



## SIDE EFFECTS OF GENERAL VERSUS SPINAL ANESTHESIA DURING CAESAREAN SECTION AMONG CENTRAL INDIAN POPULATION – A COMPARATIVE STUDY

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### ABSTRACT

**Aim :** To compare the side effects of general versus spinal anesthesia during caesarean section.

**Materials and methods:** The present study was made among 40 randomly selected participants of central Indian population. General anesthesia was given to 20 participants and are referred as group A while 20 participants were treated with spinal anesthesia referred as group B. Pre and post operational blood samples were collected to observe the differences in blood cells, platelets count and hemoglobin concentration. Measurements of blood pressure were also taken, after caesarean section. Body temperature has also been recorded post operatively. Participants were interviewed with direct questionnaire to note other parameters like local pain, headache etc.

**Observation & Results:** Most of the participants fall in first or second C-section. 15/20 (75%) of patient's has chosen general anesthesia by themselves while among 18/20 (90%) of participants it was decided by the doctor for spinal anesthesia. It was observed that with spinal anesthesia local pain and headache were more remarkable in comparison with general anesthesia while infection, fever, vomiting were rare with both procedures. Blood samples have presented marked differences in the parameters. Although there is not much variability in the blood pressure values observed however slight hypotension has been observed among some patients.

**Conclusion:** As disparities were observed in the parameters tested for both general and spinal anesthesia, it is concluded from the present study that patient's psychological behavior should be taken into consideration in making a choice for types of anesthesia along with their medical condition.

**KEYWORDS :** Spinal, Epidural / General Anesthesia, Cesarean section

### INTRODUCTION:

Anesthetics are any agent that causes a local or general loss of sensation, including pain that can be achieved by using general, spinal and an epidural anesthetic which acts by suppressing responses to sensory stimulus. Sometimes we use them in combination<sup>1</sup>. Among the most developed countries there is huge increase in number of caesarean sections deliveries. For example in USA the comprehensive increase of C-section is about 14% during the period of 1998-2001 which has led to a medical increase of primary C-section of about 13% and an elective primary C-section to about 53%<sup>2</sup>. Considerable differences are seen among various countries, provinces, even within hospitals of the same locality having analogous patient characteristics and socioeconomic status<sup>3</sup>.

There is huge difference related to the selection & preference for the choice of anesthesia. Though Regional anesthesia is the first choice in majority of the countries which is controversial still. An university hospital in turkey has conducted a study and noticed that the patients opted for regional anesthesia preferentially were only 44.5%<sup>4</sup> while in US 80% of patients has opposed for regional anesthesia<sup>5</sup>.

Cesarean sections might use the complete obstetric surgical intervention probably done for non medical reasons. Infact the contribution from the repeat C- section as well as the elective primary has led to enormous rise in the cesarean sections<sup>6</sup>. More attention has been paid off to the outcomes of the C- section because of its increased rates globally. General anesthesia & spinal anesthesia/epidural anesthesia are the technique of choice for C- section despite of having their own pros and cons and General anesthesia is usually injected into the mother and the gases breathe by the mother by using a combination of drugs in order to make her unconscious in a precise controlled way.

General anesthesia is often considered to be safe despite of its little usage in C-section as compared with spinal or epidural or anesthetics<sup>7</sup>. Spinal anesthesia is more commonly opted for a C- section as compared to epidural because it blocks the nerves rapidly and more totally<sup>8</sup>. Spinal anesthesia generally used as a single local anesthetics injection that lasts for 2 to 3 hours. The present study was taken with an aim to compare side effects of general versus spinal anesthesia during caesarean section among Central Indian population

### MATERIAL AND METHODS:

The present study was carried out in Chirayu Medical College and hospital, Bhopal for a period of six months, which includes a total of 40 participants. The participants were randomly selected for the study

irrespective of age, nationality and the clinical condition. They were divided into two groups (A & B) of 20 each subjected to general anesthesia and spinal anesthesia respectively.

Pre and post operative blood samples were collected by puncturing the vein, parameters like RBC count, WBC count, Platelets count & hemoglobin concentration were recorded by using Sysmex KX-21 automated hematology analyzer. Postoperatively few parameters like body temperature and blood pressure were checked using respective equipments such as thermometer and the sphygmomanometer. Other Data related to the age, no: of previous caesarian sections, mode of anesthesia, decision made by whom for the choice of anesthesia, presence of other side effects like local pain, head ache, vomiting etc were perceived either by direct questionnaire or from the patients clinical record

The proposal of the present study was submitted to the institutional ethical committee of Chirayu Medical College and hospital, Bhopal. Ethical consent forms were given to the participants of current study and the duly signed forms were collected taking their willingness to participate in this study.

### RESULTS:

Evaluation of the 40 participants who opted for C- section was done in the present study. Twenty participants (Group A) were subjected to general anesthesia while other twenty (Group B) were treated by giving spinal anesthesia. Most of the participants on their primary caesarean sections has decided themselves for the general anesthetic C-sections (15/20), in contrast bulk of C-sections with spinal anesthesia (18/20) has been decided by the doctors. No infection has been noted in all participants post operatively however participants with spinal anesthesia has presented mild side effects like local pain, headache, vomiting and hypotension as depicted in Figure 1. 2 out of 20 participants had severe complications with the spinal anesthesia and has been shifted to ICU while 1/20 participants with general anesthesia presented with complications. Hypotension is major cause for complication in almost all the cases. It was also observed that there was marked increase in mean WBCs count in participants with general anesthesia (Group A) in comparison with the spinal anesthetic participants (Group B). In contrary the mean RBCs count, the platelet count and the hemoglobin concentration has been decreased with both types but a remarkable decrease has been noted in Group A participants as shown in Table-1. No major difference was observed in the blood pressure values of systolic and the diastolic in both Group A and Group B. Remarkable correlation has been noted among preoperative mean of platelets count and the TWBC's mean postoperatively.

