

## Comparing Dinoprostone and Oxytocin for labor induction in pregnancies $\geq 37$ weeks with prelabor rupture of membranes at Hung Vuong Hospital

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### Abstract

**Background:** Prelabor rupture of membranes (PROM) at term is associated with increased maternal and neonatal infection risks, and induction of labor (IOL) is recommended to improve pregnancy outcomes. Dinoprostone and oxytocin are commonly used for IOL; however, direct comparative evidence in Vietnam remains limited.

**Methods:** This retrospective cohort study included 140 term pregnant women ( $\geq 37$  weeks' gestation) with PROM who underwent IOL at Hung Vuong Hospital between January 2023 and February 2025. Seventy women were assigned to each group dinoprostone and oxytocin. The primary outcome was successful IOL, defined as achieving a Bishop score  $\geq 7$  or entering active labor (cervical dilation  $\geq 4$  cm) within 24 hours. Secondary outcomes included mode of delivery, induction-to-delivery interval, and maternal and neonatal outcomes. Multivariable regression models were used to adjust for potential confounders.

**Results:** The overall successful IOL rate was 73.6% (95% CI, 65.5-80.7). After adjustment for parity and Bishop score, there was no significant difference in IOL success between the oxytocin and dinoprostone groups (adjusted RR = 1.21; 95% CI, 0.99-1.47). The vaginal delivery rate was higher in the oxytocin group than in the dinoprostone group (64.3%, 95% CI 51.9-75.4 vs 40.0%, 95% CI 28.4-52.4); and oxytocin was independently associated with a higher likelihood of vaginal delivery (adjusted RR = 1.47; 95% CI, 1.05-2.06). Dinoprostone was associated with a shorter induction-to-delivery interval, mainly due to a shorter time from treatment initiation to successful IOL (HR = 1.96; 95% CI, 1.29-2.99). Maternal complications were uncommon and neonatal outcomes were comparable between groups.

**Conclusions:** In term pregnancies with PROM, dinoprostone and oxytocin showed comparable effectiveness and safety for achieving successful IOL. Oxytocin was associated with a higher likelihood of vaginal delivery, whereas dinoprostone was associated with a shorter induction duration. However, the retrospective design and single-center setting may limit causal inference and generalizability of the findings. These results support individualized selection of induction methods based on clinical context.

**Keywords:** Induction of labor; prelabor rupture of membranes; Dinoprostone; Oxytocin.

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## 1. INTRODUCTION

Prelabor rupture of membranes (PROM) at term ( $\geq 37$  weeks of gestation) is a common obstetric condition and is associated with an increased risk of maternal and neonatal complications, particularly infectious morbidity. Accumulating evidence indicates that early induction of labor (IOL) following term PROM shortens the time to delivery and reduces infection-related complications in both mothers and newborns when compared with expectant management, without increasing serious adverse outcomes [1-3].

Despite broad agreement on the benefits of early IOL, the optimal method of induction in term PROM remains uncertain. Oxytocin and dinoprostone are among the most commonly used agents in clinical practice; however, international studies have reported inconsistent findings regarding induction success, mode of delivery, labor duration, and maternal and neonatal safety outcomes[4-7]. These discrepancies may reflect differences in study populations, cervical status at induction, parity, and local induction protocols.

In Vietnam, evidence addressing IOL strategies in term pregnancies complicated by PROM is limited. Most published studies have focused on single-agent use, with few directly comparing oxytocin and dinoprostone within the same clinical setting and under similar management protocols[8-10]. As a result, local data to guide method selection in routine practice remain insufficient.

Therefore, we conducted this study at Hung Vuong Hospital, a high-volume tertiary obstetric center, to compare the effectiveness and safety of oxytocin and dinoprostone for IOL in term pregnancies with PROM. The findings aim to provide context-specific evidence to support individualized clinical decision-making

and optimize maternal and neonatal outcomes.

## 2. OBJECTIVE

This study aimed to compare the effectiveness of IOL between dinoprostone and oxytocin in term pregnancies ( $\geq 37$  weeks) with PROM at Hung Vuong Hospital. Specifically, we compared the rate of successful induction, vaginal delivery rate, induction-to-delivery interval, and maternal and neonatal outcomes between the two groups.

