Original Article

Comparative Study of Oral Prostaglandin E1 & Intracervical Prostaglandin E2 Gel for Induction of Labor in Pre-Labor Rupture of Membranes at Term

Rabia Irfan[1], Kausar Masoom[2], Syed Azra[3], Majida Zafar[4], Kainaat Kanwal[5], Hannan Sajid[6], Aisha Sidiqqa[7]

[1,5]Post Graduate Resident Gynae, Pakistan Institute of Medical Sciences, Islamabad
[2]Associate Professor, Gynae MCH centre, Pakistan Institute of Medical Sciences, Islamabad
[3]Senior Registrar Gynae MCH centre, Pakistan Institute of Medical Sciences, Islamabad
[4]Assistant Professor Gynae, Pakistan Institute of Medical Sciences, Islamabad
[6]Department of General Surgery Pakistan Institute of Medical Sciences, Islamabad
[7] Professor of Obs and Gynae, Bolan Medical College Quetta

Correspondence: *Dr Kausar Masoom*
Associate Professor, MCH centre, Pakistan Institute of Medical Sciences, Islamabad
drkausarmasoom@gmail.com

Abstract

Background: The amniotic sac rupturing prior to childbirth is known as premature rupture of membranes (PROM). This is known as preterm PROM if it occurs 37 weeks before pregnancy. It is referred to as term PROM if it occurs after 37 weeks of pregnancy.
Objective: The study aimed to compare oral prostaglandin E1 and intracervical prostaglandin E2 gel to induce labor.
Methodology: The randomized comparative study was conducted at Department of Obstetrics and Gynecology, SZABMU, Islamabad during the period February 26, 2022 till February 25, 2023. Two groups of 102 willing patients were formed. Oral prostaglandin E1 was given to Group A, while intracervical prostaglandin E2 was given to Group B.
Results: In Oral PGE1 group 9.8% patients had cesarean section and in Intracervical PGE2 group 21.6% patients had cesarean section with p value (p=0.102). Oral PGE1 group had better outcomes than Intracervical PGE2 group..
Conclusion: When it comes to inducing labor in cases of pre-labor rupture of membranes at term, oral prostaglandin E1 performs better than intracervical prostaglandin E2 gel.
Key Words: PROM, Prostaglandin E1, Prostaglandin E2, term.

Cite this article as: Irfan R, Masoom K, Azra S, Zafar M, Kanwal K, Sajid H, Sidiqqa A. Comparative Study of Oral Prostaglandin E1 & Intracervical Prostaglandin E2 Gel for Induction of Labor in Pre-Labor Rupture of Membranes at Term. J Soc Obstet Gynaecol Pak. 2024; 14(2):286-292.

Introduction

PROM happens when the amniotic sac ruptures before the onset of labor. If this happens before 37 weeks of pregnancy, it's called preterm PROM. If it happens after 37 weeks of pregnancy, it's called term PROM.[1]

The incidence of PROM is estimated to occur in approximately 5% to 10% of all pregnancies. Women experiencing PROM are at increased risk of complications such as intra-amniotic infection, postpartum infection, endometritis, and, in severe cases, maternal mortality. Neonates born to mothers with PROM are at heightened risk of respiratory distress, neonatal sepsis, intraventricular hemorrhage, and neonatal mortality. [2]

The aberrant breakdown of the extra-cellular matrices in the fetal membranes, mediated by matrix metalloproteinases, has been suggested as a key mechanism in the development of preterm PROM. Prostaglandins are hypothesized to contribute to this process by promoting matrix degradation.[3]

A comprehensive review of twelve studies involving 1,489 pregnancies examined the use of oral prostaglandin E1 (PGE1) to start labor (induction of labor or IOL) when the amniotic sac breaks before the expected due date (term premature rupture of membranes or TPROM). The results showed that successful vaginal births occurred in 73% to 95% of cases when PGE1 was taken orally, compared to 52%

Authorship Contribution: [1,4,6]Substantial contributions to the conception or design of the work or the acquisition, [2,3,5] Drafting the work or revising it critically for important intellectual content, [7]Final approval of the version to be published. Active participation in methodology.

