

## “Evaluation of Side Effects of Spinal and General Anesthesia during Caesarean Section”

Dr. Md. Golam Shorwer<sup>1\*</sup>, Dr. Nahida Sultana<sup>2</sup>, Dr. Forida Yesmin<sup>3</sup>, Dr. Meher Nigar Sultana<sup>4</sup>

<sup>1</sup>Assistant professor, Department of Anesthesiology, Prime Medical College Hospital, Rangpur, Bangladesh

<sup>2</sup>Assistant professor, Department of Anesthesiology, Prime Medical College Hospital, Rangpur, Bangladesh

<sup>3</sup>Associate professor and Head, Department of Physiology and Biochemistry, Rangpur Dental College, Rangpur, Bangladesh

<sup>4</sup>Medical Officer, Rangpur Medical College Hospital, Rangpur, Bangladesh

DOI: [10.36347/sjams.2019.v07i09.030](https://doi.org/10.36347/sjams.2019.v07i09.030)

| Received: 29.08.2019 | Accepted: 05.09.2019 | Published: 29.09.2019

\*Corresponding author: Dr. Md. Golam Sorwer

### Abstract

### Original Research Article

**Introduction:** In caesarean section uses of anesthesia is a common practice. Sometimes general anesthesia is well enough for this purpose and in some cases spinal anesthesia becomes necessary in caesarean section for better compliance. Physicians have to have the clear ideas about the side effects of general as well as spinal anesthesia in treating the patients of caesarean section. **Aim of the study:** The aim of this study was to evaluate the side effects of spinal and general anesthesia during caesarean section. **Methods:** This comparative study was conducted in the Department of Anaesthesiology collaboratively with the Department of Gynecology & Obstetrics of Prime Medical College Hospital, Rangpur, Bangladesh during the period from January 2018 to December 2018. In total 60 randomly selected patients of caesarean section was the study population. The total study population was divided into two groups containing 30 participants in each. Blood samples of Group I and Group II patients were collected to analyze the differences in WBCs, RBCs, Hemoglobin concentration and platelets count. **Result:** In Group I (Spinal) the highest portion of patients suffered from Hypotension which was 53.33%. Then 50%, 43.33%, 36.67% and 46.67% suffered from pain, headache, vomiting and fever. On the other hand in Group II patients 33.33%, 30%, 23.33%, 20% and 6.67% suffered from Hypotension, pain, headache, vomiting and fever. So in our study we found all the ratios of side effects were higher in group I where spinal anesthesia was used. **Conclusion:** According to the findings of regarding side effects of spinals as well as general anesthesia in our study we found some superiority of general anesthesia over spinal anesthesia. During this study, we felled some necessity of a study regarding the efficacy of both the anesthetic agents to make a better choice between the agents.

**Keywords:** Spinal anesthesia, General anesthesia, Side effects, Hemoglobin, Caesarean section.

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## INTRODUCTION

Spinal anesthesia or spinal block is a form of neuraxial regional anesthesia involving the injection of a local anesthetic or opioid into the subarachnoid space, commonly through a fine needle, usually 9 cm long. It is a safe and effective procedure of anesthesia performed by the physicians. Spinal anesthesia can be used as an alternative to general anesthesia commonly used in surgeries involving the lower extremities and surgeries below the umbilicus. On the other hand, general anesthesia is a medically induced coma with loss of protective reflexes, resulting from the administration of one and/or more general anesthetic agents. It is performed to allow medical procedures that would otherwise be intolerably painful for the patient; or where the nature of the procedure itself precludes the

patient being awake. During last years, many narcotic substances have been added to local anesthetic compounds to improve the analgesic effects. Now a day there we have many anesthetic agents with fewer side effects. Regional nerve blocks used in deliveries include: a) lumbar epidural block and cauda equine epidural block, b) subarachnoid block (spinal) and c) podendal block. The number of cesarean deliveries is increasing day by day specially in developed world. Wide differences occur between countries, regions or even hospitals within the same region with similar socioeconomic profiles and patient characteristics [1]. It indicates that cesarean section is probably often used for non- medical purpose leading to an overall overuse of this surgical obstetric procedure. Indeed, it has been acknowledged that, elective primary and repeat CS have contributed heavily to the rise in CS [2]. In the US, for

