

Epidural Analgesia During Labour: A Comprehensive Review

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Abstract

Labour pain is among the most intense forms of physiological pain a woman can experience. Epidural analgesia is widely accepted as the most effective method for managing labour pain. This article reviews the procedure, pharmacology, maternal and neonatal outcomes, advantages, limitations, and the latest updates in epidural pain management.

Keywords: Labour pain management, Epidural block, Obstetric anesthesia, Maternal care, Neonatal effects.

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INTRODUCTION

Pain associated with childbirth can lead to anxiety, fatigue, and increased stress hormone levels in the mother. Effective pain control is vital to ensuring a positive birthing experience and maternal well-being. Epidural analgesia has become the standard of care due to its effectiveness and adaptability in obstetric settings.

Overview of Epidural Space Anatomy

The epidural space, located between the dura mater and the inner surfaces of the vertebrae, contains fat, blood vessels, and connective tissue. Administering medication into this space blocks sensory nerve pathways responsible for conveying pain from the uterus and birth canal.

When is Epidural Analgesia Recommended?

- Intense labour pain not managed by alternative methods
- Upon maternal request for pain relief
- In induced or prolonged labour
- In hypertensive pregnancies
- Where assisted or cesarean delivery is anticipated

How the Procedure is Done

The mother is positioned either sitting or lying on her side. Under sterile conditions, a Tuohy needle is inserted into the lumbar region (commonly L3–L4). Once the epidural space is accessed, a catheter is threaded for continuous or intermittent drug delivery throughout labour.

Medications Commonly Used

1. **Local Anesthetics:** Bupivacaine, Ropivacaine
2. **Opioids:** Fentanyl, Sufentanil
3. **Additives:** Clonidine, Epinephrine (to prolong and enhance effect)

Advantages of Epidural Analgesia

1. Superior control of pain compared to systemic medications
2. Reduces stress response, improving placental blood flow
3. Enhances maternal comfort and cooperation during delivery
4. Can be extended for anesthesia in emergency cesarean sections

Outcomes for Mother and Baby

For the Mother:

- Significant pain relief
- Possible extension of second stage of labour
- Slight increase in the likelihood of assisted vaginal birth

For the Baby:

- Generally safe with no long-term negative effects
- Temporary lowering of APGAR score may occur, but without clinical significance
- Better oxygen delivery due to reduced maternal distress

Risks and Side Effects

- Drop in maternal blood pressure
- Difficulty in urination

- Headache (due to dural puncture)
- Fever during labour
- Rare but serious issues include infection, nerve damage, or hematoma

Who Should Not Receive Epidural?

- Women who decline or fear the procedure
- Patients with bleeding disorders or on anticoagulants
- Local infection at the injection site
- Women with increased intracranial pressure
- Cases of untreated low blood volume

Recent Developments

- Use of Patient-Controlled Epidural Analgesia (PCEA)
- Adoption of low-dose and combined spinal-epidural techniques
- Ultrasound guidance to improve precision
- Development of newer drug combinations for enhanced safety and duration

Recent Trends in Nursing Care and Multidisciplinary Approach in Epidural Analgesia

The success of epidural analgesia during labour depends not only on the anesthetic technique but also on the quality of nursing care and collaborative team involvement. In recent years, there has been a notable shift toward evidence-based, nurse-led innovations in obstetric analgesia.

Recent Nursing Trends

- **Personalized Care Plans:** Nurses assess maternal history, anxiety levels, and preferences to tailor pain management approaches.
- **Enhanced Monitoring Protocols:** Frequent assessment of maternal vitals, fetal heart rate, and sensory-motor block levels is emphasized.
- **Use of Digital Tools:** Electronic partographs and mobile health apps assist nurses in real-time monitoring and documentation.
- **Non-Pharmacologic Adjuncts:** Complementary therapies such as guided breathing, music therapy, and positioning techniques are used alongside epidurals.
- **Continuous Education:** Ongoing training in updated epidural guidelines, PCEA devices, and

adverse event recognition is promoted among nursing professionals.

Multidisciplinary Care Approach

Optimal outcomes with epidural analgesia are achieved through collaboration among:

- **Anesthesiologists:** Administer and monitor epidural agents, adjust dosages as labour progresses.
- **Obstetricians:** Coordinate labour progression and surgical interventions when necessary.
- **Nurses:** Serve as the primary caregivers monitoring effects, offering emotional support, and ensuring safety.
- **Pediatricians/Neonatologists:** Evaluate newborns post-delivery, especially in cases of assisted or prolonged births.
- **Mental Health Counselors** (when applicable): Support mothers with anxiety, previous trauma, or substance use disorders.

This team-based model improves maternal satisfaction, minimizes complications, and ensures safe, dignified birthing experiences.

CONCLUSION

Epidural analgesia remains one of the safest and most effective tools for labour pain relief. With appropriate technique and monitoring, it can significantly improve the birthing experience. Recent nursing trends have strengthened patient-centered care, while a multidisciplinary approach enhances safety and outcomes. As maternal expectations evolve and technology advances, integrated obstetric care continues to be essential for ensuring positive childbirth experiences.

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