Funding Source: none
Conflict of Interest: none

Received: Feb 18, 2024
Accepted: May 22, 2024

to 94% of cases where other methods were used. This suggests that oral PGE1 is a safe and effective way to induce labor in TPROM. However, the studies used different doses, administration methods, and dosing schedules. This highlights the need for a consistent approach to using oral PGE1 for labor induction in Canadian obstetrical practice.[4,5]

Oral misoprostol can serve as an alternative to PGE2 gel to induce labor in women with pre-labor PROM post 34 weeks' gestation. It has been shown to be an efficient and medically safe option for facilitating vaginal delivery, reducing the need to facilitate the process by oxytocin augmentation, and also significantly decreasing the chances of morbidity in both the mother and fetus.[6]

A clinical trial reported that the mean Bishop score after 6 hours was 8.95 ± 1.595 with oral PGE1 and 6.76 ± 2.196 with intracervical PGE2, with the difference being statistically significant ($p < 0.05$). Additionally, 87.4% PGE1 group had successful deliveries within 24 hours compared to 85.3% in the participant of PGE2 group. The rate of cesarean delivery was 15.8% in the PGE1 group and 32.6% in the PGE2 group, showed significantly different results in the two groups. Overall, oral PGE1 was associated with better outcomes compared to intracervical PGE2.[7]

The study aimed to assess the outcomes of oral prostaglandin E1 and intracervical prostaglandin E2 gel to induce labor in term pregnancies with PROM. Existing literature reports oral prostaglandin E1 to be much efficient in delivering improved Bishop score and overall outcome, with a lower incidence of cesarean sections compared to intracervical prostaglandin E2 gel. However, limited research has been conducted in the local population, where intracervical prostaglandin E2 gel is routinely used. This study seeks to provide reliable evidence that can inform clinical practice in the local context, ensuring more effective and appropriate management of PROM at term. The goal is to improve the outcomes in both maternal and neonatal while minimizing risks to the health and safety of both mother and fetus.

Methodology

The randomized comparative study was conducted at Department of Obstetrics and Gynecology, SZABMU, Islamabad during the period February 26, 2022 till February 25, 2023.

Inclusion criteria: 18-40 years old females, presenting PROM (as per operational definition) at term (gestational age >37 weeks, assessed on LMP)

Exclusion criteria: Multiple fetus, non-cephalic presentation, fetal anomalies (on ultrasound)

Females with previous cesarean sections, antepartum haemorrhage and systemic diseases i.e. anemia (Hb<10 g/dl), diabetes (BSR>200 mg/dl), hypertension (BP≥140/90mmHg).

After obtaining official approval from the authorized ethical committee Ref no F.1-1/2015/ERB/SZABMU/947. Approximately 102 patients meeting the inclusion criteria were recruited from the labor room of the Department of Obstetrics & Gynecology. All the enrolled patients signed an official consent form, and confidentiality was maintained throughout the study. Demographic data, including name, age, gestational age, parity, and BMI, were recorded. The patients were then randomly assigned to two groups using a lottery method. A total of 51 chits were prepared for each group (Group A and Group B), and placed in a box. Upon the arrival of each patient, one chit was drawn from the box to randomly assign the patient to the respective group. In Group A, patients received oral prostaglandin E1 (25 mg of misoprostol, administered every 6 hours with a maximum of 3 doses). In Group B, patients received intracervical prostaglandin E2 (2.5 mg of dinoprostone gel, administered every 6 hours with a maximum of 3 doses). The time of induction was recorded. Patients were followed in the labor room for 6 hours, and after this period, the Bishop Score was evaluated. The patients were then monitored further to assess the total duration from induction to delivery. The time of delivery was recorded, and the total induction-to-delivery interval was calculated. If the Bishop Score was less than 5 after 6 hours of the third dose, indicating failed induction, patients underwent cesarean section, and the mode of delivery was documented as per the operational definition. All data were recorded on a proforma. As all patients were considered low-risk, fetal monitoring was performed via cardiotocography. Fetal distress was observed in three patients in the PGE1 group and two patients in the PGE2 group, for whom cesarean sections were performed.

