

Nature and Management of Labor Pain

Larry Leeman MD, MPH

American Native Women's Health and Maternity Care Conference (IHS/UNM)

August 4, 2004

Objectives

- Review information regarding the nature of labor pain and maternal satisfaction with childbirth
- Understand the use of epidural anesthesia and controversies regarding the effects on labor
- Review options for expanding patient choice in labor pain management including doulas, nonpharmacologic techniques, and less commonly used pharmacologic methods
- Understand the technique and appropriate use of intrathecal analgesia, pudendal block, and intradermal water blocks for labor pain.

Symposium on the Nature and Management of Labor Pain (May 2001)

- ❖ A series of systematic reviews were presented and critiqued by ob/gyns, midwives, family physicians, obstetrical anesthesiologists, and childbirth educators.
- ❖ Cosponsored by New York Academy of Science and Maternity Center Association
- ❖ Reviews in supplement May 2001 American Journal of Obstetrics and Gynecology
- Summary with editorial and a patient education handout in American Family Physician (9/15/03):

<http://www.aafp.org/afp/20030915/contents.html>

Listening to Mother's: Report of the First National U.S. Survey of Women's Childbearing Experiences (October 2002)

- Survey of 1200 women in May and June of 2002
- All had birthed within 24 months
- Focused on their experiences relating to most recent birth, including pregnancy, labor and birth, and the weeks and months afterward

www.maternitywise.org/listeningtomothers/

Nature of labor pain

- Almost all women experience pain in labor
- 1st stage: Visceral pain of diffuse cramping and uterine contractions
- 2nd stage: Sharper and more continuous somatic pain in perineum. Pressure or nerve entrapment from head causes back or leg pain

Lowe 2001

Nature of labor pain

- Nullips have more pain than multips in first stage but multips may have more pain in late first and second stage from rapid descent of vertex
- Anxiety and fear of pain correlate with report of increased pain
- A women's confidence in ability to cope with labor is best predictor of subjective experience of pain (1/3 of reported variance)
- Women rate pain as more severe than caretaker's do!

Lowe 2001

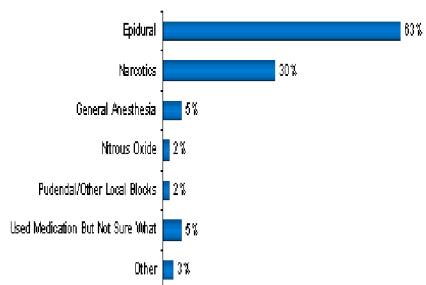
Maternal satisfaction and pain relief (Hodnett 2001)

- Pain relief does not have significant role in maternal satisfaction with childbirth
- Major factors in satisfaction were:
 - 1) Quality of the relationship with the caregiver
 - 2) Amount of participation in decision making during labor and delivery.
- Women preferred home-like birth environment and knowing their caregivers

Epidural analgesia

- Used in **60%** of labors in the US
- **Highly effective pain relief**
- **Changes in types and concentrations of medicines and mode of delivery have occurred**
- **Combined spinal-epidural (“walking epidural”)** is the use of spinal opioids to decrease dose of epidural local anesthetics and motor blockade

Pain Relief Medications Used During Labor



Effects of epidurals on labor outcomes

- **Length of second stage labor prolonged (15 minutes, 95% CI 9-22) (Leighton 2002)**
- **Increased need for operative vaginal delivery (OR 2.08; 95% CI 1.48-2.93) (Leighton 2002)**
- **Increased perineal lacerations (Lieberman 2002)**

Effects of epidurals on labor outcomes

- **Does not increase incidence of post partum back pain (Lieberman 2002, Leighton 2002)**
- **Effect on cesarean delivery rates remains controversial but likely minimal**

Effects of epidurals on labor outcomes

- **Maternal fever secondary to epidural (OR 5.6; 95% CI 4.0-7.8) (Leighton 2002)**
- **Increased neonatal sepsis evaluations and antibiotic administration (Lieberman 2002)**

Epidural side-effects

❖ **Common: hypotension, impaired motor function with inability to walk and urinary catheterization due to inability to void**

❖ **Uncommon: pruritis, nausea and vomiting, and sedation**

Techniques to modify effects on labor outcomes

❖ **Deferring epidural analgesia until active labor/fetal descent:** A study (Holt 1999) demonstrated an odds ratio of 5.3 (2.6,11.0; 95%CI) for cesarean delivery when epidural was placed at -1 or higher.

