

Obstetric Problems? Blame the Epidural!

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Thanks to his work with Sigmund Freud in Vienna, Carl Koller introduced cocaine into ophthalmic surgery in 1884, with wide acclaim. He had to leave Vienna following a duel, and ended up working in New York where, inevitably, he became known as Coca Koller. Although it was eventually realized that cocaine in the eye produced corneal ulcers, Carl Koller received fame and not blame. How different is today's culture!

Early Use of Neuraxial Blocks in Childbirth

In 1900, Oscar Kreis, an obstetrician working in Basel, described giving 10 mg of cocaine intrathecally to 6 women in the second stage of labor.¹ He marveled at the dramatic relief of pain, indeed one of the most rewarding sights in medicine. The women variously suffered extremely heavy legs, severe headache, dizziness, nausea, and vomiting, but these side effects were taken lightly. No follow-up of symptoms was reported.

There followed pioneering work with caudal analgesia in labor by Walter Stoekel in 1909 in Germany, and Eugen Aburel, a Rumanian working in Paris,² who correctly described the nerve supply of the uterus in 1931, and actually gave continuous caudal, paravertebral, and apparently even lumbar epidural blocks. Ignorant of these European advances, Robert Hingson, working in the U.S. Marine Hospital in Staten Island, New York during the Second World War, was looking for a way to stop women in labor from disturbing the peace of nearby wounded men. Having tried 84 other methods, he also lighted upon caudal block. He became a great publicist for the technique, even touring Europe to "introduce" it. This, despite its dangers and complications, direct injection into the baby's head being one. The much preferable lumbar approach was,

like many brilliant ideas, invented in many places by many people and took over gradually in the second half of the last century.

Problems Arising Within My Time

My first taste of obstetric anesthesia, in the 1960s, consisted mainly of giving general anesthesia for forceps delivery or removal of retained placenta, and a whiff of cyclopropane to deliver the aftercoming head of the breech or the second twin. The cesarean section rate was only around 5%. Meanwhile, lumbar epidural analgesia in obstetrics made a tentative start. I well remember struggling to provide labor analgesia using lidocaine with epinephrine. Motor block, tachyphylaxis, and cumulative toxicity causing sedation in both mother and baby were major problems, yet the novelty of complete analgesia led the poor mothers to be pathetically grateful.

The advent of bupivacaine made it possible to provide continuous epidural analgesia in labor with fewer complications. As a result, in the 1970s the practice spread, but as its own major problems were being overcome, epidural analgesia began to be blamed for others. These included: (1) forceps delivery; (2) cesarean section; (3) post partum backache; (4) neonatal problems, breast feeding, etc.; and (5) obstetric palsies.

Forceps Delivery

Epidural analgesia was and is used preferentially in difficult and prolonged labors, hence an apparent association with obstetric problems. In those days, forceps delivery was common, particularly among primiparae. It was not long before epidurals began to be blamed for increasing the forceps delivery rate. This led Andrew Doughty to point out that it is not epidurals, but obstetricians who apply the forceps. He reported a 7-fold difference in forceps rates among the obstetricians for whom he provided a uniform epidural service (Fig 1).³ In the 1980s, though *observational studies* found the inevitable link between epidurals and obstetric intervention,^{4,5} an *impact study* showed that the introduction of an extensive epidural service produced no increase in abnormal deliveries in the population as a whole, apparently refuting any causal association.⁶ There-

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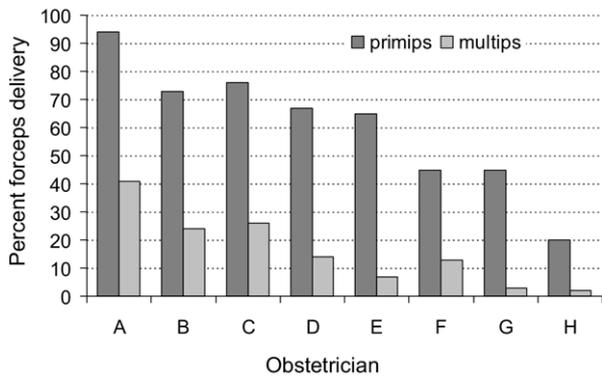


Fig 1. The forceps delivery rates among eight obstetricians (A-H) for whom Andrew Doughty provided epidural analgesia in labor. The rate clearly varied markedly depending on the individual obstetrician. Data from Doughty.³

after forceps were gradually replaced by ventouse delivery, somewhat less traumatic. It must be admitted, however, that some meta-analyses of later randomized studies have confirmed an association between epidural analgesia and instrumental vaginal delivery (see next section).

