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Original Research Article

A comparative study of vaginal delivery and caesarean section in antepartum eclampsia at and beyond 34 weeks of gestation

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ABSTRACT

Background: This study was done to compare maternal and fetal outcome in pregnancies after 34 weeks gestation complicated by antepartum eclampsia when terminated by caesarean section and by vaginal delivery.
Methods: A comparative prospective study was done on 100 pregnant women with antepartum eclampsia at or beyond 34 weeks of gestational age from November 2019 to June 2021 at Gandhi Hospital, Secunderabad, Telangana. The patients were divided into two groups: CD group (who delivered by caesarean section) and VD group (who delivered by vaginal route). After history taking and examination, delivery was planned according to the gestational age, foetal condition and Bishop's score. The associated indication for caesarean, induction delivery interval in vaginal deliveries, total blood loss was noted. Baby details were noted and were followed till discharge at hospital.
Results: The incidence of caesarean section was 41% and that of vaginal delivery was 59%. Highest incidence of antepartum eclampsia was seen in the age group of 20-24 years and between 37-40 weeks. Most common indication of caesarean section was fetal distress (19%). The convulsion-delivery interval was less in CD group and it was statistically significant (p value 0.01). The incidence of live births, still births and IUD was better in the CD group than VD group (p value 0.02). Perinatal mortality was more in vaginal delivery group (27.64%) than in caesarean section group (12.19%). Maternal mortality was 1.7% in the VD group and nil in the CD group.
Conclusions: The study reflected that both perinatal and maternal morbidity and mortality were found to be lesser in the CD group in comparison with the VD group. Thus, early decision for caesarean section especially when delivery is not anticipated within 6 hours of admission is essential in improving the perinatal and maternal outcome in eclampsia.

Keywords: Antepartum eclampsia, Caesarean delivery, Vaginal delivery

INTRODUCTION

The term eclampsia is derived from a Greek word, meaning "like a flash of lightening".[1] The onset of convulsions in a woman with pre-eclampsia that cannot be attributed to other causes is termed eclampsia.[2] Eclampsia is not only very serious, but can be life-threatening for pregnant women with pre-eclampsia. It was found that 79% of cases of preeclampsia developed eclampsia.[3] Pre-eclampsia is a complex multisystem disorder of unknown etiology, characterized by the combined development of high blood pressure and proteinuria (>300 mg/24 hours) after the first 20 weeks of pregnancy.[4] Proper antenatal care and management of complications has reduced the adverse effects of eclampsia on mother and her child in developed countries.

Eclampsia is essentially a disease of low socio-economic status. But unfortunately, its incidence is still uncomfortably high in any hospital accepting unbooked cases. The incidence in India ranges from 1 in 500 to 1 in 30.[1] It is more common in primigravidae (75%), five times more common in twins than in singleton pregnancies and occurs between the 36th week and term in more than 50%.[5]

Eclampsia is a leading cause of maternal and neonatal morbidity and mortality with most injury being associated with the seizures that mark the onset of the disease.

Eclampsia is uniquely a disease of pregnancy and the only cure is termination of pregnancy regardless of gestational age. The place of caesarean section has however remained controversial. It has been argued that its selective use may enhance only the fetal outcome while worsening the maternal outcome. It has also been suggested that a more liberal and early use of caesarean section in eclamptics improves fetal and maternal outcome. It is however known that caesarean section itself has a risk of morbidity and even mortality for the mother. Keeping this in view an attempt has been made in the present study to ascertain if caesarean section has any distinct advantage over vaginal delivery in lowering maternal and perinatal deaths.

Aims and objectives

Aim

To compare maternal and fetal outcome in pregnancies after 34 weeks gestation complicated by antepartum eclampsia when terminated by caesarean section and by vaginal delivery.

Objectives

To evaluate the role of termination of pregnancy by caesarean section and vaginal delivery in ante partum eclampsia with more than 34 weeks of gestation with reference to perinatal mortality and morbidity and maternal mortality and morbidity. To compare the results of termination of pregnancy by caesarean section with those obtained by routine or induced vaginal delivery at more than 34 weeks of gestation with antepartum eclampsia.

