Comparison Of Emergency Caesarean Section To Misoprostol Induction For The Delivery Of Antepartum Eclamptic Patients: A Pilot Study

***Tukur, J.** *MBBS,FWACS,* ****Umar N.I.** *MBBS,FWACS,* ****Khan N.** *MBBS*
****Musa D.,** *FWACS***

**Department of Obstetrics and Gynaecology, Aminu Kano Teaching Hospital/ Bayero University, Kano.*
***Department of Obstetrics and Gynaecology, Federal Medical Centre, Azare.*

Abstract

***Background**: Eclampsia has now emerged as one of the commonest cause of maternal mortality in Nigeria. There is need for research on best modality for delivery of eclamptics.*

***Methodology**: The pilot study was conducted on 50 eclamptic patients at the Federal Medical Centre, Azare. The patients were randomized for delivery either by caesarean section (CS) or induction of labour. The fetomaternal outcome of the two groups was compared.*

***Results**: 25 of the patients had CS and 25 had induction of labour with misoprostol. The mean decision delivery interval was 4.1 hours and 13.08 hours for the CS and misoprostol groups respectively. Misoprostol failure was recorded in 4 (16%) patients and they were subsequently delivered by CS. The duration of admission was longer in the CS group (mean of 10.1 days) compared to the misoprostol group (mean of 6.08 days). There were more maternal complications and admissions of babies into the SCBU in the CS group. Maternal mortality in the two groups was similar (2% each).*

***Conclusion:** Misoprostol is cheap, available and safe for delivery of antepartum eclamptics. In the event of delay at caesarean section for antepartum eclamptics patients, misoprostol induction should be started. A multicenter study is called for.*

***Keywords:** Antepartum; Eclampsia; Misoprostol; Caesarean section*

INTRODUCTION

Nigeria has one of the highest maternal mortality rates worldwide. Maternal mortality ratios reported from some hospitals in Kano, Lagos and Cross Rivers States ranged from 2500 to 7500 per 100,000 live births and are some of the highest ever reported from any part of the world.[1] Eclampsia has also emerged as one of the commonest causes of maternal mortality in Nigeria. Apart from maternal mortality and morbidity, Eclampsia is also associated with a high perinatal morbidity and mortality.[2,3.] Eclampsia is also a major health problem in developing countries. It is estimated that every year eclampsia is associated with about 50 000 maternal deaths worldwide, most of which occur in developing countries.[4]

Once eclampsia develops, an essential part of the treatment is delivery of the baby. The plans for the delivery are commenced once the convulsions are controlled.[5] With delivery, the process of reversing the eclamptic process is begun. For antepartum eclamptics, the fastest means of delivery is usually by emergency caesarean section as they are by then not in established labour.

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.[6] It has also been suggested that a more liberal and early use of caesarean section in eclamptics improves fetal and maternal outcome. [7] It is however known that caesarean section itself has a risk of morbidity and even mortality for the mother [8,9] and is averred by Nigerian women for reasons that include the feeling of a sense of reproductive failure and for its financial implications.[10] A safe and effective alternative to caesarean section is therefore desirable.

Induction of labour is usually not advocated as a means of delivery of antepartum eclamptics as it is not a fast means of delivery. Induction may involve cervical ripening apart from the induction process all of which may take more than 24 hours by which time it is feared, the maternal and fetal conditions would have worsened. Misoprostol is a PGE1 analogue that has recently become available for induction of labour in Nigeria. It is cheap, heat stable, safe and with an induction delivery interval as low as 10.2 hours even where the pre induction bishop score was adjudged not to be ripe.[11] Important for its use in eclamptics, is that it has no

Correspondence ***to Dr. J. Tukur***

significant vasoactivity in humans.[12] With the introduction of misoprostol, induction of labour can be faster compared to cervical ripening and subsequent use of oxytocin. In hospitals (especially in the developing countries) where the decision delivery interval for CS may be long, it is even possible to deliver such patients by induction using misoprostol before the preparations for the CS is completed.

