

All About Epidurals

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Epidural pain relief is an increasingly popular choice for Australian women in the labour ward. Up to one-third of all birthing women have an epidural, (1) and it is especially common amongst women having their first babies. (2) For women giving birth by caesarean section, epidurals are certainly a great alternative to general anaesthetic, allowing women to see their baby being born, and to hold and breastfeed at an early stage: however their use as a part of a normal vaginal birth is more questionable (3)

There are several types of epidural used in Australian hospitals. In a conventional epidural, a dose of local anaesthetic is injected through the lower back into the epidural space, around the spinal cord. This numbs the nerves which bring sensation from the uterus and birth canal. Unfortunately, the local anaesthetic also numbs the nerves which control the pelvic muscles and legs, so with this type of epidural, a woman usually cannot move her legs and, unless the epidural has worn off, cannot push her baby out, in the second stage of labour.

More recent forms of epidurals use a lower dose of local anaesthetic, usually combined with an opiate, such as pethidine, morphine or fentanyl (sublimaze). With this low-dose or combination epidural, most women can move around with support; however the chance of a woman being able to give birth without forceps is still low (4). Another form of epidural, popular in the US, is the CSE, or combined spinal-epidural, where a one-off dose of opiate, with or without local anaesthetic, is injected into the spinal space, very close to the end of the spinal cord. This gives pain relief for round 2 hours, and if further pain relief is needed, it is given as an epidural. These forms of "walking epidural" may seem advantageous, but being attached to a CTG machine to monitor the baby, and hooked up to a drip which is also a requirement when an epidural is in place, can make walking impossible.

Many women have a good experience with epidurals. Sometimes the relief from pain can allow a woman to rest and relax sufficiently to go on and have a good birth experience. However deciding to use an epidural for pain relief can also lead to a "cascade of intervention", where an otherwise normal birth becomes highly medicalised, and a woman feels that she loses her control and autonomy. Often the decision to accept an epidural is made without an awareness of these, and other, significant risks to both mother and baby.

Although the drugs used in epidurals are injected around the spinal cord, substantial amounts enter the mothers blood stream, and pass through the placenta into the baby's circulation. Most of the side effects of epidurals are

due to these "systemic", or whole-body effects.

One of the most commonly recognised side effects is a drop in blood pressure. Up to one woman in eight will have this side effect to some degree(5), and for this reason, extra fluids are usually given through a drip to prevent problems. A drop in the mother's blood pressure will affect how much of her blood is pumped to the placenta, and can lead to less oxygen being available to the baby.

An epidural will often slow a woman's labour, and she is three times more likely to be given an oxytocin drip to speed things up(6, 7). The second stage of labour is particularly slowed, leading to a three times increased chance of forceps(8). Women having their first baby are particularly affected; choosing an epidural can reduce their chance of a normal delivery to less than 50%(9).

This slowing of labour is at least partly related to the effect of the epidural on a woman's pelvic floor muscles. These muscles guide the baby's head so that it enters the birth canal in the best position. When these muscles are not working, dystocia, or poor progress, may result, leading to the need for high forceps to turn the baby, or a caesarean section. Having an epidural doubles a woman's chance of having a caesarean section for dystocia(10).

When forceps are used, or if there is a concern that the second stage is too long, a woman may be given an episiotomy, where the perineum, or tissues between the vaginal entrance and anus, are cut to enlarge the outlet and hurry the birth. Stitches are needed and it may be painful to sit until the episiotomy has healed, in 2 to 4 weeks.

As well as numbing the uterus, an epidural will numb the bladder, and a woman may not be able to pass urine, in which case she will be catheterised. This involves a tube being passed up from the urethrer to drain the bladder, which can feel uncomfortable or embarrassing.

Other side effects of epidurals vary a little depending on the particular drugs used. Pruritis, or generalized itching of the skin, is common when opiate drugs are given. It may be more or less intense and affects at least 1/4 of women(11 12): morphine or diamorphine are most likely to cause this. Morphine also causes oral herpes in 15% of women(13).

All opiate drugs can cause nausea and vomiting, although this is less likely with an epidural around 30%(14) than when these drugs are given into the muscle or bloodstream, where larger doses are needed. Up to 1/3 of women with an epidural will experience shivering(15), which is related to effects on the bodies heat-regulating system.

When an epidural has been in place for more than 5 hours, a woman's body

temperature may begin to rise(16). This will lead to an increase in both her own and her baby's heart rate, which is detectable on the CTG monitor. Fetal tachycardia, or fast heart rate can be a sign of distress, and the elevated temperature can also be a sign of infection such as chorioamnionitis, which affects the uterus and baby. This can lead to such interventions as caesarean section for possible distress or infection, or, at the least, investigations of the baby after birth such as blood and spinal fluid samples, and several days of separation, observation, and possibly antibiotics, until the results are available(17).

Less common side effects for a woman having an epidural are; accidental puncture of the dura, or spinal cord coverings, which can cause a prolonged and sometimes severe headache (1 in 100)(18) ongoing numb patches, which usually clear after 3 months(1 in 550)(19); and weakness and loss of sensation in the areas affected by the epidural, (4-18 in 10,000) also usually resolving by 3 months(20).

