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The Study of Maternal Outcome in Severe Preeclampsia and Eclampsia in Abdominal and Vaginal Route of Delivery

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ABSTRACT
OBJECTIVES*: 1. To evaluate the maternal outcome in severe Preeclampsia and eclampsia, in abdominal and vaginal route of delivery*
2. To evaluate maternal outcome in elective caesarean section and emergency caesarean section.
STUDY DESIGN *The study was conducted for the duration of one year from 1/7/20 to 1/7/21. Patients admitted to OBG DEPT of Cheluvamba hospital, MMC & RI, Mysore with the diagnosis of severe pre-eclampsia and eclampsia, form the source of data.*
RESULTS *In this study 63.2% in severe pre-eclampsia, 50% in eclampsia group delivered vaginally.15.1% in severe preeclampsia and 25% in eclampsia group underwent elective LSCS. 21.7% in severe preeclampsia and 25% in eclampsia group underwent Emergency LSCS. In this study incidence of caesarean deliveries in severe pre-eclampsia is 36.8% and in eclampsia is 50%. In this study no maternal death was observed in elective LSCS group. Maternal death in vaginal delivery cases was 0.94% in severe preeclampsia and 4.76% in eclampsia group. In emergency LSCS cases maternal mortality was 1.4% in severe preeclampsia and 4.76% in eclampsia group.*
CONCLUSION *The result of the present study shows that labour induction should be considered strongly for eligible women with severe pre-eclampsia. Maternal outcomes are not worsened by induction of labour. Immediate caesarean delivery confers no benefit to patients with severe preeclampsia. Present study shows that in eclampsia group, maternal outcome is better in the caesarean deliveries than in the vaginal deliveries*
Keywords: *caesarean section, severe pre-eclampsia, maternal morbidity*

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I. Introduction

Hypertensive disorders complicate 5-10% of all pregnancies and together they are one member of the deadly triad along with haemorrhage and infection that contributes greatly to maternal morbidity and mortality. Of these disorders, the pre-eclampsia syndrome, either alone or superimposed on chronic hypertension, is the most dangerous. New onset hypertension during pregnancy termed gestational hypertension – is followed by signs and symptoms of pre-eclampsia almost half the time, and pre-eclampsia is identified in 3.9% of all pregnancies. [1] The World Health Organization (WHO) systematically reviews maternal mortality worldwide, and in developed countries, 16 percent of maternal deaths were reported to be due to hypertensive disorders. This proportion is greater than three other leading causes that include haemorrhage – 13%, abortion – 8% and sepsis – 2 %.[1] Pre-eclampsia is a multi-system disorder specific to pregnancy and puerperium which manifests by onset of hypertension and proteinuria after 20 weeks of gestation and resolves by 12 weeks post-partum. [2] Eclampsia (Greek word for lightning) is the onset of convulsion in a woman with pre-eclampsia that cannot be attributed to other causes. The seizures are generalized and may appear before, during or after labor.[1] Eclampsia is associated with high maternal mortality and morbidity. Eclampsia is more common in nulliparous women from low socioeconomic strata particularly teenage primigravida who receive inadequate or no antenatal care. The peak incidence is in the teenage pregnancy and early 20's. But there is also an increased prevalence in women older than 35 years.[3] Eclampsia is a major obstetric emergency that requires mobilization of efforts and adequate management to avoid catastrophic events. [3] Delivery is the ultimate cure for severe pre-eclampsia and eclampsia, because of worsening of maternal status. Proper obstetric care is one of the cornerstone of the management, undue delay in the delivery of the fetus and placenta may adversely affect maternal outcome. Hence, abdominal route of delivery when vaginal route is not imminent will help in improving the maternal

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outcome. Controversies still persist regarding early Caesarean section and conservative line of management. With early Caesarean section there is improved maternal outcome.[1] The present study is being done to evaluate the incidence of emergency and elective Caesarean section in severe pre-eclampsia and eclampsia and to evaluate the maternal outcome in abdominal and vaginal route of delivery.

