

## ORIGINAL RESEARCH

# Comparative evaluation of general anaesthesia and spinal anaesthesia in patients undergoing caesarean section at a tertiary care hospital

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### ABSTRACT

**Background:** Caesarean section can be described as the procedure where a baby is delivered by an incision on the abdominal wall and uterus of the mother. Various factors, such as clinical indications, patient preference, and the proficiency of anesthesiologist, often influence the decision-making process when selecting between general anesthesia and spinal anesthesia for a cesarean section. Hence, the present study was conducted for comparing general anaesthesia and spinal anaesthesia for caesarean section. **Materials & Methods:** A total of 200 subjects scheduled to undergo elective C-section were enrolled. All the subjects were randomly divided into two study groups: Spinal anesthesia group and general anesthesia group. A Performa was made and the complete medical and family history of all the patients was evaluated. All the variables were compared. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. Chi-square test and student t test were used for evaluation of level of significance. **Results:** Mean urine output at first hour among patients of spinal anesthesia group and general anesthesia group was 234.2 ml and 189.2 ml respectively. Mean time for first analgesic requirement among patients of spinal anesthesia group and general anesthesia group was 310.2 minutes and 192.4 minutes respectively. 8 percent of the neonates of the spinal anesthesia group and 12 percent of the neonates of the general anesthesia group were hospitalized. **Conclusion:** If not contraindicated, spinal anesthesia during elective C-section is a safer option and should be preferred.

**Key words:** Spinal, General, Caesarean.

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### INTRODUCTION

Caesarean section can be described as the procedure where a baby is delivered by an incision on the abdominal wall and uterus of the mother. In spite of the fact that operation has become very secure over the years, it is still connected with significant maternal mortality and morbidity. The type of anesthesia utilized and the protection with which it is managed is a significant factor of the result of caesarean section. The purpose of the anesthetic is to reduce the pain that appears in the caesarean section

operation. This can be gained by a general anesthetic, a spinal anesthetic or an epidural anesthetic. Regional and general anesthesia are two kinds of anesthesia commonly used for caesarean section and both have their advantages and disadvantages. General anesthesia is in ability in feeling pain connected with loss of consciousness created by intravenous or inhalation anesthetic agents.<sup>1-3</sup> Various factors, such as clinical indications, patient preference, and the proficiency of anesthesiologist, often influence the decision-making process when selecting between

general anesthesia and spinal anesthesia for a cesarean section. While both methods have their advantages and disadvantages, their differential impacts on the quality of life post-surgery are still a subject of ongoing research. A number of studies have looked at different anesthesia methods for C-sections, comparing things like maternal mortality, pain after surgery, and bleeding. Other studies have compared the quality of life after C-sections to vaginal deliveries.<sup>4-6</sup> Hence, the present study was conducted for comparing general anaesthesia and spinal anaesthesia for caesarean section.

## MATERIALS & METHODS

The present study was conducted for comparing general anaesthesia and spinal anaesthesia for caesarean section. A total of 200 subjects scheduled to undergo elective C-section were enrolled. Complete demographic and clinical details of all the patients were enrolled. All the subjects were randomly divided into two study groups: Spinal anesthesia group and general anesthesia group. A Performa was made and the complete medical and family history of all the patients was evaluated. Standard general monitoring was placed before the induction of anesthesia including ECG, noninvasive blood pressure, pulse oximetry, bladder catheterization planning, and assistance availability. The neonatal resuscitation

team was ready to accept and care for the infant in addition to the mother, and they had all the necessary equipment and a strong suction available at the same time. All the variables were compared. All the results were recorded in Microsoft excel sheet and were subjected to statistical analysis using SPSS software. Chi-square test and student t test were used for evaluation of level of significance.

