Combined spinal-epidural analgesia represents the gold standard for regional analgesia in labour

Felicity Plaat
Queen Charlotte’s Hospital,
Imperial College NHS Trust
London
Combined spinal-epidural analgesia represents the gold standard for regional analgesia in labour

Declaration:

I practice what I preach..
I do CSEs for labour... most of the time

Felicity Plaat
Queen Charlotte’s Hospital,
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Combined spinal-epidural analgesia represents the **gold standard** for regional analgesia in labour

A barely perceptible sensory block that maintains sensation, alleviates pain, and does not inhibit mobility

A fast effective way to obtain continuous pain relief throughout labour & delivery, whilst maintaining ability to move /push in 2\textsuperscript{nd} stage

Effective analgesia that does increase need for intervention, improves dysfunctional labour and can be easily topped up for obstetric intervention.
Combined spinal-epidural analgesia represents the gold standard for regional analgesia in labour
Combined spinal-epidural analgesia represents the gold standard for regional analgesia in labour

Effective analgesia within 10 minutes

Faster onset of analgesia
More pruritis
Speed of onset

![Graph showing the speed of onset for CSE and Epidural pain relief. The x-axis represents time in minutes, ranging from 0 to 30, and the y-axis represents the visual analog pain score in millimeters, ranging from 100 to 0. The graph compares the pain relief effectiveness of CSE and Epidural methods over time.]

Breen 2001
CSE v epidural

n = 219

CSE 114
- Successful 135
- Unsuccessful 9 [6.3%]

Epidural 75
- Successful 65
- Unsuccessful 10 [13%]

Bedson, Crowhurst, Plaat 1999

OAA Cases & Controversies 2013
Reliability of epidural catheter

Incidence of breakthrough pain

Rate of breakthrough pain [episodes/hr]

Hess 2001
Time in pain

CSE or Epidural

% CSE or epidural

0/144
6/75
9/144
4/75

Time / Minutes

< 40
40 - 80

OAA Cases & Controversies 2013
Retrospective studies.

Prospective studies.

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>CSE Events</th>
<th>Total</th>
<th>PDA Events</th>
<th>Total</th>
<th>Weight</th>
<th>Risk Ratio M-H, Random, 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dunn et al., 1998</td>
<td>0</td>
<td>35</td>
<td>1</td>
<td>35</td>
<td>6.3%</td>
<td>0.33 [0.01, 7.91]</td>
</tr>
<tr>
<td>Price et al., 1998</td>
<td>0</td>
<td>45</td>
<td>2</td>
<td>48</td>
<td>6.9%</td>
<td>0.21 [0.01, 4.32]</td>
</tr>
<tr>
<td>Hepner et al., 2000</td>
<td>1</td>
<td>27</td>
<td>1</td>
<td>25</td>
<td>8.3%</td>
<td>0.93 [0.06, 14.03]</td>
</tr>
<tr>
<td>Thomas et al., 2005</td>
<td>10</td>
<td>107</td>
<td>10</td>
<td>123</td>
<td>41.7%</td>
<td>1.15 [0.50, 2.66]</td>
</tr>
<tr>
<td>Cappello et al., 2008</td>
<td>3</td>
<td>39</td>
<td>13</td>
<td>40</td>
<td>29.6%</td>
<td>0.24 [0.07, 0.77]</td>
</tr>
<tr>
<td>Goodman et al., 2009</td>
<td>0</td>
<td>48</td>
<td>3</td>
<td>45</td>
<td>7.2%</td>
<td>0.13 [0.01, 2.53]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>301</strong></td>
<td><strong>316</strong></td>
<td><strong>100.0%</strong></td>
<td></td>
<td></td>
<td><strong>0.50 [0.22, 1.15]</strong></td>
</tr>
</tbody>
</table>

Total events: 14 vs. 30

Heterogeneity: Tau^2 = 0.25; Chi^2 = 6.54, df = 5 (P = 0.26); I^2 = 24%

Test for overall effect: Z = 1.64 (P = 0.10)

Reliability epidural catheters.

Lee Anesth Analg 2009
Cappiello Anesth Analg 2008
Miro IJOA 2008
Norris. IJOA 2000
COMET Anesthesiology 2002
Pratt Anesthesiology 1999
Vernis Eur J Anaesth 2004
Van de Velde Anaesth Intens Care 2001
Eappen IJOA 1998

OAA Cases & Controversies 2013
Reliability epidural catheters.

Lee Anesth Analg 2009
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Vernis Eur J Anaesth 2004
Van de Velde Anaesth Intens Care 2001
Eappen IJOA 1998

OAA Cases & Controversies 2013
Pain during Caesarean section
- failed regional anaesthesia

OAA Cases & Controversies 2013
Shibli 2000
Effect on labour

Wong 2005

Kayacan 2006

Tsen 1999
Do the risks associated with CSE analgesia outweigh the benefits? [Is the dura really too vulnerable to be breached?]

