ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH

INNOVARE ACADEMIC SCIENCES
Knowledge to Innovation

Vol 15, Issue 10, 2022

Online - 2455-3891
Print - 0974-2441

Research Article

A COMPARATIVE STUDY OF FETOMATERNAL OUTCOME IN WOMEN WITH OLIGOHYDRAMNIOS INDUCED WITH MISOPROSTOL

ANJLINA BHATI[1], JYOTI NAGAR[1]*, MAYANKJAIN[2], MONIKA RAHAR[1], SURENDRASINGH[3], AISHWARYA RAVIKRISHAN[3]

[1]Department of Obstetrics and Gynaecology, Jhalawar Medical College, Jhalawar, Rajasthan, India. [2]Department of PSM, Jhalawar Medical College, Jhalawar, Rajasthan, India. [3]Department of General Medicine, Jhalawar Medical College, Jhalawar, Rajasthan, India. Email: nagarjyoti64@gmail.com

Received: 29 May 2022, Revised and Accepted: 16 July 2022

ABSTRACT

Objectives: The objectives of this study were to compare the effect of misoprostol on fetomaternal outcome among women with oligohydramnios and normal amniotic fluid.

Methods: An intervention study was carried out at Obstetrics and Gynecology Department of Jhalawar Medical College during September 2021–February 2022. Based on inclusion and exclusion criteria, 42 women with oligohydramnios at term gestation (Group I) and 42 matched control (Group II) were enrolled in the study. All women were undergone for induction of labor using 50 microgram misoprostol. Data were entered and analyzed using SPSS 23.0 software.

Results: Mean age of Group I was 25.9±4.3 and Group II was 26.4±5.8 years. Nearly, equal dose of misoprostol was required to induce labor in both groups (p=0.28). Induction to delivery interval was significantly different (p=0.0001) in both group. Vaginal or assisted vaginal delivery was occur in 26 (61.90%) and 23 (54.76%) in Group I and Group II. Meconium staining was found significantly higher (p=0.033) among Group I (13, 30.95%) than Group II (05, 11.90%). APGAR score <7 at 1 min was found in 11 (26.19%) in Group I and 04 (9.52%) in Group II p=0.046).

Conclusion: Labor induction at term with misoprostol in both groups did not show significant difference as far as maternal outcome was concerned, although it does affect neonatal parameters in terms of meconium staining and APGAR score.

Keywords: Fetomaternal outcome, Misoprostol, Oligohydramnios.

 DOI: http://dx.doi.org/10.22159/ajpcr.2022v15i10.45370. Journal homepage: https://innovareacademics.in/journals/index.php/ajpcr

INTRODUCTION

Induction of labor implies stimulation of uterine contractions before spontaneous onset of labor, with or without ruptured membranes [1]. Induction of labor is widely used to improve the outcome of pregnancy and when the benefits to either mother or fetus outweighs those of continuing pregnancy [2,3]. The induction rate varies from 12% to 25% indifferent parts of the world. In developing countries, the rates of induction are generally lower than developed countries [4].

Oligohydramnios is one of important condition required intervention during pregnancy either in form of induction of labor or lower segment cesarean section (LSCS). Oligohydramnios is a condition, where the liquor amnii is deficient in amount to the extent of <200 ml at term. Sonographically, it is defined when the maximum vertical pocket of liquor is <2 cm or when amniotic fluid index (AFI) is <5 cm. Oligohydramnios is a severe and common complication of pregnancy and the incidence of this is reported to be around 1–5% of total pregnancies [5]. Oligohydramnios may result in compression of umbilical cord due to loss of protective cushioning effect, thereby leading to fetal distress, increased risk of stillbirth, and complications during labor [6,7].

To prevent antepartum stillbirth, the American College of Obstetricians and Gynecologists recommends induction of labor between 36 0/7 and 37 6/7 weeks in pregnancies complicated by oligohydramnios [8]. Misoprostol (prostaglandin E1) is an effective induction agent when the cervix is not favorable [9]. Misoprostol is a synthetic prostaglandin E1 methyl ester that stimulates myometrium contractions in pregnant uterus by binding to EP2 and EP3 prostanoid receptors. It can be used orally, vaginally, and sublingually. In a recent meta-analysis, it was concluded that oral misoprostol was safer than vaginal misoprostol for induction of labor [10]. When appropriate measures are taken, risks and adverse outcomes associated with misoprostol are rare [11].

