MATERNAL AND FETAL OUTCOME IN ECLAMPSIA: CAESAREAN VS VAGINAL DELIVERY

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ABSTRACT: OBJECTIVE: To compare the results of vaginal delivery and caesarean section in the management of eclampsia in terms of maternal, fetal, morbidity and mortality. **STUDY DESIGN:** This is a comparative prospective study. **SETTING:** The study entitled "Maternal and Fetal Outcome in Eclampsia: Caesarean Vs Vaginal Delivery" was done in M.K.C.G. Medical College & Hospital, Berhampur. The study period extended from October 2010 to August 2012. **MATERIAL AND METHODS:** The 210 patients were studied by dividing them into two groups for comparative analysis. The first group consisted of patients in whom conservative obstetric management and delivery per vaginam was carried out and was called the "V.D. group" and the second group consisted of patients in whom lower segment caesarean section was carried out due to eclampsia and varied associated complications of eclampsia, unfavourable cervix, failed induction and was called the "C.S. group". **CONCLUSION:** Maternal and perinatal morbidity and mortality were low in patients undergoing caesarean delivery than in vaginal delivery group. Both maternal and perinatal outcome can be improved by taking an early decision for caesarean section when on admission cervix is unfavourable or delivery is not anticipated within 6 hours.

KEYWORDS: Eclampsia, Vaginal Delivery, Caesarean Section.

INTRODUCTION: Motherhood is long cherished desire of every woman, but enormous precious maternal lives are lost in the process. Improving maternal health is one of the eight Millennium Development goals adopted by the international community at the United Nations millennium summit in year 2000 and the target is to reduce MMR by 75% from 1990 to 2015. The MMR in developing countries is 450 maternal deaths per 1,00,000 live births vs 9 per 1,00,000 in developed countries¹.

The word "ECLAMPSIA" is derived from the Greek term "ECLAMPION" used by Hippocrates. He described it as "**fever of sudden onset**". The word "**Eclampsia**" means "Flash or shining forth" and emphasizes the dramatic and frightening onset of convulsions in a pregnant or puerperal woman. It is an unpredictable, multisystem, life threatening emergency disorder and is unique to human pregnancy.^{2,3} It is defined as the occurrence of generalised convulsions and or coma associated with preeclampsia during pregnancy, labour or within seven days of delivery and not caused by epilepsy or other convulsive disorders.

The incidence of eclampsia has often been viewed as an index of civilization in a country. The hospital incidence in India ranges from 1 in 500 to 1 in 30. In the US the incidence of eclampsia is about 1 in 3250 pregnancies ⁴ while in Europe eclampsia complicates approximately 1 in 2000 deliveries ⁵. The incidence of eclampsia is declining in the developed world due to adequate antenatal care and proper management of preeclampsia. However in the developing countries, the

scourge of eclampsia continues and its incidence varies from 1 in 100 to 1 in 1700 in pregnancies^{6,7,8}.

Nulliparity, family history of preeclampsia, prior preeclampsia and eclampsia, poor outcome of previous pregnancies, pre-existing medical conditions like obesity, hypertension, renal diseases, gestational diabetes, SLE, teen pregnancies, patients older than 35 years, multifetal gestations, lower socioeconomic status⁹. Increased incidence in molar pregnancies and hydrops fetalis is due to associated hyperplacental. It is more in cold weather due to vasoconstriction. Obesity is a definite risk for developing pregnancy induced hypertension including eclampsia¹⁰.

Delivery of the fetus with elimination of placental and residual tissue is the only known definitive treatment. However there is controversy regarding the mode of delivery, whether vaginal or caesarean section. Some contend that, in eclampsia delivery should occur within 12 hours of onset of convulsions¹¹. Pritchard et al ¹² has advocated delivery of the patient as soon as convulsions are controlled and the patient is conscious and definitely within 48 hours of the initial convulsion.

According to RCOG's guidelines on "Management of severe preeclampsia / eclampsia" Magnesium sulphate should be given to women with severe preeclampsia once a delivery decision is made and in immediate postpartum period.¹³. As far as the baby is concerned perinatal mortality and morbidity is related to placental insufficiency and premature delivery.