SPSS version 25 was used to interpret all of the data that was gathered. Mean±SD was used to calculate quantitative variables. Frequencies and percentages were used to represent qualitative factors. T- test was

utilized to compare the independent samples. A *p*-value of less than 0.05 was considered as significant.

Age, gestational age, parity, BMI, and length of PROM were used to stratify the data. Following stratification, the mean induction to delivery interval and Bishop score in both groups were compared using the independent samples t-test, and the mode of delivery in both groups for each stratum was compared using the chi-square test. A *P*-value of less than 0.05 was considered significant.

Results

The average age of patients was 25.88±3.91 and 25.29±3.63 with p value (p=0.433) in Oral PGE1 group was and in Intracervical PGE2 group respectively (Table I). In Oral PGE1 group 41(80.4%) patients were primigravida and 10(19.6%) patients were multigravida. Similarly, in Intracervical PGE2 group 38(74.5%) patients were primigravida and 13(25.5%) patients were multigravida with p value (p=0.477). In Oral PGE1 group 33(64.7%) patients had <40 weeks gestational age and 18(35.3%) patients had >40 weeks gestational age. Similarly, in Intracervical PGE2 group 36(70.6%) patients had <40 weeks gestational age and 15(29.4%) patients had >40 weeks gestational age with p value (p=0.856) (Table I).

In Oral PGE1 group 36(70.6%) patients had <25 BMI and 15(29.4%) patients had >25 BMI. Similarly, in Intracervical PGE2 group 37(72.5%) patients had <25 BMI and 14(27.5%) patients had >25 BMI with p value (p=0.680).

In Oral PGE1 group 35(68.8%) patients had <12 hours duration of PROM and 16(31.4%) patients had >12 hours duration of PROM. Similarly, in Intracervical PGE2 group 38(74.5%) patients had <12 hours duration of PROM and 13(25.5%) patients had >12 hours duration of PROM with p value (p=0.510).

The mean estimated fetal weight in Oral PGE1 group was 3.27±0.79 kg and in Intracervical PGE2 group was 3.35±0.79 kg hours with p value (p=0.636) (Table 2). At time of induction the Bishop score in Oral PGE1 group was 2.99±0.81 and in Intracervical PGE2 group it was 2.94±0.79 with p value (p=0.876). After 6 Hours of induction the Bishop score in Oral PGE1 group was 8.84±1.77 and in Intracervical PGE2 group it was 7.51±1.92 with p value (p=0.0001).

Table I: Age, Parity & Gestational age of the participants.

Age Groups	Groups		Total	p value
	Oral PGE1	Intracervical PGE2		
18-25 years	22	27	49	0.482
	43.1%	52.9%	48.0%	
26-30 years	24	18	42	
	47.1%	35.3%	41.2%	
31-40 years	5	6	11	
	9.8%	11.8%	10.8%	
Total	51	51	102	
	100.0%	100.0%	100.0%	
Mean±SD	25.88±3.91	25.29±3.63	25.59±3.77	0.433
Parity	**Oral PGE1**	**Intracervical PGE2**	**Total**	**p value**
Primi gravida	41	38	79	.477
	80.4%	74.5%	77.5%	
Multi gravida	10	13	23	
	19.6%	25.5%	22.5%	
Total	51	51	102	
	100.0%	100.0%	100.0%	
Gestational age	**Oral PGE1**	**Intracervical PGE2**	**Total**	**p value**
≤40 weeks	33	36	69	0.525
	64.7%	70.6%	67.6%	
>40 weeks	18	15	33	
	35.3%	29.4%	32.4%	
Total	51	51	102	
	100.0%	100.0%	100.0%	
Mean±SD	39.65±1.62	39.59±1.64	39.62±1.62	0.856

Table II: Results of BMI, duration of PROM and estimated fetal weight.