II. Methodology

The study was conducted for the duration of one year from July 2020 to july 2021. Severe preeclamptic and eclamptic patients admitted in Cheluvamba Hospital, department of Obstetrics and Gynaecology, Mysore Medical College and Research Institute, Mysore for the source of data. Patient included in the study were admitted to the eclamptic labour room and relevant obstetric history and significant events associated were noted. From each patient or legal guardian informed or written consent was taken. Proper general physical examination, abdominal examination and pelvic examination were done and entered in the patient case sheet. Depending on the severity, cases were subjected to respective line of management of like: 1] Conservative management and vaginal delivery 2] Induction of labor 3] Elective Caesarean section and 4] Emergency Caesarean section if conservative management with vaginal delivery and failed induction.

Inclusion Criteria: 1. Cases with severe preeclampsia between 32 to 42 weeks of Gestation.
2. Ante partum and Intra partum eclampsia.

Exclusion Criteria: Patients with imminent delivery

Management Patient was managed with following: 1. General management 2. Antihypertensive management 3. Anticonvulsive management 4. Obstetric management

General Management Brief history taken, clinical examination done. IV line secured , Bladder catheterized , Blood and urine sent for investigation, blood – Hb%, blood grouping and Rh typing, Blood urea, Serum creatinine, blood uric acid, blood sugar, SGOT, SGPT, Platelet count, urine – protein, sugar, microscopy , Patient was monitored closely – conscious level, pulse, BP, input/output, respiratory rate, knee jerk, progress of labour .

Anticonvulsive therapy Pritchard regimen Give 4 g of magnesium sulfate as a 20% solution intravenously at a rate not to exceed 1 g/min

Follow promptly with 10 g of 50% magnesium sulfate solution, one half (5 g) injected deeply in the upper outer quadrant of each buttock through a 3-inch-long 20- gauge needle. (Addition of 1.0 mL of 2% lidocaine minimizes discomfort.) If convulsions persist after 15 min, give up to 2 g more intravenously as a 20% solution at a rate not to exceed 1 g/min. If the woman is large, up to 4 g may be given slowly, Every 4 hr thereafter, give 5 g of a 50% solution of magnesium sulfate injected deeply in the upper outer quadrant of alternate buttocks, but only after ensuring that:

1] The patellar reflex is present, 2] Respirations are not depressed, and 3] Urine output the previous 4 hr exceeded 100 mL It was continued upto 24 hr after delivery or 24 hr after last convulsion in postpartum cases, whichever was later.

Antihypertensive therapy 1] Injection Labetalol IV 20mg stat, followed by 40, 80, 160 mg depending up on the severity of the condition. 2]Oral labetalol 100/200mg BD 3] Oral nifedepine 20mg TID

Obstetric management Based on the factors such as parity, gestational age, cervical examination (Bishop score), cases were individualized and subjected to respective mode of management, on attending physicians / consultants preference:

1) patient with favourable cervix were managed with artificial rupture of membranes.
2) Patient with unfavourable cervix were induced with prostaglandins Inducing agents used were Dinoprostone - PGE2 – cerviprime gel
3) Elective Caesarean section once the patients were stabilized.
4) Emergency Caesarean section was done for obstetric indications

Primary outcomes was measured in terms 1) Maternal mortality 2) Maternal morbidity

STATISTICAL METHODS USED Data analysis was done using Epi data analysis software version V2.2.2.178(Odense Denmark) Continuous variables like age, gestational age , have been summarized as mean and standard deviation. Categorical variables like mode of delivery, maternal morbidity and mortality, Microsoft excel and stata 12 software were used

III. Results

This study was conducted for a period of one year, from **which 421 cases of severe pre-eclampsia and eclampsia were studied**. In that period, the number of deliveries accounted to a total of 12,986. Out of which number of vaginal deliveries were 9,508 and LSCS were 3,476.

Total number of patients in the study group (severe pre-eclampsia and eclampsia): 421
Total number of severe pre eclampsia cases: 337
Number of vaginal delivery among severe pre-eclampsia: 213
Number of Elective LSCS among severe pre-eclampsia: 51
Number of Emergency LSCS among severe pre-eclampsia: 73
Total number of eclampsia cases: 84
Number of vaginal delivery among eclampsia: 42
Number of Elective LSCS among eclampsia: 21
Number of Emergency LSCS among eclampsia: 21

Table 1: Gestational age distribution of the study subjects (N=421)

Gestational Age	Severe pre eclampsia		Eclampsia		Total	
	Number	%	Number	%	Number	%
32 to 36 weeks	95	(28.2)	44	(52.4)	139	(33.0)
36 to 40 weeks	220	(65.3)	35	(41.7)	255	(60.6)
40 weeks and above	22	(6.5)	5	(6.0)	27	(6.4)
Total	337	(100.0)	84	(100.0)	421	

