

# A Comparison Study of Spinal Anesthesia with General Anesthesia in Cesarean Section

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## Abstract

**Background:** The present study was conducted to compare spinal anesthesia with general anesthesia in cesarean section. **Subjects and Methods:** The present study was conducted in the department of Anesthesiology. It comprised of 78 pregnant women with American Society of Anaesthesiologists (ASA) physical status grade I or II who were scheduled to undergo elective CS under SA. Patients were divided into 2 groups. In both groups, side-effects after surgery such as nausea, vomiting, headache, pain and other clinical symptoms were noted. **Results:** The mean WBC count in group I was 12.74 10<sup>9</sup>/L and 10.62 10<sup>9</sup>/L in group II which was significant (P < 0.05). Other parameters such as mean RBCs, mean hemoglobin and mean platelet count was non-significant (P > 0.05). In group I most common complication was fever (6) and hypotension (6) while in group II, fever (8) and hypotension (7). However, the difference was non-significant (P > 0.05). **Conclusion:** Both spinal anesthesia and general anesthesia showed variations in hematological parameters as well as complications.

**Keywords:** Cesarean, general anesthesia, spinal anesthesia.

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Received: June 2019

Accepted: June 2019

## Introduction

Caesarean section (CS) is now one of the most commonly performed major operations in women throughout the world. While regional or general anaesthesia (GA) are both acceptable for caesarean delivery, use of GA has decreased dramatically in the past few decades due to a higher risk of anaesthesia-related maternal mortality.<sup>[1]</sup> As a consequence, spinal anaesthesia (SA) is now the technique of choice for CS. Although SA is generally well tolerated, it is still associated with considerable side effects, the most common of which is maternal hypotension, potentially endangering both mother and child.<sup>[2]</sup>

For balancing the pros and cons of the caesarean surgeries in relation to mother and her foetus, spinal anaesthesia should be preferred. Because of some selective advantages provided by SA over epidural anaesthesia, SA is preferred nowadays for performing elective caesarean sections.<sup>[3]</sup> Evidence for maternal death in CS, especially due to excessive bleeding is rare and general anesthesia is not often considered in this regard. This is because of muscle relaxation and much less labor induction against spinal method. Furthermore, inhaled halogen contents in general anesthesia may induce more bleeding via suppression in uterine wall contraction and mother's consciousness.<sup>[4]</sup> The present study was conducted to compare spinal anesthesia with general anesthesia in cesarean section.

## Subjects and Methods

The present study was conducted in the department of Anesthesiology. It comprised of 78 pregnant women with American Society of Anaesthesiologists' (ASA) physical status grade I or II who were scheduled to undergo elective CS under SA. The study protocol was approved prior to the commencement of study. All patients were informed regarding the study and written consent was obtained.

General information such as name, age etc. was recorded in performa. Patients were divided into 2 groups. Group I received general anesthesia and group II received spinal anesthesia. Pre-operative assessment of the haematological parameters was done in both groups.

Caesarean section was performed in both the groups. Post-surgical symptoms were recorded. In both groups, side-effects after surgery such as nausea, vomiting, headache, pain and other clinical symptoms were noted. Results were subjected to statistical analysis. P value less than 0.05 was considered significant.

## Results

**Table 1: Distribution of patients**

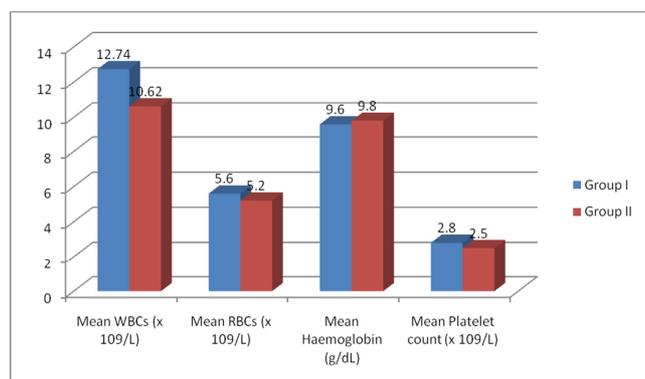
Total- 78		
Groups	Group I (GA)	Group II (SA)
Number	39	39

[Table 1] shows that group I received general anesthesia and group II received spinal anesthesia. Both groups had 39 patients each.