instance, the overall CS rates increased by 14% from 1998 to 2001 as a result of a 13% increase in medically indicated primary CS and a 53% increase in the rate of elective primary CS[3]. As the rate of are increasing day by day the physicians paying more attention in the complaisance of the effectiveness of several anesthesia in CS. Although there are association of some side effects in recent period Spinal anesthesia and general anesthesia are two major choices of methods in CS. The ratio of using spinal and general anesthesia differs in several regions of the globe. In a study held at a university hospital in Turkey, only 44.5% of patients were preferentially submitted to regional anesthesia [4], as opposed to an 80% rate in the US<sup>5</sup>. To reduce pain for the patients in CS anesthesiologists use one or more method of anesthesia. There are times when these techniques may be used together [6]. The method is selected in CS Considering the considering the condition of mother. General anesthesia has been shown to be very safe although it's less commonly performed than epidural or spinal anesthetics for caesarean section [7]. The aim of this study was to evaluate the side effects of spinal and general anesthesia during caesarean section.

## OBJECTIVES

### a) General objective

- To evaluate the side effects of spinal and general anesthesia during caesarean section

### b) Specific Objectives

- To evaluate the clinical findings regarding spinal and general anesthesia during caesarean section

## METHODOLOGY & MATERIALS

This was a Comparative prospective study and was conducted in the Department of Anaesthesiology collaboratively with the Department of Gynecology & Obstetrics of Prime Medical College Hospital, Rangpur, Bangladesh during the period from January 2018 to December 2018. In total 60 randomly selected patients of caesarean section was the study population. The total study population was divided into two groups containing 30 participants in each. In Group I spinal anesthesia and in Group II general anesthesia was used. The proposal of this study was submitted and approved by the ethical committee of Prime Medical College Hospital, Rangpur. A written consent in native language was taken from all the participants before starting the intervention. Blood samples of participants were collected by vein puncture prior and after the operation, hemoglobin concentration (Hb), red blood cells (RBCs), white blood cells (WBCs) and platelets (Plts) count were measured using Sysmex Kx21 and data were recorded. Blood pressure (BP) and body temperature were measured using sphygmomanometer and

thermometer, respectively after the operation. Other data include age, type of anesthesia used, the assigned Anesthesiologist, number of previous caesarean section, presence of side effects after operation (pain, headache and vomiting) were collected by a pre-designed questionnaire and from patient's clinical records. All the tasks of several steps of the study were done by professional stuffs.