Cesarean Section and Post Partum Backache: The Stimulus to Conduct Randomized Trials

In a systematic review of epidural analgesia published in the first volume of the *International Journal of Obstetric Anesthesia*, obstetric anesthetists were berated for the fact that fewer than 600 women worldwide had participated in controlled, still less randomized, comparisons of epidural with other forms of pain relief.⁷ We wrote in our defense, “we have, in most large obstetric centres, passed the point where randomisation of epidural analgesia is ethical or practical.”⁸ How wrong could we be? I was unable to believe that women would be willing to receive epidural analgesia on a random basis, and was influenced by the knowledge that, although there had by then been at least two such randomized trials, the one conducted in the U.K. suffered from a 77% drop-out rate.⁹

I reckoned without the stimulus of two new complaints with which anesthesiologists were castigated: post partum backache in the U.K. and the rising cesarean section rate in the U.S. In the U.K. retrospective studies with poor response rates suggested that epidural analgesia was associated with an 18 to 19% incidence of new long term backache after childbirth,^{10,11} overlooking the 50% prevalence of spontaneous backache during pregnancy, and 70% incidence post partum.¹² The outcry was resounding and prolonged (like the said backache). Both

prospective and randomized studies disproved the association (Fig 2),¹³⁻¹⁷ but did not extinguish the belief.

Now came the great cesarean section controversy. In the U.S. retrospective surveys showed the entirely predictable association between cesarean sections and epidurals. Moreover, an early *randomized* trial, conducted by an obstetrician, showed cesarean section rates of 25% in the epidural and 2% in the control groups!¹⁸ Needless to say more studies followed, and by the end of the millennium there had been at least 16 randomized controlled trials to which over 6,700 women had been recruited, more than half of them in Dallas.¹⁹⁻²² Now there are several meta-analyses comparing epidural with systemic analgesia,²³⁻²⁶ providing good quality evidence. Any association between cesarean section and epidural analgesia has been thoroughly refuted (Fig 3). Though maternal hypotension, fever, and instrumental vaginal delivery are more justifiably laid at the door of epidural analgesia,²³ the far superior analgesia and maternal satisfaction (Fig 4) would seem to outweigh these drawbacks.

Neonatal Problems

Using surrogates for fetal and neonatal well-being, such as duration of labor, delivery type, maternal hypotension and fever, even neonatal sepsis evaluation, has led critics to affirm that neuraxial blockade in labor is bad for the baby.²⁷ Meta-analyses, however, have shown that both Apgar score (Fig 5) and neonatal acid base status

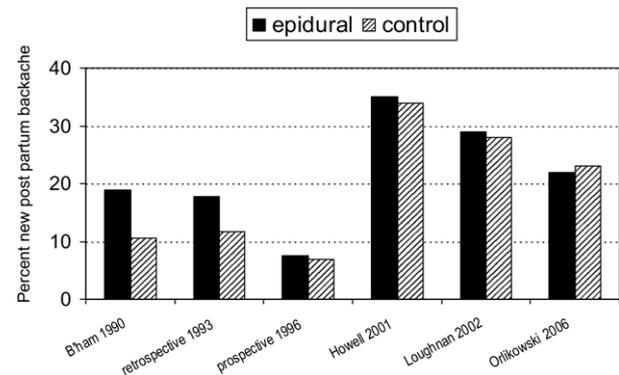


Fig 2. The reported frequency of new post partum backache after epidural and nonepidural labor. Higher rates are associated with less rigorous elimination of those who already had backache. The only significant differences are in the retrospective studies;^{10,11} the remainder, randomized^{15,16} or prospective studies, showed no differences in backache rates. Data from Birmingham (B'ham): MacArthur et al.;¹⁰ retrospective: Russell et al.;¹¹ prospective: Russell et al.,¹³ Howell et al.,¹⁵ Loughnan et al.,¹⁶ and Orlikowski et al.¹⁷

