

# THE EFFECT OF ANAESTHESIA MODUS ON AMOUNT OF BLOOD LOSS IN CESAREAN SECTIONS

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## ABSTRACT

*Introduction:* A cesarean section is the delivery of a baby through a incision in the mother's abdomen and the uterus. It is the most common major surgery that women undergo. In the UK about 1:4 pregnant women give birth by c/section every year.

*Objective:* To compare the effect of spinal and general anaesthesia on the amount of blood loss during cesarean section. It is a cross – sectional study to be carried out at Shalamar Hospital. It was conducted in one year's time i.e. from 1<sup>st</sup> March 2010 to 28<sup>th</sup> February 2011.

*Methodology:* All the patients with low risk of bleeding were enrolled to the trial. The choice of anaesthesia was the patient's choice after counselling by the anaesthesiologist. The total number of patients enrolled to the trial were 1308 out of which 972 patients received spinal anaesthesia and 336 patients were given general anaesthesia. The Demographic data along with preoperative haemoglobin and haematocrite was recorded on the proforma designed for the purpose.

*Result:* The demographic data including age and gravidity was not statistically different in both the groups similarly the preoperative haemoglobin and haematocrite was also insignificantly different in both the groups. The mean amount of blood loss is 357 ml in the spinal group and 501 ml in the patients who received general anaesthesia, this difference is statistically significant. The postoperative haemoglobin and haematocrite is also significantly reduced in the patients who received general anaesthesia. The rate of transfusion is 14.6% (n = 49) in general anaesthesia group and 3.2% (n = 31) in the spinal anaesthesia group and this difference is also statistically significant.

*Conclusion:* The study proves that spinal anaesthesia is a better choice of anesthesia as it reduces the amount of blood loss and requirement of the post-operative blood transfusion.

*Keywords:* Cesarean section, spinal anesthesia, blood loss, hemoglobin.

## INTRODUCTION

Cesarean section is the delivery of a baby through a incision in the mother's abdomen and the uterus. It is the most common major surgery that women undergoes (Anorlu et al 2008). In the UK about 1:4 pregnant women give Birth by c/section every year (Birth choice UK 2008).

The incidence of c-section varies from place to place. The WHO officially withdrew its previous recommendation of a 15% c-section rates in June 2010. Their official statement read, "There is no empirical evidence for an optimum percentage. What matters most is that all women who need cesarean section receive them."

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There are different modes of anaesthesia available for doing c/section i.e. general and regional, including spinal and epidural. It is noticed that general anaesthesia is liked by the patients because of the fear of being awake during the surgery, while spinal anaesthesia is preferred by the anaesthesio-

logists because of its safety towards the patients and the baby.<sup>1</sup> The Afolabi et al did a Cochrane review for 16 studies including 1586 women<sup>6</sup> and found that when compared to general anaesthesia, women having spinal or epidural had a lower estimated blood loss but recommended further studies to show the superiority of regional anaesthesia over general in terms of major maternal or neonatal outcomes.

We have planned this study to testify the perception of the superiority of the spinal anaesthesia for cesarean section.

## METHODOLOGY

It was cross sectional study conducted in a year's time i.e. from 1<sup>st</sup> March 2010 to 28<sup>th</sup> February 2011 in the department of OBGYN of the Shalamar hospital which is a tertiary care hospital in Lahore, Pakistan. We report on 1308 patients having undergone both the elective and emergency c/section out of which 972 patients i.e. 74.3% received spinal anaesthesia and 336 i.e. 25.7% received general anaesthesia.

All the patients with low risk of bleeding were enrolled to the trial i.e. the patients with placenta praevia were excluded. The choice of anaesthesia was the patient's choice after counselling by the anaesthesiologists. After enrollment to the trial the demographic and the obstetrical data was entered in a specially designed proforma. The patients were divided in two groups according to the type of anaesthesia given to them, group I included the patients who received spinal anesthesia and group II was designated to the patients who got general anaesthesia. The preoperative haemoglobin and haematocrite was recorded and the amount of blood loss is calculated and then the postoperative haemoglobin and haematocrite was recorded on the second post-operative day.

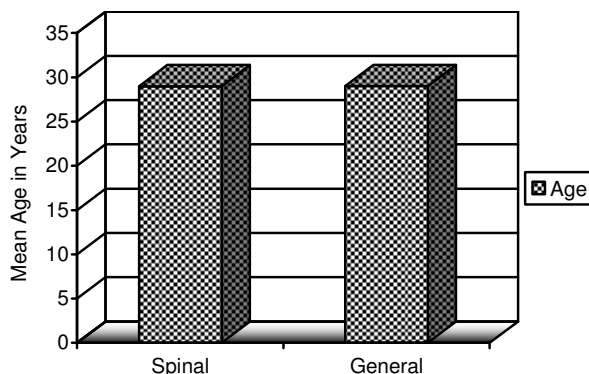
The primary outcome was the estimated blood loss, difference in the preoperative and postoperative haemoglobin and haematocrite and need of blood transfusion. The secondary outcome was the patient's satisfaction.

The data was calculated and then entered in SPSS version 19 and was analyzed statistically, 't' test was applied. The significance level was at 0.05 or less margin of error.