More serious but rare side effects include permanent nerve damage; convulsions and heart and breathing difficulties (1 in 20,000)(21) and death attributable to epidural. (1 in 200,000)(22) When opiates are used, a woman may experience difficulty in breathing which comes on 6 to 12 hours later.(23)

There is a noticeable lack of research and information about the effects of epidurals on babies.(24) Drugs used in epidurals can reach levels at least as high as those in the mother(25), and because of the baby's immature liver, these drugs take a long time- sometimes days- to be cleared from the baby's body.(26) Although findings are not consistent, possible problems, such as rapid breathing in the first few hours(27) and vulnerability to low blood sugar(28) suggest that these drugs have measurable effects on the newborn baby.

As well as these effects, babies can suffer from the interventions associated with epidural use; for example babies born by caesarean section have a higher risk of breathing difficulties.(29) When monitoring of the heart rate by CTG is difficult, babies may have a small electrode screwed into their scalp, which may not only be unpleasant, but occasionally can lead to infection.

There are also suggestions that babies born after epidurals may have difficulties with breastfeeding(30,31) which may be a drug effect, or may relate to more subtle changes. Studies suggest that epidurals interfere with the release of oxytocin(32) which, as well as causing the let-down effect in breastfeeding, encourages bonding between a mother and her young(33).

Epidural research, much of it conducted by the anaesthetists who administer epidurals, has unfortunately focussed more on the pro's and con's of different drug combinations than on possible serious side-effects(34). There have been, for example, no rigorous studies showing whether epidurals affect the

successful establishment of breastfeeding(35).

Several studies have found subtle but definite changes in the behaviour of newborn babies after epidural(36,37,38) with one study showing that behavioural abnormalities persisted for at least six weeks(39). Other studies have shown that, after an epidural, mothers spent less time with their newborn babies(40), and described their babies at one month as more difficult to care for.(41)

While an epidural is certainly the most effective form of pain relief available, it is worth considering that ultimate satisfaction with the experience of giving birth may not be related to lack of pain. In fact, a UK survey which asked about satisfaction a year after the birth found that despite having the lowest self-rating for pain in labour (29 points out of 100), women who had given birth with an epidural were the most likely to be dissatisfied with their experience a year later.(42)

Some of this dissatisfaction was linked to long labours and forceps births, both of which may be a consequence of having an epidural. Women who had no pain relief reported the most pain (70 points out of 100) but had high rates of satisfaction.

Pain in childbirth is real, but epidural pain relief may not be the best solution. Talk about other options with your care-givers and friends. With good support, and the use of movement, breathing and sound, most women can give themselves, and their babies, the gift of a birth without drugs.

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1 Perinatal Statistics, Queensland 1996. Queensland Health 1998. At the present time, national figures for epidural use are not collected.

2 Dr Steve Chester, Head of Anaesthetics Dept, Royal Women's Hospital, Melbourne. Around 45% of primiparous women at RWH have an epidural. Personal Communication

3 World Health Organisation. Care in Normal birth: A Practical Guide..P 16. WHO 1996

4 Russell R, Reynolds F. Epidural infusion of low-dose bupivacaine and opioid in labour. Does reducing the motor block increase the spontaneous delivery rate? *Anaesthesia* 1996; 51(5): 266-273

5 Webb RJ, Kantor GS. Obstetrical epidural anaesthesia in a rural Canadian hospital. *Can J Anaesth* 1991; 39:390-393

- 6 Ramin SM, Gambling DR, Lucas MJ et al. Randomized trial of epidural versus intravenous analgesia during labor. *Obstet Gynecol* 1995; 86(5): 783-789
- 7 Howell CJ. Epidural vs non-epidural analgesia in labour. [Revised 6 May 1994]
In: Keirse MJNG, Renfrew MJ, Neilson JP, Crowther C. (eds)
Pregnancy and Childbirth Module. In: The Cochrane Pregnancy and Childbirth Database. (database on disc and CD-ROM) The Cochrane Collaboration; Issue 2, Oxford: Update Software 1995 (Available from BMJ publishing group, London)
- 8 Thorp JA, Hu DH, Albin RM, et al. The effect of intrapartum epidural analgesia on nulliparous labor; a randomized, controlled, prospective trial. *Am J Obstet Gynecol* 1993; 169(4): 851-858
- 9 Paterson CM, Saunders NSG, Wadsworth J. The characteristics of the second stage of labour in 25069 singleton deliveries in the North West Thames Health Region. 1988. *Br J Obstet Gynaecol* 1992;99:377-380
- 10 Thorp JA, Meyer BA, Cohen GR et al. Epidural analgesia in labor and cesarean section for dystocia. *Obstet Gynecol Surv* 1994; 49(5): 362-369
- 11 Lirzin JD, Jacquintot P, Dailland P, et al. Controlled trial of extradural bupivacaine with fentanyl, morphine or placebo for pain relief in labour. *Br J Anaesth* 1989; 62: 641-644
- 12 Caldwell LE, Rosen MA, Shnider SM. Subarachnoid morphine and fentanyl for labor analgesia. Efficacy and adverse effects. *Reg Anesth* 1994;19:2-8
- 13 John Paull, Faculty of Anaesthetists, Melbourne. Quoted in: "The perfect epidural for labour is proving elusive" *New Zealand Doctor*. 21 Oct 1991
- 14 as above
- 15 Buggy D, Gardiner J. The space blanket and shivering during extradural analgesia in labour. *Acta-Anaesthesiol-Scand* 1995; 39(4): 551-553
- 16 Camman WR, Hortvet LA, Hughes N, et al. Maternal temperature regulation during extradural analgesia for labour. *Br J Anaesth* 1991;67:565-568.
- 17 Kennell J, Klaus M, McGrath S, et al. Continuous emotional support during labor in a US hospital. *JAMA* 1991;265:2197-220
- 18 Stride PC, Cooper GM. Dural taps revisited: a 20 year survey from Birmingham Maternity Hospital. *Anaesthesia* 1993; 48(3):247-255
- 19 Epidurals for pain relief in labour: Informed choice leaflet for women. MIDIRS and the NHS centre for Reviews and dissemination 1997.

