

## USE OF MISOPROSTOL FOR INDUCTION OF LABOUR IN UNFAVORABLE CERVIX IN ECLAMPSIA

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### ABSTRACT

**Objective:** To find out safety and efficacy of Misoprostol in cervical ripening and induction of labour to achieve vaginal delivery

**Design:** Prospective observational study

**Setting:** Dept. of Obstetrics and Gynecology, Khulna Medical College, Bangladesh

**Patients & Methods:** From January 2002 to December 2003, 5197 obstetric patients were received for delivery. This included 251 eclampsia patients. Out of the 251 Eclampsia patients, 81 patients (Primigravida 49 and multigravida 32) with unripe cervix were selected for induction of labour using Misoprostol tablet 1/4<sup>th</sup> mixed with K-Y Jelly. Misoprostol application was stopped after third dose if there was no progress in cervical dilatation or effective uterine contractions and patients were taken for caesarean operation.

**Results:** From Misoprostol insertion to delivery time was 4-24 hours. Vaginal delivery was achieved in 80.2%, which included spontaneous, forceps and vacuum extraction. Caesarean section rate was 19.7%. Indications for C. Section included Misoprostol unresponsiveness 11% and fetal distress in 8.6%. Oxytocin augmentation was required in 32% of cases. Term babies were 58%. Intrauterine death and neonatal deaths were 9.8% and 8.6% respectively. Hyper stimulation and postpartum haemorrhage was seen in 2.4% and 3.7% of patients respectively

**Conclusions:** Intravaginal Misoprostol is well tolerated and is very effective for the induction of labour in eclampsia. It helps vaginal delivery in toxemic patients, reduces maternal morbidity, mortality and hospital stay.

**KEY WORDS:** Eclampsia, Toxemia of Pregnancy, Misoprostol, Induction of Labour

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## INTRODUCTION

The incidence of eclampsia is high in places with poor antenatal care and high incidence of pregnancy. The patient of Eclampsia needs quick and safe method of delivery for mother and the baby. In a baseline survey for assessment of emergency obstetric care (EOC) in Bangladesh, 5% of total obstetrical admissions in health facility were due to pre-eclampsia and eclampsia.<sup>1</sup> As there are approximately 3.6 million births per year in Bangladesh, over 100,000 women develop Eclampsia per year. Eclampsia contributes 16% of maternal mortality on a national basis which is equivalent to about 4500 maternal death in one year.<sup>2</sup> With an unripe cervix induction of labour may be difficult and

often unsuccessful. The use of agents to ripen the cervix prior to conventional methods of induction is the standard practice. Prostaglandins are most frequently used for ripening the cervix and induction of labour. Extra amniotic prostaglandin E2 gel or vaginal pessarie are currently the agents of choice. These are very costly and not easily affordable. A more affordable alternative, is to use misoprostol, for induction of labour. Misoprostol is a synthetic analogue of naturally occurring prostaglandin E1 originally manufactured for the treatment of peptic ulcer. It is a 15 deoxy - 16 hydroxy - 16 methyl analogue of prostaglandin E1.<sup>6</sup> Misoprostol is an effective drug for ripening the cervix and induction of labour.<sup>3,4,6,7</sup> It is less expensive, easy to handle, and is stored at room temperature.<sup>3,6</sup> Misoprostol showed a good result when used in toxemia of pregnancy for induction of labour.<sup>8,9</sup> Khulna Medical College is a tertiary care centre. A large number of toxemia in pregnancy patients are admitted as referrals from different Hospital. Our Obstetrics and Gynecology department has a good team for continuous supervision and emergency management of this group of patients.

The study was planned to find out the efficacy and safety of misoprostol in cervical ripening and induction of labour, vaginal delivery, safe maternal and fetal out-come and minimal caesarian section rate.

## PATIENTS AND METHODS

During the period January 2002 to December 2003, a total of 5197 obstetric patient were received for delivery at the Department of Obstetrics and Gynaecology, Khulna Medical College Hospital, Khulna. This included 251 patients with eclampsia out of this 81 patients were selected for this study.