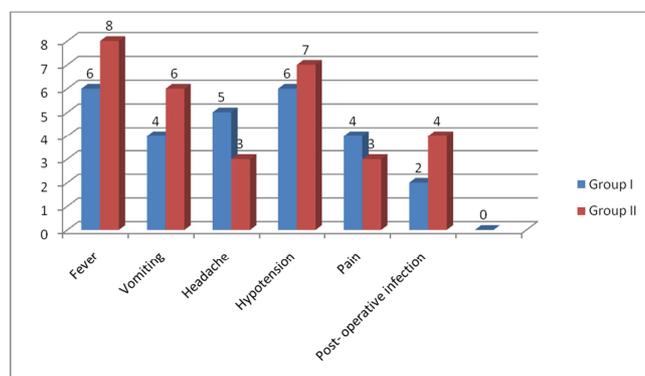
**Table 2: Assessment of Post-operative hematological parameters in both groups**

Parameters	Group I	Group II	P value
Mean WBCs (x 10 <sup>9</sup> /L)	12.74	10.62	0.05
Mean RBCs (x 10 <sup>9</sup> /L)	5.6	5.2	0.12
Mean Haemoglobin (g/dL)	9.6	9.8	0.74
Mean Platelet count (x 10 <sup>9</sup> /L)	2.8	2.5	0.98

[Table 2 & Figure 1] shows that mean WBC count in group I was 12.74 10<sup>9</sup>/L and 10.62 10<sup>9</sup>/L in group II which was significant (P< 0.05). Other parameters such as mean RBCs, mean hemoglobin and mean platelet count was non-significant (P> 0.05).



**Figure 1: Post-operative hematological parameters in both groups**



**Figure 2: Assessment of complications in both groups**

Graph II shows that in group I most common complication was fever (6) and hypotension (6) while in group II, fever (8) and hypotension (7). However, the difference was non-significant (P> 0.05).

## Discussion

Although both general and spinal anesthesia are used in elective cases of CS, the latter is much preferred, particularly when they need to keep mother awakes. Besides, mother aspiration and fetal distress would effectively reduce by spinal technique.<sup>[5]</sup> Previous studies show a dilemma about labor bleeding and its causes when compare general and

spinal anesthesia although the majority of authors determine more bleeding in general technique. However; still a lot of controversy exists regarding the negative or positive effects of spinal anaesthesia on the post-surgical analgesic effects in mothers undergoing caesarean sections.<sup>[6,7]</sup> The present study was conducted to compare spinal anesthesia with general anesthesia in cesarean section.

In present study, group I received general anesthesia and group II received spinal anesthesia. Both groups had 39 patients each. Ajay<sup>8</sup> in his study found that before surgery, mean WBCs (x 10<sup>9</sup>/L) concentrations in patients undergoing GA and SA was 9.85 and 9.92 respectively. Mean RBCs (x 10<sup>9</sup>/L) concentrations were 4.12 and 4.18 in patients undergoing GA and SA respectively before surgery. Non-significant results were obtained while comparing the mean WBC concentration, mean RBC concentration, mean hemoglobin and other hematological parameters in between the two study groups before the surgery. After surgery, mean WBCs (x 10<sup>9</sup>/L) concentrations in patients undergoing GA and SA was 12.21 and 10.41 respectively. Statistically significant differences were obtained while comparing the mean WBC concentration in the two study groups when measured after the surgery. Pain and hypotension was the most common side effect prevalent in patients undergoing caesarean sections under both GA and SA.

We found that mean WBC count in group I was 12.74 10<sup>9</sup>/L and 10.62 10<sup>9</sup>/L in group II which was significant (P< 0.05). Other parameters such as mean RBCs, mean hemoglobin and mean platelet count was non-significant. In group I most common complication was fever (6) and hypotension (6) while in group II, fever (8) and hypotension (7).

Veneziani et al,<sup>[9]</sup> found that all the elective CS with 38-40 weeks gestational age enrolled via easy sampling before being divided into two groups of general and spinal anesthesia. Patients' hemoglobin and HCT in addition to blood pressure were the major factors which were checked and compared between the groups. HB fell significantly more in patients with general anesthesia, especially at the range of 1-2 g/dl after 6 and 24 hours of CS. Around 91% of GA and more than 50% of SA had middle changes in HB and HCT. These changes were significantly different between GA and SA. The two groups were simply similar according to greater changes including 2-3 g/dl in HB or 6-9 in HCT and contain a minor part of the patients. The present study indicated that bleeding and decreased HB and HCT occur significantly less in spinal anesthesia comparing to general anesthesia.

## Conclusion

Both spinal anesthesia and general anesthesia showed variations in hematological parameters as well as complications. Hence the choice of technique should be done considering present clinical factors as preferred by anesthesiologist.

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**How to cite this article:** Das RK, Seth M. A Comparison Study of Spinal Anesthesia with General Anesthesia in Cesarean Section. *Acad. Anesthesiol. Int.* 2019;4(2):30-32.

DOI: [dx.doi.org/10.21276/aan.2019.4.2.8](https://doi.org/10.21276/aan.2019.4.2.8)

**Source of Support:** Nil, **Conflict of Interest:** None declared.