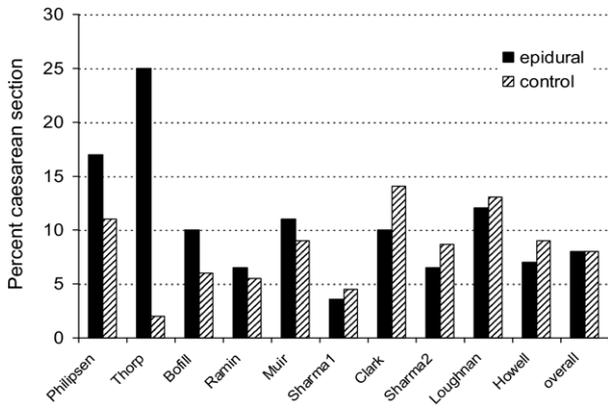


Fig 3. Caesarean section rates in randomized trials of epidural versus systemic opioid analgesia in labor. The only significant difference is in the study by Thorp et al.¹⁸ Data from Halpern et al.²³

(Figs 6 and 7) are improved by epidural analgesia,^{23,26} even when compared with no analgesia,²⁸ evidence that is commonly ignored.

The latest accusation leveled at epidurals is an adverse effect on *breast feeding*. Despite the many possible confounding variables (intention to breast-feed, parity, age, local tradition, social class, education, delivery type, and the amount of help and support offered) there has been no hesitation in publishing numerous unrandomized trials, while known detrimental effects of systemic opioid analgesia on breastfeeding have been extrapolated to epidural analgesia.²⁹ Meanwhile, one observational study and one randomized trial have suggested (perhaps unsurprisingly) an adverse effect on breast-feeding of large epidural doses of fentanyl.^{30,31} It may turn out that this albumin-bound opioid, though popular hitherto, is not ideal for

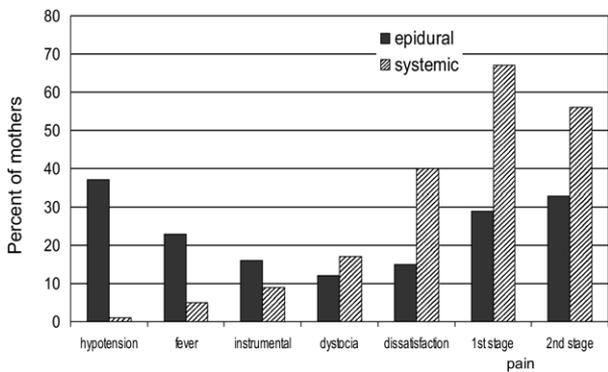


Fig 4. Maternal effects in epidural (n = 1,183) and control (n = 1,186) groups. The only difference that is *not* significant is in the need for instrumental delivery for dystocia. Data from a meta-analysis of randomized trials of labor analgesia from Halpern et al.²³

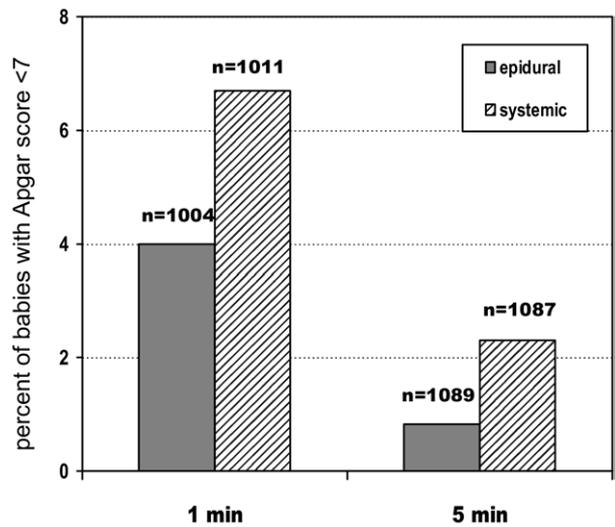


Fig 5. Apgar scores at 1 minute and 5 minutes from a meta-analysis of randomized trials of epidural versus systemic opioid analgesia in labor. Data from Halpern et al.²³

epidural analgesia in labor for this reason. More evidence is needed.