BMI	Groups		Total	p value
	Oral PGE1	Intracervical PGE2		
≤25	36	37	73	0.826
	70.6%	72.5%	71.6%	
>25	15	14	29	
	29.4%	27.5%	28.4%	
Total	51	51	102	
	100.0%	100.0%	100.0%	
Mean±SD	24.39±1.78	24.53±1.57	24.46±1.69	0.680
Duration of PROM	**Oral PGE1**	**Intracervical PGE2**	**Total**	**p value**
≤12 hours	35	38	73	0.510
	68.6%	74.5%	71.6%	
>12 hours	16	13	29	
	31.4%	25.5%	28.4%	
Total	51	51	102	
	100.0%	100.0%	100.0%	
Mean±SD	9.88±4.02	9.90±4.22	9.89±4.10	0.981
Estimated fetal weight (Kg)	**N**	**Mean**	**SD**	**p value**
Oral PGE1	51.00	3.27±0.79	0.79	0.636
Intracervical PGE2	51.00	3.35±0.79	0.79	

Table III: Results of Bishop score and induction to delivery interval.					
Bishop Score	**Groups**	**N**	**Mean**	**SD**	**p value**
Bishop score (at time of induction)	Oral PGE1	51.00	2.99	0.81	0.876
	Intracervical PGE2	51.00	2.94	0.79	
Bishop score (after 6 hours of induction)	Oral PGE1	51.00	8.84	1.77	0.0001*
	Intracervical PGE2	51.00	7.51	1.92	
Results of induction to delivery interval (hours) in study groups	**Groups**	**N**	**Mean**	**SD**	
	Oral PGE1	51.00	12.37	4.66	0.0001*
	Intracervical PGE2	51.00	16.02	4.60	

The mean induction to delivery interval in Oral PGE1 group was 12.37±4.66 and in Intracervical PGE2 group was 16.02±4.60 hours with p value (p=0.0001) (Table III).

In Oral PGE1 group 46(90.2%) patients had spontaneous vaginal delivery and 5 (9.8%) patients had cesarean section. In Intracervical PGE2 group 40(78.4%) patients had spontaneous vaginal delivery and 11(21.6%) patients had cesarean section with p value (p=0.102).

In Oral PGE1 group spontaneous vaginal delivery was noted in 46 female out of which 18 (39.13%) were augmented with Syntocinon to accelerate labor and in Intracervical PGE2 group it was noted that out of 40 vaginal deliveries 21(52.5%) females required augmentation.

In Oral PGE1 caesarean deliveries were noted in 05 females, 03 females required augmentation and in Intracervical PGE2 group 11 females had caesarean deliveries out of which 08 (72.72%) were augmented.

Indication of cesarean section in Oral PGE1 group was persistent NRCTG 3 (5.9%), failed IOL 2(3.9%) and in Intracervical PGE2 group Indication of cesarean section was persistent NRCTG 2(3.9%), persistent decreased fetal movement 2(3.9%), failed IOL 3(5.9%), reduced liqor + NRCTG 2(3.9%) and non-progression of labor 2(3.9%) (Table (V).

The stratification results for age, gestational age, parity, BMI and duration of PROM with Bishop score, mode of delivery and induction to delivery interval were non-significant. Chorioamniotis was not developed in any group (Table V& VI).

Discussion

In cases where the amniotic sac breaks before labor starts (pre-labor rupture of membranes), actively inducing labor can lower the risk of infections for both the mother and baby compared to waiting for labor to start on its own. Preparing the cervix for labor before induction (cervical ripening) can make the induction process more successful.

Table IV: Results of mode of delivery and indication of cesarean section				
Mode of delivery	**Groups**		**Total**	**p value**
	Oral PGE1	Intracervical PGE2		
Spontaneous vaginal	46	40	86	0.102
	90.2%	78.4%	84.3%	
Cesarean section	5	11	16	
	9.8%	21.6%	15.7%	
Total	51	51	102	
	100.0%	100.0%	100.0%	
Indication of Cesarean section	**Groups**		**Total**	
	Oral PGE1	Intracervical PGE2		
Persistent NRCTG	3	2	5	0.10
	5.9%	3.9%	4.9%	
Persistent Decreased Fetal Movement	0	2	2	
	0.0%	3.9%	2.0%	
Failed IOL	2	3	5	
	3.9%	5.9%	4.9%	
Reduced Liqor + NRCTG	0	2	2	
	0.0%	3.9%	2.0%	
Non –progression of labor	0	2	2	
	0.0%	3.9%	2.0%	
Total	51	51	102	
	100.0%	100.0%	100.0%	

