

## The comparison of dinoprostone and vagiprost for induction of lobar in post term pregnancy: A randomized prospective study.

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### **ABSTRACT:**

**Objective:** The aim of study to see the effect of 3mg dinoprostone in induction of labor in comparison to 50mcg vagiprost in post term pregnancies.

**Methods:** A randomized prospective study that attends at bint AL huda hospital from the period of 1<sup>st</sup> of septmber 2012 to 1<sup>st</sup>septmber 2013 where 115 patients which need induction of lobar for post term pregnancy that diagnosed by early dating U/S, where randomly divided into 2 groups, the 1<sup>st</sup> group receive dinoprstone 3mg vaginal tablet , the other group receive vagiprost 50mcg vaginal tablet. The mean outcome measures is the time from induction to delivery, the incidence of vaginal delivery within 12 and 24 hours, obstetrical complications & neonatal outcome.

**Result:** The induction to delivery time was significantly shorter ( 12.5 hrsvs 16.3 hrs  $P < 0.001$ ) in the misoprostol group with less need to second and third dose ( 9% vs 20%  $P$  value  $< 0.05$ ) compared to dinoprostone. With misoprostol more women delivered within 12 hours ( 54.5% vs 46.6%  $P < 0.01$ ) and nearly all women delivered within 24 hours ( 81.8% vs 66.6%  $P < 0.05$ ), there was a less need for oxytocin augmentation in the misoprostol group ( 27.2% vs 41.6%  $P < 0.05$ ), In both groups majority of women had vaginal deliveries (83.4% with dinoprostonevs, 81.8% with misoprostol ) and there was no statistically difference between the rate of C/S in both groups. there was difference regard the admission to baby care unit (27.2% in misoprostol vs 8.3% in the dinoprostone group).

**Conclusion :** Dinoprostone is effective in inducing labor with less effect on fetal wellbeing and less complication , compared with misoprostol which is more effective in inducing labor but with increased risk for both fetus and to mother. indicating that the faster approach is not always the better approach for child birth.

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### **I. INTRODUCTION:**

Induction of labor is carried out for certain maternal and fetal indication. One of the commonest indication is prolonged pregnancy<sup>(1)</sup> . recent studies has been suggested that pregnancy continued beyond 41 weeks gestation, there is statistically significant higher perinatal mortality and morbidity as well as increased risk to mother<sup>(2,3)</sup>. And there are a variety of maternal and fetal conditions where is the benefits of birth outweigh the risks of continued pregnancy for either mother or fetus that are accepted indications for induction of lobar<sup>(4)</sup>. Unsuccessful labor induction is more likely when the cervix is unfavorable, while there is no consensus about exact Bishop score that indicate need for cervical ripening , in general as a role Bishop score  $< 6$  consider too low to induce labor using oxytocin only<sup>(5)</sup>. So prostaglandin groups that used to ripe cervix have been proof to be beneficial in induction of labor together with oxytocin infusion<sup>(5)</sup>. Inducing labor when the cervix is ripe is not difficult, but complications are increased when the cervix is not ripe. Prostaglandin analogues, dinoprostone (PGE1) and misoprostol(PGE2), are used for induction of lobar by cervical ripening and enhancing uterine contraction in order to achieve delivery .Although dinoprostone approved by FDA for ripening of the cervix in patients at or near term , misoprostol is not currently approved for such use by FDA, although it cheap, not need refrigeration and may be with higher efficacy .

several studies have demonstrated higher efficacy of vaginally misoprostol compared to vaginal dinoprostone for both ripening of the cervix and inducing labor<sup>(6-18)</sup>. The Cochrane Pregnancy and Childbirth Group, having reviewed 45 randomized studies, concluded that vaginal misoprostol was more effective than oxytocin or dinoprostone for induction of lobar but with increased rates of uterine hyperstimulation both with and without associated fetal heart rate abnormalities and meconium stained fluid<sup>(8)</sup>. There is a lot of techniques that are available for induction of labor, however prostaglandins remain the most important effective means in achieving cervical ripening and induction of labor when combined with proper timed amniotomy , providing good clinical effectiveness and patient satisfaction.

Prostaglandin E<sub>2</sub> is registered in many countries for labor induction, however, in setting with high average parity an inducing regimen used only oxytocin without prostaglandin E<sub>2</sub> is most likely dangerous, in such setting there is urgent need for another drugs to optimize the induction outcome.