### *Patient selection criteria:*

1. All eclampsia patients: Pregnancy more than 20 weeks.
2. Cervix less or equal to 6 Bishop Score.

### *Exclusion criteria:*

The following patients were excluded from the study:

1. Eclampsia with fetal distress.
2. Acute left ventricular failure.
3. Previous caesarean section operation.
4. Multiple pregnancies.
5. Non-vertex presentation.
6. Abnormal fetal heart rate.
7. Marked uterine anomaly.

Ethical approval for use of Misoprostol was obtained from Ethical committee of the medical college. Informed consents were taken from all the participants included in this study. Prostaglandin is used sequentially every four hour up to four doses or till the cervix became favorable i.e. Bishops score more than 7 and effective uterine contraction. We used tablet misoprostol 1/4<sup>th</sup> mixed with K-Y jelly (sterile hydroxyethyl gel) and inserted into posterior fornix of vagina by syringe canula at an interval of four hours. In eclamptic patient the misoprostol application was stopped after third dose if there was no progress in cervical dilatation or effective uterine contractions. These unfavorable patients were taken for caesarean section operation. Patients who achieved Bishop score more than 7 but the delivery was not progressing, was used for labour augmented syntocinon drip. Fetal heart rate and uterine contractions were monitored at regular intervals. When the cervix dilated 3 cm, artificial rupture of membrane (ARM) was done. For all eclampsia patients we used injection magnesium sulphate to control convulsions and blood pressure was controlled by hydralazine drip or nifidifin sublingually. Efficacies of Misoprostol were judged by change of Bishops score, vaginal delivery rate in 24 hours, doses of misoprostol needed to induce delivery, oxytocin augmentation, rate of caesarean section operation, pathology of fetal heart rate, maternal side effects as hyper stimulation and fetal outcome parameters include neonatal Apgor score and neonatal intensive care unit requirement. Evaluation of uterine ac-

tivity monitoring was performed to assess the frequency and duration of tachysystole, hypertonus, and hyperstimulation syndrome. Uterine hypertonus was defined as a single uterine contraction lasting  $\geq 2$  minutes, tachysystole as  $\geq 6$  uterine contractions in 10 minutes for two consecutive 10-minute windows, and hyperstimulation as either hypertonus or tachysystole associated with an abnormal fetal heart rate pattern.

**RESULTS**

We selected 81 eclampsia patients with unripe cervix for induction of labour. Maternal age, parity, gestational age, initial Bishop's score are presented in table-I. Table-II shows the events of misoprostol insertion up to delivery. After giving 1<sup>st</sup> dose of misoprostol, the Bishop's score at 4 hours were 2 to 13 and after 8 hours 7-13 in 10 patients. No changes of Bishop's score at 4 hours were 21 but after 8 hours were 13. From insertion to delivery time was 4-24 hours. Table-III shows vaginal delivery was 80.3% which included spontaneous, forceps and vacuum extraction, caesarean section rate was 19.7%. Indications for caesarean section were misoprostol unresponsiveness and fetal distress was 11.1% and 8.6% respec-

*Table-I: General characteristics of mothers*

	<i>Mean ± SD</i>
1. Age (years)	21.2 ± 5
2. Gestational age (weeks)	35.6 ± 2.2
3. Initial Bishop score	4.8 ± 1.1
4. Gravida (n):	
Primigravida – 49	
Multigravida – 32	

*Table-II: Obstetrical findings*

	<i>After 4 hours</i>	<i>After 8 hours</i>
1. Bishop's score after treatment (mean & ranges)	8 (2-13)	10 (7-13)
2. No improvement (n)	21	13
3. Insertion to delivery time(hours)	11.5 (4 -24)	

tively. Oxytocin augmentation was required in 32% cases. Table-IV shows intrapartum abnormal fetal heart rate was seen 16 cases which included bradycardia, tachycardia, early and late deceleration. Intrauterine death and neonatal death were 9.8% and 8.6% respectively. Term babies were 58%. Table-V shows maternal side effects, hyperstimulation and post partum haemorrhage (PPH) was 2.4% and 3.7% respectively.

