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DOI: 10.46903/gjms/23.1.1843

ORIGINAL ARTICLE

COMPARATIVE EFFICACY OF DEXAMETHASONE VERSUS EVENING PRIMROSE OIL ON BISHOP SCORE AND DEVELOPMENT OF LABOUR IN POSTDATE PREGNANCY

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ABSTRACT

Background: The postdate pregnancy is an obstetric problem . we need to enhance cervical preparation prior to induced labour which is needed to decrease maternal and fetal morbidities .this can be achieved by many ways. The determination of this research stayed to examine the efficiency and protection of using vaginal primrose oil capsules versus intravenous dexamethasone for cervix preparation and induced labor duration in full-term pregnancies.

Materials & Methods: It was a randomized case control study started from November 2023 to June 2024, 84 primiparous females with a gestational age of 40-42 weeks and a Bishop Score of 4 or fewer stood confessed to the obstetrics and Gynecology Department at Al Diwanyiah maternity and children teaching hospital to terminate their pregnancies. The study sample 84 calculated with convidence level 80% and margin of error 5%. Simple random method used to select and divided the sample into three groups, 30 people were given 8 milligrams of intravenous dexamethasone, 29 people were given one evening primrose oil capsule vaginally, and 25 people as a control. All of them were given 6 hours before induction. Then we induce labor with oxytocin and then compare the three groups regarding labour progress and the neonatal outcome.

Results: Results show that after 6 hours of injecting dexamethasone, there is a statistical alteration in the Bishop scoring system among the two groups (5.88±1.18, vs. 5.19±0.85 correspondingly). In the dexamethasone grouping, the time it took to go as of the start of initiation to the start of the vigorous labor stage stayed 90±26.3 minutes, which is shorter than in the controlling group's 112.88±48.87 minutes. The initial and second stages of labor are completed more quickly in the group of dexamethasone paralleled to the controlling grouping.

Conclusions: Dexamethasone's administration may contribute more significantly to the process of cervical ripening and labor advancement compared to primrose oil.

KEY WORDS: Dexamethasone; primrose oil; Bishop Score; Initiation of labor; phases of labor; Cervical ripening.

Cite as: Nasir SA, Comparative efficacy of dexamethasone versus evening primrose oil on Bishop score and development of labour in postdate pregnancy. Gomal J Med Sci 2025 Jan-Mar;23(1):45-50. https://doi.org/1046903/gjms/23.1.1843

INTRODUCTION

As a treatment measure, labor induction might be required. This means that contractions must start in the uterus before labor naturally begins. Gestational or long-lasting hypertension, preeclampsia,austere fetal growth limitation, gestational diabetes, eclampsia, and postterm pregnancy are the main reasons for inducing labor. Early membrane rupture without labor, oligohydramnios, or worries about the health of the fetus, such as unsettling heart tones, may all be grounds for ending a pregnancy.[1,2]

Labour induction is among the most prevalent operations conducted in the field of obstetrics. Labour induction is commonly conducted with prostaglandin and oxytocin. Currently, the utilisation of corticosteroids is attracting significant attention about their impact on cervical ripening and the acceleration of the physiological labour process.3 Multiple methods are available for cervical ripening in anticipation of induction. The procedures encompassed medical interventions, including the management of prosta-

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Date Submitted: 05-07-2024
Date Revised: 21-02-2025
Date Accepted: 26-02-2025

glandins, and perfunctory techniques for instance extra amniotic saline infusion (EASI), cervical grip via a Foley catheter, and the use of laminaria. A prospective method for accelerating labor induction involves the administration of corticosteroids in instances of nonreassuring fetal heart tones.[4,5]

From the hypothalamic-pituitary-uterine axis, the birthing process begins. Other axes are involved in this mechanism, such as the adrenal glands' steroid hormones. The humanoid fetus's adrenal glands produce steroid hormones that disturb the placenta and membranes, changing the myometrium's quiescent state to a contractile one. By generating large amounts of the hormone that releases corticotropins, the placenta may facilitate this process. Significant amounts of cortisol are not produced through the fetal adrenal glands until the third trimester. The fetus's stages of cortisol and dehydroepiandrosterone sulfate rise in the last few weeks of pregnancy. Cortisol's negative feedback has no effect on the hormone that releases placental corticotropins.[6,5]