❖ **Delayed pushing** for labor management demonstrated to increase the chances for spontaneous vaginal delivery (Fraser 2000)

Knowledge of Effects of Epidural Analgesia

Base: All Respondents (n = 1983)	Agree Strongly %	Agree Somewhat %	Disagree Somewhat %	Disagree Somewhat %	Not Sure %
Epidurals provide more effective pain relief than any other method	54	23	5	6	12
Epidurals require certain interventions such as EFM and "IV" drips	34	29	6	4	28
Epidurals often involve other interventions such as using "Pitocin" or a bladder catheter	24	29	13	9	26
Epidurals increase the chance of fever in the mother	4	16	23	16	40
Epidurals increase the chance that babies are evaluated for infection	5	12	24	18	41

Listening to Mothers: Report of the First National U.S. Survey of Women's Childbearing Experiences

Labor pain and patient choice

- Limited options for labor pain management in US compared to Canada or Europe (Levitt 1995, Findley 1999)
- Increase in epidural use from 1981-1997 and diffusion to smaller hospitals (Hawkins 1997)
- Concern for loss of labor support techniques as epidural rates increase in US hospitals: childbirth education, non-pharmacologic techniques, doulas and emotional labor support, and alternative pharmacologic techniques

Table 3. Effectiveness of Methods for Labor Pain Relief

Pain Relief Method	Overall Number Using %	Base: Used Specified Method of Pain Relief			
		Very Helpful %	Some-what Helpful %	Not Very Helpful %	Not Helpful at All %
Epidural	63	78	15	3	4
General anesthesia	5	67	26	4	2
Immersion in tub or pool	6	49	41	10	1
Pudendal block/other local blocks	2	47	10	29	5
Shower	8	32	52	13	2
Use of large "birth balls"	5	32	39	15	14
Hands-on techniques	32	30	52	13	6
Nitrous oxide	2	30	22	21	26
Changes to environment	12	26	50	18	5
Narcotics	30	24	42	20	9
Mental strategies	30	22	52	18	7
Application of hot or cold objects	15	21	62	14	3
Breathing techniques	61	21	48	21	10
Position changes and/or movement	60	19	60	16	5

Listening to Mothers: Report of the First National U.S. Survey of Women's Childbearing Experiences

Pharmacologic options

- Intravenous narcotics
- Nitrous oxide
- Blocks: intrathecal , paracervical, pudendal

Intravenous narcotics

- Effect appears modest and may be more of a sedative than analgesic effect
- No opioid has been proven superior to others
- Potential concerns include effect on fetal heart rate variability, respiratory depression after birth, and effect on nursing

Nitrous oxide

- Common in Europe
- 50-75% of labors in United Kingdom including home births
- 60% of labors in Finland
- Canada, Australia and New Zealand
- Uncommon in U.S. : 2% in the Listening to Mothers Survey

Efficacy and safety of nitrous oxide

- Entenox is 50-50 blend of nitrous oxide and oxygen
- Use in any stage of labor
- Usually self-administered
- Full effect at 50 seconds
- Consistent but moderate analgesic effect
- Side effects: Nausea, vomiting, and poor recall of labor

Rosen May 2002 AJOG

Intrathecal analgesia

- Injection of narcotics into intrathecal space using preservative free medicines (fentanyl or morphine)
- 25 micrograms fentanyl and/or 0.25 mg morphine
- Fentanyl has onset at 3-5 minutes and lasts 1-3 hours
- Morphine has onset at 40-60 minutes and lasts 4-7 hours
- Excellent pain relief but limited duration
- Pain relief is less than epidural

Intrathecal analgesia

- Pruritis (40-70%), nausea, sedation, urinary retention and rarely respiratory depression are side effects
- Technique is easy to learn for FPs and Ob/Gyns as it's a lumbar puncture!
- Especially useful in rural areas or hospitals without epidurals. Doesn't require anesthesiologist
- Reverse pruritis or respiratory depression with naloxone (0.2 mg IV) or naltrexone (12.5 mg po).
- May reverse nausea or pruritis with nalbuphine 5-10 mg IV.

Intrathecal analgesia

- No motor blockade
- May combine morphine and fentanyl for long acting and rapid relief
- Rapid onset with pain relief up to 3 hours and may be repeated

Intrathecal analgesia

- Not as effective as epidural for pain relief or maternal satisfaction. High degree of satisfaction if deliver within 3 hours
- Pruritis is common with up to 95% incidence (Fontaine 2002) although brief or mild for 2/3
- Unlikely to be popular alternative to epidural analgesia in larger urban hospitals but has role in rural and smaller hospitals, and for women not desiring an epidural

Pudendal block



Pudendal block by vaginal approach

Pudendal block

- Bilateral injections to block pudendal nerves at level S2-S4
- Analgesia for spontaneous vaginal delivery vacuum assisted delivery or outlet forceps
- May use vaginal or perineal approach
- Lidocaine or other local anesthetic
- Potential complications: Systemic toxicity, rectal puncture, hematoma formation, sciatic block