Majority of maternal deaths occur in developing countries and most of these are preventable. Eclampsia is responsible for about 12% of all maternal global death and about 16 – 31 % of perinatal deaths ^{12,14,15,16}. In India, maternal morbidity and mortality from eclampsia is very high, it ranges from 8 – 14 %. The perinatal mortality ranges from 14.6 to 47.4% because eclampsia still kills.

Eclampsia is an obstetric enigma. Though it has almost been eradicated from the developed world, it continues to be a major cause of maternal and fetal mortality and morbidity in the developing countries. The incidence of eclampsia can be decreased with better antenatal care, early recognition and treatment of severe preeclampsia. But there are minority of patients in whom eclampsia may not be preventable as it comes like a "Bolt from the blue". For these unfortunate patients and also ignorant patients, we can offer service by reducing both maternal and perinatal mortality due to eclampsia rather than prevention of eclampsia. The real challenge of eclampsia has not been met. In spite of considerable progress made in the field of obstetrics, the incidence of eclampsia and its consequent complications have not been significantly decreased in our country. However the management of eclampsia still poses a fascinating challenge to the obstetrician, requiring the greatest skill, judgment and patience.¹⁷

Faced with this reality, a plan of management has to be evolved. Though the exact pathophysiology leading to the occurrence of fits is still not understood, one thing has been proved beyond doubt that the termination of pregnancy removes the basic cause of the disease.

Keeping this view, an attempt had been made in the present study to ascertain if caesarean section has any distinct advantage over vaginal delivery in lowering maternal and perinatal deaths.¹⁸ There is enormous scope for preventing death from eclampsia world wide – a suitable challenge for our generation.

AIMS AND OBJECTIVE:

- i) To evaluate the maternal and foetal outcome in eclampsia; depending on its mode of termination whether caesarean or vaginal.
- ii) To analyze the criteria used to decide the time and mode of termination of pregnancy.
- iii) To evaluate which cases are clear cut indication of caesarean without giving induction of labour a trial.

PATIENTS AND METHODS: The study entitled “**Maternal And Fetal Outcome in Eclampsia: Caesarean Vs Vaginal Delivery**” was done in M.K.C.G. Medical College & Hospital, Berhampur. The study period extended from October 2010 to August 2012.

The 210 patients were studied by dividing them into two groups for comparative analysis. The first group consisted of patients in whom conservative obstetric management and delivery per vaginam was carried out and was called the “V.D. group” and the second group consisted of patients in whom lower segment caesarean section was carried out due to eclampsia and varied associated complications of eclampsia, unfavourable cervix, failed induction and was called the “C.S. group”.

OBSERVATIONS: The incidence of Eclampsia in MKCG medical college in the study period. Out of 10125 deliveries, there were 210 cases of Eclampsia giving an incidence of 2.07%. (Table-I)

Out of 210 cases of eclampsia 115(54.76%) had vaginal delivery and 95(45.24%) underwent caesarean section. Outlet forceps were applied in 10(8.69%) patients and in 25(21.73 %) patients ventouse application was done. 15 (15.79%) cases in the C.S. group were operated for antepartum eclampsia per se with uncontrolled convulsion, 68 (71.58%) patients underwent caesarean section due to unfavourable cervix at the time of admission, 2 (2.10%) cases were operated due to HELLP syndrome and 10 (10.53%) cases underwent C.S. due to failed induction (Table-II).

83 (87.36%) cases in the C.S. group were operated within 2 hours of admission, whereas the remaining 12 (12.64%) cases were operated beyond 2 hours of admission. 46(40%) patients in the VD group delivered within 6 hrs of induction, 69(60%) patients delivered after 6 hrs (Table-III).

Out of 115 women in the V.D. group 79 had complications giving a maternal morbidity of 68.70%, out of 95 cases in the C.S. group, 16 had complications, giving a maternal morbidity of 16.84 % (Table-IV). Chi-square without Yates correction - Chi squared equals 56.465 with 1 degrees of freedom.

The two-tailed P value is less than 0.0001.

The association is considered to be extremely statistically significant

Complications like PPH, Abruptio, Hepatic Failure, Pulmonary oedema etc occur more frequently in VD group than in CS group (Table-V).