## RESULT

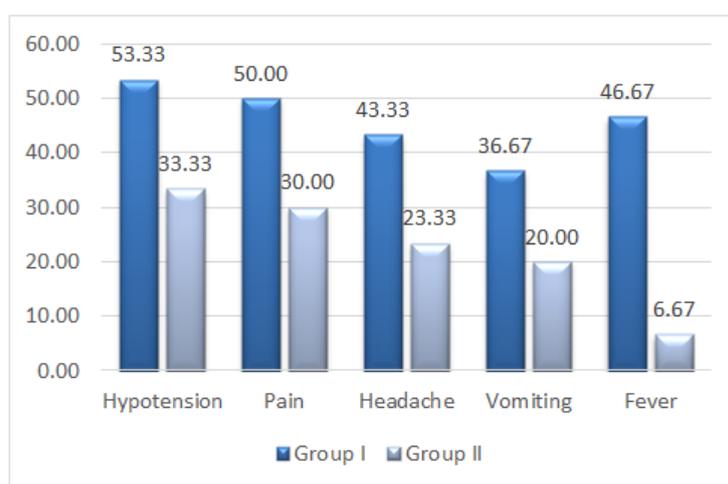
In total 60 randomly selected patients of caesarean section was the study population. The total study population was divided into two groups containing 30 participants in each. In Group I spinal anesthesia and in Group II general anesthesia were used. The mean age of participants of Group I was 29.5 years whereas in Group II was 30.5 years. The decision of applying spinal or general anesthesia was made by the assigned anesthesiologists. They decided with the patient's and/or guardian's concern. Mild to moderate side effects were found on patients with spinal anesthesia which include vomiting, headache, localized pain and hypotension. All the frequencies of several side effects in patients of both the groups were recorded. In this study we found not a single case of infection. Only one patient from Group II and one from Group II got the facilities of ICU for a couple of hours. Before operation in Group I patients TWBCs ( $\times 10^9/L$ ), RBCs ( $\times 10^{12}/L$ ), Hemoglobin (g/L), Platelets C. ( $\times 10^9/L$ ), Systolic BP (mmHg) and Diastolic BP (mmHg) were  $9.72 \pm 1.96$ ,  $3.81 \pm 0.68$ ,  $12.05 \pm 2.13$ ,  $189.32 \pm 41.17$ ,  $124.91 \pm 13.19$  and  $82.17 \pm 4.75$  respectively whereas in Group II patients that were  $9.69 \pm 2.14$ ,  $3.87 \pm 0.74$ ,  $12.27 \pm 2.28$ ,  $190.17 \pm 39.83$ ,  $123.71 \pm 14.63$  and  $81.91 \pm 4.38$  respectively. Among all these in platelets count there found co-relation between the groups. There the p value was 0.047. On the other hand, in case of after operation in Group I patients TWBCs ( $\times 10^9/L$ ), RBCs ( $\times 10^{12}/L$ ), Hemoglobin (g/L), Platelets C. ( $\times 10^9/L$ ), Systolic BP (mmHg) and Diastolic BP (mmHg) were  $11.15 \pm 2.27$ ,  $3.69 \pm 0.251$ ,  $10.48 \pm 1.72$ ,  $181.27 \pm 38.45$ ,  $116.28 \pm 12.71$  and  $77.15 \pm 4.13$  respectively whereas in Group II patients that were  $11.64 \pm 2.77$ ,  $3.51 \pm 0.61$ ,  $10.57 \pm 1.49$ ,  $183.47 \pm 39.16$ ,  $117.47 \pm 13.08$  and  $78.06 \pm 3.81$  respectively. Here in case of TWBCs ( $\times 10^9/L$ ) and Systolic BP (mmHg) we found co-relation between the groups where the p values were 0.036 and 0.047 respectively. In Group I (Spinal) the highest portion of patients suffered from Hypotension which was 53.33%. Then 50%, 43.33%, 36.67% and 46.67% suffered from pain, headache, vomiting and fever. On the other hand in Group II patients 33.33%, 30%, 23.33%, 20% and 6.67% suffered from Hypotension, pain, headache, vomiting and fever. So in our study we found all the ratios of side effects were higher in group I where spinal anesthesia was used.

**Table-I: Physiological condition of participants before operation (N=60)**

Variables	Group I	Group II	P value
TWBCs( $\times 10^9/L$ )	9.72 $\pm$ 1.96	9.69 $\pm$ 2.14	0.674
RBCs( $\times 10^{12}/L$ )	3.81 $\pm$ 0.68	3.87 $\pm$ 0.74	0.571
Hemoglobin(g/L)	12.05 $\pm$ 2.13	12.27 $\pm$ 2.28	0.623
Platelets C.( $\times 10^9/L$ )	189.32 $\pm$ 41.17	190.17 $\pm$ 39.83	0.047 <sup>Sig</sup>
Systolic BP (mmHg)	124.91 $\pm$ 13.19	123.71 $\pm$ 14.63	0.611
Diastolic BP(mmHg)	82.17 $\pm$ 4.75	81.91 $\pm$ 4.38	0.713

**Table-II: Physiological condition of participants before operation (N=60)**

Variables	Group I	Group II	P value
TWBCs( $\times 10^9/L$ )	11.15 $\pm$ 2.27	11.64 $\pm$ 2.77	0.036 <sup>Sig</sup>
RBCs( $\times 10^{12}/L$ )	3.69 $\pm$ 0.251	3.51 $\pm$ 0.61	0.571
Hemoglobin(g/L)	10.48 $\pm$ 1.72	10.57 $\pm$ 1.49	0.813
Platelets C.( $\times 10^9/L$ )	181.27 $\pm$ 38.45	183.47 $\pm$ 39.16	0.573
Systolic BP (mmHg)	116.28 $\pm$ 12.71	117.47 $\pm$ 13.08	0.047 <sup>Sig</sup>
Diastolic BP(mmHg)	77.15 $\pm$ 4.13	78.06 $\pm$ 3.81	0.574