METHODS

A comparative prospective study was done on 100 pregnant women with antepartum eclampsia at or beyond 34 weeks of gestational age at Gandhi Hospital, Secunderabad, Telangana from November 2019 to June 2021. All women with ante partum eclampsia and gestation at or beyond 34 weeks were included in the study after obtaining ethical approval from the institution. Patient refusal or inability to provide informed consent, patient with epilepsy or other causes of convulsions with pregnancy and those with chronic hypertension with eclampsia were excluded from the study. 100 patients were studied by dividing them into two (2) groups for comparative analysis.

The first group consisted of patients whom conservative obstetric management and delivery per vaginum was carried and was called the “VD group”. The second group consisted of patient in whom lower segment caesarean section was carried out due to eclampsia and varied associated indications was called “CD group.”

Methods

On admission a detailed history was taken regarding the personal information (name, age, socio economic status, religion and address of the patients), antenatal check-ups,

the time of onset of convulsion, total number of convulsions, interval between convulsion, duration and time of each convulsion, history of loss of consciousness and frothing, passing urine/stool, during convulsion were noted. Premonitory symptoms like headache, epigastric pain, nausea, vomiting and blurred vision were noted. Any history of pain abdomen, per vaginal leak or bleeding was noted. Obstetric, menstrual, past, family and personal history and any nature of treatment before hospitalization were noted.

A rapid general examination was subsequently made noting the grade of consciousness of patients, temperature, pulse rate, blood pressure, presence of edema, evidence of injuries, condition of heart, lungs and kneejerk. A detailed obstetric examination and vaginal examination was conducted. Bladder was catheterized and urine output was noted. Intra venous line was started and 1 pint of Ringer lactate was given for hydration. Investigations were sent for complete hemogram, urine analysis, blood grouping and Rh-typing, renal and liver function tests and coagulation profile.

Obstetric management was done giving due consideration to the age of the patient, gestational age, whether the patient was in labour or not, rate and regularity of fetal heart and Bishop’s score. Then, either induction was done with per vaginal misoprostol or dinoprostone gel or were taken up for caesarean section directly with unfavourable cervix as the associated indication. Patients who delivered pervaginum following successful induction (if not in labour), with prostaglandins for patients who were in labour (augmented with ARM or pitocin or both) who also delivered per vaginum using outlet forceps, were included under the “VD group”. Caesarean section was also done in those cases where not wherein induction failed or other varied associated obstetric indications were present and were included in the “CD group”. The associated indication for caesarean, induction delivery interval in induced vaginal deliveries, total blood loss and intra operative/intra partum complications if any were noted. Baby details were noted. The mother and the neonate were followed till discharge at hospital and the details were noted in the proforma. The data was analysed using SPSS version 22.

RESULTS

In present study, most common age group was 21-24 years in both caesarean (41.50%) group and vaginal (42.5%) group. Mean age was 22.39 in caesarean group and 23.12 in vaginal group. P value been 0.4, which was statistically insignificant.

Most of patients 76% in vaginal group and 68% in caesarean group belong wherein at gestational age to lower socioeconomic status, 24.5% cases in caesarean group and 17% cases in vaginal group belonged to middle class, 7.3% and 6.3% cases in caesarean group and vaginal group belonged to upper class.

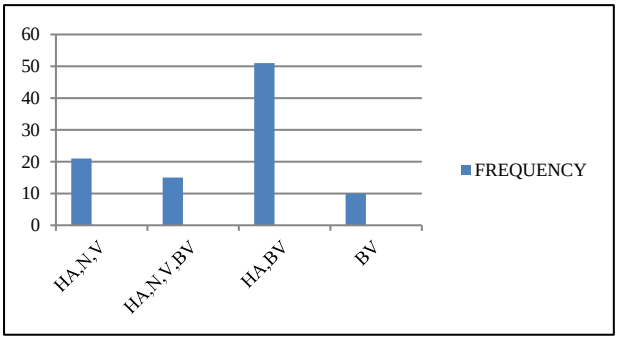

Figure 1: Distribution of premonitory symptoms among patients.

In this study, the incidence of antepartum eclampsia was more common in primigravida (68%) of which 32% were in caesarean delivery group and 36% in vaginal delivery group. P value was 0.09 which was statistically insignificant. Most of patients were unbooked cases of 63% in caesarean group and 61% in vaginal group respectively with a p value of 0.80 (statistically insignificant). Most common premonitory symptoms in both groups were headache and blurred vision (51%) then headache, nausea and vomiting (21%) and least 10% with only blurred vision in both the groups (Figure 1).