## 3. MATERIALS AND METHODS

### 3.1. Study population

Pregnant women with a gestational age of  $\geq 37$  weeks who were diagnosed with PROM and underwent IOL with dinoprostone or oxytocin at Hung Vuong Hospital between January 2023 and February 2025.

**Inclusion criteria:** Pregnant women who met all of the following criteria:

Gestational age  $\geq 37$  weeks, determined by the last menstrual period and/or first-trimester ultrasonography.

PROM diagnosed based on clinical findings and/or supportive tests according to hospital protocols and documented in the medical records. Prophylactic antibiotics were administered according to the hospital protocol when indicated, such as in cases of PROM  $\geq 18$  hours or group B streptococcus (GBS) infection.

Bishop score  $\leq 5$ , with fewer than 4 uterine contractions within 20 minutes.

Singleton pregnancy with cephalic presentation and a live fetus.

Category I fetal heart rate tracing according to the American College of Obstetricians and Gynecologists (ACOG, 2009).

IOL with dinoprostone or oxytocin.

Complete medical records available.

### **Exclusion criteria:**

Women who were already in established labor.

Abnormal fetal heart rate tracing of unknown etiology.

Indication for immediate cesarean delivery at admission;

Suspected chorioamnionitis;

Severe untreated vaginitis;

Contraindications to the study medications.

### **3.2. Induction protocol**

The method of IOL was selected according to the hospital clinical protocol and attending obstetrician's clinical judgment.

Dinoprostone 10 mg was administered as a vaginal insert for cervical ripening in women with an unfavorable cervix and no contraindications to its use. During treatment, uterine contractions and fetal heart rate were monitored. If adequate uterine contractions were not achieved after successful induction, the dinoprostone insert was removed and oxytocin augmentation was initiated according to the clinical protocol.

Oxytocin was administered intravenously using a low-dose protocol, starting at 1.2 mL/h, with incremental increases every 20 minutes until adequate uterine contractions were achieved or the maximum dose of 12 mL/h was reached.

During induction of labor, fetal heart rate was monitored using cardiotocography (CTG) every 4 hours according to standard obstetric practice.

### **3.3. Methods**

**Study design:** A retrospective two-group cohort study.

**Sample size:** The sample size was calculated using the formula for comparing two proportions ( $p_1 = 0.714$ ,  $p_2 = 0.928$ , significance level  $\alpha = 0.05$ , and power  $1 - \beta = 0.90$ )[5]. The minimum required sample size was 66 women per group. In practice, 70 women were included in each group.

**Definition of successful IOL:** Bishop score  $\geq 7$  or entering active labor (cervical dilation  $\geq 4$  cm) within 24 hours after initiation of induction[11].

**Study variables:** The exposure variable was the method of IOL (dinoprostone or oxytocin). Outcome variables included IOL success, labor duration, mode of delivery, and adverse maternal and neonatal outcomes. Other variables collected included sociodemographic characteristics, maternal clinical characteristics and obstetric history, and factors related to the labor and delivery process.

**Data collection:** All eligible cases of IOL in pregnancies  $\geq 37$  weeks with PROM at Hung Vuong Hospital were identified using the HSoft hospital information system. Paper medical records were retrieved from the medical record archive, and data were extracted using a standardized data collection form. Selection and information biases were minimized by clearly defining study variables and excluding records with missing information on key variables. Potential confounders were controlled using multivariable regression models.

**Data analysis:** Data were analyzed using Stata version 14.0. Descriptive statistics were used to summarize the characteristics of the study population. Comparisons between the two groups were conducted using appropriate statistical tests based on variable type and distribution. Survival analysis and regression models were used to assess the association between the method of IOL and study outcomes. In the time-to-event analysis, the event of interest was successful induction. Women who underwent cesarean delivery before achieving successful induction were treated as censored observations at the time of cesarean delivery. Cesarean delivery may act as a

competing event; however, given the study objective and sample size, it was handled as censoring in the present analysis.

**Ethical considerations:** This study was approved by the Institutional Ethics Committee of Hung Vuong Hospital

(Approval No. 564/HĐĐĐ-BVHV, dated January 24, 2025) and was also approved by the Scientific Council of Pham Ngoc Thach University of Medicine. Patient confidentiality was maintained, and data were anonymized prior to analysis.