Obstetric Palsies and Other Neurological Sequelae

Long before regional analgesia for labor was widely practiced, when the cesarean section rate was about 2%, obstetric palsies were well recognized phenomena, and were known to be related to small maternal stature and large babies, nulliparity, prolonged labor, and difficult delivery (a first stage measured in days and a second stage often many hours!). Perhaps unsurprisingly, such cases were

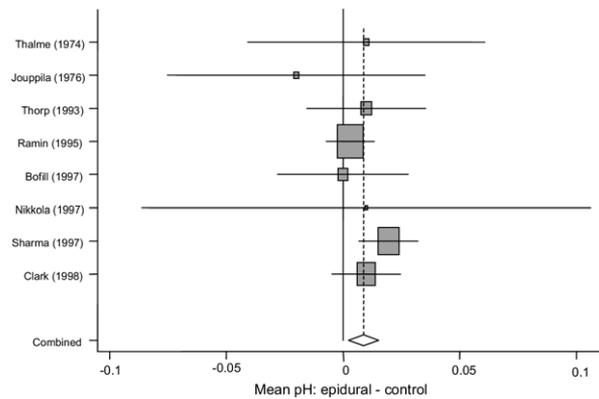


Fig 6. Meta-analysis of umbilical artery pH in randomized trials of epidural (local anesthetic alone or with opioid) versus systemic opioid analgesia in labor. To the right favors epidurals. From Reynolds et al.²⁶ Reproduced with permission of the British Journal of Obstetrics and Gynaecology.

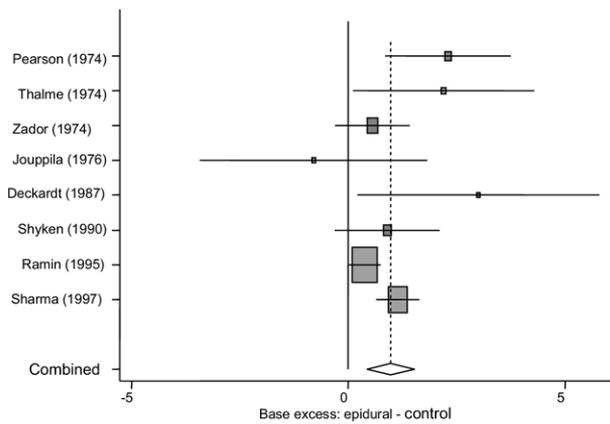


Fig 7. Meta-analysis of umbilical artery base excess in trials of epidural (local anesthetic alone or with opioid) versus systemic opioid analgesia in labor. To the right favors epidurals. From Reynolds et al.²⁶ Reproduced with permission by the British Journal of Obstetrics and Gynaecology.

associated with a perinatal mortality rate of about 40%.³²⁻³⁵ The condition classically involved foot drop due to compression of the lumbosacral trunk as it crossed the pelvic brim. When epidural analgesia became widely used in labor, this invasive technique got blamed for all manner of neurological disorders,³⁶ prompting several attempts to assess their frequency. Unfortunately, initial surveys overlooked the need for controls who labored without neuraxial analgesia, until Holdcroft and her colleagues conducted a survey aimed to include all 48,000 women delivering in a single English region over one year, 13,000 of whom had epidural analgesia.³⁷ This survey detected 19 neurological disorders, of which one mild case without physical signs could be attributed to epidural analgesia, making childbirth itself 5-fold more dangerous than epidural analgesia. Other comprehensive surveys have followed, affirming the frequency of peripheral neuropathy rather than root disturbances after childbirth, and demonstrating an association with difficult labor rather than with epidural analgesia.³⁸⁻⁴⁰

Conclusion

It was not the purpose of this lecture to review the many acknowledged complications of neuraxial blockade, but merely to point out that neither the benefits nor the genuine adverse effects of neuraxial analgesia catch the headlines as do fallacious accusations. The relatively high accidental dural puncture rates in some surprising parts of the world attract little lay attention. The use of spinal analgesia and the advent of combined spinal-epi-

dural analgesia (inserted often without wearing a mask) for labor have been associated with sporadic cases of meningitis.⁴¹ The many catastrophes in the early days of epidural analgesia, such as accidental intrathecal and intravenous injection, have focused our attention more than that of our critics. Our genuine faults are not always broadcast. I am not, therefore, saying that epidural analgesia is blameless; it is just blamed for the wrong problems.

What will epidural analgesia in labor be blamed for next? Who knows? Meanwhile, the considerable body of reliable evidence to support its use is often ignored by midwives and radical patient groups. Good news does not suit the agenda of the critical consumer.

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