Out of 115 women in the V.D. group, 24 died, giving a Maternal Mortality Rate of 20.86%. Out of 95 women in the C.S. group, 7 women died, giving a Maternal Mortality Rate of 7.37% (Table-VI). Common causes of maternal mortality are pulmonary oedema, hepatic failure, cerebro vascular accident, renal failure, cardiac arrest, sepsis, HELLP syndrome.

Chi-square without Yates correction

Chi squared equals 7.536 with 1 degrees of freedom.

The two-tailed P value equals 0.0060

The association between rows (groups) and columns (outcomes) is considered to be very statistically significant.

PERINATAL OUTCOME: 72 (62.06%) babies out of total deliveries in the VD group were born alive and 74 (76.28%) babies in the C.S. group were live births. Stillbirths were 30 (25.86%) in the VD group and 8 (8.24%) in the C.S. group. Early neonatal deaths were seen in 10 (8.62%) babies out of total deliveries in the VD group and in 4 (4.12%) babies in the C.S. group. Corrected PMR in the VD group was 36.11% and 10.30% in the C.S. group (Table-VII).

$\chi^2=15.785$ DF=2 .The two-tailed P value equals 0.0004

By conventional criteria, this difference is considered to be extremely statistically significant 60 (83.33%) babies out of total live births in the VD group had Apgar score < 7 at 1', whereas it was seen in 37 (50%) babies in the C.S. group. 52 (72.22%) babies out of total live births in the VD group required NICU admission, whereas 26 (35.13%) babies in the C.S. group were admitted to NICU (Table-VIII).

For Apgar score < 7 at 1', Chi-square without Yates correction

Chi squared equals 18.185 with 1 degrees of freedom.

The two-tailed P value is less than 0.0001

The association between rows (groups) and columns (outcomes) is considered to be extremely statistically significant.

For NICU admission,

Chi-square without Yates correction .Chi squared equals 20.172 with 1 degrees of freedom.

The two-tailed P value is less than 0.0001

The association between rows (groups) and columns (outcomes) is considered to be extremely statistically significant

When caesarean was performed within 2 hours of admission in 83 cases, there were 2 (16.67%) perinatal deaths, but when it was done beyond 2 hrs in 12 cases there were 10 (83.33%) perinatal deaths (Table-IX).

Chi-square without Yates correction

Chi squared equals 62.212 with 1 degrees of freedom.

The two-tailed P value is less than 0.0001

The association is considered to be extremely statistically significant

When caesarean was performed within 2 hrs in 83 cases there were 18 (21.68%) NICU admissions, but it was done after 2 hrs in 12 cases there were 8(66.66%) NICU admissions. (Table-X)

Chi-square without Yates correction

Chi squared equals 10.671 with 1 degrees of freedom.

The two-tailed P value equals 0.0011

The association between rows (groups) and columns (outcomes) is considered to be very statistically significant.

No of deliveries in study period	No of cases of eclampsia	Percentage
10125	210	2.07%

Table 1: Incidence of Eclampsia

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Route of delivery		No. of cases		Percentage
Vaginal	NVD	80	115	54.76
	Forceps application	10		
	Ventouse application	25		
Caesarean section	Failed induction	10	95	45.23
	Unfavourable cervix	68		
	Uncontrolled convulsion	15		
	HELLP syndrome	02		

Table 2: Distribution of Eclampsia according to mode of Delivery and Indications of Caesarean Section

Time when LSCS was performed (hours)/ Induction delivery interval (hours)	CS		VD	
	No. of Cases	Percentage	No of cases	Percentage
0-2	83	87.36	00	00
2-6	12	12.63	46	40
6-12	00	00	51	44.35
12-18	00	00	14	12.17
18-24	00	00	03	2.60
>24	00	00	01	0.87

Table 3: Incidence of Caesarean Section according to the time when LSCS was performed after admission and Induction Delivery Interval

Mode of Delivery	Total No. of Cases	No. of Maternal Morbidity	Percentage of Maternal Morbidity
VD	115	79	68.70
CS	95	16	16.84
'P' Value	<0.0001		

Table 4: Maternal Morbidity

Complications	VD (n=79)		CS (n=16)	
	No. of Cases	Percentage	No. of Cases	Percentage
PPH	8	10.12	1	6.25
Abruptio placentae	8	10.12	1	6.25
DIC	1	1.27	0	0.00
Hepatic failure	6	7.60	1	6.25
Renal failure	4	5.06	1	6.25
Pulmonary oedema	16	20.25	5	31.25
Transient blindness	7	8.86	1	6.25