## 4. RESULTS

### 4.1. Baseline characteristics of the study population

**Table 1.** Sociodemographic characteristics of the study population

Characteristic	Overall (N=140)	Dinoprostone (n1=70)	Oxytocin (n2=70)	p-value
<b>Age</b>				0.661*
Mean±SD	28.6±4.8	28.4±4.6	28.7±5.0	
Min-Max	18-39	18-37	19-39	
<b>Ethnicity</b>				0.512**
Kinh	130 (92.9)	64 (91.4)	66 (94.3)	
Hoa/other	10 (7.1)	6 (8.6)	4 (5.7)	
<b>Place of residence</b>				0.376**
HCM city	49 (35.0)	27 (38.6)	22 (31.4)	
Other	91 (65.0)	43 (61.4)	48 (68.6)	
<b>Education level</b>				0.073**
≤ Secondary	29 (20.7)	10 (14.3)	19 (27.1)	
High school	47 (33.6)	22 (31.4)	25 (35.7)	
Post-high school	64 (45.7)	38 (54.3)	26 (37.2)	
<b>Occupation</b>				0.052**
Office worker	43 (30.7)	29 (41.3)	14 (20.0)	
Factory worker	36 (25.7)	16 (22.9)	20 (28.6)	
Trader	21 (15.0)	7 (10.0)	14 (20.0)	
Homemaker	21 (15.0)	11 (15.7)	10 (14.3)	
Other	19 (13.6)	7 (10.0)	12 (17.1)	

*SD: Standard deviation; Min: Minimum; Max: Maximum HCM: Ho Chi Minh; (\*) T-test; (\*\*) Chi-square test*

The mean age of the 140 pregnant women included in the study was 28.6 ± 4.8 years (range, 18-39). Most participants were of Kinh ethnicity (92.9%), lived in provinces outside Ho Chi Minh City (65.0%), and had a post-high school education level (45.7%). The most common occupation was office worker (30.7%). There were no statistically significant differences in baseline characteristics between the two groups (p > 0.05).

**Table 2.** Maternal health status, obstetric history and Bishop score

Characteristic	Overall (N=140)	Dinoprostone (n1=70)	Oxytocin (n2=70)	p-value
<b>Medical history</b>				0.853*
Yes	41(29.3)	20 (28.6)	21 (30.0)	
No	99(70.7)	50 (71.4)	49 (70.0)	
<b>Pre-pregnancy BMI</b>				0.503*
Underweight(<18.5)	9 (6.4)	3 (4.3)	6 (8.6)	
Normal (18.5-22.9)	68 (48.6)	35 (50.0)	33 (47.1)	
Overweight (23-24.9)	30 (21.4)	13 (18.6)	17 (24.3)	
Obesity (≥25)	33 (23.6)	19 (27.1)	14 (20.0)	
<b>Parity</b>				0.005*
Nulliparous	118(84.3)	65 (92.9)	53 (75.7)	
Multiparous	22 (15.7)	5 (7.1)	17 (24.3)	
<b>Bishop score</b>				0.508***
2	16 (11.4)	8 (11.4)	8 (11.4)	
3	72 (51.4)	39 (55.7)	33 (47.1)	
4	47 (33.6)	22 (31.4)	25 (35.7)	
5	5 (3.6)	1 (1.4)	4 (5.7)	

BMI: Body mass index; (\*) Chi-square test; (\*\*) No linear trend was observed (*p* for trend =0.407 and 0.287); (\*\*\*) Fisher exact test

Most women had no underlying medical conditions (70.7%) and had a normal pre-pregnancy body mass index (BMI) (48.6%), with comparable distributions between groups (*p* > 0.05). Most participants were nulliparous; the nulliparous rate was higher in the dinoprostone group than in the oxytocin group (92.9% vs 75.7%), and this difference was statistically significant. Baseline Bishop scores were mainly 3 and 4, with no significant difference in distribution between groups (*p* = 0.058).