- Fetal heart rate abnormalities
- Neurological trauma
- Infection
Fetal heart rate abnormalities associated with CNB

<table>
<thead>
<tr>
<th></th>
<th>Opioid</th>
<th>CSE</th>
<th>Epidural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nielsen 1996</td>
<td>Sufentanil</td>
<td>15.4%</td>
<td>18.8%</td>
</tr>
<tr>
<td>Eberle 1998</td>
<td>Sufentanil</td>
<td>3.9%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Kahn 1998</td>
<td>Fentanyl</td>
<td>5.6%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Palmer 1999</td>
<td>Fentanyl</td>
<td>12%</td>
<td>6%</td>
</tr>
<tr>
<td>Van de Velde</td>
<td>Sufentanil</td>
<td>11.4%</td>
<td>5.9%</td>
</tr>
</tbody>
</table>
Regional anaesthesia and neuropathy

CASE REPORT
Damage to the conus medullaris following spinal anaesthesia

F. Reynolds

7 cases of cord neuropathy
• 3 Single shot spinals, 4 CSEs
• ALL at L2-3 (1 also at L1-2; 1 also L3-4)
• Poly-segmental neuropathies
• ALL had dysaesthesia on needle insertion

Reynolds Anaesthesia 2001
Direct trauma

Lower end of spinal cord

Tuffier’s line

L4

L5
Common features of meningitis case reports

• Difficulty with the procedure / bleeding
• Poor aseptic technique
• Multiple needling
# Neurological sequelae

## Chapter 16: Complications after Obstetric CNB

### Permanent damage after obstetric CNB

<table>
<thead>
<tr>
<th>Type</th>
<th>Rate</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spinal</td>
<td>1.5</td>
<td>1 – 5.4</td>
</tr>
<tr>
<td>Epidural</td>
<td>0.62</td>
<td>0 – 3.4</td>
</tr>
<tr>
<td>CSE</td>
<td>3.9</td>
<td>1 - 22</td>
</tr>
</tbody>
</table>

x 100 000
Neuraxial infection can occur despite full aseptic technique. Multiple attempts at CNB, especially when accompanied by significant bleeding, may well be a factor. 

NAP 3
‘In many obstetric anesthesia units today, standards of prudent surgical hygiene have regressed to almost pre-Listerian indifference’

Bromage 1999
Cost

• Introduction of ‘mobile epidurals’: rate went up from <50% to >60% (>80% nullips.)
• 90% women who had a regional block want one again.
• 49% woman who did not have a regional block would have one next time
• <$10 for spinal needle
Is CSE [closer to] the gold standard for regional labour analgesia?

Reliable faster onset of analgesia with little interpatient variability

More reliable subsequent analgesia

Shorter labour compared to epidural—possibly

More reliable for anaesthesia

Requires a more perfect midline approach

Demands the highest standard of asepsis
Which do you want for your women?

Fast
Reliable
Requires a skilled driver
[OK – Expensive]

Really?
Combined spinal-epidural analgesia does represent the gold standard for regional analgesia in labour.

‘An imperfect epidural should be a spur to the active pursuit of perfection rather than remain as an object of regretful contemplation. VOTE CSE

Andrew Doughty

Lumbar epidural analgesia—the pursuit of perfection
Original Article

Combined spinal epidural vs epidural labour analgesia: does initial intrathecal analgesia reduce the subsequent minimum local analgesic concentration of epidural bupivacaine?

N. P. Patel,¹ S. L. Armstrong,² R. Fernando,¹ M. O. Columb,³ J. K. Bray,⁴ V. Sodhi⁵ and G. R. Lyons⁶
## Methodology

<table>
<thead>
<tr>
<th>Analgesia</th>
<th>Definition</th>
<th>Subsequent dose in up/down seq. allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective</td>
<td>VAS ≤10 &lt; 30mins</td>
<td>0.01% [bupivacaine] ↓</td>
</tr>
<tr>
<td>Ineffective</td>
<td>VAS ≥10 @30mins, but responded to rescue EA</td>
<td>0.01% [bupivacaine] ↑</td>
</tr>
<tr>
<td>Repeat</td>
<td>Rescue EA failed to reduce VAS ≤ 10</td>
<td>Use same [bupivacaine]</td>
</tr>
</tbody>
</table>
Discussion

- Statistical not clinical significant difference

- Only studied 2nd injection not overall analgesia

- These results do not influence the established clinical indications for a CSE technique
Complications of Labor Analgesia: Epidural Versus Combined Spinal Epidural Techniques

Mark C. Norris, MD, William M. Grieco, MD, Michael Borkowski, MD, Barbara L. Leighton, MD, Valerie A. Arkoosh, MD, H. Jane Huffnagle, DO, and Suzanne Huffnagle, DO

Department of Anesthesiology, Jefferson Medical College, Thomas Jefferson University, Philadelphia, Pennsylvania