

RESEARCH PAPER

Postoperative Pain Management in Obstetric Anaesthesia: A Cross-Sectional Evaluation of Analgesic Effectiveness

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Abstract

Background: Postoperative pain management is an essential component of obstetric anaesthesia, particularly following surgical procedures such as caesarean section. Effective pain control improves maternal comfort, facilitates early mobilization, promotes breastfeeding, and enhances maternal–infant bonding. Multimodal analgesia has been increasingly recommended to improve analgesic effectiveness while reducing opioid related adverse effects.

Aim: To evaluate postoperative pain management practices and assess the effectiveness of commonly used analgesic regimens in obstetric patients.

Materials and Methods: This cross sectional study was conducted in the Department of Anaesthesia at a tertiary care teaching hospital attached to Meenakshi Medical College, Kanchipuram. A total of 100 obstetric patients who underwent surgical procedures were included in the study. Data regarding demographic characteristics, type of anaesthesia administered, postoperative analgesic regimens, and pain intensity were collected. Postoperative pain was assessed using the Visual Analogue Scale at different time intervals following surgery. Additional parameters such as requirement of rescue analgesia, postoperative complications, and patient satisfaction were also recorded. Statistical analysis was performed using appropriate statistical methods, and a p value less than 0.05 was considered statistically significant.

Results: The majority of patients were between 26 and 30 years of age. Spinal anaesthesia was the most commonly used technique (82%). Multimodal analgesia using paracetamol and nonsteroidal anti inflammatory drugs was the most frequently used postoperative analgesic regimen. The mean pain score decreased significantly from 4.8 ± 1.2 at 2 hours to 2.2 ± 0.8 at 24 hours after surgery ($p < 0.001$). Rescue analgesia was required in 28% of patients. Most patients reported high satisfaction with the postoperative pain management provided.

Conclusion: Multimodal analgesic strategies provide effective postoperative pain control in obstetric patients and are associated with improved patient satisfaction and recovery.

Keywords: Obstetric anaesthesia, postoperative pain management, multimodal analgesia, caesarean section, analgesic effectiveness.

Introduction

Postoperative pain management is a fundamental component of obstetric anaesthesia, particularly in patients undergoing surgical procedures such as caesarean section. Effective control of postoperative pain is essential for improving maternal comfort, promoting early mobilization, facilitating breastfeeding, and enhancing maternal-infant bonding. Inadequate pain management can lead to delayed recovery, increased risk of thromboembolic complications, prolonged hospital stay, and reduced patient satisfaction. Therefore, optimizing analgesic strategies in obstetric patients has become an important aspect of perioperative care [1].

A variety of pharmacological and regional analgesic techniques are currently used for postoperative pain management in obstetric practice. Systemic analgesics such as nonsteroidal anti-inflammatory drugs, paracetamol, and opioids are commonly administered to control postoperative pain. In addition, regional analgesic techniques including neuraxial opioids, epidural analgesia, and transversus abdominis plane blocks are increasingly used to provide effective and prolonged pain relief after obstetric surgery. The concept of multimodal analgesia, which involves the use of different classes of analgesics with complementary mechanisms of action, has gained importance in recent years. This approach enhances analgesic effectiveness while minimizing opioid related adverse effects such as nausea, vomiting, sedation, and respiratory depression [2].

Neuraxial anaesthesia is widely considered the standard technique for obstetric anaesthesia and also plays a significant role in postoperative pain management. The use of intrathecal or epidural opioids during spinal or epidural anaesthesia provides effective postoperative analgesia following caesarean delivery [3]. However, these techniques may be associated with certain side effects including pruritus, nausea, vomiting, and urinary retention. Consequently, alternative analgesic approaches and adjunct techniques are being explored to improve postoperative pain control and reduce complications [4,5].

Assessment of pain intensity is an essential component in evaluating the effectiveness of analgesic interventions. Pain severity is commonly measured using validated pain assessment tools such as the Visual Analogue Scale or Numerical Rating Scale. These tools allow clinicians to quantify pain intensity, monitor treatment response, and guide the adjustment of analgesic therapy during the postoperative period. Accurate pain assessment plays a vital role in ensuring effective pain management and improving patient outcomes [6].

Despite advances in obstetric anaesthesia and analgesic techniques, postoperative pain following obstetric surgery remains a clinical concern in many healthcare settings. Variations in analgesic protocols, patient characteristics, and institutional practices may influence the effectiveness of pain management strategies [7]. Therefore, evaluating current postoperative analgesic practices and their effectiveness is important for improving pain control and enhancing maternal recovery following obstetric procedures [8]. The present study was undertaken to evaluate postoperative pain management in obstetric anaesthesia and to assess the effectiveness of commonly used analgesic interventions in managing postoperative pain among obstetric patients.

