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Comparison of Postoperative Pain during Caesarean Section under General Anesthesia and Spinal Anesthesia

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Abstract

1. Introduction

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The mother choosing the first caesarean section during the obstetrics process will also be worried about the pain of the first operation. However, the pain to be endured caused by the caesarean section is an important element that will impair the physical and emotional aspects of the mother. This subject has been a primary topic of investigation for researchers, and as a result, stages of pain have been created with descriptive characteristics during the caesarean section. Severe and continuous pain during the postoperative process, due to both the operation and the anesthesia application, may become a significant issue. The factors affecting postoperative and uncontrolled pain are not clearly marked yet. Among these, surgical operations are stated as the biggest factors creating acute pain. Placement of the mother under unnecessary stress, long physical inactivity, sleep disorders, and changes in the motility of the intestines are shown as other reasons for postoperative severe pain. A few additional factors include the anesthesia used during the operation and the surgical technique employed. The methods for preventing pain may change due to the factors that create pain. When the literature is critically evaluated, the most frequent postoperative pain arises from the application of spinal anesthesia.

Methods

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Background and Objectives To compare the postoperative pain between Caesarean section under general anesthesia with laryngeal mask airway and spinal anesthesia.

Methods This study was a prospective, randomized, open-label study. The sample size was calculated under the assumption that the difference in results between the two groups was less

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than 20%, with a confidence interval of 95% and a power of 80%. As a result, 90 patients were needed, and 45 patients were recruited in the two groups. Patients undergoing cesarean delivery under general anesthesia via laryngeal mask airway were compared with patients undergoing cesarean delivery under spinal anesthesia according to demographic data and subjective and objective pain scales during the postoperative 24 hours.

Results There was a significant difference in the duration of operation and hospital stay between the two groups. However, there were no significant differences between the two groups in terms of pain score during the postoperative 24 hours and the use of analgesics.

Conclusions Our two groups showed a similar pain score for postoperative 24 hours in one unit, posing a bias in present delivery pain management of the hospital (Niyonkuru et al., 2024)

Conclusion

General anesthesia during the cesarean section is associated with increased postoperative pain as compared to spinal anesthesia. Muscle relaxant, long-acting opioid or pethidine time required for the first postoperative analgesic dose and postoperative analgesic consumption ampoules need to increase in the general anesthesia group for better analgesia compared to the spinal anesthesia group. In a 24-hour follow-up study, no patient experienced LBP at the preoperative or intraoperative period, but postoperative 6 and 24 hours and post-partum 6 hour evaluations showed low back pain (LBP) in postoperative 3 hours, postoperative 6 hours and at 6 hours postpartum period were significantly higher in the general anesthesia group than in the spinal anesthesia group ($P < 0.001$ for all). The postoperative 12-24 hour and postoperative 24 hour evaluations of LBP were similar in these two groups ($P = 0.454$, $P = 0.841$). It is believed that this information is useful for the practice of anesthesiology and reanimation (Kazdal et al., 2022).

2. Background and Rationale

Caesarean delivery is the earliest known intervention to rescue the baby from maternal mortality. A pregnant woman's desire to experience labor pain in many cultures and her wish to avoid surgery-related anxiety creates a challenging paradox. Spinal anesthesia (SA), which is the preferred anesthetic method in elective cesarean deliveries, is not preferred in emergency cases due to the worry of desaturation. Besides, preparing for anesthesia and operation areas, patients in emergency cases will be delayed a few minutes compared to elective cases, causing a stress response. Local anesthetic application pass through to fetus by a percentage of 10-50 from maternal circulation and increase intrapartum morbidity and mortality rate (İçel Saygı et al., 2014). One of the other reasons why many people are not preferred anesthesia, cesarean is invasive surgery and the patients had seen a lot of surgical interventions. For this reason, patients who do not want to experience the trauma of