## RESULTS

Mean age of the patients of spinal anaesthesia group and general anesthesia group was 27.3 years and 28.1 years respectively. Mean gestational age among the patients of the spinal anesthesia group and general anesthesia group was 38.9 weeks and 38.1 weeks respectively. Mean parity among the patients of the spinal anesthesia group and general anesthesia group was 1.4 and 1.2 respectively. Mean urine output at first hour among patients of spinal anesthesia group and general anesthesia group was 234.2 ml and 189.2 ml respectively. Mean time for first analgesic requirement among patients of spinal anesthesia group and general anesthesia group was 310.2 minutes and 192.4 minutes respectively. 8 percent of the neonates of the spinal anesthesia group and 12 percent of the neonates of the general anesthesia group were hospitalized.

**Table 1: Demographic data**

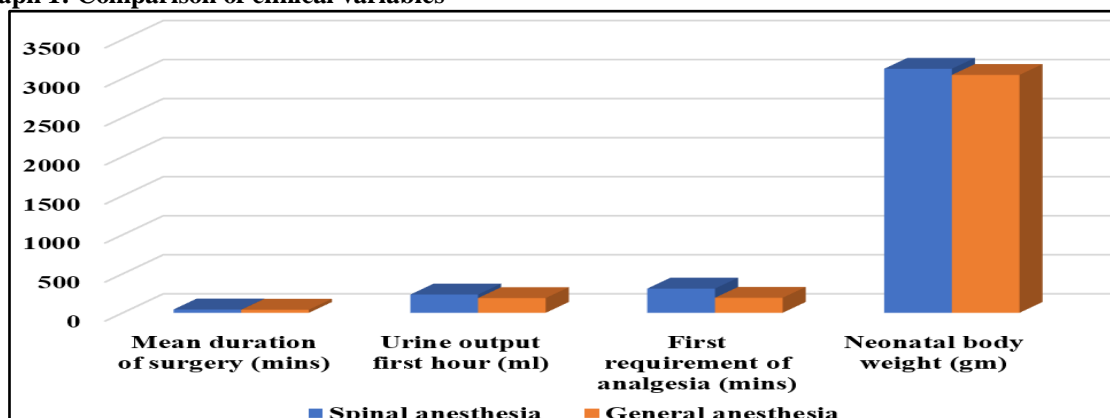
Variable	Spinal anesthesia	General anesthesia
Mean age (years)	27.3	28.1
Mean gestational age (weeks)	38.9	38.1
Mean BMI (Kg/m <sup>2</sup> )	26.3	25.8
Parity	1.4	1.2

**Table 2: Clinical variables**

Clinical variables	Spinal anesthesia	General anesthesia	p-value
Mean duration of surgery (mins)	42.8	40.1	0.463
Urine output first hour (ml)	234.2	189.2	0.001*
First requirement of analgesia (mins)	310.2	192.4	0.000*
Neonatal body weight (gm)	3125.3	3046.8	0.627
Neonatal hospitalization (%)	8	12	0.877