The administration of corticosteroids to expedite labor was suggested subsequent the documentation of glucocorticoid receptors on the fetal amnion. Furthermore, numerous research trainings have examined corticosteroids' role in promoting cervical maturing and expediting labor initiation.[7]

The determination of this research stayed to examine the efficiency and protection of using vaginal primrose oil capsules versus intravenous dexamethasone for cervix preparation and induced labor duration in full-term pregnancies.

MATERIALS & METHODS

This single-blind, randomized, controlled medical trial was showed in the obstetrics and gynecology department at Al Diwanyiah Maternity and Children Teaching Hospital from November 2023 to June 2024. Simple random method used to select and divided the samole into three groups, 84 women was selected as a study sample ,and open EPI with a 95 percent confidence interval and 80 percent power was used. Primiparous women with a singleton fetus in cephalic presentation, a Bishop score of 4 or lower, complete fetal membranes, not in labor, and a gestational age of 40 to 42 weeks, as established by the last menstrual dated and established via first-trimester ultrasonography, for whom vaginal delivery is not contraindicated. Educated agreement was gotten as of all contributors, and the training received approval from the investigation ethics commission of the Facility of Medicine, Alqadissiya University.

We excluded multiparous women, those in active labor, cases of preterm labor, fetal malpresentation, polyhydramnios, and multifetal gestations. Additionally, maternal conditions including diabetes mellitus, hypertensive disorders of pregnancy, and placenta previa. This investigation excluded the history of uterine scarring and prelabor rupture of membranes.

A computer-generated list was utilized to randomize participants into two study groups, I and II, and a control group, III. Following a comprehensive explanation of the technique, signed consent was acquired from each participant.

Research intervention:

The females in training group (I) received eight milligrams (2cc) of dexamethasone sodium phosphate, whereas study group (II) was delivered one capsule of evening primrose oil (1000 mg) vaginally in the posterior fornix by using a sterile needle to open it. Females in the controlling group (III) were administered 2cc of saline intravenously as a placebo. After six hours, a vaginal inspection stayed conducted to assess the cervix, and labor stayed initiated with oxytocin for all three groups. The initial dosage of oxytocin is 4 IU, delivered in 500 mL of normal saline (0.9% NaCl) through intravenous infusion at a rate of 1-2 milliunits per minute, subsequently titrated according to uterine contractions until effective contractions are attained, with a maximum dosage of 20 milliunits per minute. The lengths of the initial and subsequent stages of labor, along with the Apgar scores at one and five minutes, have been documented.

Table 1: Age, BMI, and gestational age comparisons between the groups.

	Dexamethasone grouping	Primrose oil	Controlling group	P value
Age (years)				
Range	19 - 27	19 -28	19 - 27	
Mean ±SD	23.35 ±3.65	23.99 ±3	20.35 ±4.33	0.878
BMI (kg/m2)				
Range	20.1 – 23.2	20.2 -23.8	21.05 - 28	
Mean ±SD	21.99 ± 2.15	21.45 ±1.63	23.28 ±1.63	0.671
Gestational age (weeks)				
Mean ±SD	41.07 ±0.93	41.06 ±0.94	41.12 ±0.42	0.767
Range	40 -42	40 -42	40.32 - 42	

RESULT

Table 1 shows the age, BMI, and gestational age comparisons between the groups under study.

According to study finding of study there is no statistical significant difference among the three studied groups regarding age, BMI, and gestational age.

Table 2 show that the effect of dexamethasone and primrose oil approximately have the same degree of effects after 6 hours.

In table 3 the result indicates that dexamethasone needs to time less than primrose oil to reach active form

Our findings revealed a statistically important disparity in the period of the initial phase of labor, with the dexamethasone cohort exhibiting a shorter period compared to the other two cohorts (Table 4). Furthermore, our training demonstrated a notable disparity in the period of the second phase, with the dexamethasone grouping exhibiting a shorter

Table 2: Bishop scores before and after the intervention were compared for the groups under study.