Table 5. Stratification results of Bishop score (6 hours post induction)					
Variables		**Groups**	**Mean**	**SD**	**p value**
Age Groups	18-25 years	Oral PGE1	8.18	2.52	0.112
		Intracervical PGE2	7.22	2.19	
	26-30 years	Oral PGE1	9.42	0.50	0.046*
		Intracervical PGE2	7.67	1.75	
	31-40 years	Oral PGE1	9.00	0.01	0.048*
		Intracervical PGE2	8.33	0.52	
Parity	Primi gravida	Oral PGE1	8.71	1.94	0.116
		Intracervical PGE2	7.71	1.78	
	Multi gravida	Oral PGE1	9.40	0.52	0.034*
		Intracervical PGE2	6.92	2.25	
Gestational age groups	<40 weeks	Oral PGE1	9.06	1.41	0.165
		Intracervical PGE2	7.53	1.98	
	>40 weeks	Oral PGE1	8.44	2.28	0.076
		Intracervical PGE2	7.47	1.85	
BMI Groups	<25	Oral PGE1	8.78	1.81	0.166
		Intracervical PGE2	7.51	1.94	

	>25	Oral PGE1	9.00	1.73	0.187
		Intracervical PGE2	7.50	1.95	
Duration of PROM Groups	<12 hours	Oral PGE1	8.71	1.81	0.232
		Intracervical PGE2	7.42	2.00	
	>12 hours	Oral PGE1	9.13	1.71	0.321
		Intracervical PGE2	7.77	1.74	
Variables		**Groups**	**Mean**	**SD**	**p value**
Age Groups	18-25 years	Oral PGE1	12.59	4.43	0.432
		Intracervical PGE2	15.63	4.34	
	26-30 years	Oral PGE1	12.29	4.75	0.321
		Intracervical PGE2	15.39	4.89	
	31-40 years	Oral PGE1	11.80	6.22	0.005*
		Intracervical PGE2	19.67	3.72	
Parity	Primi gravida	Oral PGE1	11.88	4.38	0.223
		Intracervical PGE2	16.42	4.77	
	Multi gravida	Oral PGE1	14.40	5.46	0.034
		Intracervical PGE2	14.85	4.00	
Gestational age	<40 weeks	Oral PGE1	12.61	4.95	0.117
		Intracervical PGE2	16.36	4.78	
	>40 weeks	Oral PGE1	11.94	4.19	0.432
		Intracervical PGE2	15.20	4.18	
BMI Groups	<25	Oral PGE1	12.86	4.75	0.154
		Intracervical PGE2	15.97	4.44	
	>25	Oral PGE1	11.20	4.39	0.049*
		Intracervical PGE2	16.14	5.16	
Duration of PROM Groups	<12 hours	Oral PGE1	11.46	4.54	0.411
		Intracervical PGE2	15.76	4.61	
	>12 hours	Oral PGE1	14.38	4.43	0.652
		Intracervical PGE2	16.77	4.66	