The pilot study was done in order to compare emergency caesarean section to induction of labour using misoprostol for the delivery for antepartum eclamptics

METHODOLOGY

This was a pilot prospective study conducted at the Federal Medical Center, Azare, Bauchi State. It is the only tertiary health facility in Bauchi State, Northern Nigeria with an average annual delivery of about 2000. The facility serves as referral center for patients from all parts of Bauchi state and also neighbouring states such as Jigawa, Kano and Yobe.

The study was limited to primigravida with singleton cephalic presentation presenting with antepartum or imminent eclampsia and a closed cervical os.

The patients were systematically randomized for delivery either by emergency CS or induction of labour with misoprostol. Consent was obtained from all the patients used for the study and approval obtained from the hospital ethical committee.

For those patients slated for emergency caesarean section, this was done within the shortest possible time.
For those slated for induction, the pre induction Bishop score was recorded and then 50mg of misoprostol was made wet with tap water and inserted at the posterior vaginal fornix. The patients were reevaluated after four hours. If the patient had gone into labour, (characterized by development of uterine contractions, full cervical effacement and a cervical dilatation of 3cm or more), then another 50mg of misoprostol was made wet with tap water and inserted at the cervical os. The second stage was shortened by the use of outlet forceps. If the patient did not go into labour within four hours of inserting misoprostol, then induction was considered to have failed and emergency CS offered. CS was also offered if any other complication that warranted a caesarean section such as fetal distress arose.

Both groups of patients were sedated with intravenous diazepam and slow boluses of intravenous hydrallazine if the diastolic blood pressure was found to be 110 mmHg or more.

The fetal and maternal outcome of both groups were recorded and compared. The outcome compared included decision delivery interval, Apgar scores at one and five minutes, need for admission of baby into the special care baby unit (SCBU), maternal complications, fetal and maternal mortality and duration of admission.

DATA ANALYSIS

The results obtained were analysed using the EPI INFO 2004 version. Comparison of means of continuous variables was by the student t test while that of categorical variables was by the Fisher's exact test with Yates correction (where appropriate). The point of significance was set at a p value < 0.05

RESULTS

A total of 50 patients were recruited into the study. Twenty five were delivered by Caesarean section while 25 were delivered by induction of labour using misoprostol. The mean age was 19.6 years for the Caesarean section group and 17.7 years for the misoprostol group. Eighty four percent of the Caesarean section groups were unbooked as compared to 90% of the misoprostol group. The two groups were comparable in number of fits before admission with an average of five.

All the patients slated for induction with misoprostol had a Bishop score of less than five. Misoprostol failed in 4 (16%) of patients. They were subsequently delivered by Caesarean section. The reasons for the failure were failed induction (characterized by their inability to go into labour within four hours of insertion of misoprostol) in 2 (50%) and fetal distress in 2 (50%) of patients.

The main outcomes are tabulated in Table I. The mean decision delivery interval was 4.1 (range of 2-8 hours) and 13.08 hours (range of 6 to 19 hours) for the CS and misoprostol groups respectively. This was statistically significant ($p< 0.05$). The mean Apgar score was higher in the CS group being 4.7 at 1 minute and 6.9 at 5 minutes compared to 3.7 and 6.2 respectively for the misoprostol group. The differences in the Apgar score were not statistically significant ($p>0.05$). Eleven (44%) of the babies delivered by CS needed admission to the SCBU compared to 9(36%) of the babies delivered by misoprostol induction. These findings were not statistically significant ($p>0.05$). Maternal death occurred in 1(2%) of both the misoprostol and CS

groups. Similarly, 1(2%) baby died in each of the two groups. Autopsies were not done. The mean duration of admission was lower in the misoprostol group being 6.08 days as compared to 10.1 in the CS group (p=0.05)