TABLE - 1

PARAMETER	PRE OPERATIVE (mean ± SD)		P value	POST OPERATIVE (mean ± SD)		P value
	GENERAL ANESTHESIA (Group-A)	SPINAL ANESTHESIA (Group-B)		GENERAL ANESTHESIA (Group-A)	SPINAL ANESTHESIA (Group-B)	
TWBCs ( $\times 10^9/L$ )	9.68 ± 2.414	9.78 ± 2.457	0.65	11.676 ± 2.91	10.29 ± 2.464	0.010*
RBCs ( $\times 10^{12}/L$ )	4.02 ± 0.314	4.1 ± 0.335	0.494	3.46 ± 0.418	3.86 ± 0.306	
Platelets count ( $\times 10^9/L$ )	206.08 ± 80.235	185.4 ± 40.234	0.032*	192.22 ± 58.55	174.8 ± 46.377	
Hemoglobin (g/L)	12.33 ± 3.477	11.35 ± 1.792	0.868	10.59 ± 1.57	10.72 ± 1.501	
Systolic blood pressure in mmHg	Not Done	Not Done	Not Done	110.88 ± 13.702	110.92 ± 20.093	
Diastolic blood pressure in mmHg	Not Done	Not Done	Not Done	68.18 ± 10.701	65.6 ± 13.048	

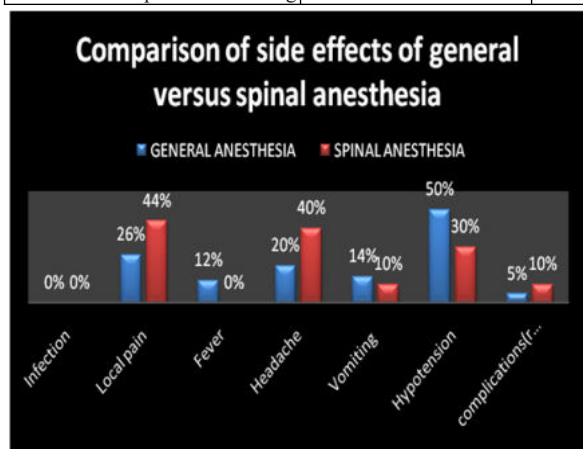


FIGURE 1

**DISCUSSION:**

It is absolutely normal to sense the pressure and heave at the time of a caesarean section. Most of the Patient's themselves has decided for general anesthesia. Anesthetist may not possibly always go for spinal which also has raised the need to opt for general anesthesia<sup>9</sup>. Most of the patients believe that the spinal anesthesia can affect their movement of the lower limbs and may even result in the paralysis. This belief has remarkably reduced the preference of spinal anesthesia as a choice for themselves. With spinal injection Low back pain is more commonly experienced which is expected to be sorted out in a span of 2 weeks<sup>10</sup>. However in the present study, pain was observed in both A & B group participants.

Mild fever has been noticed in Group A participants, while Group B participants are with no fever. Spinal needles, Catheters, IV drips Syringes, local anesthetics and other tubing used for the anesthetic procedures during the C-section are for only single usage and were completely sterile hence there might be little or no chance of infection. Despite of the Sterile techniques were usually used by the anesthetist there is no complete chance of eliminating the risk of infection near the site of injection or in and around the spinal cord leading to medical emergencies or complications such as abscess or meningitis<sup>11</sup>.

Mean Total white blood cell count of the present study was increased markedly among Group A participants indicating the usual side effects of the general anesthesia as introduced into the blood directly. Many studies have been done on different anesthetic effects on WBC's and said that few of the anesthetic agents can abruptly increase the WBC count<sup>12,13</sup> which is in correlation with the current study.

Similarly after the C-section there is an affect of anesthetic agents that resulted in decrease count of RBC. This result is similar in comparison with the study done by Ismail et al<sup>12</sup> in their study. Remarkable reduction in the RBC count has been noted in Group A participants probably because of direct introduction of general anesthetic agents in to the blood stream directly.

Post spinal headache which is of more specific type is commonly seen with spinal anesthesia which usually settles down immediately within one to three weeks<sup>14</sup>. In the present study headache has been observed in both the group participants but with a remarkable increase in headache was noted in among group B participants receiving spinal anesthesia. Following spinal anesthesia the participants may also experience temporary deafness<sup>15</sup> however it is noted in the present study.

At the time of spinal anesthetic procedures the maternal blood pressures were carefully watched by an anesthetist to prevent untoward problems for the baby as the maternal blood pressure has a potential to lessen the blood supply to the baby if there is fall in the maternal blood pressure for a longer period. Hypotension has been noticed among both the group of participants with general and spinal anesthesia respectively, however there was no marked difference in their systolic and the diastolic blood pressures among both the groups.

**CONCLUSION:**

Patients clinical condition should be taken into consideration for a doctor to decide the type of anesthesia as general anesthesia has its effect on the hematological parameters like increase in the WBCs count, low hemoglobin concentrations, decrease in RBC count and platelets counts. In contrast though spinal anesthesia is thought to be safer it has mild side effects like local pain, headache and vomiting e.t.c., Hence it is highly recommended that the preference for choice of anesthesia should purely rely on the patient's medical condition along with the psychological behavioural.

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