**4.2. Comparison of the successful induction of labor rate between the dinoprostone and oxytocin groups.**

**Table 3.** Comparison of successful IOL between the two IOL groups

Variables	Crude RR (95% CI)	p-value	Adjusted RR (95% CI)	p-value
<b>IOL method</b>				
Dinoprostone	1.00		1.00	
Oxytocin	1.24 (1.01-1.52)	0.039	1.21 (0.99-1.47)	0.061
<b>Bishop score*</b>				
2	1.00		1.00	
3	2.58 (1.23-5.39)	0.012	2.59 (1.25-5.38)	0.010
4-5	2.46 (1.17-5.18)	0.018	2.40 (1.15-5.02)	0.020
<b>Parity**</b>				
Nulliparous	1.00		1.00	
Multiparous	1.29 (1.08-1.54)	0.005	1.21 (1.02-1.43)	0.032

*Multivariable generalized Poisson regression model; RR: relative risk; CI: confidence interval; (\*) The interaction p-value was 0.698 (>0.05), indicating no interaction; (\*\*) The interaction p-value was 0.947 (>0.05), indicating no interaction.*

The overall successful IOL rate was 73.6% (95% CI, 65.5-80.7). Success was observed in 81.4% (95% CI, 70.3–89.7) of women in the oxytocin group and 65.7% (95% CI, 53.4-76.7) in the dinoprostone group (p = 0.035).

A multivariable Poisson regression model was constructed including variables with p < 0.25 in univariable analyses (medical history, parity, birth weight, and Bishop score). In addition to the IOL method, Bishop score and parity were independently associated with induction success. Variance inflation factors (VIFs) were < 2 for all covariates, indicating no significant multicollinearity. No interaction was detected (all interaction p-values > 0.05). In the final model, after adjustment for Bishop score and parity, oxytocin was associated with a 1.21-fold higher likelihood of successful IOL compared with dinoprostone (RR = 1.21; 95% CI, 0.99–1.47), although the association was not statistically significant (p = 0.061).

### 4.3. Comparison of the vaginal delivery rate between the two IOL groups.

**Table 4.** Comparison of mode of delivery between the two groups

<b>Mode of delivery</b>	<b>Overall (N=140)</b>	<b>Dinoprostone (n1=70)</b>	<b>Oxytocin (n2=70)</b>
<b>Vaginal delivery</b>	73 (52.1)	28 (40.0)	45 (64.3)
Spontaneous vaginal delivery	67 (47.9)	25 (35.7)	42 (60.0)
Assisted vaginal delivery	6 (4.2)	3 (4.3)	3 (4.3)
<b>Cesarean delivery</b>	67 (47.9)	42 (60.0)	25 (35.7)
<b>Indications for cesarean delivery</b>	(n=67)	(n=42)	(n=25)
Failed IOL	37 (55.2)	24 (57.1)	13 (52.0)
Arrest of labor	14 (20.9)	11 (26.2)	3 (12.0)
Umbilical cord compression	14 (20.9)	6 (14.3)	8 (32.0)
Uteroplacental insufficiency	2 (3.0)	1 (2.4)	1 (4.0)

The vaginal delivery rate was significantly higher in the oxytocin group than in the dinoprostone group (64.3% vs 40.0%; p = 0.004). Among cesarean deliveries, the most common indication was failed induction of labor (37/67, 55.2%), followed by arrest of labor, umbilical cord compression, and uteroplacental insufficiency.

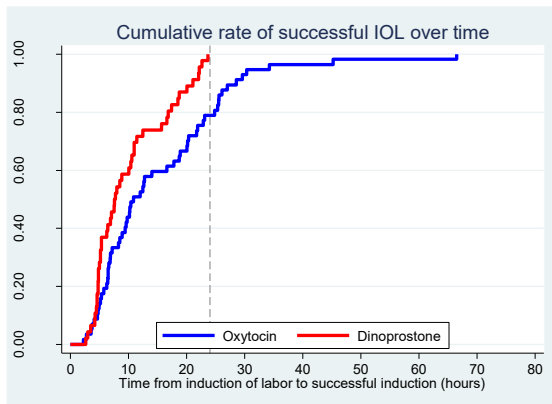
**Table 5.** Comparison of vaginal delivery between the two groups

