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ORIGINAL ARTICLE

Intravenous Oxytocin Vs Vaginal Prostaglandin E2 for Inducing Labour in Prelabor Rupture of Membranes at Term

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ABSTRACT

Objective: In patients with prelabor membrane rupture at term, evaluate the relative effectiveness of vaginal prostaglandin E2 and oxytocin infusion for induction of labour.

Study design: Randomized clinical trial

Place and Duration: This study was conducted in the multi centers at the Department of Obstetrics and Gynaecology, Murshid Hospital and Health Care Center Karachi, Sindh and PGMI/AMC/LGH Lahore, Punjab in the period from March, 2022 to August, 2022.

Material and methods: Ninety patients with term membrane rupture who were brought through emergency for induction of labour were randomly assigned to either group I (oxytocin) or group II (vaginal prostaglandin E2) and monitored until delivery. We recorded the number of vaginal births that occurred within 24 hours of the induction of labour and the time it took for labour to begin after the induction. All of the data was analyzed with SPSS 23.0.

Results: Mean age of the patients in group I was 26.5±6.26 years and in group II mean age was 24.7±5.60. Mean BMI in group I was 25.1±8.16 kg/m^2 and in group II mean BMI was 26.1±7.36 kg/m^2. Those who were induced with intravenous oxytocin had 22 (48.9%) vaginal deliveries within 24 hours, while patients who were induced with vaginal PGE2 had 32 (71%) vaginal deliveries within 24 hours.

Conclusion: The findings of this study led us to the conclusion that vaginally administered PGE2 causes more patients to deliver their babies vaginally within twenty-four hours.

Keywords: Oxytocin, Induction of labor, Rupture of membranes, PGE2

INTRODUCTION

Rupture of the membranes at full term happens in 10% of pregnancies before the start of labor. The majority of women with PROM go into labour within 24 hours,[1] and the rate of induction of labour has risen during the past decade. Medical or obstetrical difficulties during pregnancy might necessitate inducing labour, but it can also be requested or chosen for social or psychological reasons. When a woman and her doctor determine that they want to induce labour, the next step is to decide how to do it. Inducing labour can be done in a variety of ways depending on a number of parameters such as cervical and membrane state, parity, and patient and provider desire. In this work, we analyse the research on several methods of inducing labour in the third trimester, including drugs, machines, clinical trials, and CAM. Potential drawbacks of each strategy are discussed as well.[2]

Fetal hypoxia can be induced by a number of reasons, including cord prolapse, cord compression, and abruptio-placentae; the duration from membrane rupture to delivery increases the probability of ascending infection, which can lead to perinatal morbidity and mortality[4,5]. For the management of PROMs over the long term, several approaches have been suggested, but none of them have yet achieved widespread acceptance as the standard practise. If labour does not start shortly after the membrane that surrounds the cervix ruptures, you have two options: you may insist on inducing it, or you can wait for it to start on its own, with the latter option being the preferred one when there is no feto-maternal compromise. In patients with preterm rupture of membranes (PROM), inducing labour with intravenous syntocinon resulted in a lower risk of infection for both the mother and the infant [6]. One study found that the oxytocin group had a shorter time from induction to early labour and a lesser period from initiation to delivery (4.9+/-4.1 vs. 8.5+/-3.6 hrs; P=0.02) than the PGE2 group; however, the 2 groups showed rates of caesarean and reaching as high as 13% if the delay is more than 12 hours[7,8]. There was a substantial reduction in the risk of chorioamnionitis and endometritis when labour was induced instantly with intravenous oxytocin, as compared to expectant management. The odds ratio for chorioamnionitis was 0.63, and the 95% confidence interval ranged from 0.51 to 0.78. The odds ratio for endometritis was 0.72, and the 95% confidence interval ranged from 0.52 to 0.99. .[9]