65.3% of the patients in the severe pre-eclampsia group and 41.7% of the patients in eclampsia group were between 36-40 weeks and 28.2% of patients in severe pre-eclampsia and 52.4% of patients in eclampsia group were between 32-36 weeks

Table 2: Mode of delivery among the study subjects (N=421)

Mode of delivery	Severe pre eclampsia		Eclampsia		Total	
	Number	%	Number	%	Number	%
Normal Vaginal Delivery	213	(63.2)	42	(50.0)	255	(60.6)
Elective Caesarean Section	51	(15.1)	21	(25.0)	72	(17.1)
Emergency Caesarean Section	73	(21.7)	21	(25.0)	94	(22.3)
Total	337	(100.0)	84	(100.0)	421	

In the study, out of 421 patients 63.2% & 50% of patients delivered vaginally in severe pre-eclampsia and eclampsia respectively. 15.1% & 25% of patients delivered by elective LSCS in severe pre-eclampsia & eclampsia respectively. 21.7% & 25% of patients delivered by Emergency LSCS in severe pre-eclampsia and eclampsia respectively.

Table 3: Admission to delivery interval among the study (N=421)

Admission to delivery interval	Severe pre eclampsia		Eclampsia		Total	
	Number	%	Number	%	Number	%
<24 hours	76	(22.6)	63	(75.0)	97	(48.8)
>24 hours	261	(77.4)	21	(25.0)	324	(51.2)
Total	337	(100.0)	84	(100.0)	421	

In this study 77.4% patients in severe pre-eclampsia group and 25% patients in eclampsia group delivered 24 hours after admission

Table 4: Maternal deaths among the study group

Maternal deaths	Severe pre eclampsia		Eclampsia		Total	
	Number	%	Number	%	Number	%
Normal Vaginal Delivery	2	(0.94)	2	(4.76)	4	(2.85)
Emergency Caesarean Section	1	(1.40)	1	(4.76)	2	(3.08)
Total	3	(2.34)	3	(9.52)	6	

In the study, 0.94% of the patients in the severe pre-eclampsia group and 4.76% of the patients in eclampsia group who delivered vaginally, 1.4% of patients in severe pre-eclampsia and 4.76% of patients in eclampsia group who delivered by Emergency LSCS ended up in maternal deaths.

Table 5: Maternal complications among the study subjects (N=421)

Maternal complications	Severe pre eclampsia		Eclampsia		Total	
	Number	%	Number	%	Number	%
Nil	313	(92.9)	81	(96.4)	394	(93.6)
ARF	3	(0.9)	0	(0.0)	3	(0.7)
Pulmonary edema	4	(1.2)	0	(0.0)	4	(1.0)
HELLP	9	(2.7)	2	(2.4)	11	(2.6)
DIC	3	(0.9)	0	(0.0)	3	(0.7)
Abruption	5	(1.5)	1	(1.2)	6	(1.4)
Total	337	(100.0)	84	(100.0)	421	

Table 5.1: Maternal complications among the study subjects who underwent elective caesarean section (N=72)

Maternal complications	Severe pre eclampsia		Eclampsia		Total	
	Number	%	Number	%	Number	%
Nil	48	(94.1)	21	(100.0)	69	(95.8)
HELLP	2	(3.9)	0	(0.0)	2	(2.8)
Abruption	1	(2.0)	0	(0.0)	1	(1.4)
Total	51	(100.0)	21	(100.0)	72	

Out of 72 patients who were delivered by Elective LSCS,3.9% of the patients in the severe pre-eclampsia group and 2.8% of the patients in eclampsia group developed HELLP syndrome and 2% of patients in severe pre-eclampsia and 1.4% of patients in eclampsia group developed abruption as complication

Table 5.2: Maternal complications among the study subjects who underwent emergency caesarean section (N=94)

Maternal complications	Severe pre eclampsia		Eclampsia		Total	
	Number	%	Number	%	Number	%
Nil	62	(84.9)	20	(95.2)	82	(87.2)
ARF	1	(1.4)	0	(0.0)	1	(1.1)
Pulmonary edema	2	(2.7)	0	(0.0)	2	(2.1)
HELLP	4	(5.5)	0	(0.0)	4	(4.3)
DIC	2	(2.7)	0	(0.0)	2	(2.1)
Abruption	2	(2.7)	1	(4.8)	3	(3.2)
Total	73	(100.0)	21	(100.0)	94	