Variables	Crude RR (95% CI)	p-value	Adjusted RR (95% CI)	p-value
<b>IOL method*</b>				
Dinoprostone	1.00		1.00	
Oxytocin	1.61 (1.15-2.25)	0.006	1.47 (1.05-2.06)	0.023
<b>Bishop score*</b>				
2	1.00		1.00	
3	4.67 (1.25-17.39)	0.022	4.73 (1.32-16.96)	0.017
4-5	4.46 (1.19-16.76)	0.027	4.21 (1.17-15.20)	0.028
<b>Parity**</b>				
Nulliparous	1		1	
Multiparous	1.89 (1.46-2.44)	<0.001	1.67 (1.29-2.16)	<0.001

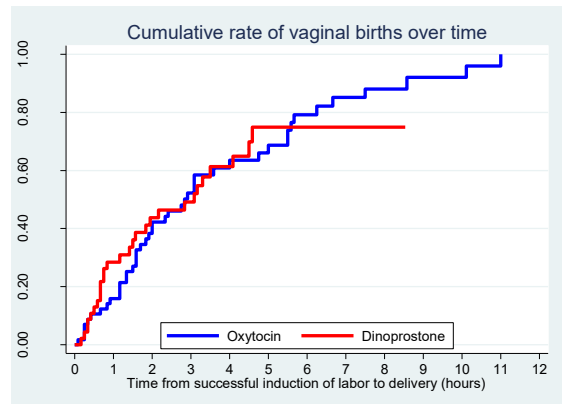
Multivariable generalized Poisson regression model; (\*) Interaction p-value = 0.883 (>0.05), indicating no interaction; (\*\*) Interaction p-value = 0.817 (>0.05), indicating no interaction.

In a multivariable Poisson regression model adjusting for age group, medical history, nutritional status, parity, birth weight, and Bishop score, oxytocin was associated with a higher likelihood of vaginal delivery compared with dinoprostone (adjusted RR = 1.47; 95% CI, 1.05-2.06; p=0.023). Bishop score and parity were independently associated with vaginal delivery. No interaction was detected (all interaction p>0.05), and no evidence of multicollinearity was observed.

**4.4. Comparison of the induction-to-delivery interval between the two groups**



**Figure 1.** Kaplan–Meier curve showing the time from induction of labor to successful induction in the two groups



**Figure 2.** Kaplan–Meier curve showing the time from successful induction of labor to delivery in the two groups.

The dinoprostone group had a shorter induction-to-delivery interval than the oxytocin group ( $14.7 \pm 8.7$  vs  $19.9 \pm 13.1$  hours;  $p < 0.05$ ). The time from IOL initiation to successful induction was shorter in the dinoprostone group ( $10.1 \pm 6.3$  vs  $15.2 \pm 11.8$  hours), whereas the time from successful induction to delivery was comparable between groups. Cox proportional hazards regression showed that dinoprostone was associated with a faster achievement of successful induction compared with oxytocin (HR = 1.96; 95% CI, 1.29–2.99;  $p = 0.002$ ).

#### 4.5. Comparison of maternal and neonatal outcomes between the two groups

**Table 6.** Comparison of maternal outcomes between the two groups

Outcome	Overall	Dinoprostone	Oxytocin	p-value
<b>IOL-related complications</b>	4 (2.9)	3 (4.3)	1 (1.4)	0.620*
Uterine tachysystole	3	3	0	
Placental abruption	1	0	1	
<b>Postpartum blood loss (mL)</b>				0.001
Median	300	300	200	
Min-Max	50-1000	100-550	50-1000	
<b>Postpartum infection</b>	4 (2.9)	1 (1.4)	3 (4.3)	0.620**

(\* ) Chi-square test; (\*\*) Fisher’s exact test

Overall, induction-related complications were uncommon, occurring in 2.9% of cases (4/140), with three cases reported in the dinoprostone group. Postpartum complications were mainly postpartum infections, which were also infrequent (2.9%) and similarly distributed between the two groups.

Postpartum blood loss was not normally distributed, medians were compared. The median estimated blood loss was lower in the oxytocin group (200 mL) than in the dinoprostone group (300 mL), and this difference was statistically significant ( $p = 0.001$ ).

