

## Research Article

# Maternal Mortality in Eclampsia after Cesarean Section versus Vaginal Delivery

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**Abstract** | Preeclampsia with generalized tonic-clonic convulsions is termed as eclampsia. Eclampsia is associated with multiple maternal and fetal complications. Eclampsia is an obstetric emergency and quick decision making is required to save lives. The objective of the study was to compare the maternal mortality after cesarean section versus vaginal delivery among eclampsia patients. It is a descriptive case series conducted in Department of Obstetrics and Gynecology, Lady Willingdon Hospital, from December 2014 to June 2015. In our study, 62.86 % (n=88) patients were between 18-25 years of age and 37.14 % (n=52) were between 26-35 years of age. The mean+SD was calculated as 25.12+4.53 years. Frequency of vaginal delivery in patients with eclampsia was 30.71 % (n=43) while 69.29 % (n=97) were delivered through cesarean section. Comparison of maternal mortality in two groups was recorded, where out of 43 spontaneous vaginal deliveries mortality was recorded in 6.98 % (n=3). Out of 97 cesarean deliveries, mortality was recorded in 17.53% (n=17). We concluded that mortality rates are higher in patients undergoing cesarean section.

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## Introduction

Eclampsia, major neurological sequelae of preeclampsia, is convulsed disorder or any other form of altered consciousness observed in a patient of preeclampsia and which cannot be related to any other concurrent neurological entity<sup>(1)</sup>

It caused 14% maternal deaths throughout world between 2003 and 2012.<sup>(2)</sup> According to World Health Organization; Hypertensive Disease in Pregnancy (HDP) is an established cause of adverse prenatal consequences. The incidence of eclampsia in developed nations has been seen to be 1.6 to 2 per 10000 deliveries and in developing nations it ranges from 6

to 157 cases per 10000 deliveries.<sup>(3)</sup>

In developed part of the globe, women continue die from preeclampsia and eclampsia.<sup>(4)</sup> The incidence is on the decline due to accessible antenatal facilities. However this fall is not reciprocated in developing countries.<sup>(5)</sup> These deaths are avoidable as 90% of them are due to suboptimal care.<sup>(6)</sup> Fetomaternal prognosis is worsened by the underutilization of modern antenatal services as compared to the Caucasian population.<sup>(7)</sup>

It occurs around the 20th week of pregnancy or in the postpartum era. Worse outcome in patients with eclampsia has been observed when they present an-

tepartum or 12 hours after the fit.

Eclampsia in the absence of hypertension with proteinuria has been observed in 38% of cases in the United Kingdom. Likewise, hypertension was not seen 16% of such patients in the United States.<sup>(8)</sup>

Most cases of eclampsia are seen in the third trimester of pregnancy, with 80% of eclamptic fits occurring during delivery or within the first 48 hours after delivery. Early detection of preeclampsia is only reliable measure predicting eclampsia. Eclamptic seizures mostly stop by themselves and usually last no longer than three to four minutes.

Fetal bradycardia lasting at least three to five minutes is commonly seen with an eclamptic seizure, and does not indicate cesarean delivery. Stabilization of the mother by anticonvulsant drugs and oxygen and treating severe hypertension can relieve the fetus of the effects of seizure. If the fetal heart rate trace remains non reassuring for more than 10 to 15 minutes with no improvement in spite of maternal and fetal interventions, then there may be possibility of an abruption and delivery needs to be expedited.<sup>(9)</sup>

In the United Kingdom first-trimester screening method has been discovered to scrutinize women at risk for the preeclampsia or gestational hypertension. It uses a combination of maternal parameters, including mean arterial pressure, uterine artery pulsatility index, pregnancy-associated plasma protein-A, and placental growth factor. The algorithm proved helpful for predicting early preeclampsia (i.e., requiring delivery before 34 weeks).<sup>(10)</sup> A large study revealed that early onset preeclampsia increased the risk of fetal demise more than five-fold and mounted the risk of adverse perinatal outcome to sixteen times.<sup>(11)</sup>

In order to optimize maternal outcome, selecting a mode of delivery is also important, as this can also influence the maternal mortality rate.

Currently, both vaginal delivery and cesarean section are in practice and are routinely offered by the Obstetrician to the eclamptic patients. None of them is considered to be the best. The results of the previous studies are different from each other. This shows the dire need to conduct a study in our setup to compare the outcome of both mode of deliveries.

## Materials and Methods

It is a descriptive case series conducted in Department of Obstetrics and Gynecology, Lady Willingdon Hospital, from December 2014 to June 2015. The sample size of 140 patients is calculated with 95% confidence level, 7.5% margin of error and taking expected percentage of patients undergoing vaginal deliveries i.e. 27.65% among patients with eclampsia. The non-probability purposive sampling was performed. The women having fits due to epilepsy or any other non-obstetric cause were excluded.

140 cases fulfilling inclusion criteria were registered through emergency Department of Obstetrics and Gynecology, Lady Willingdon Hospital, Lahore. Demographic history, including age (in years) was obtained. Informed consent was obtained through patients or legal guardian if patient was unconscious or unable to understand the consent form. Patients with no history of fits for the last 2 hours and cervical dilatation (1.5cm/hour) were planned to have vaginal delivery. Patients with history of fits in last 2 hours and no cervical dilatation underwent cesarean section. All the patients were observed for the mortality within next 7 days (as per operational definition). All the information was collected on a pretested, validated and specially designed data collection tool and kept confidential.

