

A Retrospective Study Of The Outcome Of Cesarean Section For Women With Pre-Eclampsia Under Spinal Versus Epidural Anaesthesia In Hospital Of Northern India

Rajeev Kumar*, Varsha Chaudhary**, Mahendra Sharma***

* Assistant Professor, Department of Anesthesia, ** Associate Professor, Department of Community Medicine, *** Statistician cum lecturer, Rohilkhand Medical College & Hospital, Bareilly.

Abstracts: Back ground: Pre-eclampsia is a major cause of maternal and perinatal mortality worldwide. Women with pre-eclampsia have an increased rate of cesarean section consequent upon the high incidence of intrauterine growth restriction, fetal distress and prematurity. **Objective:** To compare the outcome of Cesarean section for pre-eclampsia using sub-arachnoid block and epidural anesthesia. **Methods:** The present retrospective study was carried out in one of the tertiary care hospital of Bareilly district from Jan.2011 to July 2013. Unit of study were all the women with preeclampsia who underwent caesarean section for delivery under spinal or epidural anaesthesia and their babies. chi square test and student t-test test were applied for statistical analysis. **Results:** There was no significant difference between two groups in overall maternal mortality (0.0% vs 2.4%, $p>0.05$), perinatal mortality (5% vs 7.1%, $p>0.05$), Apgar score less than 7 at 1 minute (25% vs 21%, $p,0.05$) and Apgar score less than 7 at 5 minute (5% vs 14.3%). **Conclusion:** no significant difference in the maternal and perinatal mortality outcome of cesarean delivery between women with preeclampsia who had epidural and those that had spinal anaesthesia. [Kumar R et al NJIRM 2014; 5(2) :71-74] **Key Words:** Cesarean section, spinal anaesthesia, epidural anaesthesia, pre-eclampsia, maternal/ perinatal mortality.

Author for correspondence: Dr. Rajeev Kumar, Assistant Professor, Department of Anaesthesia, Rohilkhand Medical College & Hospital, Bareilly. E-mail: mahichaudhary25@gmail.com, 9897694695

Introduction: Pre-eclampsia is a major cause of maternal and perinatal mortality worldwide. While the symptoms and complications of pre-eclampsia are well known and far-reaching, the exact etiology remains unknown.¹ It accounts for 5-10% of all pregnancies. Women with pre-eclampsia have an increased rate of cesarean section consequent upon the high incidence of intrauterine growth restriction, fetal distress and prematurity.² Cesarean section on the other hand increases the risk of cardiopulmonary morbidity associated with pre-eclampsia.³ This is due to the altered hemodynamics in women with pre-eclampsia.⁴

This risk is present with both spinal and epidural anesthesia. Epidural anaesthesia has been accepted as the preferred anaesthetic technique for caesarean delivery in severely preeclamptic patients among both an anaesthesiologist and obstetrician^{5,6} but physician in most developing countries are still restricted to either spinal or general anaesthesia. This is due to high cost and unavailability of epidural sets and scarcity of personnel with the requisite skills for epidural anesthesia.⁷ Spinal anaesthesia can be performed faster, has fewer complications, and is more cost effective for uncomplicated caesarean delivery.⁸ However, several studies have demonstrated the

safety of sub-arachnoid block (spinal), epidural and combined sub-arachnoid block-epidural anesthesia for Cesarean section in women with pre eclampsia.⁹⁻¹² The optimal anaesthetic method for Cesarean section for women with pre-eclampsia remains unsettled. This underscores the need for studies to compare the outcome of Cesarean section using sub-arachnoid block and epidural anaesthesia as this will help physicians practicing in developing countries in decision-making. This study compared the outcome of Cesarean section for pre-eclampsia using sub-arachnoid block and epidural anesthesia.

Material and Methods: The present retrospective study was carried out at one of the tertiary care hospital in Bareilly Uttar Pradesh, with the objective to compare the outcome of Cesarean section for pre-eclampsia using sub-arachnoid block and epidural anesthesia. Study period was from January 2011 to July 2013. Target population were the women with preeclampsia who underwent caesarean section for delivery. The semi-structured schedule for entering the details of mother and baby was prepared. Unit of study were all the women with preeclampsia who underwent caesarean section for delivery under spinal or epidural anaesthesia and their babies

with following exclusion criteria: Women with other medical disorders in pregnancy, caesarean section under general anaesthesia, multiple pregnancies, gestational age less than 32 weeks, and cases of failed sub-arachnoid block that were reverted to general anesthesia.

Pre eclampsia is defined as a multisystem disorder of unknown etiology characterized by development of hypertension to the extent of 140/90 mm Hg or more with proteinuria after the 20th week in a previously normotensive and non proteinuric women.¹³

Booked Case: Booked case is one who had taken atleast three antenatal visit at the study center.