**Table 7.** Neonatal outcomes in the two group

Outcome	Overall (N=140)	Dinoproston (n1=70)	Oxytocin (n2=70)	p-value
<b>Apgar score at 1 min</b>				0.681*
< 7	6 (4.3)	4 (5.7)	2 (2.9)	
≥7	134 (95.7)	66 (94.3)	68 (97.1)	
<b>Apgar score at 5 min</b>				-
< 7	0 (0)	0 (0)	0 (0)	
≥7	70 (100)	70 (100)	70 (100)	
<b>Birth weight (g)</b>				0.066**
Mean ± SD	2968±311	3016±289	2919±326	
<b>Neonatal complications</b>	25 (17.9)	13 (18.6)	12 (17.1)	0.825***
Neonatal infection	10 (40.0)	6 (46.2)	4 (33.3)	0.688*
Respiratory distress	3 (12.0)	2 (15.4)	1 (8.3)	1.000*
Early jaundice	11 (44.0)	5 (38.5)	6 (50.0)	0.561***
Other	1 (4.0)	0 (0)	1 (8.3)	0.480*

(\*) Fisher's exact test; (\*\*) T-test for comparison of two means with equal variances; (\*\*\*) Chi-square test

Among the 140 neonates, 95.7% had an Apgar score  $\geq 7$  at 1 minute, and all neonates had an Apgar score  $\geq 7$  at 5 minutes. Mean birth weight was slightly higher in the dinoprostone group than in the oxytocin group ( $3016 \pm 289$  g vs  $2919 \pm 326$  g), although the difference was not statistically significant ( $p = 0.066$ ). Overall, 25/140 neonates (17.9%) experienced at least one complication; early jaundice was the most common (11/140), followed by neonatal infection (10/140), respiratory distress (3/140), and other complications (1/140).

## 5. DISCUSSION

**Principal findings.** In this retrospective cohort of 140 term pregnancies complicated by PROM, both dinoprostone and oxytocin achieved relatively high rates of successful induction of labor. Although oxytocin showed a higher crude rate of successful induction, the difference was attenuated after adjustment for parity and the baseline Bishop score. These findings highlight the important influence of cervical status and parity—two well-established determinants of labor induction outcomes—on the likelihood of successful induction.

**Effectiveness and mode of delivery.** In the adjusted analysis, oxytocin remained associated with a higher likelihood of vaginal delivery compared with dinoprostone. This finding is consistent with several previous observational studies evaluating induction strategies in term PROM, which reported comparable or slightly higher vaginal delivery rates with oxytocin-based protocols [4,5]

A possible explanation is that oxytocin directly stimulates uterine contractility and may be particularly effective once cervical

ripening has progressed sufficiently. In contrast, prostaglandin E2 preparations such as dinoprostone primarily act on cervical remodeling and may require additional time before adequate uterine contractions are established. In clinical practice, this difference may lead to earlier augmentation with oxytocin and potentially different trajectories of labor progression.

However, the interpretation of this association should be cautious because the groups differed significantly in parity distribution at baseline. A higher proportion of nulliparous women in the dinoprostone group may have contributed to the lower vaginal delivery rate observed in this group. Although multivariable regression was used to adjust for this imbalance, residual confounding cannot be completely excluded.

**Induction duration and labor progression.** Dinoprostone was associated with a shorter induction-to-delivery interval, mainly driven by a shorter time from initiation of induction to achieving the study-defined endpoint of successful induction. This finding is biologically plausible because prostaglandin E2 promotes cervical ripening through collagen remodeling and increased cervical compliance, facilitating the transition to active labor.

Nevertheless, once active labor was established, the interval from successful induction to delivery did not differ substantially between the two groups. This suggests that the primary difference between the two methods occurs during the cervical ripening phase rather than during active labor itself.

Previous studies comparing prostaglandins and oxytocin in PROM have reported heterogeneous results regarding induction duration, likely reflecting differences in induction protocols, augmentation policies, and clinical thresholds for diagnosing

failed induction [4-7]. These protocol-related differences should therefore be considered when interpreting comparisons across studies.