Out of 94 patients who were delivered by Emergency LSCS, 5.5% of the patients in the severe pre-eclampsia group and 0% of the patients in eclampsia group developed HELLP syndrome, 2.7% of patients in severe pre-eclampsia and 4.8% of patients in eclampsia group developed abruption as complication, 2.7%, 1.4% and 2.7% of patients in severe pre-eclampsia developed DIC, ARF & pulmonary edema as complication respectively, none of the patients in eclampsia group developed DIC, pulmonary edema & ARF.

Table 5.3: Maternal complications among the study subjects who underwent normal vaginal delivery (N=255)

Maternal complications	Severe pre eclampsia		Eclampsia		Total	
	Number	%	Number	%	Number	%
Nil	203	(95.3)	40	(95.2)	243	(95.3)
ARF	2	(0.9)	0	(0.0)	2	(0.8)
Pulmonary edema	2	(0.9)	0	(0.0)	2	(0.8)
HELLP	3	(1.4)	2	(4.8)	5	(2.0)
DIC	1	(0.5)	0	(0.0)	1	(0.4)
Abruption	2	(0.9)	0	(0.0)	2	(0.8)
Total	213	(100.0)	42	(100.0)	255	

Out of 213 patients who were delivered vaginally, 1.4% of the patients in the severe pre-eclampsia group and 4.8% of the patients in eclampsia group developed HELLP syndrome, 0.9%, 0.5%, 0.9% and 0.9% of patients in severe pre-eclampsia developed abruption, DIC, ARF & pulmonary oedema as complication respectively, none of the patients in eclampsia group developed abruption, DIC, pulmonary oedema & ARF.

IV. Discussion

In the present study, the total number of patients with severe preeclampsia and eclampsia are 421. The incidence of severe preeclampsia and eclampsia was 2.6% and 0.6% respectively.

- severe preeclampsia and eclampsia were common in the age group of 21-29 years.
- Majority of patients in both the groups were unbooked
- severe preeclampsia and eclampsia cases were common in primigravida.
- 65.5% patients in the preeclampsia cases and 41.7% patients in eclampsia cases had gestational age between 36 to 40weeks. 28.2% in preeclampsia and 52.4% in eclampsia had gestational age between 32-36 weeks.

- Admission to delivery interval was <24hrs in 22.6% cases of severe preeclampsia and 75% of eclampsia
- In this study incidence of caesarean deliveries in severe pre-eclampsia is36.8% and in eclampsia is 50%.
- Maternal complication in caesarean deliveries in severe pre-eclampsia Is 20.9% and in eclampsia is 4.5%.
- Maternal complication in vaginal deliveries in severe pre-eclampsia Is 4.6% and in eclampsia is 4.8%.
- Maternal complications in elective LSCS group in severe pre-eclampsia Is 15.9% and in eclampsia is 0%
- Maternal complications in Emergency LSCS group in severe pre-eclampsia Is 15% and in eclampsia is 4.5%
- Maternal deaths in caesarean deliveries in severe pre-eclampsia Is 1.4% and in eclampsia is 4.76%

Maternal deaths in vaginal deliveries in severe pre-eclampsia are 0.9% and in eclampsia is 4.76%.

- In this study no maternal deaths were observed in elective lscs

V. Conclusion

Preeclampsia /eclampsia is a multi system pregnancy specific disorder with high maternal and perinatal morbidity and mortality. Once the condition is diagnosed, stabilizing the mother and assessing the wellbeing of the fetus are the first principles of management. Delivery of fetus and placenta is the only effective treatment for preeclampsia and eclampsia to prevent maternal complications. Immediate delivery does not necessarily mean cesarean delivery. Individualized decision to proceed with cesarean section or induced labour and attempt vaginal delivery, based on such factors such as parity , gestational age, Bishop score and patients preference for operative delivery should be taken. The result of the present study shows that labour induction should be considered strongly in eligible women with severe preeclampsia .Maternal outcomes are not worsened by induction of labour. Immediate cesarean delivery confers no benefit to patients with severe preeclampsia.. Present study shows that in eclampsia group, maternal outcome is better in the cesarean deliveries than in the vaginal deliveries

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