All the collected data were entered into SPSS version 10 and analyzed. Quantitative data like age (in years), and gestational age (in weeks) was presented as means and standard deviations. Qualitative data like patients undergoing vaginal delivery and mortality in both groups were presented in the form of frequency and percentages.

## Results and Discussion

A total of 140 cases were enrolled. The Age distribution of the patients had shown that 62.86 % (n=88) were between 18-25 years and 37.14% (n=52) were between 26-35 years of age. The mean SD was calculated as 25.12+4.53 years. (Table 1).

Gestational age was recorded which shows that 65.71 % (n=92) of the patients were between 32-36 weeks of gestation while 34.29% (n=48) of patients were between 37-41 weeks. The mean SD was computed as 35.85+2.78 weeks. (Table 2).

The vaginal delivery in patients with eclampsia was recorded in 30.71% (n=43) while 69.29% (n=97) were delivered through cesarean section. (Table 3).

Comparison of maternal mortality in two groups was recorded where out of 43 spontaneous vaginal deliveries 6.98% (n=3) had mortality. Out of 97 cesarean deliveries 17.53% (n=17) were observed to have mortality. P value was computed as 0.09. (Table 4).

**Table 1: Age distribution (n=140).**

| Age(in years) | No. of patients | %age  |
|---------------|-----------------|-------|
| 18-25         | 88              | 62.86 |
| 26-35         | 52              | 37.14 |
| Total         | 140             | 100   |
| Mean+SD       | 25.12+4.53      |       |

**Table 2: Gestational age (n=140).**

| Gestational age(in weeks) | No. of patients | %     |
|---------------------------|-----------------|-------|
| 32-36                     | 92              | 65.71 |
| 37-41                     | 48              | 34.29 |
| Total                     | 140             | 100   |
| Mean+SD                   | 35.85+2.78      |       |

**Table 3: Vaginal delivery in patients with eclampsia (n=140).**

| Vaginal delivery | No. of patients | %     |
|------------------|-----------------|-------|
| Yes              | 43              | 30.71 |
| No               | 97              | 69.29 |
| Total            | 140             | 100   |

**Table 4: Comparison of maternal mortality in two groups (n=140).**

| Mortality | Spontaneous Vaginal Delivery (n = 43) |       | Cesarean Delivery (n=97) |       |
|-----------|---------------------------------------|-------|--------------------------|-------|
|           | No of Patients                        | %     | No of Patients           | %     |
| Yes       | 3                                     | 6.98  | 17                       | 17.53 |
| No        | 40                                    | 93.02 | 80                       | 82.47 |
| Total     | 43                                    | 100   | 97                       | 100   |

**P value: 0.09**

Hypertensive disorders of pregnancy (HDP) particularly eclampsia and pre-eclampsia are the leading causes of maternal morbidity and mortality all over the world and are of significant burden to the patients, and healthcare system. Eclampsia is associated with multitude of maternal and fetal complications.

The incidence of Eclampsia is on the decline in the developed countries, but worrisome situation prevails in the developing countries.<sup>(12), (13)</sup> Almost 99% of the deaths related to hypertensive disorders of the pregnancy occur in South Asia and Sub Saharan Africa<sup>(14)</sup>.

The literature review shows variation regarding the mode of delivery and the outcome of patients with eclampsia. However, the current study was planned to compare the outcome of both modes of delivery and know which one is more suitable of the two in our set up.

The findings of the current study match the results of a local study conducted by Farhat R, et al, in which 100 cases with eclampsia were studied. All the maternal mortalities were observed in cesarean section group (12%) while no maternal mortality was seen among patients with vaginal delivery (0%)<sup>(15)</sup>.

In another study, percentage of vaginal delivery in patients with eclampsia was 27.65%, which is in contrast to our results.<sup>(16)</sup> Lal et al also found a high C- section rate in their study and about 50 % of the women with eclampsia delivered by C section so the results matched that of our study.

In a study by Khanum, et al, 100 women with eclampsia were studied to compare the frequency of maternal mortality. Maternal mortality was higher with vaginal delivery (12%) as compared to cesarean section (7%).<sup>(17)</sup> This finding contradicts the result of our study where a higher maternal mortality rate was observed in cases undergoing C-Section.

In another study by Yaliwal, et al, 98 women with eclampsia were studied for comparison of mortality in vaginal or cesarean delivery groups. The maternal mortality was higher in vaginal delivery group (37.7%) as compared to cesarean section (28%) group.<sup>(18)</sup> So the literature presents a conflicting evidence. However most of the studies match the results found in our study<sup>(19)</sup>.

Eclampsia remain is the leading cause of maternal mortality in countries like Pakistan and India due to the lack of basic and comprehensive emergency obstetrics care.<sup>s, (20)</sup> In our study majority of the patients were unbooked and had no antenatal care. Low incidence is seen in countries with grass root availability

of ante natal care and provision for timely hospitalization of hypertensive pregnant women.<sup>(21), (22)</sup> It is imperative to have an efficient referral system from community for monitoring<sup>(23)</sup>.

## Conclusion

We found that the frequency of patients undergoing cesarean delivery among patients with eclampsia is comparatively higher and mortality rate is also higher in patients undergoing cesarean section. In order to ensure best results in such cases, easily available antenatal care, referral to fully equipped specialized centers and delivery of baby in a way to benefit both mother and baby are required. Antenatal care in our set up needs to be comprehensive and timely anticipation may lead to reduction in maternal accidents and improvement of overall situation.

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