**Safety outcomes.** Maternal complications were uncommon in both groups, and neonatal outcomes were reassuring. All neonates achieved an Apgar score  $\geq 7$  at 5 minutes, and neonatal complications were infrequent and comparable between groups. These findings align with current guideline recommendations supporting induction of labor after term PROM to reduce the risk of ascending infection without increasing serious maternal or neonatal morbidity [1-3].

The observed difference in median postpartum blood loss between the groups reached statistical significance but remained small in absolute terms and may therefore have limited clinical relevance. Variability in estimated blood loss measurements and differences in labor management may also contribute to this finding.

These findings also highlight the importance of appropriate intrapartum surveillance and allowing adequate time during oxytocin induction before diagnosing failed induction.

**Interpretation in the context of existing evidence.** Our findings are broadly consistent with the body of evidence suggesting that both oxytocin and prostaglandin preparations are acceptable options for induction after term PROM. Randomized trials and systematic reviews have shown that early induction of labor—regardless of the specific pharmacologic agent used—reduces the risk of maternal and neonatal infection compared with expectant management [1-3,12].

The present study adds context-specific evidence from Vietnam, where published comparative data on induction strategies in term PROM remain limited [8-10,13,14].

Real-world data from high-volume tertiary centers may help inform clinical decision-making in settings where resource availability, monitoring capacity, and clinical protocols differ from those in randomized trials.

**Limitations.** Several limitations of this study should be acknowledged. First, the retrospective cohort design may introduce selection bias and information bias inherent to studies based on medical record review. Because the choice of induction method was determined by the attending obstetrician and local clinical protocols rather than by random allocation, confounding by indication cannot be excluded. Clinicians may have preferentially selected dinoprostone or oxytocin based on cervical status, parity, or other clinical considerations not fully captured in the dataset.

Second, baseline differences between the two groups, particularly in parity distribution, may have influenced the observed outcomes. Although multivariable regression was used to adjust for potential confounders, residual confounding may remain.

Third, the primary outcome of “successful induction of labor,” defined as achieving a Bishop score  $\geq 7$  or entering active labor within 24 hours, represents a surrogate endpoint rather than a definitive clinical outcome. While this measure reflects progress toward labor, it may not fully capture clinically meaningful endpoints such as vaginal delivery or maternal and neonatal morbidity.

Fourth, heterogeneity in clinical management—such as timing of induction after membrane rupture, antibiotic use, and augmentation protocols—may have influenced labor outcomes and could not be completely standardized in this retrospective analysis.

Finally, this was a single-center study

conducted in a high-volume tertiary obstetric hospital, which may limit the generalizability of the findings to other healthcare settings with different patient populations or induction protocols. Prospective multicenter studies or randomized controlled trials would be valuable to further clarify the comparative effectiveness of dinoprostone and oxytocin for induction of labor in term PROM.

**Clinical implications.** Despite these limitations, the study provides practical insights for clinical decision-making in term PROM. Oxytocin may be associated with a higher probability of vaginal delivery, whereas dinoprostone may facilitate earlier cervical ripening and shorten the induction phase. Therefore, selection of the induction method should be individualized according to cervical status, parity, clinical priorities regarding time to delivery, and the monitoring capacity of the healthcare setting.

Future prospective studies or randomized controlled trials in similar populations would be valuable to further clarify the comparative effectiveness of induction strategies in PROM and to minimize the risk of residual confounding.

## 6. CONCLUSIONS

In term pregnancies with PROM, the overall success rate of IOL was comparable between dinoprostone and oxytocin after adjustment for relevant confounders. Oxytocin was associated with a higher likelihood of vaginal delivery than dinoprostone, while parity and pre-induction Bishop score independently influenced this outcome. In contrast, dinoprostone was associated with a shorter induction-to-delivery interval, primarily driven by a shorter induction phase and earlier achievement of successful induction.

Maternal and neonatal complications

were uncommon, and no significant safety differences were observed between the two induction methods. Taken together, these findings indicate that both agents are effective and safe options for the management of PROM at term. Selection of the induction method should therefore be individualized, taking into account clinical priorities such as the probability of vaginal delivery, anticipated time to delivery, cervical status, parity, and the monitoring capacity of the healthcare setting. However, given the retrospective design of this study, causal inference should be interpreted with caution.

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