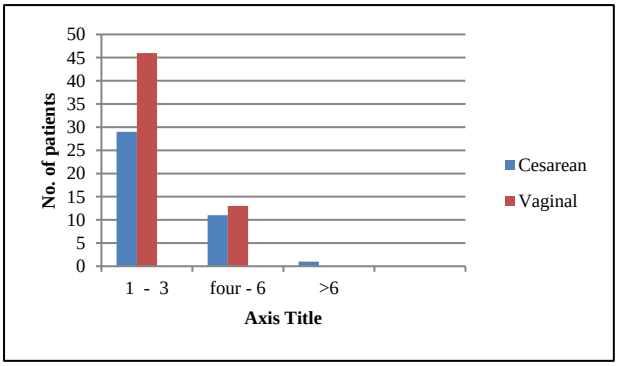

Figure 2: Association between number of convulsions and mode of delivery.

In my study most of patients were conscious at the time of admission. Only 17% of patients in caesarean group and 18% in vaginal delivery were unconscious at the time of admission. Most of patients had 1-3 convulsions in total in both groups; caesarean group (70%), vaginal group (78%). p value been 0.398 (not statistically insignificant) (Figure 2).

In this study, at gestational age of 34-37 weeks vaginal delivery (45%) was more than caesarean section (36%) wherein in gestational age of 37-40 weeks caesarean delivery (63.4%) was slightly more than that of vaginal delivery (54%). However, the difference was statistically just significant ($p<0.05$) (Figure 3).

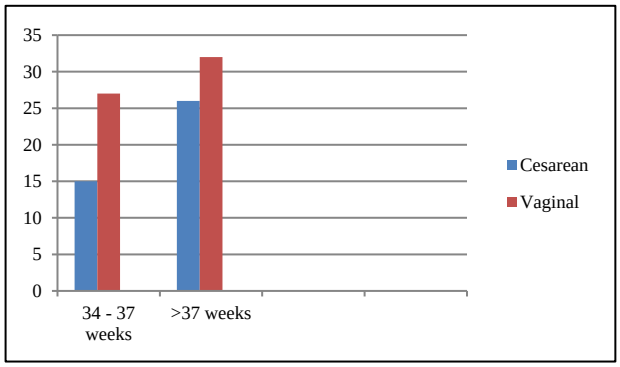

Figure 3: Association between gestation age and mode of delivery.

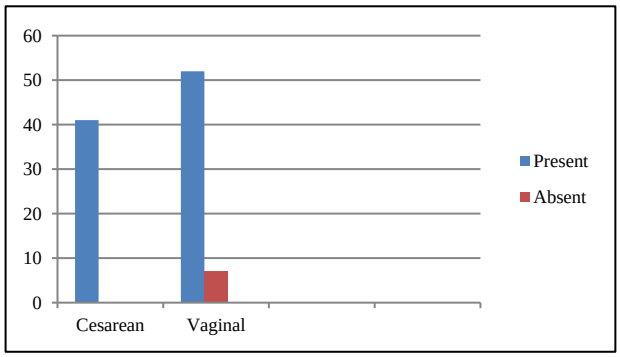

Figure 4: Association between FHR and mode of delivery.

In this study, there were 7 (7%) patients presented with IUD, which were delivered vaginally by spontaneous or induction (Figure 4).

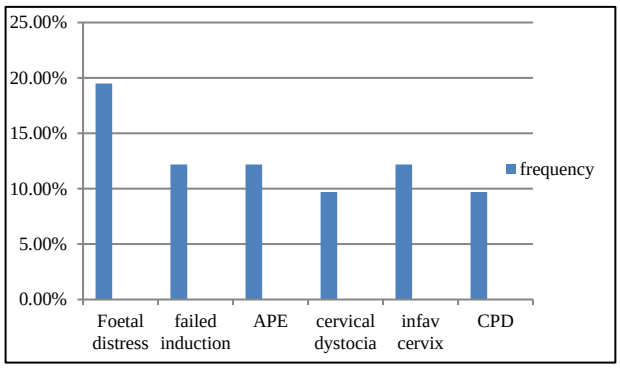

Figure 5: Distribution of indication of caesarean section among the patients

In present study most common mode of delivery is vaginal delivery of 59% and caesarean delivery of 41%. Out of 41 cases, most common indication of caesarean section was fetal distress (19.5%), followed by 12.1% cases had

infavourable cervix, failed induction and ante partum eclampsia per se, then 9.7% cases had CPD and obstructed labor, least were 7.3% cases had malpresentation. Total cervical factors accounted for indication of caesarean section in 34.08% cases (Figure 5).