Data collection : The records of all women who had Cesarean section for pre-eclampsia and their baby from January 2011 to July 2013 were retrieved. The necessary information was collected on semi structured schedule. The information collected include maternal age, parity, gestational age at delivery, booking status, indication for caesarean section, anaesthesia used, Apgar scores, maternal mortality and perinatal mortality .

Data analysis: The subjects were classified into two categories: Group A was patients that had spinal anaesthesia while group B comprised of patients that had epidural anaesthesia. After covering all the target population the data was coded and entered in SPSS version 10.0 statistical software. The data base so prepared was analysed and the results were transferred to predesigned classified tables prepared according to the aims and objectives of the study. Valid inference was drawn and the results were discussed with the available studies. The background characteristics and outcomes were compared between the two groups using chi square test and student t-test. Differences were considered significant if $P < 0.05$.

Results: A total of 72 cases of preeclampsia underwent cesarean section during the study period. Ten cases were excluded based on the exclusion criteria leaving 62 cases for the comparative analysis.

Type of anaesthesia: Twenty (32.26%) were epidural (group A) and forty two (67.74%) were spinal anaesthesia (group B).

Type of cesarean section : Five cases (25%) in group A were elective cases and 15 (75%) were emergencies. The corresponding figures in group B were 10 (23.8%) and 32 (76.2%) respectively.

Indication for cesarean section : The indications for cesarean section were preeclampsia with the following condition: foetal distress, previous cesarean section, oligohydroamnios, bad obstetric history and failed induction of labour. The distribution is shown in table 1.

Table 1: Indication for cesarean section in 62 women with pre-eclampsia

Indication	Group A No. (%)	Group B No. (%)	Total
Pre-eclampsia with foetal distress	4 (20.0 %)	19 (45.2%)	23 (37.1%)
Pre-eclampsia with failed induction of labour	7 (35.0 %)	8 (19.1 %)	15 (24.2%)
Pre-eclampsia with oligohydroamnios	3 (15.0 %)	7 (16.7%)	10 (16.1 %)
Pre-eclampsia with previous cesarean section	2 (10.0%)	7 (16.7%)	9 (14.5 %)
Pre-eclampsia with bad obstetric history	4 (20.0%)	1 (2.4 %)	5 (8.1 %)
Total	20 (100%)	42 (100%)	62 (100%)

Booking status: Fifteen (80%) in group A and 36 (85.7%) in group B were booked patients (table 2).

Age: The mean maternal age were 27±6.1 (range:20-45) years and 26±4.5 (range: 20-40) years for group A and B respectively (table 2).

Gestational age at delivery: The mean gestational age at delivery was 38±1.7 (range: 34-40) weeks for group A and 38±2.2 (range: 32-42) weeks for group B (table 2).

Parity: Twelve (60%) in group A were nulliparous. The corresponding figure in group B was 22 (52.4%) (Table2).

Table 2: Background Demographics

Characteristics	Epidural anaesthesia (N = 20)	Spinal anaesthesia (N = 42)	P value
Mean maternal age	27 ± 6.1	26 ± 4.5	>0.05
Mean gestational age at delivery	38 ± 1.7	38 ± 2.2	>0.05
Booked patients	15 (80%)	36 (85.7%)	>0.05
Nulliparity	12 (60%)	22 (52.4%)	>0.05

Apgar score < 7 at 1 minute: Five babies (25%) in group A and nine babies (21%) in group B had Apgar scores less than 7 at 1 minute.

Apgar score < 7 at 5 minute: One baby (5%) in group A and six babies (14.3%) in group B had Apgar scores less than 7 at 5 minute.

Table 3: Outcome of delivery

Outcome	Epidural anaesthesia (N = 20)	Spinal anaesthesia (N = 42)	P value
Apgar score <7 at 1 minute	5 (25%)	9 (21%)	>0.05
Apgar score <7 at 5 minute	1 (5%)	6 (14.3%)	>0.05
Perinatal mortality	1 (5%)	3 (7.1%)	>0.05
Maternal mortality	0 (0.0%)	1 (2.4%)	>0.05

Maternal mortality: No maternal death was recorded in group A and only one (2.4%) death was recorded in group B.

Perinatal mortality: One (5%) perinatal death was recorded in group A and three (7.1%) in group B.

Discussion: Pre-eclampsia is a major cause of maternal mortality and morbidity, and fetal loss worldwide, but particularly in the third world. Anesthetists may be required to assist with pain management in labor, to provide anesthesia for

Cesarean section and to assist in the Intensive Care Management of life-threatening complications which may arise from this condition.

In our study 67.7% of the study subjects receive spinal anaesthesia and the remaining (32.3%) receive epidural anaesthesia. In one of the multicentric prospective study conducted by Shusee V⁹ et al and in retrospective study by Obinna V¹⁴ et al this percentage of patients receiving spinal anaesthesia is much low as compare to our study (52.2% and 38.5% respectively). In present study the most common indication for cesarean section in preeclamptic patient was foetal distress (37.1%) followed by unfavourable cervix (24.2%) where as in one of the retrospective study conducted in developing country by Obinna V¹⁴ et al unfavourable cervix (74.0%) was the most common cause for preeclamptic women to undergo cesarean section. There was no significant difference in the background maternal characteristics. This is consonance with Shusee V et al study.