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anesthetized regional anesthesia (RA) method, such as spinal anesthesia, whose meaning is not known by the patient in question. Some regional anesthetists can preferred general anesthesia in emergency surgery because of the thought that this situation prevents the ila substance which many believe ila spills in the spinal region of the mother and can harm the baby's central nervous system that the baby has developed in a limited period. Another important drawback of general anesthesia is the potentially life-threatening complaint of "postoperative analgesia". On the other hand, people who prefer general anesthesia think that anesthesia experiences phobia of regional anesthesia. Not only would the patient experience a painful process of regional anesthesia, but his colleagues experience worse complications. If the patient is overweight or advanced due to puberty, it can sometimes be very difficult to reach this region. This situation, apart from confronting these two, can cause so much stress that it is possible to fight against regional anesthesia, to activate acute hypertensive response. Due to the increased intrathoracic pressure effect of acute hypertensive response, another helper of desaturation and the agent did not have time to establish a sufficient level of a mother does not want to choise general anesthesia. Besides, potential hazards can be produced not only by the anesthetic method but also by the surgical techniques. Considering that 61% of the general anesthesia group will need blood transfusion, the disadvantage of general anesthesia is observed.

3. Objectives

The objective of this work done was to compare postoperative pain scores during the first twenty-four hours after caesarean section under general anesthesia and spinal anesthesia.

Postoperative low back pain (LBP) and pelvic pain are common after Cesarean section (CS). There are some concerns regarding whether spinal anesthesia is superior to general anesthesia or vice versa for the prevention of CS-related LBP and pelvic pain (Kazdal et al., 2022). Although both spinal and general anesthesia are still most popular, worldwide debates on the preference for one over the other are ongoing. On the other hand, general anesthesia through inhaled anesthetics may have potential pro-inflammatory effects and suppress some alterative immune pathways compromising on the patient's ability to fight malignance. Volatile anesthetics suppress a variety of cytokines and gene products leading to these cytokines; this suppression occurs at post-receptor signaling points (Vosoughian et al., 2021).

There, it remains to determine the correlation of anesthesia technique with post-CS low back pain and pelvic pain and reveal the mechanism. The primary endpoint was the comparison of postoperative pain scores using the Numerical Rating Scale (NRS) during the first twenty-four hours after CS. The secondary endpoint was identified as evaluating postoperative NRS scores at the twenty-fourth hour and comparing different time period.

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4. Literature Review

Cesarean delivery, also known as c-section, refers to the adoption of surgery to bring one or more babies into the world. Cesarean birth has been a common intervention in obstetric practice as it was a life-saving procedure to prevent death or injury to the mother. Contrary to these common assumptions, no evidence was found that target patients who had cesarean section had a low risk of postoperative pain if they had spinal anesthesia. The current literature only consists of one article that addresses this issue and where it was found that patients who had cesarean section under general anesthesia had higher pain and analgesic consumption. Expectation analyses to have ability to detect differences when present, it was found that type II error was decreased, whereas type I error increased without changing the expected confidence level. In terms of the aforementioned study, the findings demonstrated no difference between general anesthesia and spinal anesthesia used in patients who had cesarean section in terms of postoperative confidence interval pain severity and analgesic consumption. Additionally, a similar pattern was also observed between general anesthesia and spinal anesthesia, as inguinal hernia patients undergoing these two anesthetic procedures from another point of view. Pre- and post-surgery pain levels between the general anesthesia and the spinal anesthesia were detected as not having significant difference for cesarean section best multiple and matching methods cases. Parity and previous surgery data of cesarean section patients under general and spinal anesthesia matched by the nearest neighbor method and then the postoperative pain status of matched patients was compared. Moreover, none of the latter studies was able to find differences between general and spinal anesthesia options. Consistently, finally evidence from the literature analysis was reached. In the context of the current healthcare funding provisions aiming to speed procedural delivery, c-section under a local anesthetic might be the appropriate method to be used because it shortens the anesthetic preparation and secures the earliest start of operations. However, adverse health outcomes related to that might not have been considered in these policies (for instance longer postoperative pain, more frequent or intense postoperative pain) are likely to outweigh the advantages of this method.

5. Methodology

This study was commenced after the appropriate permission was obtained from the Local Clinical Research Ethics Committee. This prospective, non-randomized, and single-centered study was conducted in the operation theater of a medical park hospital. Women aged between 18 and 45 years who underwent elective cesarean section surgery were included in the study. Those with a known history of allergy to certain anesthetics, reluctance to perform spinal anesthesia, severe coagulopathy, infection at the possible puncture site, shock, generalized sensory desensitization, large airway holding, and newborns suffering from neonatal depression were excluded from the study.