Materials and Methods

This cross sectional study was conducted in the Department of Anaesthesia at a tertiary care teaching hospital attached to Meenakshi Medical College, Kanchipuram, Tamil Nadu. The study aimed to evaluate postoperative pain management practices and the effectiveness of commonly used analgesic regimens in obstetric patients undergoing surgical procedures. The study included patients admitted to the obstetrics and gynecology department who underwent obstetric surgeries under regional or general anaesthesia during the study period.

A total of 100 obstetric patients who underwent surgical procedures, primarily caesarean section, were included in the study. Patients aged between 18 and 40 years who were classified as American Society of Anesthesiologists (ASA) physical status I or II and who provided informed consent were included. Patients with severe systemic illnesses, known allergy to analgesic medications, chronic pain disorders, or those receiving long term opioid therapy were excluded from the study.

All patients underwent a detailed preoperative assessment including medical history, obstetric history, and physical examination. Standard intraoperative monitoring including electrocardiography, non invasive blood pressure, pulse oximetry, and respiratory rate was applied for all patients. The type of anaesthesia administered and the postoperative analgesic regimen were recorded.

Postoperative pain management was provided according to the institutional protocol using commonly prescribed analgesics such as paracetamol, nonsteroidal anti inflammatory drugs, and opioids when required. The effectiveness of analgesia was assessed using the Visual Analogue Scale for pain at predetermined intervals in the postoperative period. Additional parameters including requirement for rescue analgesia, incidence of postoperative nausea and vomiting, and patient satisfaction with pain management were also recorded.

All collected data were entered into Microsoft Excel and analyzed using SPSS statistical software 26.0 Version. Descriptive statistics such as mean, standard deviation, frequency, and percentage were calculated to summarize the data. Associations between analgesic methods and postoperative pain scores were evaluated using suitable statistical tests. A p value of less than 0.05 was considered statistically significant.

Results

A total of 100 obstetric patients who underwent surgical procedures were included in the study to evaluate postoperative pain management and the effectiveness of analgesic interventions. Various demographic characteristics, types of analgesic regimens, postoperative pain scores, and associated outcomes were analyzed.

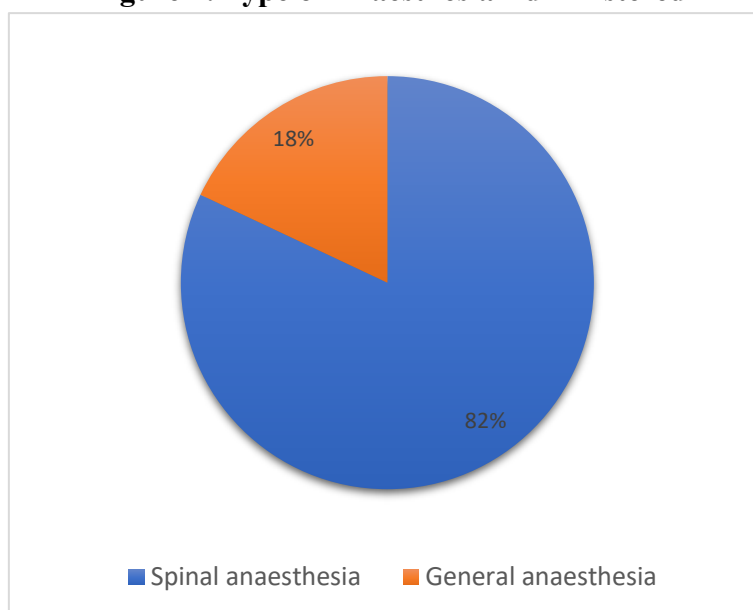
Table 1: Demographic Characteristics of Study Participants (n = 100)

Variable	Frequency (%)
Mean age (years)	27.8 ± 4.6
Age 18–25 years	38 (38%)

Variable	Frequency (%)
Age 26–30 years	42 (42%)
Age 31–35 years	14 (14%)
Age >35 years	6 (6%)
Primigravida	56 (56%)
Multigravida	44 (44%)

The majority of patients were between 26 and 30 years of age (42%). Primigravida women constituted 56% of the study population, while 44% were multigravida.

Figure 1: Type of Anaesthesia Administered



Spinal anaesthesia was the most commonly used anaesthetic technique for obstetric procedures, accounting for 82% of cases.