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Electrolyte imbalance	10	12.65	1	6.25
Retained placenta	6	7.60	0	0.00
Psychosis	4	5.06	1	6.25
Cerebral hemorrhage	2	2.53	1	6.25
Cerebral infarction	1	1.26	0	0.00
Cerebral oedema	6	7.60	1	6.25
HELLP Syndrome	0	0.00	2	12.50

Table 5: Maternal Complications

Mode of Delivery	Total No. of Cases	No. of Maternal Death	Maternal Mortality Rate
VD	115	24	20.86
CS	95	07	7.37
'P' Value	0.0060		

Table 6: Maternal Mortality

Perinatal Mortality	VD		CS	
	No. of Cases (n=116)	Percentage	No. of Cases (n=97)	Percentage
Live births	72	62.06	74	76.28
Still births	30	25.86	8	8.24
Early neonatal deaths	10	8.62	4	4.12
IUDS on admission	14	12.06	2	2.06
Corrected PMR	26/72*100	36.11	10/97*100	10.30
'P' Value	0.0004			

Table 7: Perinatal Mortality

Perinatal Outcome	VD		CS		P Value
	No. of Cases (n=72)	Percentage	No. of Cases (n=74)	Percentage	
Apgar score <7 at 1'	60	83.33	37	50.00	<0.0001
Need for NICU admission	52	72.22	26	35.13	<0.0001

Table 8: Perinatal Morbidity

Time period after admission (hours)	PNM	Percentage
Early 0-2	2	16.67
Late >2	10	83.33
'P' Value	<0.0001	

Table 9: Relation of PNM to CS Done in Early & Late period after admission

Time period after admission (Hrs.)	Total No. of Cases	NICU Admission	Percentage
Early 0-2	83	18	21.68
>2	12	8	66.66
'P' Value	0.0011		

Table 10: Incidence of NICU admission in relation to CS done in early & late period after admission

DISCUSSION: Eclampsia, a dreaded complication in pregnancy is still associated with a great deal of maternal and fetal loss. A couple of decades ago, the conventional treatment of eclampsia entailed a conservative approach with the use of sedative, tranquilizers, anticonvulsants and antihypertensives to be followed by induction or stimulation of labour after the fits are controlled. Caesarean section was considered to be an extremely risky procedure and reserved for highly selected cases¹⁶.

But, now in the 21st century, with advancements in the field of anesthesiology and availability of blood, caesarean section in eclampsia is no more risky and promises reassuring maternal and perinatal outcome raising the vital question, whether a deviation from the conservative approach is worthwhile. Both early control and follow up of lab parameters and immediate delivery by LSCS if necessary may lead to reduction of maternal morbidity and mortality and to improvement of perinatal result¹⁹. The main stay of management are integrated antenatal care, access to monitoring services, stabilization of maternal condition and delivery of baby in way to benefit both mother and Child. Antenatal care must provide easy access to monitoring services. The perinatal mortality rate for eclampsia in the series was relatively good for developing country, this may be due to early reason to LSCS.

CONCLUSION: "In antepartum eclampsia in women with unfavourable cervix on admission with expected fetal weight >1.5 kgs, an early decision for caesarean section either within 6 hours of admission or 12 hours of first fit whichever is earlier improves the fetomaternal outcome".

With advanced expert surgical and anaesthetic techniques in modern obstetrics, caesarean section is not unsafe as seen in previous years. Both maternal and perinatal outcome can be improved by taking an early decision for caesarean section when on admission cervix is unfavourable or delivery is not anticipated within 6 hours. In the severe antepartum eclamptic with a closed uneffaced cervix and unengaged presenting part, it might give better results if conservative treatment is supplemented by timely caesarean section instead of withholding it. As this study comprised mostly of young primigravidae, it was seen that most had unfavourable cervix and induction failure and moreover the duration of labour was more in comparison with multigravida patients. Therefore, from this study, caesarean section if done promptly leads to more favourable outcome than conservative obstetric management with vaginal delivery in eclampsia in primigravidae with unfavourable cervix on admission.

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