

# Practical Considerations For Remifentanil Pca In Labour Analgesia – A Comprehensive Approach

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## **Abstract:**

Remifentanil Patient-Controlled Analgesia (PCA) has emerged as a viable option for managing labour pain, providing an alternative to traditional methods. This review explores practical considerations associated with implementing Remifentanil PCA in the labour unit. The goal is to present a comprehensive overview of key aspects that healthcare providers must address to optimize patient safety, satisfaction, and analgesic efficacy. The unique pharmacological properties of Remifentanil contribute to its suitability for the dynamic nature of labour pain. Careful consideration must be made to identify any contraindications for its use. This article discusses monitoring strategies, emphasizing the importance of vigilant observation due to the potential for respiratory depression. It highlights the significance of clear communication between healthcare providers and labouring women to ensure a tailored and individualized analgesic experience. A trained midwife is the most important safety monitor with this technique and must remain with the mother throughout its use.

**Key Word:** Remifentanil PCA; Labour Analgesia; Practical aspects.

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## **I. Introduction**

Remifentanil is a novel ultra-short-acting synthetic opioid metabolized by non-specific tissue and plasma esterases. It is a selective mu opioid agonist, non-cumulative, with a context-sensitive half-time of approximately 3 minutes<sup>1</sup>. Its rapid onset and offset, along with independence from excretory organ function or duration of use, makes it a suitable drug for labour analgesia in a patient-controlled analgesia system (PCA), where severe pain occurs at intervals and rapid recovery between contractions and after delivery is desirable.<sup>2</sup>

### Indications for Remifentanil PCA:

Remifentanil PCA is an alternative form of analgesia for patients who do not want pethidine or an epidural<sup>3</sup>.

The other indications include:

- Patients with coagulopathies and bleeding disorders.
- Anatomical deformities of the spine/previous spine surgery.
- Neurological diseases.
- Sepsis.

### Contraindications to Remifentanil PCA:

Absolute:

- Allergy to Remifentanil.

Relative:

- Gestation < 36 weeks (unless for IUD).
- Other long-acting opioid in the preceding 4 hours.
- Body Mass index > 40.
- Twin Pregnancy.

## **II. Checklist when Initiating Remifentanil PCA for Labour Analgesia**

1. Confirm indication/contraindication for Remifentanil PCA.
2. Provide the patient with an information leaflet, obtain consent, and explain the benefits and side effects clearly. The mother should be shown how to use the PCA suggesting that she presses the button as soon as

she notices the contraction have started. Only the patient must press the button: not her partner or any other birth attendant. They must be explained that Analgesia with Remifentanil PCA is not as effective as epidural analgesia and that they will still feel some pain.

3. Confirm no opioids administered up to 4 hours before initiating this PCA. However, Entonox can be simultaneously used by the patient.
4. Ensure one-to-one trained midwifery care is available.
5. Connect a dedicated 20G IV cannula directly to the PCA pump<sup>4</sup>, with no extensions, and place the NIBP cuff on the opposite arm. Thus, the patient has 2 iv cannula's; 20 G connected to the PCA pump and 18/16 G for iv fluids.
6. Only an anesthetist should prescribe and set up the PCA, being present at initiation and for the first five boluses to ensure patient safety and make sure that the patient is not over-sedated or dropping her o<sub>2</sub> saturations.
7. If O<sub>2</sub> saturation < 94%, oxygen via nasal cannula-2-4 L/min should be administered.
8. Prepare Remifentanil 40mcg/ml with specified pump settings :
  - a. Program A: 40mcg bolus (1mL bolus), 2 minute lockout
  - b. Program B: 30mcg bolus (0.75mL bolus), 2 minute lockout - Standard regime; use for most patients.
  - c. Program C: 20mcg bolus (0.5mL bolus), 2 minute lockout - Use for IUD and patients weighing less than 50kg.
9. Prescribe anti-emetic and antacid.
10. Ensure following safety equipment and medications are available in the room at all times :
  - a. Self-inflating bag-valve-mask (BVM)
  - b. Non-rebreathing facemask (with reservoir bag)
  - c. Nasal cannula for oxygen
  - d. Oxygen supply
  - e. Naloxone 400 micrograms
  - f. Atropine
  - g. Ephedrine
11. Midwife to record following observations every 15 mins for the first hour and then every 30 mins thereafter:
  - a. SpO<sub>2</sub>- should be monitored continuously throughout the use of the Remifentanil PCA
  - b. Respiratory rate
  - c. Pain score:- 0 - No pain; 1 - Mild pain; 2 - Moderate pain; 3 - Severe pain
  - d. Sedation score:- A - Alert; V - Responds to voice; P - Responds to pain; U – Unresponsive
  - e. Continuous CTG monitoring
12. After Baby Delivery: Disconnect the PCA from the mother and remove the cannula without flushing.

### **III. Side Effects**

1. Low oxygen saturation: SaO<sub>2</sub> < 94% for more than 15 seconds and respiratory rate >8/minute.
  - a. Immediate action: Remove PCA handset, administer 2-4 L/min oxygen via nasal cannula, consider restarting the PCA once SaO<sub>2</sub> improves to >=94%.
2. Respiratory depression: • Respiratory rate < 8/ minute due to excessive sedation: • Sedation score = P or U
  - a. Immediate actions: • Disconnect the PCA pump. • Wake the patient up • Position the patient in semi-upright position. • Administer O<sub>2</sub> - 15 L/min via non-rebreathing face mask. • Inform the Anaesthetist at the earliest. • Pull the emergency alarm if SaO<sub>2</sub> < 90%.

### **IV. Troubleshooting for Anaesthetists**

1. If patient continues to remain drowsy:
  - a. Provide airway and respiratory support
  - b. Administer Naloxone up to 400 micrograms IV
  - c. Disconnect the Remifentanyl PCA until patient is appropriately responsive
2. Subsequent management:
  - a. Reduce the bolus dose
  - b. Re-educate the patient about when to press the PCA button – ensuring only the patient presses the button
  - c. Also consider other causes including hypoxia, hypercarbia, hypoglycaemia and cerebrovascular event.
3. Bradycardia and / or Hypotension: • Bradycardia - maternal heart rate <50bpm with or without hypotension -systolic Bp<90 mmhg
  - a. Action- Disconnect the pump, If heart rate does not improve, treat with IV Atropine. If hypotensive-IV fluid bolus -500 mL Hartmann's / plasmalyte solution, vasopressors like ephedrine to be administered IV by anaesthetist

- b. Pull the emergency alarm if patient is drowsy or unresponsive.

### **V. Conclusion**

In conclusion, this review article has examined the key aspects such as pharmacological properties, patient selection criteria, safety considerations, and practical implementation strategies by which we aim to equip the healthcare providers with valuable insights for optimizing the use of Remifentanil PCA in labouring women.

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