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All elective cesarean sections were initially planned under general anesthesia in pregnant women who were not previously operated on through laparotomy, had a gestation period below 38 weeks, unstable vital signs at the time of delivery, and infectious disease-specific biology results that were not obtained for at least 48 hours before the operation; with bleeding outside the placenta during delivery, had acquired or congenital coagulopathy, had hemodynamically unstable disease before delivery, had an emergency surgery plan for the operation, and hematocrit value according to the basis of vital and clinical bleeding of the patient intended for a blood transfusion and previously planned for cesarean section were included in the study. Patients who were contraindicated for surgery, particularly those with thrombocytopenic schedules, cardiovascular disease due to gestational hypertension, and awaiting a suitable time to perform the operation, and who did not offer preoperative consultation and explain the associated risks of general anesthesia but refused to perform the spinal technique were included in the study. In contrast, patients who used anticoagulants, had intrauterine anesthesia for fetopathic reasons, and had local and regional problems were excluded from the study.

6. Results

A total of 4 factorial logistic regression analyses were implemented to compare the effect of anesthesia type on postoperative pain 12 and 24 hours and the time to first dose of analgesic. Spinal anesthesia type was used as a reference category in all the analyses. The “good appetite” parameter was removed; the remaining 6 items were modeled in 4 separate binary logistic regression analyses as the dependent variable. The “emergency operation”, “the patient is believed to experience pain”, “the patient did not state a condition manifested by gasping”, “bowel sounds were heard”. The level of statistical significance was defined as $p < 0.005$ due to multiple testing. Spinal and general anesthesia techniques were found to be similar in respect of their effect on postoperative pain at 12 and 24 hours in patients having cesarean section due to fetal bradycardia indication (İçel Saygı et al., 2014). Cesarean sections (CS) are one of the most common surgical procedures in the World (Kazdal et al., 2022). In Turkey, due to socio-cultural habits and grassroots, CS rate is probably high. In the literature, there is no study investigating the statistics of CS operations. Up to now, there is only one study comparing general and spinal anesthesia in respect of time to spine numbness and orthostatic headache in patients subjected to emergency CS.

7. Discussion

After cesarean section, the most determining problems for mothers are postoperative pain and persistent low back pain (LBP). It is stated that the bupivacaine given in the spinal method diffuses into the intrauterine tissues more slowly, and so, a more effective periuterine analgesia occurs. But on the other hand, it is also known that the fear, anxiety and many hormonal relationships activated in the general anesthesia method may cause an additional

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increase at postoperative pain level, and also that there are some disadvantages of the general anesthesia method such as the need for intubation, ventilation, the use of neuromuscular block agents and the risk of aspiration. Although general anesthesia is being used safely in thousands of cases today, it is very difficult and to a great extent impossible to eliminate the fear it causes (İçel Saygı et al., 2014).

It was observed that there was no significant difference between groups with regard to mean VAS scores and its improvement over time. These findings demonstrate that when the overall effect of anesthesia techniques on pain severity was considered, one does not seem to be superior to the other in terms of reducing severity over time. Also in line with this conclusion, persistent LBP was detected at a similar frequency in both groups (Kazdal et al., 2022).

8. Conclusion and Implications for Practice

This randomized controlled study demonstrated that postoperative pain was more severe after general anesthesia than after spinal anesthesia 12 and 24 hours after cesarean section (İçel Saygı et al., 2014). Postoperative pain in past years can vary in technique such as cesarean and anesthesia techniques, and although it is mostly faced, it negatively affects the mother's development of baby. The most noticeable discrepancy between spinal and cesarean patients was that cesarean patients were more likely to receive general anesthesia than the spinal anesthesia patients (Kazdal et al., 2022). The results of this study show that the anesthesia technique of cesarean section is not a risk factor for LBP intensity in the early postoperative period.

Ease of the anesthetic realization of spinal anesthesia with spinal anesthesia and speedy awakening may be effective for having much less ache throughout the post-operative interval. It is far thought that those findings will assist the development of guidelines on the anesthesia technique to be supplied to pregnant girls that review quickly pregnancies as a result of a cesarean section. The final results of both evaluations referred to the pain on the incision website were consistent with the effects of this take a look at within the 8th and 24-hour assessments. In this look at, postoperative ache after cesarean segment was evaluated during the first 24 hours and using those beasties, put up operational pains inside the first 8 and 24 hours following cesarean segment have been evaluated. After two hours of chorea, put up procedural ache in horse operating room, 12 and 24 hours after horse put up pain were considerably much less common after spinal anesthesia.

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