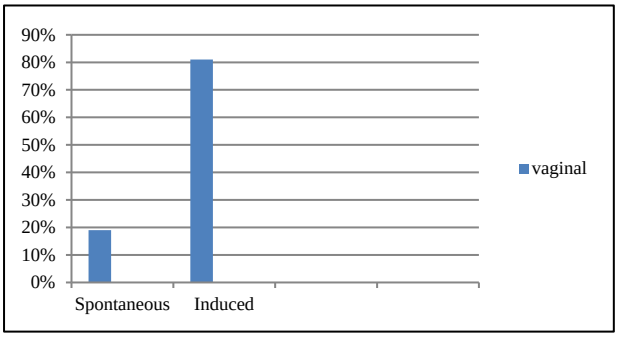

Figure 6: Distribution of vaginal delivery among the patients.

Out of 59 cases in vaginal group, 48 (81%) cases were induced by PGE2 (dinoprostone gel) or PGE1 (misoprostol) augmented by amniotomy and oxytocin. 11 (18%) of cases had spontaneous onset of labour (Figure 6).

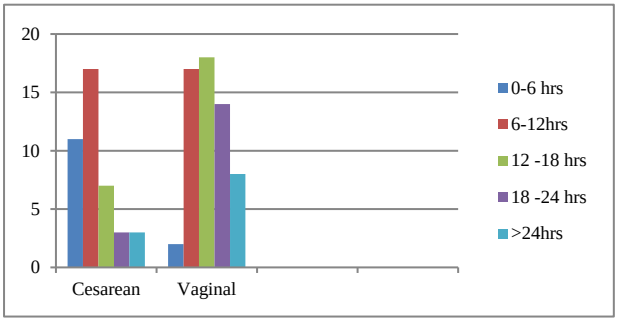

Figure 7: Association between interval between convulsion-delivery interval and mode of delivery.

Most of the patients in caesarean group has convulsion-delivery (c-d) interval of 6-12 hours (41%) and most of the patients in vaginal group has c-d interval of 12-18 hours (30%) and the difference among the two groups was statistically significant p value 0.01 (Figure 7).

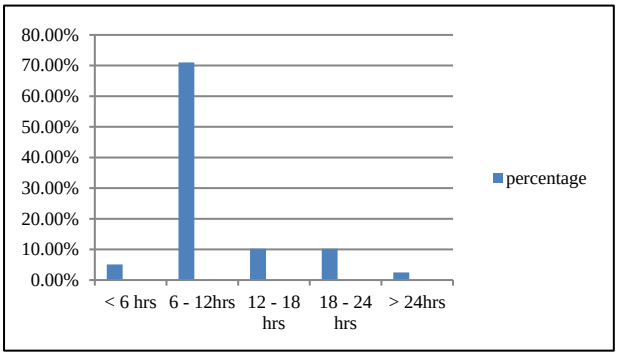

Figure 8: Distribution of induction to delivery interval among patients.

Out of 39 cases induced in vaginal delivery group, most of the patients (71%) had induction-delivery interval of 6-12 hours, p value been 0.07 not significant (Figure 8).

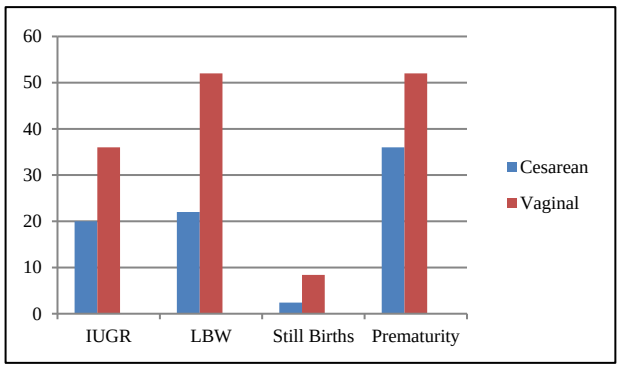

Figure 9: Distribution of perinatal outcome in both groups.