Table VI: Stratification results of induction to delivery

Variables		**Mode of delivery**	**Groups**		**Total**	**p value**
			Oral PGE1	Intracervical PGE2		
Age Groups	18-25 years	Spontaneous vaginal	17	19	36	0.586
			77.3%	70.4%	73.5%	
		Cesarean section	5	8	13	
			22.7%	29.6%	26.5%	
	26-30 years	Spontaneous vaginal	24	15	39	0.038
			100.0%	83.3%	92.9%	
		Cesarean section	0	3	3	
			0.0%	16.7%	7.1%	
	31-40 years	Spontaneous vaginal	5	6	11	-
			100.0%	100.0%	100.0%	
Parity	Primi gravida	Spontaneous vaginal	36	31	67	0.441
			87.8%	81.6%	84.8%	
		Cesarean section	5	7	12	
			12.2%	18.4%	15.2%	
	Multi gravida	Spontaneous vaginal	10	9	19	0.054
			100.0%	69.2%	82.6%	
		Cesarean section	0	4	4	
			0.0%	30.8%	17.4%	
Gestational age groups	<40 weeks	Spontaneous vaginal	31	28	59	0.057
			93.9%	77.8%	85.5%	
		Cesarean section	2	8	10	
			6.1%	22.2%	14.5%	
	>40 weeks	Spontaneous vaginal	15	12	27	0.805
			83.3%	80.0%	81.8%	

Prostaglandin E2 (PGE2) gel boosts Cervical ripening, which can be used vaginally or intracervically. Misoprostol, a prostaglandin E1 analogue that was originally developed to treat stomach ulcers, has now being tested as a cervical ripening agent. Unlike PGE2 gel, which needs refrigeration, misoprostol is affordable, stable and simple to administer.[8]

Studies on using the medication misoprostol orally to prepare the cervix for childbirth have shown it can be effective. However, there's concern that it might lead to excessively strong and frequent contractions, potentially harming both mother and baby.[9] The vaginal route was used in most studies due to a longer halflife when taken vaginally rather than orally. The short half-life of oral misoprostol, on the other hand, may be beneficial for cervical ripening since it reduces the risk of hyperstimulation and tachysystole.

The benefit of taking misoprostol orally, particularly with regard to PROM, is that it eliminates the need for frequent vaginal inspections, lowering the danger of sepsis in both the mother and the infant.[10] We conducted this study at the Unit II, Department of Obstetrics & Gynecology, SZABMU, Islamabad to compare the outcome of oral prostaglandin E1 and intracervical prostaglandin E2 gel for induction of labor in pre-labor rupture of membranes at term.

Misoprostol and dinoprostone, the inducing agents for cervical ripening and labor induction, are available in a variety of forms, including gel, pills, inserts, and pessaries, and may be delivered by intravaginal, intracervical, oral, and sublingual methods.

We find mean age of patients in Oral PGE1 and Intracervical PGE2 groups were as (25.88±3.91 vs 25.29±3.63, p=0.433) while in Nadar et al., study the mean age of patients in Oral misoprostol and Intracervical PGE2 gel groups were as (27.33±2.76 vs 27.11±3.48, p=0.687). In our study at time of induction the Bishop score was as (2.99±0.81 vs 2.94±0.79,

p=0.876) while in Nadar et al., at time of induction the Bishop score was as (2.67±0.53 vs 2.97±0.0.63), after 6 Hours of induction the Bishop score was as (8.84±1.77 vs 7.51±1.92, p=0.0001) while in reference study after 6 Hours of induction the Bishop score was as (7.84±3.64 vs 9.39±4.20, p=0.0001). In our study mean induction to delivery interval was as (12.37±4.66 vs 16.02±4.60, p=0.0001) while in Nadar et al., mean induction to delivery interval was as (12.60±3.78 vs 14.66±4.80, p=0.005). In our study Oral PGE1 group 9.8% patients had cesarean section and in Intracervical PGE2 group 21.6% patients had cesarean section with p value (p=0.102) while in Nadar et al., In Oral PGE1 group 10% patients had cesarean section and in Intracervical PGE2 group 17.14% patients had cesarean section with p value (p=0.217). Oral PGE1 group had better outcomes than Intracervical PGE2 group. These findings aligned with the findings of our investigation. Furthermore, they come to the conclusion that a little dose of oral misoprostol (25 mcg) administered for pre-induction cervical ripening is a safe, efficient, and well-tolerated alternative to intracervical PGE2 gel, particularly for PROM patients at term.[8] The time between PROM and delivery was also evaluated in this study. In a research employing 200 mcg oral misoprostol, Ngai et al. found comparable results, with a PROM to delivery time of 7.5±6 hours compared to 16.2±6.3 hours in the placebo group.[11] Using a low dosage of 100 mcg oral misoprostol every 6 hours compared to a placebo, Hoffmann et al. conducted an extended PROM experiment. The results showed that oral misoprostol required 7.5 hours compared to 25 hours for the placebo (P<0.001).[12] In a study comparing 100 mcg oral misoprostol every 6 hours to intravenous oxytocin, Al Hussaini TK et al. discovered that the PROM to delivery interval was much shorter with 100 mcg oral misoprostol every 6 hours (60 percent vs. 35.4%), with a statistically significant result (P<0.001).[13]