	Dexamethasonegroup	Primrose oil	Controlgrouping	P value
Before intervention:				
Mean ± SD	3.5 ± 0.71	3.44 ± 0.71	3.58 ± 0.64	0.683
Range	2 - 4	2-4	2 - 4	
After 6 hours:				
Range	4 - 9	3-5	3 - 5	
Mean ± SD	6.55 ± 2.45	5.99 ± 0.71	4.19 ± 0.85	0.019*
p	<0.001**	< 0.092	<0.001**	

Table 3: Appraisal of the two groups under study statistically in terms of the time between the initiation of induction and active stage of labour.

	Dexamethasonegroup	Primrose oil	Controlling group	P value
Time from administration to				
active stage (min)				
Range	42 - 125	53- 158	63 - 254	
Mean ± SD	92±26.3	100±53.3	112.88±48.87	0.001*

Table 4: Analysis of the statistical difference between the two groups under investigation, focusing on the extent of the initial stage of labor.

	Dexamethasonegroup	Primrose oil	Controlling group	P value
Period of 1st stage of				
labor (hr)				
Range	5.8 – 7.7	5.8 – 7.7	6.5 – 9.8	
Mean ± SD	7.38 ± 0.7	7.1 ± 0.92	8.38 ± 0.93	<0.001**

Table 5: Comparing the groups under study statistically in terms of how long the second stage of labor lasted.

	Dexamethasonegroup	Primrose oil	Control group	P value
Period of the 2nd				
stage of labor (minute)				
Mean ± SD	21 ± 5.64	22.23 ± 8.64	26.9 ± 8.53	0.004*
Range	13 - 28	16-35	18 - 42	

Table 6: Comparison of the APGAR scores at one and five minutes for the groups under study.

	Dexamethasonegroup	Primrose oil	Control group	P value
At 1 minute:				
Range	7 - 9	7 - 9	7 - 9	
Mean ± SD	7.82 ± 0.5	7.72 ± 0.6	7.62 ± 0.59	0.239
At 5 minute:				
Range	9	9	8-9	
Mean ± SD	9.27 ± 0.55	9.3 ± 0.57	9.38 ± 0.5	0.503
p	<0.001**	<0.001**	<0.001**	

duration relative to the other two groups (Table 5).

The APGAR score outcomes indicated no statistically important alteration between the assessed groups at one and five minutes (Table 6).

DISCUSSION

This study examined the impact of vaginal EPO and dexamethasone on cervical ripening and the progression of labor in females. The results indicated that the control group exhibited a considerably lower Bishop score paralleled to the intervention groups; nevertheless, the disparity across the intervention groups was considerable, with dexamethasone demonstrating the highest score. Furthermore, findings indicated that cervical consistency and position were significantly enhanced after one week of using vaginal EPO pills alongside dexamethasone. In agreement with our findings, Saleh Zaher et al. [8] assessed cervical preparation and labor duration following intravenous dexamethasone administration, and our results aligned with theirs. The case group exhibited an initial Bishop Score of 2.95 ±0.9, whereas the controlling group displayed a score of 2.82 ±0.9, representing no important alteration between the two groups. A notable difference (P=0.001) existed between the two scores following dexamethasone injection, recorded as 5.9 ±1.57 and 4.6 ±1.72, respectively. The findings indicated that the usage of dexamethasone enhanced cervical preparation and expedited labor induction. Furthermore, Hajivandi et al. [9] assessed the influence of intramuscular dexamethasone on cervical ripening and labor initiation; our findings aligned with theirs. The case and control groups exhibited a substantial disparity in the Mean Bishop Score following dexamethasone treatment (7.23±1.32 vs. 2.98±0.89; P<0.0001). Moreover, significant disparities stayed detected among the dexamethasone and control groups across several metrics, including the period of the second phase of labor (MD = −8.61), the mean interval as of labor initiation to the active stage (MD = −1.55), the Bishop score (MD = 2.40), and the interim from labor initiation to carriage (MD = −2.83). These results aligned with our research conducted by Hemmatzadeh et al. [7]