Low birth weight ≤2.5 kg was common in vaginal delivery group (45.08%) than caesarean group (22%). Birth weight of >2.5 kg was 78% in caesarean group and 54% in vaginal group. P value been 0.02 which was statistically significant. The incidence of live births and stillbirths was 97.5% and 2.4% respectively in the CD group, while it was 79.6% and 8.4% in the VD group. P value been 0.02 (statistically significant). Early neonatal deaths were 9.43%, 15.2% in CD group and VD group respectively. Not statistically significant. Perinatal mortality was more in vaginal delivery group (27.64%) than in caesarean section group (12.19%) no significant p value. Proportion of IUGR (36.53%), prematurity (51.92%) was more in vaginal delivery group than in caesarean section group which was 9.51% and 36.58% respectively (Figure 9).

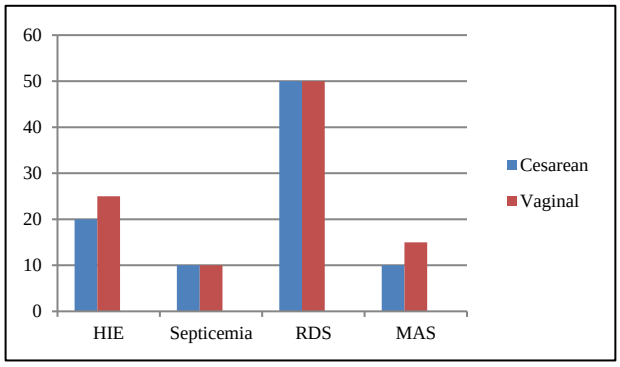

Figure 10: Distribution of cause of NICU admissions in both groups.

Proportion of newborn who needed resuscitation was more in vaginal delivery group (28.84%) than caesarean section group (9.75%) which was statistically significant (p value-0.01). NICU admissions were more in vaginal group. Most common cause of admission was respiratory distress syndrome (RDS) of 50% in both the groups. Perinatal mortality was more in vaginal delivery group (32.25%) than in caesarean section group (12.19%) (Figure 10).

Maternal complications were encountered in14.4% of the cases in the CD group and 25.5% of the cases in the VD group. Most common complication in vaginal group is PPH of 5%. In caesarean group, one case has pulmonary edema, one case had abruption placenta, other case had renal failure. Nil complications seen in 85% cases.

DISCUSSION

Eclampsia a dreaded complication in pregnancy is still associated with a great deal of maternal and fetal loss. Previously caesarean section was considered to be extremely risky procedure and reserved for highly selected cases. Now with advancement in the field of anesthesiology caesarean section in eclampsia is no more risky and promises reassuring maternal and perinatal outcome.

In the study, incidence of caesarean section was 41% and that of vaginal delivery was 59%. This was comparable with other studies.[6-9] Arora et al have advocated early caesarean section in eclamptic patients, at least in the referral centers.[8] This is because they found in their series a maternal mortality of 4.3 percent in the caesarean section group, which is almost half the mortality rate of 7.1 percent in the vaginal delivery group. Zuspan et al asserted that condition of cervix is a fetal prognostic indicator and presents the obstetrician with the challenge as to how, when and what means of delivery are most appropriate for best results.[9]

The highest age incidence was in group 21-24 years. Mean age distribution in caesarean group was 22.29 and in vaginal group was 23.12. This was comparable with other studies who also found the highest incidence between 20-25 years.[10-12] In the studies of Khanam et al and Rouf et al preponderance was found in the age group between 15-25 years.[13,14]

In both the groups 68-76% of cases belong to low socio-economic status. 73.5% of patients in the study of El-Nafaty et al and study done by Chowdhury has shown that 95% patients belonged to low socio-economic group due to poverty, illiteracy and lack of proper antenatal care.[15,16]

Twenty six percent of cases in CD group and thirty six percent of cases in VD group were booked. Here notable fact is that more cases were booked, still had eclamptic seizure. This was because in few cases there was no mid trimester fall of blood pressure. Infrequent antenatal visits and refusal to get admitted when advised were instrumental in causing eclampsia in these cases, which was 35.57% in the Khanam et al[13] study and 69.2% in the El- Nafaty series.[13,15]

The highest incidence of eclampsia was found between 37-40 weeks was 54% in CD group and 63.0% in VD group. Most studies found that the incidence to be high when the age is less than 37weeks. Low et al found maximum incidence between 33-37 weeks (60%).[17] Mundle et al found maximum incidence between 29-36 weeks (70%), which is contrast to our study.[10]

Most of the patients were admitted in a compromised state after throwing 1-3 convulsions at home (caesarean group of 70% and vaginal group of 78%). All three signs of toxemia were seen in 78% of cases, similar results were seen in Mundle study.[10]

Cervical factors (unfavourable cervix, failed induction, cervical dystocia) top the list of indications for caesarean section accounts for 14 cases decision for cesarean delivery was taken. In Mondal RN series, 41 out of 62 cases (62.12%) decision with the sole purpose of shortening the period of delivery.