In term PROM patients, Ayaz et al compared 50 mcg oral misoprostol every 4 hours against conservative care and found that misoprostol reduced PROM to delivery interval (14.8 hours versus 17 hours, P< 0.001).[14] As a result, inducing the patient did not raise the likelihood of caesarean section; in fact, good cervical ripening considerably lowered the rate of caesarean.

For IOL, misoprostol was shown to be more effective than prostaglandin E2. Many studies have indicated that it has a shorter induction to labor and delivery interval. Misoprostol is now widely used for cervical ripening across the globe. The “American College of Obstetricians and Gynecologists” has approved its usage for inducing childbirth.[15]

According to Qudsia's research, Misoprostol is more effective and quicker than prostaglandin E2 in increasing bishop score, and hence its induction to labor and delivery time is shorter. In her research, the time from induction to labor was shorter with Misoprostol, at 7.2±4.7 hours, compared to 12.03±6.69 hours with prostaglandin E2.[16]

When compared to intracervical PGE2, sublingual PGE1 is a better cervical ripening agent, since it is quicker and more effective, with a shorter induction- to-delivery delay. Sublingual PGE1 was also associated with a decreased rate of caesarean section and fetal distress when compared to oral or vaginally delivered PGE1.[7]

This discovery was overlooked in prior studies and is a valuable finding from our research. As a result, low-dose Misoprostol is just as effective as prostaglandin E2 for improving bishop score and uterine contractions.

Padayachee et al evaluate the effectiveness of oral misoprostol for induction of labor (IOL) in the setting of term pre-labor membrane rupture (TPROM). Oral misoprostol seems to be a safe and effective IOL in TPROM, according to the researchers. However, the disparities in administration, dosage and frequency documented in the literature underscore the necessity for a consistent methodology to be used in practice.[4]

Deepika et al examined the effectiveness of a sublingual misoprostol pill vs an intracervical dinoprostone gel for induction of labor, as well as the mother and fetal outcomes following induction. In comparison to the dinoprostone group, the misoprostol group had a shorter IDI, more vaginal births and a lower requirement for caesarean surgery. Between the two groups, there was a significant difference in the post-induction Bishop's score, the Stage II labor process, and the decrease in the need for augmentation (ARM). When compared to dinoprostone, misoprostol was shown to be more effective.[17]

Maternal complications i.e. gestational diabetes, hypertension, fetal macrosomia & still births increase with higher maternal BMI. These complications in turn result in increased rate of reduction of labor among women with obesity however, induction of labor in obese women result in higher caesarean section rates.[18]

Maternal age and BMI are two of the main factors that influence Oral Misoprostol efficacy and effect the failure of induction rate in term PROM.[19]

Conclusion

The present study conclude that 3 doses of 25 mg oral misoprostol administered every 6 hours is as efficient as intracervical administered 2.5 mg of PGE2 every 6 hours in the cervical ripening in PROM patients.

We concluded that oral prostaglandin E1 has better outcomes as compared to intracervical prostaglandin E2 gel for induction of labor in pre-labor rupture of membranes at term.