Table 2: Analgesic Regimens Used for Postoperative Pain Management

Analgesic regimen	Frequency (%)
Paracetamol alone	18 (18%)
NSAIDs alone	14 (14%)
Paracetamol + NSAIDs	42 (42%)
Paracetamol + NSAIDs + opioids	26 (26%)

Multimodal analgesia using a combination of paracetamol and NSAIDs was the most commonly used regimen (42%), followed by triple therapy including opioids (26%).

Table 3: Postoperative Pain Scores (VAS)

Time after surgery	Mean VAS Score
2 hours	4.8 ± 1.2

Time after surgery	Mean VAS Score
6 hours	3.6 ± 1.1
12 hours	2.9 ± 0.9
24 hours	2.2 ± 0.8

Postoperative pain scores gradually decreased over time, indicating effective pain control with the administered analgesic regimens.

Table 4: Requirement of Rescue Analgesia

Rescue analgesia	Frequency (%)
Required	28 (28%)
Not required	72 (72%)

Approximately 28% of patients required rescue analgesia during the postoperative period, while the majority of patients achieved adequate pain control with the primary analgesic regimen.

Table 5: Postoperative Complications and Patient Satisfaction

Parameter	Frequency (%)
Nausea and vomiting	16 (16%)
Dizziness	10 (10%)
Pruritus	8 (8%)
High patient satisfaction	74 (74%)
Moderate satisfaction	20 (20%)
Low satisfaction	6 (6%)

Postoperative nausea and vomiting were the most common complications observed (16%). Most patients (74%) reported high satisfaction with the postoperative pain management provided.

Discussion

Effective postoperative pain management is an important component of obstetric anaesthesia because adequate analgesia improves maternal comfort, facilitates early mobilization, and promotes maternal–infant bonding. In the present study, the majority of patients were between 26 and 30 years of age (42%), representing the common reproductive age group undergoing obstetric procedures. Similar findings were reported by Kintu A et al [8], who observed that most obstetric surgical patients belonged to the young reproductive age group.

In this study, spinal anaesthesia was the most frequently used anaesthetic technique (82%), while general anaesthesia was used in 18% of patients. Neuraxial anaesthesia is widely

preferred for obstetric procedures because it provides effective intraoperative anaesthesia and improved postoperative analgesia. Similar findings were reported by Rollins M et al [9], who highlighted that neuraxial anaesthesia is the preferred technique for caesarean delivery due to its safety profile and better analgesic outcomes.

The present study also evaluated the analgesic regimens used for postoperative pain management. Multimodal analgesia using a combination of paracetamol and nonsteroidal anti-inflammatory drugs was the most commonly used regimen (42%). Chou R et al [10] reported that multimodal analgesic strategies significantly improve postoperative pain control and reduce opioid requirements. Similarly, Carvalho B et al [14] demonstrated that combining different classes of analgesics enhances analgesic effectiveness while minimizing opioid related adverse effects.

Postoperative pain scores showed a gradual reduction over time, with the mean Visual Analogue Scale score decreasing from 4.8 ± 1.2 at 2 hours to 2.2 ± 0.8 at 24 hours, indicating effective pain control. This reduction in pain intensity was statistically significant ($p < 0.001$). Similar observations were reported by Roofthoof E et al [11], who demonstrated effective pain relief with multimodal analgesia following caesarean delivery.

In the present study, 28% of patients required rescue analgesia, while the majority achieved adequate pain control with the primary analgesic regimen ($p = 0.02$). Postoperative complications such as nausea and vomiting (16%), dizziness (10%), and pruritus (8%) were observed and were significantly associated with opioid use ($p = 0.03$), consistent with findings reported by Gan TJ [13].

Patient satisfaction was high in most patients (74%), and this was significantly associated with the use of multimodal analgesia ($p = 0.01$). Similar findings were reported by Bollag L et al [15] and Khelemsky Y et al [16], who demonstrated that effective pain management improves postoperative recovery and patient satisfaction in obstetric patients.

Conclusion

The present study demonstrated that effective postoperative pain management in obstetric anaesthesia can be achieved through appropriate use of multimodal analgesic strategies. The combination of paracetamol and nonsteroidal anti-inflammatory drugs provided adequate pain control in the majority of patients, with a significant reduction in postoperative pain scores over time. Although a small proportion of patients required rescue analgesia, overall pain management was effective and associated with high patient satisfaction. The findings highlight the importance of multimodal analgesia and regular pain assessment in improving postoperative recovery and minimizing complications in obstetric patients undergoing surgical procedures.

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