Nonpharmacologic pain relief

- Continuous labor support
- Warm water baths
- Touch and massage
- Maternal movement and positioning
- Intradermal water blocks

Continuous labor support

- ❖ Studies of doulas. Lay women trained in labor support consistently decreased need for obstetrical intervention
- ❖ Cochrane meta-analysis (Hodnett 2002) demonstrated decreased:
 - Requests for pain medications (OR 0.59; 52-0.68)
 - Operative vaginal deliveries (OR 0.77; 0.65-0.90)
 - Cesarean deliveries (OR 0.77; 0.64-0.91)

Continuous labor support

- Intermittent is not the equivalent of continuous support (Scott 1999)
- Greatest benefit in low -income women who would have labored with minimal or no social support (Simkin 2002)
- Two studies using nurses showed minimal or no benefit but the labor support was provided relatively late in labor (Gagnon 1997, Langer 1998)

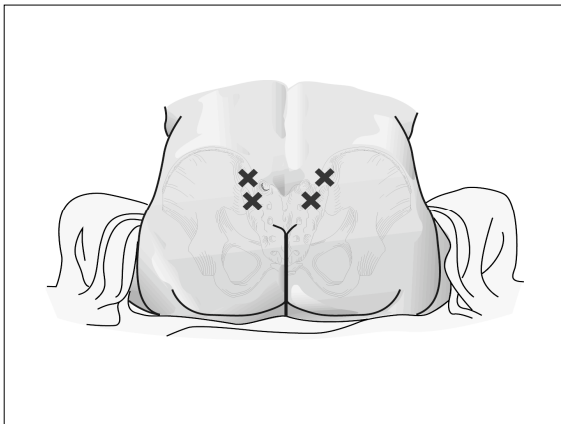
Intradermal sterile water injections

- Injections into sacral area to decrease back pain of labor
- Works if primary site of labor pain is in back (not abdomen) as occurs in some occiput posterior presentations
- Painful burning sensation caused by sterile water

Sterile water injections

Injection of 0.1 ml of sterile water in four locations on the lower back

- ❖ Two over each posterior superior iliac spine (PSIS) and two placed 3 cm below and 1 cm medial to the PSIS.
- ❖ The injections are intradermal and should raise a bleb below skin. Simultaneous injections by two clinicians will decrease the pain.



Efficacy of sterile water injection

- Four RCTs demonstrated a significant reduction in back pain for 45-90 minutes (Simkin 2002)
- Three of RCTs showed stronger interest in receiving injections in future pregnancy in women getting sterile water compared to saline
- No RCTs demonstrated a decrease in request of other pain meds

Warm water baths

- Used by 6% of women in labor in US
- Limited evidence supporting efficacy
- Decreased use of epidurals and augmentation (Cluett, et al BMJ 2004)
- Appear to offer short term relief
- Use in early labor may lengthen labor
- Recommendations: Await active labor before use, keep at or below body temperature and limit to one to two hours

Childbirth education and prenatal care

- Prenatal care is the time for education on labor pain not active labor
- Classes, videos, handouts
- Maternity wise website (high reading level) <http://www.maternitywise.org/mw/topics/pain/>
- AFP Handout: www.aafp.org/afp/20030915/1121ph.html
- Doulas: <http://www.dona.org/>

Labor pain and Native American women

- Higher proportion of multiparous women
- Limited availability of epidural analgesia in rural hospitals
- Doulas: Professional less available but have extended families
- Cultural preferences

Labor analgesia in Zuni-Ramah population

- 732 women delivered at Zuni-Ramah hospital from 1992-1996
- IV opioids readily available
- 81.4% of women birthed without use of pain medicines
- Abundant labor support from sisters, aunts and mothers

Warm water baths in labor at Zuni-Ramah hospital

- Introduced in 2003. Initiated by Amy Doughty CNM. Initial physician apprehension as unfamiliar with use
- Term patients in active labor. ROM not a contraindication
- Contraindications: maternal fever, excess vaginal bleeding, thick meconium, need for continuous monitoring
- Enthusiastic acceptance by laboring women

Warm water bath resources

- Systematic review of nonpharmacologic pain management methods: Simkin PP, O'Hara M. Nonpharmacologic relief of pain during labor: systematic reviews of five methods. *Am J Obstet Gynecol.* 2002; 186:S131-S159.
- www.waterbirth.org/spa: Baths for use in hospitals and birth centers



Conclusions

- Improve prenatal education of women regarding nature and management of pain
- Expand knowledge of physicians and midwives
- Determine ranges of local options and preferences of pregnant women
- Consider additional options: doulas, intrathecal analgesia, nitrous oxide, warm water baths