## **II. METHODS AND MATERIALS:**

Between September 1, 2012 and September 1, 2013 , 115 women where participate in this study, 60 women in the dinoprostone group and 55 women in the vagiprost group. All women gave their written informed consent after they had been made aware about the target of this study. Although the main indications was prolonged pregnancy, other induction performed in this study was patient request after consultation without any medical complications after 40 weeks completed gestations. The patient randomly distributed for each group. The vaginal administration of the drug is performed by the resident doctor on the duty and documented in the patient notes either in my duty or duty of other senior that accept using these induction regimens.

Inclusion criteria include:

- [1] age > 18 years.
- [2] accurate dating of pregnancy using crown rump length measurement in the 1<sup>st</sup> trimester.
- [3] single viable pregnancy.
- [4] gestational age > 40 weeks.
- [5] cephalic presentation.
- [6] unfavorable cervix define as Bishop score < 5.
- [7] intact membrane.
- [8] reactive non stress test.

Exclusion criteria include:

- [1] known contraindication to prostaglandins.
- [2] placenta previa.
- [3] prior uterine surgery.
- [4] any antenatal complications.

Gestational age was estimated using crown rump length measurement in the 1<sup>st</sup> trimester<sup>(19)</sup>. Tachysystole define as more than 5 contractions per minute. Non reassuring FHR is define as prolong fetal bradycardia<sup>(20)</sup>.NST was performed for each patient at the time of admission to hospital to ensure fetal well-being and one hour before administration of the drugs. After reassessment of Bishop score, either 3mg dinoprostone or 50 mcg vagiprost was inserted in the posterior vaginal fornix at 8: 00am hour.After another 2 hours the NST was repeated then after each 4 hours. If the women passing to active labor or there membrane spontaneously ruptured or there was abnormal FHR so the patient should be transferred to labor, otherwise, a second Bishop score evaluation was performed after 12 hours ie at 8: 00 pm. If BS is favorable (>5) so the patient transferred to labor room where oxytocin augmentation was performed if there was unsatisfactory uterine contractions so amniotomy carried out when appropriate, if the cervix still unfavorable ,a second dose of misoprostol or dinoprostone was given and same evaluation were fellow as mention above.After a total 24 hours elapsed the non-responders were given the third dose and if this dose was inefficient to induce spontaneous lobar so oxytocin infusion was initiated to induce lobar if there was no progress within 6 hours as assess by pelvic examination the patient underwent CS. The outcomes measures divided into obstetrical and neonatal outcomes. The primary outcome measures were time from induction to delivery and incidence of vaginal delivery within 12 hours and 24 hours. The secondary outcomes were the CS rates, the need for oxytocin augmentation, the meconium stained amniotic fluid incidence, the FHR abnormalities, uterine tachysystole incidence, the admission to the intensive neonatal care within 24 hours and neonatal death rates.Statical analysis was performed using SPSS version 19 software, the Chi square test and Fisher's exact test were used analyze nominal variables in form of frequency tables. Normally distributed metric variables were tested by the T- test for independent samples, while non- normally distributed metric variables were analyzed by Mann Whitney U test. All tests were two-tailed with a confidence level of 95% ( p<0.05). values are expressed as mean \_ standard error(SEM).

## **III. RESULT:**

The two groups were comparable in terms of patients' age (25.5 years old vs 28.5 years old, p > 0.05) and indications for induction of labor( prolonged pregnancy 90.2% vs 88.3%, p > 0.05; social 9.8% vs 11.7% p > 0.05) in the dinoprostone and misoprostol group respectively gestational age ( 286 days, range: 285- 292 days) and the pre induction Bishop score ( 2.7\_+ 0. 1) in the dinoprostone groups, were also comparable to misoprostol group ( 286 days, range: 285- 293 days) and the Bishop score ( 2.9\_+ 0.1) respectively.

**Table 1: obstetrics out come**

The induction to delivery time was significantly shorter ( 12.5 hrsvs 16.3 hrs P < 0.001) in the misoprostol group with less need to second and third dose ( 9% vs 20% P value < 0.05) compared to dinoprostone. With misoprostol more women delivered within 12 hours ( 54.5% vs 46.6% P < 0.01) and nearly all women delivered within 24 hours ( 81.8% vs 66.6% P < 0.05), there was a less need for oxytocin augmentation in the misoprostol group ( 27.2% vs 41.6% P <0.05), While uterine tachysystole ( P <0.05) and meconium stained ( P > 0.05) occur more often in misoprostol groups.