References

1. Danforth DN. Danforth's obstetrics and gynecology. Lippincott williams & wilkins; 2008.
2. Assefa NE, Berhe H, Girma F, Berhe K, Berhe YZ, Gebreheat G, et al. Risk factors of premature rupture of membranes in public hospitals at Mekele city, Tigray, a case control study. BMC pregnancy and childbirth. 2018;18:1–7.
3. Li W, Unlugedik E, Bocking AD, Challis JR. The role of prostaglandins in the mechanism of lipopolysaccharide-induced proMMP9 secretion from human placenta and fetal membrane cells. Biology of reproduction. 2007;76(4):654–9.
4. Padayachee L, Kale M, Mannerfeldt J, Metcalfe A. Oral misoprostol for induction of labour in Term PROM: a systematic review. Journal of Obstetrics and Gynaecology Canada. 2020;42(12):1525–31.
5. BODDU SN. A randomized controlled unmasked trial comparing safety and efficacy of oral misoprostol with intravenous oxytocin for induction in prelabour rupture of membranes at term. Available from www ctri nic in/Clinicaltrials/pmaindet2 php? trialid= 13129. 2017;
6. Mane JD, Singh AK. Can prostaglandin E1 (Misoprostol) be an alternative to prostaglandin E2 (PGE2) for induction of labor in prelabor rupture of membranes (PROM) after 34 weeks period of gestation. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2017;6(10):4298.
7. Veena B, Samal R, Inbaraj LR, George CE. Sublingual misoprostol (PGE1) versus intracervical dinoprostone (PGE2) gel for induction of labour: a randomized control trail. The Journal of Obstetrics and Gynecology of India. 2016;66:122–8.
8. Nadar AN, PSRNS S. Comparative study of oral PGE 1 and intracervical PGE2 gel for pre-induction cervical ripening in prelabour rupture of membranes> 37 weeks gestational age. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018;7(5):1802.
9. Wing DA. Labor induction with misoprostol. American journal of obstetrics and gynecology. 1999;181(2):339–45.
10. Butt KD, Bennett KA, Crane JM, Hutchens D, Young DC. Randomized comparison of oral misoprostol and oxytocin for labor induction in term prelabor membrane rupture. Obstetrics & Gynecology. 1999;94(6):994–9.
11. Ngai SW, To WK, Lao T, Ho PC. Cervical priming with oral misoprostol in pre-labor rupture of membranes at term. Obstetrics & Gynecology. 1996;87(6):923–6.
12. Hoffmann R, Anthony J, Fawcus S. Oral misoprostol vs. placebo in the management of prelabor rupture of membranes at term. International Journal of Gynecology & Obstetrics. 2001;72(3):215–21.
13. Al-Hussaini T, Abdel-Aal S, Youssef M. Oral misoprostol vs. intravenous oxytocin for labor induction in women with prelabor rupture of membranes at term. International Journal of Gynecology & Obstetrics. 2003;82(1):73–5.
14. Ayaz A, Saeed S, Farooq MU, Ahmad F, Bahoo LA, Ahmad I. Pre-labor rupture of membranes at term in patients with an unfavorable cervix: active versus conservative management. Taiwanese Journal of Obstetrics and Gynecology. 2008;47(2):192–6.
15. Raval BM, Zalavadiya NS, Yadava PA, Mehta ST. Comparative study of intra vaginal misoprostol (PGE1) with intracervical dinoprostone (PGE2) gel for induction of labour. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018;7(9):3769–74.
16. Qazi Q, Fatima SS, Wahab S, Syed W. Efficacy of misoprostol and prostaglandin E2 gel for induction of labor in term pregnancy. Journal of Postgraduate Medical Institute. 2019;33(4).
17. Deepika T, Nagabushan H, Manohar R. A comparative study between sublingual misoprostol (PGE1) versus intracervical dinoprostone Gel (PGE2) in the induction of labor:-A prospective observational study. Journal of Pharmacology and Pharmacotherapeutics. 2019;10(4):132–7.
18. Ellis JA, Brown CM, Barger B, Carlson NS. Influence of maternal obesity on labor induction: a systematic review and meta-analysis. Journal of midwifery & women's health. 2019;64(1):55–67.
19. Sfregola G, Sfregola P, Ruta F, Zendoli F, Musicco A, Garzon S, et al. Effect of maternal age and body mass index on induction of labor with oral misoprostol for premature rupture of membrane at term: A retrospective cross-sectional study. Open Medicine. 2023;18(1):20230747.