20 Epidural pain relief during labour; Informed choice for professionals. MIDIRS and the NHS centre for Reviews and dissemination 1997.

21 see 13

22see 13

23 Rawal N, Arner S et al Ventilatory effects of extradural diamorphine. Br J Anaesthesia 1982;54:239

24 Howell CJ, Chalmers I. A review of prospectively controlled comparisons of epidural with non-epidural forms of pain relief during labour. Int J Obstet Anaesth 1992;1:93-110

25Fernando R, Bonello E et al. Placental and maternal plasma concentrations of fentanyl and bupivacaine after ambulatory combined spinal epidural (CSE) analgesia during labour. Int J Obstet Anaesth 1995;4:178-179

26 Caldwell J, Wakile LA, Notarianni LJ et al. Maternal and neonatal disposition of pethidine in child birth- a study using quantitative gas chromatography-mass spectrometry. Lif Sci 1978;22:589-96

27 Bratteby LE, Andersson L, Swanstrom S. Effect of obstetrical regional analgesia on the change in respiratory frequency in the newborn. Br J Anaesth 1979; 51:415-455

28Swanstrom S, Bratteby LE. Metabolic effects of obstetric regional analgesia and of asphyxia in the newborn infant during the first two hours after birth I. Arterial blood glucose concentrations. Acta Paediatr Scand 1981; 70:791-800

29Enkin M, Keirse M, Renfrew M, Neilson J. A Guide to Effective Care in Pregnancy and Childbirth. P 287 Oxford University Press 1995

30 Smith A. Pilot study investigating the effect of pethidine epidurals on breastfeeding. Breastfeeding Review, Nursing Mothers Association of Australia. V5 no1 May 1997.

31 Walker M. Do labor medications affect breastfeeding? J Human Lactation 1997;13(2) 131-137

32Goodfellow CF, Hull MGR, Swaab DF et al. Oxytocin deficiency at delivery with epidural analgesia. Br J Obstet Gynaecol 1983; 90:214-219

33 Insel TR, Shapiro LE. Oxytocin receptors and maternal behavior. In Oxytocin in Maternal Sexual and Social Behaviors. Annals of the New York Academy of

Sciences, 1992 Vol 652. Ed CA Pedersen, JD Caldwell, GF Jirikowski and TR Insel pp 122-141 New York, New York Academy of Science

34 Howell CJ, Chalmers I A review of prospectively controlled comparisons of epidural with non-epidural forms of pain relief during labour. *Int J Obstet Anaesth* 1992 1: 93-110

35 See 31

36 Scanlon JW, Brown WU, Weiss JB Alper MD. Neurobehavioral responses of newborn infants after maternal epidural anesthesia. *Anesthesiology*, 1974; 40: 121-128

37 Morikawa S, Ishikawa I, Kamatsuki H, et al. Neurobehavior and mental development of newborn infants delivered under epidural analgesia with bupivacaine. *Nippon Sanka* 1990; 42: 1495-1502

38 Lester BM, Heidelise A, Brazelton TB. Regional obstetric anesthesia and newborn behavior: a synthesis toward synergistic effects. *Child Dev* 1982; 53:687-692

39 Rosenblatt DB, Belsey EM, Lieberman BA et al. The influence of maternal analgesia on neonatal behaviour II epidural bupivacaine. *Br J Obstet Gynecol* 1981 24;649-670

40 Seposki C, Lester B, Ostenheimer GW, Brazelton, TB. The effects of maternal epidural anesthesia on neonatal behavior during the first month. *Dev Med Child Neurol* 1992;34;1072-1080

41 Murray AD, Dolby RM, Nation RL, Thomas DB. Effects of epidural anesthesia on newborns and their mothers. *Child Dev* 1981; 82:71-82

42 Morgan BM, Bulpitt CJ, Clifton P, Lewis PJ. Analgesia and satisfaction in childbirth (the Queen Charlotte's 1000 mother survey) *Lancet* 1992; 2 (Oct 9) 808-810