Complications were recorded in 8 (32%) of the mothers delivered by CS as compared to 2 (8%) of the mothers delivered by misoprostol induction. This was statistically significant (p<0.05). The complications recorded in the CS group were post partum anemia (packed cell volume less than 30% on the 3rd day after delivery) in 5 (20%) and then wound infection, puerperal sepsis and burst abdomen each of which was recorded in 1(4%) of the patients. The only complication recorded in the misoprostol group was puerperal sepsis in the 2 patients. The commonest reason for admitting the baby in the SCBU was similar in both groups being birth asphyxia accounting for 24% and 32% of the babies delivered by CS and misoprostol induction respectively.

Table I
Comparison of Main Outcomes for the Caesarean section and misoprostol groups

Variable	CS group	Misoprostol group	p-value
Mean Decision delivery interval (hours)	4.1	13.08	0.0003*
Mean Apgar score at 1 min	4.7	3.7	0.2
Mean Apgar score at 5 min	6.9	6.2	0.5
No of babies admitted to SCBU	11(44%)	9(36%)	0.7
No of mothers with complications	8(32%)	2(8%)	0.01*
Perinatal mortality	1(4%)	1(4%)	0.7
Maternal mortality	1(4%)	1(4%)	0.7
Duration of admission of mother	10.1	6.08	0.05

* Statistically significant values

DISCUSSION

The perinatal and maternal mortality in this study were both 2%. These were lower than the finding reported from Gombe[5] of 36.8% and 11.6% and that from Lagos [6] of 6.5% and 13.8% for perinatal and maternal mortality from eclampsia respectively. These differences could have arisen because this study was limited strictly to primigravida presenting with antepartum eclampsia and the low number of patients. Our review of the literature did not reveal a previous similar study where CS and Misoprostol were compared in terms of outcome of delivery for eclamptics.

The finding from this study indicates that misoprostol induction has longer induction delivery interval compared to CS. It could have even been shorter for the CS group in centers where the response to CS is faster. In the center where the study was conducted, the delay was usually caused by failure to get consent from patients relations. One would have thought that the delay in the delivery of the mothers delivered by induction of labour would worsen the maternal and fetal condition. The finding was opposite in that there were more maternal complications in those that had CS compared to those delivered by misoprostol induction. Perinatal and maternal mortality were similar in both groups. Interestingly, the duration of admission was also shorter in those delivered by misoprostol induction compared to CS. The implication of these findings is that misoprostol appears to have several advantages over CS for the delivery of antepartum eclamptics. Its major disadvantage is the length of time it takes before the patient is delivered which is longer. Misoprostol will also have other advantages, which were not directly analysed in this study. It is much cheaper than CS. In the center where this study was conducted, a tablet of misoprostol costs N200.00 while the cost of CS is N10, 000.00. This is apart from the cost of postoperative drugs and blood transfusion where necessary. This study did show that those who were delivered by misoprostol had a shorter hospital stay than those delivered by CS. It is an intervention that is therefore likely to save families money in a country like Nigeria where poverty is widespread. It is also likely to be more acceptable to women than CS since Nigerian women have aversion to CS.[10] It should however be noted that misoprostol can fail as in this study where 8% of patients did not go into labour and another 8% developed fetal distress and they all had to be delivered by CS. However a success rate of 84% by misoprostol induction makes it worthwhile to use.

A shortfall of this study however, is the rather low number of recruited patients. It is this low number that makes it difficult to advocate a change in policy for the modality of delivery of antepartum eclamptics. It will be interesting to know the result of a similar study with a larger pool of patients. This will require a multi center study. The implication is that antepartum eclamptics should be delivered by the fastest means, which is CS.

Despite that, some findings have arisen from this study. Where there is delay at performing the CS due to logistic or other reasons, misoprostol induction should be started. In such cases, the patient may even deliver before the operation.

There is need for a multicenter study to further evaluate the role of misoprostol induction in the delivery of antepartum eclamptics patients.

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