It is less likely that chorioamnionitis will develop if labour is induced rather than left to progress naturally. Inducing labour can be done in a number of different ways. The most frequent pharmacological drug for inducing labour is oxytocin,[10] although it can have serious side effects such hyperstimulation of the uterus. Since 1960, prostaglandins have been utilised to bring on labour. Prostaglandin E2, when administered vaginally, has been shown to improve the chance of a vaginal birth within the next 24 hours8[11]. A 4.6%8 increase in the probability of uterine hyper stimulation is associated with foetal heart rate variations. When compared to oxytocin, prostaglandin has a 72% success rate for inducing a vaginal birth within 24 hours .[12]

MATERIAL AND METHODS

This randomized clinical trial was conducted in the multi centers at the Department of Obstetrics and Gynaecology, Murshid Hospital and Health Care Center Karachi, Sindh and PGMI/AMC/LGH Lahore, Punjab in the period from March, 2022 to August, 2022.and comprised of 90 patients. After receiving informed written consent from each participant, thorough demographic information about each case's age, gestational age, body mass index, and place of residence was documented. Patients were not included if they had any of the following conditions: mal-presentation, chorioamnionitis, cord prolapse, prior uterine surgery, existence of an absolute indication for caesarean delivery, or a known intolerance to prostaglandins or oxytocin.

Women between the ages of 18 and 42 who had reached 37 weeks of pregnancy when their membranes ruptured were included in the study. Sample selection with no regard to probability. Forty five patients were randomly assigned to receive either I/V oxytocin or vaginal PGE2 for induction. After subjects were included in the study, information was recorded using a standardised form. Patients were randomly assigned into two groups, each with the same number of participants. The first two parts, if you will. Patients in Group I received intravenous (I/V)

oxytocin at a rate of 4 mili units per minute, with further dose increases of 4 mili units every 30 minutes, for a total of 32 mili units. Individuals in Group II were given tabs of 3 milligramme prostaglandin E2 (PGE2) to be inserted into the posterior vaginal fornix every 6 hours for a total of 3 doses (9mg). If there were more than five contractions or if they lasted more than 90 seconds in 10 minutes, oxytocin / PGE2 was discontinued. This was done every two hours.

Fetal heart rate (FHR) was measured electronically for women in both groups beginning one hour after the initial dose, continuing at least every four hours for twenty minutes before to labor's commencement, and then every half hour once labour had begun. Every hour on the hour leading up to the start of labour, intermittent auscultation was also done. Vaginal examination and assessment of contractions were performed. Within 24-hour vaginal birth rates were the primary endpoint. Statistical analysis was performed with SPSS 23. The rate of vaginal births within the first 24 hours was compared. The significance level of the chi-square test was P0.005 (8.00).

RESULTS

Mean age of the patients in group I was 26.5±6.26 years and in group II mean age was 24.7±5.60. Mean BMI in group I was 25.1±8.16 kg/m^2 and in group II mean BMI was 26.1±7.36 kg/m^2. Mean gestational age in group I was 36.10±4.36 weeks while in group II mean gestational age was 37.5±7.50 weeks. Majority of the patients in both groups were multigravida and were from rural areas.(table-1)

Table-1: Cases' pre-enrollment baseline

Variables	Group I (45)	Group II (45)
Mena age (years)	26.5±6.26	24.7±5.60
Mean BMI (kg/m^2)	25.1±8.16	26.1±7.36
Mean gestational age (weeks)	36.10±4.36	37.5±7.50
Parity		
Primigravida	15 (33.3%)	20 (44.4%)
Multi-gravida	30 (66.7%)	25 (55.6%)
Residency		
Rural	27 (60%)	25 (55.6%)
Urban	18 (40%)	20 (44.4%)

Those who were induced with intravenous oxytocin had 22 (48.9%) vaginal deliveries within 24 hours, while patients who were induced with vaginal PGE2 had 32 (71%) vaginal deliveries within 24 hours.(Figure 1)