\*: Significant

**Graph 1: Comparison of clinical variables**



## DISCUSSION

Termination of pregnancy by caesarean section (CS) is increasing all over the world. The four-point classification of urgency of CS used by the National Confidential Enquiry into Perioperative Deaths are: Category 1 – immediate threat to life of the woman or fetus, Category 2 – maternal or fetal compromise, not immediately life-threatening, Category 3 – need early delivery but no maternal or fetal compromise, Category 4 – at a time to suit the woman and maternity team. Spinal anesthesia (SA) has become the standard technique in category 2, 3, and 4 as it results in less maternal and neonatal morbidity than general anesthesia (GA) (Grade-A recommendation, NICE). In category-1 CS, rapid sequence general anesthesia (RSGA) is commonly used because this technique is faster to perform than SA. However, RSGA is currently being challenged due to risk of hypoxia, aspiration, and controversies regarding the technique practiced, choice, and doses of drugs.<sup>7-10</sup> Hence; the present study was conducted for comparing general anaesthesia and spinal anaesthesia for caesarean section. In the present study, Mean urine output at first hour among patients of spinal anesthesia group and general anesthesia group was 234.2 ml and 189.2 ml respectively. Mean time for first analgesic requirement among patients of spinal anesthesia group and general anesthesia group was 310.2 minutes and 192.4 minutes respectively. 8 percent of the neonates of the spinal anesthesia group and 12 percent of the neonates of the general anesthesia group were hospitalized. Iqbal R et al compared the effects of general versus spinal anaesthesia on Apgar score of neonates in elective Caesarean section. A total of 100 pregnant patients undergoing elective Caesarean section were divided into two groups: Group-A (General anaesthesia), Group-B (spinal anaesthesia). In both the groups the patients were randomly divided using random number table and were blind to the technique of anaesthesia used. Mean Apgar score at one minute in group-A was 6.4±1.1 and in group-B was 8.4±1.1. The difference between two groups was statistically significant (p less than 0.001). Mean Apgar score at 5 minute was observed 9.4±0.7 in group-A and 9.5±0.6 in group-B. The difference between these two groups was not statistically significant (p=0.202). Apgar score of neonates whose mothers received spinal anaesthesia was better at 1 minute than neonates whose mothers received general anaesthesia but there was no significant difference in Apgar score after 5 minutes in both techniques.<sup>10</sup> Bhattacharya Susmita et al compared the time intervals (time for anesthesia, time to surgical readiness, incision to delivery time, emergence time) and Apgar score between rapid sequence spinal anesthesia and rapid sequence general anesthesia during category-1 caesarean section. In the prospective randomized study, 60 patients of American Society of Anesthesiologists physical status (ASA-PS) I posted for category-1

emergency caesarean section were randomly allocated into two equal groups and received either of the two techniques. Demographic data, respective time intervals, and Apgar scores were noted and compared. The time for anesthesia, surgical readiness, and emergence were significantly longer ( $P < 0.001$ ) in rapid sequence general anesthesia group as compared to rapid sequence spinal anesthesia group ( $144.80 \pm 3.42$  vs  $131.20 \pm 3.40$  s,  $178.76 \pm 4.09$  vs  $169.93 \pm 3.08$  s,  $512.13 \pm 34.33$  vs  $222.10 \pm 12.80$  s). No significant difference was found in incision to delivery time and Apgar scores between the two groups. Because anesthesia to delivery time is shorter in rapid sequence spinal anesthesia, this technique may be equivalent to rapid sequence general anesthesia in category-1 emergency caesarean section.<sup>11</sup> Ghaffari S et al determined whether pregnant women who undergo general anesthesia (GA) for cesarean delivery compared with spinal anesthesia (SA) differ regarding their perceived HRQoL. They enrolled 160 pregnant women with American Society of Anesthesiologists (ASA) class II, scheduled for CDMR with GA or SA. Anesthesia modality was based on patient's preference. Participants assessed their state of health with the EuroQoL-5 Dimensions-3 Levels (EQ-5D-3L) self-administered questionnaire at four time points: six hours before cesarean delivery, 24 hours after cesarean delivery, one week and one month after cesarean delivery. Patients also rated their health on the EQ visual analog scale (EQ-VAS) from 100 mm "best imaginable health state" to 0 mm "worst imaginable health state". More women who underwent spinal anesthesia reported "no problem" with regards to "mobility" (64% vs. 30%,  $p = 0.00$ ), "usual activities" (90% vs. 38%,  $p = 0.00$ ), and "pain/discomfort" (20% vs. 5%,  $p = 0.007$ ). Repeated measurement analysis showed that the two groups started off with the same EQ-VAS score, however, both decreased over time with different slope resulting in different scores at 24 hours after CS. Then the scores increased in both groups over time and ended up being rather close at one month after CS.<sup>13</sup>

## CONCLUSION

If not contraindicated, spinal anesthesia during elective C-section is a safer option and should be preferred.

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