In our study apgar score less than 7 at 1 min in spinal anaesthesia was found to be 21% and apgar less than 7 at 5 min was 14.3%.Obinna V et al in their study found apgar score less than 7 at 1 min. more than our study (27%) and apgar score less than 7 at 5 min. slightly less (13.5%)than our study. Perinatal mortality was found to be more (7.1%) in our study under spinal anaesthesia as compare to Obinna V study (2.7%) where as maternal mortality was slightly more in Obinna V study (5.4%)as compare to our study (2.4%). Statistically no significant difference was found in outcome of Cesarean section in term of apgar score, perinatal mortality and maternal mortality for pre-eclampsia using sub-arachnoid block and epidural anesthesia.

The neonatal outcomes assessed by apgar score and the umbilical arterial blood gas analysis in Shusee V et al study was also similar in both groups. Similar to our study Chiu CL¹⁵ et al also observe no difference in maternal and neonatal outcome in their study.

Conclusion: The above study can be concluded as, there is no significant difference in the maternal and perinatal outcome in terms of apgar score,

perinatal mortality and maternal mortality of cesarean delivery between women with preeclampsia who had received epidural anaesthesia and those that had spinal anaesthesia .

References:

1. Hall GH, Noble WL, Lindow SW, Masson EA. Long-term sexual cohabitation offers no protection from hypertensive disease of pregnancy. *Human Reprod.*2001;16:349–52.
2. Capewell V, Natale R, Gratton R. Obstetric intervention rates and maternal and neonatal outcomes of women with gestational hypertension. *Am J Obstet Gynecol.* 2001;185:798–803.
3. Terrone DA, Isler CM, May WL, Magann EF, Norman PF, Martin JN Cardiopulmonary morbidity as a complication of severe preeclampsia HELLP syndrome. *J Perinatol.*2000 Mar; 20(2):78-81.
4. Tihtonen K, Koobi T, Yli-Hankala A, Huhtala H, Uotila J. Maternal hemodynamics in pre-eclampsia compared with normal pregnancy during caesarean delivery. *Brit J Obstet Gynaecol.* 2006;113:657–63.
5. Newsome LR, Bramwell RS, Curling PE. Severe preeclampsia: haemodynamic effects of lumbar epidural anaesthesia. *Anesth Analg* 1986; 65: 31-6.
6. Hypertensive disorder in pregnancy. In: Cunningham FG, Gant NF, Leveno KJ, eds. *Williams obstetrics*, 21st ed. New York: McGraw-Hill, 2001: 607-8.
7. Hart E, Coley S. The diagnosis and management of pre-eclampsia. *BJA CEPD Rev.* 2003;3:38–42.
8. Riley ET, Cohen SE, Macario A et al. Spinal versus epidural anaesthesia for caesarean section: a comparison of time efficiency, costs, charges and complications. *Anesth Analg* 1995; 80 709-12.
9. Visalyaputra S, Rodanant O, Somboonviboon W, Tantivitayatan K, Thienthong S, Saegchote W. Spinal versus epidural anaesthesia for caesarean section in severe pre-eclampsia: a prospective randomised multicentre study. *Anesth Analg.* 2005;101:862–8.
10. Manvor M, Ng KP, Chan YK. Retrospective review of spinal versus epidural anaesthesia for caesarean section pre-eclamptic patients. *Int J Obstet Anesth.*2003;12:23–7.
11. Stamer UM, Stuber F. Spinal and epidural anaesthesia for caesarean section in patients with pre-eclampsia. *Anesthesiol Intensivmed Notfallmed Schmerzther.*2007;42:200–7.
12. Karaman S, Akercan F, Terek MC. Epidural versus spinal anesthesia for caesarean section in pre-eclampsia patients. *Int J Gynecol Obstet.* 2005; 90:68–9.
13. Dutta DC. *Text book of obstetrics*, New central book agency (P)Ltd, Kolkata, India, 7th edition, 2011; p219.
14. ObinnaV. Ajuzieogu, Humphrey Azubuike Ezike, Adaobi Obianuju Amucheazi, Jamike Enwereji. A retrospective study of the outcome of cesarean section for women with severe pre-eclampsia in a third world setting. *Saudi J Anaesth.* 2011 ; 5: 15–18.
15. Chiu CL, Mansor M, Ng KP, Chan YK. Retrospective review of spinal versus epidural anaesthesia for cesarean section in preeclamptic patients. *Int J Obstet Anesth* 2003; 12:23-7.

Conflict of interest: None
Funding: None