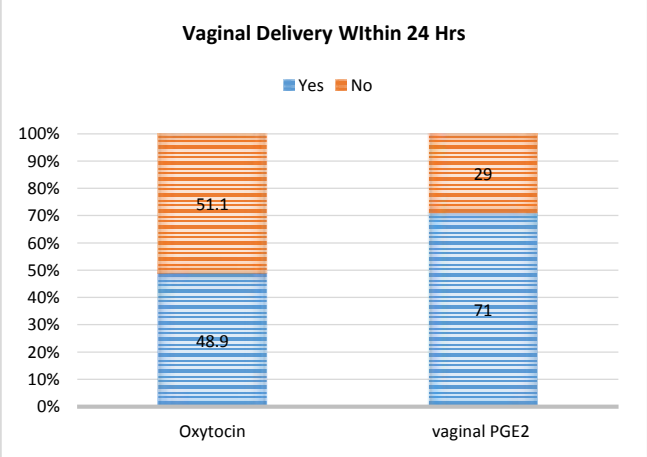

Figure-1: Intrapartum vaginal birth within

We found that satisfaction rate among patients of group II was higher 38 (84.4%) as compared to group I found in 32 (71.1%) with p value <0.003.(table-2)

Table-2: Comparison of female's satisfaction

Variables	Group I	Group II
Satisfaction Rate		
Yes	38 (84.4%)	32 (71.1%)
No	7 (15.6%)	13 (28.9%)

DISCUSSION

It has been widely held by obstetricians since antiquity that a premature membrane rupture raises the risk of difficulties for both the mother and the baby, including the need for more surgeries and a higher infant death rate. The obstetrician's predicament is compounded by the fact that the vast majority of published research comes from Western nations, where standards of care for mothers and newborns are higher, asepsis protocols are strictly adhered to, and antibiotics are utilised when necessary .[13]

This study was conducted to try and review current guidelines for care of term PROM, which is still more common in poorer countries like Pakistan because to the greater prevalence of maternal and newborn morbidity there. Increases in the capacity to detect and treat maternal and newborn problems have contributed to a shift in the recommended care plan for women with the PROM at term over the past decade .[14]

Women who had preterm premature rupture of the ovary membranes (PROM) were enrolled in this study. The initiation interval and the risk of chorioamnionitis were assessed both for intravenous oxytocin or vaginal prostaglandin E2, respectively. In the past, the first medicine used to induce labour in pregnant women who had PROM and who had already reached their full gestation was intravenous oxytocin. This drug is both safe and cost-effective when it is used properly in persons who are carefully monitored. It has been determined that intravenous oxytocin is the most effective method for going into labor in preterm preeclampsia (PROM) [15]. In the case of an unfavourable cervix, prostaglandin E2 is an efficient agent of cervical softening and inducement of labour. [16] There were a total of ninety pregnant women included in our research. Patients were randomized in two groups. Mean age of the patients in group I was 26.5±6.26 years and in group II mean age was 24.7±5.60. Results were comparable to the previous studies.[17,18]

In our study we found that, those who were induced with intravenous oxytocin had 22 (48.9%) vaginal deliveries within 24 hours, while patients who were induced with vaginal PGE2 had 32 (71%) vaginal deliveries within 24 hours. These findings are in line with those discovered by Granstrom L et al in Sweden (67.21% for prostaglandin E2 vag tablet) & Kelly AJ and Tan BP in 2001 (72% with vaginal PGE2 and 48% with I/V oxytocin[19]). While Zeteroglu found a oxytocin-induced vaginal birth rate of 87.7 %, Wing DA, et al. observed the opposite, reporting a vaginal birth rate of 78.1 percent [20-22]. However, results by Denguezil W et al. reported in 2007 at Teaching hospital Fattouma Bourguiba were different. This demonstrates that PGE2 is extremely effective in increasing the birth rate within twenty-four hours of administration of the drug.

Another theory holds that prostaglandin E2 is a potent agent for PROM induction during pregnancy. The most often cited benefits include an increase in the number of women delivering via vaginal birth, a decrease in the number of women delivering through caesarean section, and an increase in the number of women delivering by normal vaginal delivery.[23]

CONCLUSION

The findings of this study led us to the conclusion that vaginally administered PGE2 causes more patients to deliver their babies vaginally within twenty-four hours.

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