An important alteration (p-value 0.003) was seen among the groups regarding the onset of labor, with the dexamethasone group averaging 92±26.3 minutes and the control group averaging 112.88±48.87 minutes.This aligns with the results of a study investigating the consequence of dexamethasone inoculation on labor period by Heydari et al [10]. Relative to the control group, the case group exhibited a significantly reduced duration (3.09 ±1.5 hours vs. 4.21 ±1.8 hours, respectively, P < 0.001) from the onset of induction to the commencement of the active phase. The objective of using dexamethasone was to expedite the labor induction process. Moreover, our results concurred with those of Wafa YA. et al. [11], who investigated the properties of oral and vaginal EPO on cervical ripening and labor progression. The outcomes indicated that the control group exhibited a lower Bishop score compared to the interference groups; however, no statistically important variance stayed observed among the intervention groups. Subsequent findings revealed a notable enhancement in cervical consistency and positioning after one week of both oral and vaginal EPO capsules.

Our findings align with those of the study conducted by Sahar et al [12], which examined the impact of corticosteroids on the viability of labor induction via injection external to the amniotic sac. In appraisal to the controlling group, the study group displayed markedly reduced mean durations as of labor initiation to the active labor stage (178.94±34.19 vs. 237.20±24.84 minutes). The duration from the initiation of induction until delivery is reduced when extra-amniotic corticosteroids are administered.

In arrangement with the outcomes of Mokhtarpour et al. [13] our study revealed that the dexamethasone group experienced a reduced duration from initiation to the commencement of the active stage relative to the control grouping. Their findings indicate that the period as of initiation to the beginning of the active stage and from induction to delivery can be shortened with the administration of extra-amniotic corticosteroids.

The initial phase duration significantly differed between the control group and the dexamethasone grouping (7.38 ±0.7 vs. 8.38 ±0.93; p < 0.001). The outcomes we obtained differ from those of Hajivandi et al. [9], who reported no important alteration (P<0.56) among the case and controlling groups concerning the period as of the onset of the active stage to the commencement of the second phase of labor (3.18 ±0.47 vs 3.56 ±1.5). Their study likely employed a larger patient cohort, administering a sole 8 mg intramuscular dosage of dexamethasone, followed by intravenous oxytocin twelve hours post-dexamethasone treatment, which may elucidate the variance.

The current study shown that the dexamethasone grouping had a littler second phase of labor than the control grouping (21 ±5.64 minutes vs. 24.9 ±6.53 minutes) (p = 0.004). Our findings corroborate those of Sammour et al.[14], who investigated the influence of intramuscular dexamethasone on the extended dormant period of labor. A statistically important variance (p < 0.001) stayed detected in the period of the second phase of labor between the case grouping (35.4 ±11.6 minutes) and the control group (49.2 ±16.9 minutes). In alignment with other research, our study demonstrated that the duration of the second time of labor in the dexamethasone grouping stayed littler than that in the control grouping (22.23±16.09 minutes versus 29.03±15.32 minutes, P=0.01). No statistically significant change was observed in Apgar ratings at one and five minutes among the case and controlling groups following intravenous dexamethasone treatment (P=0.239, P=0.503). Hemmatzadeh et al.[7] and Lassey[15] observed no important alteration in Apgar scores at one and five minutes among the case and control groups (P<0.98, P<0.79), corroborating our findings.

CONCLUSION

The findings of our study indicate that dexamethasone is superior than primrose oil in facilitating labor induction, enhancing cervical ripening, and decreasing the period of both the initial and second stages of labor. It also diminishes the period among the start of labor initiation and the onset of active labor.

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CONFLICT OF INTEREST
Authors declare no conflict of interest.
GRANT SUPPORT AND FINANCIAL DISCLOSURE
None declared.

AUTHORS' CONTRIBUTION

The following authors have made substantial contributions to the manuscript as under:

Conception or Design:	SAN
Acquisition, Analysis or Interpretation of Data:	SAN
Manuscript Writing & Approval:	SAN

All the authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.