sentence along the lines of: ‘I was disappointed that despite our best attempts to keep you to the allotted time, you chose to overrun by 6 minutes. Feedback has indicated that this adversely affected the usefulness of some discussions and dispirited the other speakers’.

As for Chairs, CG suggests you gather your speakers before the session and - taking your cut fees for what they are - have a humble, in which you stress how long each speaker has been given. Ask them if they think they will over-run. If they say they will, fit them within a back-up time and tell them not to. When despite this, they still over-run, just stand up, thank them politely and introduce the next speaker.

And never ever invite them again.

Conference Geek
Maintenance – bolus or infusions?

- Dilute local anaesthetic solutions with opioid reduce negative impacts on labour/obstetric outcome
- Intermittent top-ups (boluses) were used first
- Infusions then followed in USA - no midwife top-ups!
- Technology then allowed parturient controlled epidural drug administration, with increasing sophistication now including automated boluses and computer control

- No single method or regimen been shown to be clearly ‘superior’ to another so wide variation in practice
Physical characteristics of infusion dosing

- Infusions deliver more drug through the proximal hole of multiport catheters
- Uniport catheters are associated with a greater incidence of inadequate analgesia and unilateral blockade
Simulated epidural spread: continuous infusion vs ‘intermittent infusion’ i.e. bolus
Intermittent Top-ups (vs Infusions)

**Pros:**
- Midwife involved
- Dose-sparing
- Less motor block

**Cons:**
- Time-consuming for midwife or anesthesiologist
- Drug error potential
- Concerns about controlled drug access
Physical characteristics of bolus dosing

- Infusions deliver more drug through the proximal hole of multiport catheters
- Uniport catheters are associated with a greater incidence of inadequate analgesia and unilateral blockade

- But intermittent top-ups are a declining method of maintenance for various reasons including midwifery workload, controlled drug issues and suggested benefits of newer methods like PCEA
What are UK departments using?

- Postal survey in 1999:
  - 41% top-ups, 48% infusions, 3% PCEA

- London telephone survey in 2004:
  - 60% top-ups, 29% infusions, 11% PCEA

- OAA survey in 2007:
  - 20% PCEA

- OAA survey in 2012:
  - 50% PCEA
Many regimens:

- Parturient Bolus: 3 to 10 mls
- Lockout: 5 to 20 mins
- Background Infusion: 0 to 10 mls/hr
- Hourly Maximum: 20 to 30 mls

Background infusion *may* reduce rescue, and some studies support larger bolus volumes.
Maintenance - programmed intermittent epidural bolus or background infusions?

- Many regimens:
  - Parturient Bolus: 3 to 10 mls
  - Lockout: 5 to 20 mins
  - Background Infusion: 0 to 10 mls/hr
  - Programmed Intermittent Bolus: 0 to 10 mls
  - Hourly Maximum: 20 to 30 mls

- Background infusion *may* reduce rescue, and some studies support larger bolus volumes
Smiths CADD-Solis Pump
‘PCEA plus’

- Programmed intermittent epidural boluses (aka: automated mandatory boluses)
- Small reduction in bupivacaine dosing compared to background infusion
- Higher maternal satisfaction
- Fewer rescue top-ups?
- Reduction in motor block?
- No consistent effect on obstetric outcome
What is your ultimate goal?

- ‘Standard’ care few can criticise?
- Individualised care which demands
  - greater knowledge, experience and understanding
  - a flexible approach
  - a willingness to take a fresh look at risk and benefit for each patient or unit
What are my conclusions?

- Initiate with CSE in selected parturients

- Maintain by midwife bolus or PCEA with generous volume bolus by parturient and pump
Thank you for your attention.

- Initiate with CSE in selected parturients

- Maintain by midwife bolus or PCEA with generous volume bolus by parturient and pump

- Further reading: references (including the most recent and relevant meta-analyses and reviews*) follow
References

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