**RESULT**

The demographic data including the age and gravidity was not significantly different in 2 groups. The mean age is 29 years with standard deviation of 4.082 in group I (spinal) and is 28.98 years standard deviation of 4.023. The difference is statistically insignificant (P-value = 0.005 >) as shown below.

As far as the gravidity is concerned 21.3% (n = 207) of the patients were primigravida in group I (spinal) in comparison to 19.3% (n = 65) in group II (general) and the difference is statistically insignificant. Similarly 76% (n = 740) of the patients were multigravida i.e. gravidas two to five, in group I (spinal in comparison to 79% (n = 266) in group II (general) and this difference is also found to be statistically insignificant. As the table 1 shows the difference in the number of the grand multigravida (gravidas six and above) is also not statistically found sig-



**Graph 1:**

nificant (P-value = 0.628) hence the distribution of the patients with regard of gravidity is almost the same in both the groups as shown in Table 1.

The number of patients who had elective c/section were 580 in spinal anesthesia group (49.7%) in comparison to 199 (59.2%) in general anaesthesia group similarly patients who had emergency c/section is 392 (40.3%) and 137 (40.8%) in patients having spinal and general anesthesia respectively. This difference is also statistically significant (P-value = 0.886) as shown in the graph below.

The difference of mean preoperative haemoglobin and haematocrite is also statistically insignificant (P-value = 0.057) as shown in table 2.

However the postoperative haemoglobin is 10.1 gm% in group I (spinal) and 9.9 gm% in group II (general) this difference is statistically very significant (P-value = 0.005 <) similarly the difference in the postoperative haematocrite (HCT) is also found statistically significant (P-value = 0.05 <) as shown in table 2.

The mean of the estimated amount of blood loss is 357 ml in group I (spinal with standard deviation of 110.93 in comparison to 501 cc in group II (general) with standard deviation of 204, this difference is found to be statistically significant (P-value = 0.005) as shown in table 2 below.

The 14.6% (n = 49) patients in general anaesthesia group received transfusion while 3.2% and (n = 31) patients who were given spinal anaesthesia received blood transfusion and this difference was found to be statistically very significant (P-value 0.00) as shown in table 3).

**Table 1:** Distribution of cases in two groups according to the gravidity of the patients.

Gravidity	Spinal		General		Total	
	n	Percentage	n	Percentage	n	Percentage
Primigravidas	207	21.3	65	19.3	272	20.8
Multigravida	740	76	266	79.1	1006	77
Grand Multigravida	25	2.5	5	1.5	30	2.3
Total	972	100	336	100	1308	100

The rate of patient satisfaction is also the same in both the groups. The patients were interviewed on the second post-operative day and all the patients were satisfied with their anaesthesia.

**DISCUSSION**

The demographic data i.e. age and gravidity is not statistically different in both the groups. We experience that although the preoperative haemoglobin and haematocrate did not significantly different in our groups the post-operative haemoglobin and haematocrate is significantly lower in the patients who received general anaesthesia and the more number of patients required the blood transfusion and there is greater amount of blood loss in the group of patients receiving general anaesthesia. The same results were found by Liberis et al in their study of 161 patients in the department of obstetrics and gynaecology,<sup>3</sup> and by the Lertakyamanee et al in the department of anaesthesiology and clinical epidemiology unit faculty of medicine, who did the study on 341 patients.<sup>4</sup>

While Ahmet Yalinkaya et al did the study on 200 patients and found no difference of blood loss in patients with low risk of bleeding. However the cases operated under general anaesthesia had more transfusion and they accepted that this may be because of low number of cases.<sup>2</sup>

Eunkim et al, did a retrospective study in Korea. They included 287 patients, out of which 152 patients received spinal anaesthesia and 135 were given general anaesthesia. They also concluded that the intra-operative blood loss in the patients receiving the spinal anaesthesia was significantly lower as compared to the other group.<sup>5</sup>

In **conclusion** the study showed that the amount of the blood loss is reduced with spinal anaesthesia and because of this the postoperative haemoglobin and haematocrate was also found to be better in these patients. In addition to that lesser number of patients required blood transfusion in the group of the patients receiving spinal anaesthesia. Therefore the study concludes that the spinal anaesthesia should be the preferred anasthesia in patients who are undergoing c/section until and unless indicated otherwise.

**Table 2:** Comparison of the preoperative and postoperative Hemoglobin (HB) and Haematocrate (HCT) and Estimated blood loss.

	Spinal		General	
	Mean	Std. Deviation	Mean	Std. Deviation
Preoperative Hb	10.4	0.73	10.5	0.75
Preoperative HCT	35.6	16.8	34.4	2.1
Postoperative Hb	10.1	0.498	9.9	0.544
Postoperative HCT	34.9	13.7	33.1	1.8
Estimated Blood Loss	357	110.93	501	204

**Table 3:** Distribution of Cases in two groups according to the need of blood transfusion.

Blood Transfusion	Spinal		General		Total	
	n	Percentage	n	Percentage	n	Percentage
Yes	31	3.2	49	14.6	80	6.1
No	941	96.8	287	85.4	1228	93.9
Total	972	100	336	100	1308	100

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