**Table 1: Obstetrical outcome:**

	Dinoprostone n:60	Misoprostol n:55	P value
<b>Time to delivery</b>	16.3	12.5	< 0.001
<b>Delivery &lt;12h</b>	28(46.6%)	30(54.5%)	<0.01
<b>Delivery &lt;24h</b>	40(66.6%)	45(81.8%)	<0.05
<b>singledose</b>	30(50%)	35(63.6%)	<0.05
<b>Second dose</b>	25(41.6%)	18(32.7%)	<0.05
<b>Third dose</b>	5(8.3%)	2(3.6%)	< 0.05
<b>Oxytocin augmentation</b>	25(41.6%)	15(27.2%)	<0.05
<b>Uterine tachysystole</b>	10(16.6%)	20(36.3%)	<0.05
<b>Abnormal FHR</b>	15(25%)	25(45%)	<0.05
<b>Meconium stained</b>	5(8.3%)	15(27.2%)	<0.05

**Table 2:**

In both groups majority of women had vaginal deliveries (83.4% with dinoprostonevs, 81.8% with misoprostol ) and there was no statistically difference between the rate of C/S in both groups. There was one case of uterine rupture in misoprostol group and one case of postpartum hemorrhage.

**Table 2: mode of delivery & indication for caesarean section.**

	Dinoprostone	Misoprostol	Statistic
<b>Vaginal delivery</b>	50(83.4%)	45(81.8%)	NS
<b>c/s</b>	10(16.6%)	10(18.2%)	NS
<b>FHR abnormality</b>	2(3.3%)	8(14.5%)	P <0.05
<b>Failed induction</b>	8(13.3%)	2(3.6%)	P < 0.05

**Table 3:**

In this table we found that also no stastically significant difference between the 2 groups regard perinatal death but there was difference regard the admission to baby care unit (27.2% in misoprostol vs 8.3% in the dinoprostone group).

**Table3: neonatal outcome.**

	Dinoprostone	Misoprostol	Statistic
<b>Perinatal death</b>	2(3.3%)	3( 5.4%)	NS
<b>Admission to baby care unit</b>	5(8.3%)	15(27.2%)	P <0.05

#### IV. DISCUSSION:

In our locality region post term pregnancy is more common because our patients has poor attendance for the antenatal care and they depend on traditional methods for calculating there pregnancy so when they passed there date it become stressful for them for possibilities of losing their babies.<sup>(21)</sup> so they preferred to do C/S in afraid from traditional methods for induction of labor for example the Foly catheter, that's why there is increased incidence of C/S in our region. So in this study we want to use drugs that induce labor without stress for patients and we compare the two drugs for their safety and effectiveness and we found that misoprostol is affective in induction of labor and more patient deliver less than 24 hours (81.8% vs 66.6%) and reduce time from induction to delivery(12.5 hrs vs 16.3 hr) and these correspond to Evangelos G Papanikolaou et al study with same findings<sup>(22)</sup>

In our study we also found that in misoprostol group less need to oxytocin augmentation but there will be increase in uterine hyper stimulation due to strong uterine contraction in fact that misoprostol induce cervical ripening together with early onset uterine contraction that which affect fetal wellbeing in labor that's why increase incidence of FHR abnormalities and incidence of neonatal admission to baby care units and this finding in accordance with previous Cochrane reviews<sup>(10)</sup>. Showed that with misoprostol there was increased risk of meconium as well as uterine tachysystole and FHR abnormalities. In our study there was the same rate of low CS in both groups ( 16.6% in dinoprostone and 18.2% in misoprostol groups).A difference of 2% more in misoprostol groups, although not statistically significant, might have clinical importance in terms of patients health and cost effectiveness. And this was in contrast to the finding of recent large meta-analysis<sup>(10)</sup> published by the Cochrane library, the CS rates were inconsistent, they tended to be lower with misoprostol . in our study we find that dinoprostone is also affective in inducing labor but the affect is less than that of misoprostol and this is correspond to Evangelos G Papanikolaou et al study with same findings<sup>(22)</sup>. And with less effect on fetal wellbeing in labor.

#### V. CONCLUSION:

To conclude, that 3 mg dinoprostone at 12 hours interval is effective in promating cervical ripening and inducing labor with less concerning about fetal wellbeing in labor , compared to 50 mcg misoprostol at 12 hours interval which is highly effective in promoting cervical ripening and inducing labor, however, certain aspects concerning fetal wellbeing during labor induction remain questionable. Larger prospective studies comparing elective induction to expectant management after a completed 40 week gestation( on the basis of early U/S ) may reveal a subgroup of women who might benefit from an elective induction using 3mg dinoprostone

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