**Fig-I: Side effects in both groups of participants (N=60)**

## DISCUSSION

In our study all the decision of applying the anesthetic agents were made by professional Anesthesiologists. The schedules were maintained by professional nurses. As it was known to us, responsibility for providing proper care in the field of pain management after surgery depends heavily on the nurse [8]. It is established that, effective pain management ensures less complications in caesarean section. In a study they claimed, effective pain relief reduces the risk of further complications such as nausea and vomiting, anxiety, thromboembolic processes or an increase in blood pressure [9]. In our study, pain was associated in 50% of Group I and 30% of Group II participants. The major portion of patients with caesarean section who had their first issue was subjected to general anesthesia while spinal anesthesia was increased after first caesarean section as well as starts to decrease regularly, this might be due to that on first caesarean the patient's consider spinal anesthesia might affects their movement or may cause of paralysis. Only two participants with general anesthesia have fever while 46.67% of general anesthesia participants

have fever, this might be due to unclean caesarean rather than due to the mode of administration of anesthesia. There was not a single case of infection in both the groups of our study. All of the spinal needles, catheters, local anesthetics, intravenous drips, syringe, tubing and fluids were sterile and used as for single use only. The anesthetist uses a sterile technique to insert the spinal. However, it is not possible to totally eliminate the risk of infection at the injection site or around the spinal cord (causing meningitis or an abscess) [10]. We know that, a prolonged drop in maternal blood pressure has the potential to reduce blood flow to the baby. During the spinal anesthetic the blood pressure is monitored carefully by the anesthetist and treated readily to prevent potential problems for the baby. In our study decrease in blood pressure after operation was observed in some cases in both the Group I as well as Group II, although there was no remarkable difference between the mean of systolic and diastolic blood pressure for both groups. Obviously in our study we found significant co-relation in systolic Blood Pressure in both the groups groups where the p values were 0.036. Low back pain is common after spinal injection, but is expected to resolve within 2 weeks

[11]. In this study such pain was found in both the groups. A specific type of headache, called a post spinal headache, usually occurred after spinal injection. It may be mild to severe and usually resolves spontaneously within 1 to 3 weeks [12]. In our study, headache was found in both the Group I and Group II, but was increased in Group I and it was 43.33%. This result indicates that, patients receiving general anesthesia are much headache free than the patients receiving spinal anesthesia. It is also important to recognize that there are many other reasons of headache that are more common. It is also possible to experience temporary deafness following spinal anesthetic [13]. In some patients in this study, they had it. White blood count (WBCs) was noticeably increased among participants with general anesthesia. This might be due to the general side effects of general anesthesia due to its direct introduction to the blood. Slight increases in WBCs count was found in both the groups, several studies on the effects of different anesthetic agents on WBCs count stated that, some anesthetic agents increase the WBCs count [14]. In our study after operation the mean TWBCs ( $\times 10^9/L$ ) were  $11.15 \pm 2.27$  and  $11.64 \pm 2.77$  in Group I and Group II respectively. We did not find any significant co-relation between both the groups in RBCs count. Red blood cells (RBCs) count was decreased after caesarean section; this result is similar to the result of Ismail *et al.* [15]. The remarkable finding of our study is, we found less frequencies of side effects in group II where general anesthesia was used.

### Limitations of the study

This was a single centered study with a small sized sample. So the findings of this study may not reflect the exact scenario of the whole country.

### CONCLUSION AND RECOMMENDATIONS

According to the findings of regarding side effects of spinal as well as general anesthesia in our study we found some superiority of general anesthesia over spinal anesthesia. During this study, we felt some necessity of a study regarding the efficacy of both the anesthetic agents to make a better choice between the agents. To get more specific findings we would like recommend for conducting more studies like this in several places with some big size samples.

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