Perinatal mortality was more in vaginal delivery group (27.64%) than in caesarean section group (12.19%). According to Kumari and colleagues, perinatal death was higher in VD group when compared with CD group (25.8%; versus 8.33%; p=0.002), similar to our study and better perinatal salvage by LSCS (72.91%) was seen in Singh et al study.[19]

Among the causes of perinatal deaths- between 34-37 weeks: in the CD group, there was 2 cases of neonatal deaths and in the VD group, out of 13 cases 5 had perinatal deaths, the predominant causes being intrauterine hypoxia resulting in fresh stillbirths, accounting for 8.4% of the total deaths before 34 weeks: there were 3 perinatal deaths in the CD group of which 2 (early neonatal deaths) were due to meconium aspiration syndrome and 1 (still birth) due to birth asphyxia and intrauterine hypoxia. PNM also increased proportionately as the first convulsion-delivery interval increased in both the groups. Similar finding was observed in other studies.[6,20,21] Nanda et al also asserted that increased induction delivery interval is associated with adverse perinatal outcome because of increased duration of exposure to fetal asphyxia.[20] Mortality was decreased when caesarean section was performed within 6 hours. So, early decision for caesarean section when delivery is not anticipated within 6 hours of admission helps in improving fetal outcome.

Maternal complications were encountered in 14.7% of the cases in the CD group and 25.5% of the cases in the VD group similar to other studies.[18] Maternal complications were seen in 15% of the cases in the CD group and 60% of the cases in the VD group in Madan study and maternal deaths occurred in none of the case in the CD group and in 33% of the cases in the VD group.[22] The complications were postpartum hemorrhage was seen in 5% of the cases in the VD group and one case in the CD group in our study. Abruptio placenta was seen in 3.8% of the cases in the VD group which improved after component therapy. This is much lower compared to other studies.[12,23] Cerebral infarction was seen in one case in the VD group who recovered uneventfully with conservative treatment. Pulmonary edema was seen in 2 cases in the VD group (3.8%) and one case died 22 hours after delivery. Bansal et

al found the incidence to be 4.6% and other study also shows higher percentage of pulmonary oedema (28%) and CVA (10%) in vaginal delivery group.[11,14] Maternal deaths occurred in 1.7% of the cases in the VD group while there were no maternal deaths in the CD group in this study. Similar results were shown in other studies.[24-26] Contradicting to our study, maternal event rate was similar 10.89% in the caesarean arm versus 7.07% for vaginal delivery according to a study.[7]

In the present series, the mother who died had an induction-delivery interval more than 10 hours and convulsion-delivery interval more than 14 hours. Menon et al observed that maternal mortality increased with increase in the first convulsion-delivery interval.[27] Thereby, we infer, that both the maternal and perinatal outcome may be considerably improved in eclamptics if an early decision for caesarean section is taken, in cases where delivery is not anticipated within 6 hours of admission or 12 hours of the first fit, whichever is earlier.

Both perinatal morbidity and mortality and maternal morbidity and mortality were found to be lesser in the CD group in comparison with the VD group. Thus, early decision for caesarean section especially when delivery is not anticipated with 6 hours of admission is helpful not detrimental in improving the perinatal as well as maternal outcome in eclampsia. As this is a small sample study, study with larger sample is recommended to make a definitive conclusion to decide on the mode of delivery.

CONCLUSION

Eclampsia is one of the major causes of maternal and perinatal mortality, particularly in developing countries. A rational therapy for general management including management of hypertension and convulsion has been established in our setup, but the obstetric management is the area, where controversy still exists. Caesarean section is chosen in many cases considering that these patients and fetus may not tolerate the stress of labour. There is increasing trend of delivering the eclampsia mother at >34 weeks of gestation by caesarean section instead of inducing labour and delivering vaginally. However, there are studies showing that, in selected patients, vaginal delivery may be better than caesarean section. This study has reflected the fact that overall maternal and perinatal mortality and morbidity is better in caesarean section group.

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