*Table-III : Mode of Delivery*

	<i>Number</i>	<i>%</i>
<b>Vaginal delivery</b>		
Spontaneous	39	48.1
Forceps	4	5.0
Vacuum	22	27.2
	<b>65</b>	<b>80.3</b>
<b>Caesarean section</b>		
<i>Indications:</i>		
Misoprostol unresponsiveness	9	11.1
Fetal distress	7	8.6
	<b>16</b>	<b>19.7</b>

*Table-IV: Intrapartum fetal complications with Perinatal out come*

	<i>Number</i>	<i>%</i>
1. Abnormal fetal heart rate pattern	16	19.8
2. Meconium passage		
Thin	23	28.4
Thick	8	9.9
3. Admission to NICU	6	7.4
4. Premature	19	23.4
5. IUD	8	9.8
6. Neonatal death	7	8.6
7. Term baby	47	58

*Table-V: Maternal out comes & side effects*

	<i>Number</i>	<i>%</i>
1. Vomiting	7	8.6
2. Fever	3	3.7
3. Hyperstimulation	2	2.4
4. Mortality	0	0.0
5. PPH	3	3.7

## DISCUSSION

Bangladesh is an underdeveloped country with low socio-economic condition. Early marriage, lack of general education, multiparity and ignorance about antenatal care are common. Five to 10% of pregnancies develop pre eclampsia and eclampsia. Toxemia of pregnancy is still the highest cause of maternal and perinatal mortality and morbidity. A case of eclampsia needs early termination of pregnancy but unfavorable cervix in eclampsia needs critical decision to decide for the mode of delivery. Eclampsia with unfavorable cervix is managed by early caesarean section. Operation has its own mortality and morbidity in these cases. In different hospitals in this country extra-amniotic balloon catheters, hygroscopic lamina tent and Prostaglandin gels are used for ripening and dilatation of the cervix. More recently prostaglandin analogues have been advocated for labour induction. Misoprostol is stable, cheap, easily available and easy to store. Mariani Neto et al in 1987 in Brazil presented their first report on misoprostol induced vaginal delivery.<sup>10</sup> Since then many studies have suggested that per vaginal use of misoprostol is helpful for labour induction in unfavorable cervix.<sup>3,4,5,10</sup> More than 45 randomized trials including more than 5400 women have found vaginal misoprostol to be more effective than oxytocin or vaginal prostaglandin E<sub>2</sub> at effecting vaginal delivery within 24 hours.<sup>11</sup> We used misoprostol 50µg (1/4<sup>th</sup> of tablet misoprostol 200 µg) initially per-vagina and repeated the same dose every other 4 hours for four doses. Maximum daily doses was 200µg, which was the average dose required for delivery in many cases.<sup>12-15</sup> In our study in eclampsia group of patients we did not continue more than three doses. After control of convulsion we used five doses of misoprostol for successful induction of labour in two eclampsia patients. H.G Sahin et al in 2001 applied misoprostol in 42 patients of toxemia in pregnancy and procured vaginal delivery in 73.8% without serious complication.<sup>10</sup> Dell – Valle et al used intra-vaginal misoprostol

in two cases of severe PET remote from term<sup>9</sup>. Both the cases had uneventful vaginal delivery at 12.5 hours and 14 hours respectively. In our study vaginal delivery was achieved in 80.2%. Some cases need augmentation with Syntocinon. Oxytocin for augmentation of labour in our study was needed in 32% cases probably due to tocolytic effect of magnesium sulphate (MgSo4). Hyperstimulation was seen in 2.4%. Perinatal mortality was 18.5% and six neonates had to be admitted in neonatal intensive care unit. In our study group caesarean section rate was 19.5%; it was same as misoprostol use in unripe cervix with normal pregnancy.<sup>14,16</sup> Caesarean section was done for obstetric indication including failure of induction, fetal distress and fulminating eclampsia non responsive to convulsion control.

In conclusions intravaginal misoprostol is well tolerated and very effective for the induction of labour with unfavorable cervix. It helps vaginal delivery in toxemic patient, and reduces maternal mortality, morbidity, hospital stay, cost of operation and manpower involvement.

## SUMMARY

Eclampsia in pregnancy requires careful decisions for maternal and fetal survival. After onset of convulsions an early delivery is essential for saving the mother and fetus. Misoprostol is a safe prostaglandin E1 analogue for induction of labour with an unfavorable cervix. The purpose of this study was to induce labour in eclampsia to achieve vaginal delivery and reduce the caesarean section operation rates. The results were satisfying with minimal incidence of mishaps or complications. Maternal and fetal out-come though much less than desirable was the best we could achieve in our humble setting.

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