The literature is full of studies comparing effect of oral and vaginal misoprostol used for induction of labor among uncomplicated pregnancy, but very few studies are available who observed its effect on complicated situation. This study was conducted to compare the effect of misoprostol on fetomaternal outcome among women with oligohydramnios and normal amniotic fluid.

Objectives

The objective of this study was to compare the effect of misoprostol on fetomaternal outcome among women with oligohydramnios and normal amniotic fluid.

METHODS

Study type

The study was intervention study.

Study setting

The study was Obstetrics and Gynecology Department of Jhalawar Medical College, Jhalawar.

Study duration

The study duration was September 2021 to February 2022.

Study population

The study was women with oligohydramnios (Group I) and their matched control (Group II). Control group was matched for age (±2 years), gestational period (term), and parity.

Inclusion criteria

The following criteria were included in the study:

- Women with term pregnancy required induction.
- Sonography report (within 24 h) shows AFI ≤5 cm for Group I and

AFI>5 cm for Group II.
- Consenting participants.

Exclusion criteria

The following criteria were excluded from the study:
- Women with previous one caesarean section.
- Those with a non-reactive pre-induction cardiotocography.
- Complication other than oligohydramnios.
- Those not consenting.

Sample size and sampling technique

The sample size was complete enumeration of cases for Group I and their age-matched control in Group II during study duration. Total 42 cases were enrolled in Group I and 42 control were selected.

Methods

Based on inclusion and exclusion criteria, total 84 women (42 in each group) were enrolled in study during study period. All participants were assessed clinically as per the standard protocol and monitored continuously. With all precaution, all women were undergone for induction of labor using 50 microgram misoprostol every 6 hourly. Both groups were provided similar care and analgesia and labor progress was assessed by partogram. They had continuous electronic fetal monitoring and misoprostol was repeated maximum for three doses or till labor started whichever occurred first. In case of fetal distress or failure to labor progression, cesarean delivery was done.

Maternal factors such as number of tablets used, induction to labor, and induction to delivery interval were calculated. In fetal and neonatal parameters, fetal distress on CTG, meconium staining of liquor, APGAR scores, and admission to NICU was documented. Complete detailed data on maternal demographics, medical history, delivery summary, maternal, and fetal outcome were recorded in individual case pro forma.

Statistical analysis

Recorded information were entered and analyzed using SPSS 23.0 software. Data were represented in form of table and graph. Comparison of quantitative variables was done using Student t-test. Categorical variables were compared using Pearson Chi-square test. $p<0.05$ was consider as significant.

Ethical approval

Enrollment of cases was started after taking ethical approval from the Institutional Ethic Committee. Written consent was obtained from all participants.

RESULTS

The patients enrolled in two groups were comparable in terms of demographic factors which included maternal age duration of pregnancy and parity. Mean age of Group I was 25.9±4.3 and Group II was 26.4±5.8 years. Among each group, first, second, and third or more birth order was found in 26 (61.90%), 12 (28.57%), and 04 (9.52%) participants, respectively. Nearly, equal dose of misoprostol was required to induce labor in both groups (p=0.28). Induction to labor interval in Group I was 381±56 min and Group II was 396±44 min. Induction to delivery interval was significantly different (p=0.0001) in both group. Vaginal or assisted vaginal delivery was occur in 26 (61.90%) and 23 (54.76%) in Group I and Group II. Complications such as postpartum hemorrhage, retained placenta or membranes, and puerperal pyrexia were observed in 4 (9.52%) and 3 (7.14%) in Group I and Group II (Table 1).

Table 2 depicts fetal factors and outcome. All pregnancies were resulted in live birth, no fetal death was found. Mean birth weight had no significant difference in both groups (p=0.21). Meconium staining was found significantly higher (p=0.033) among Group I (13, 30.95%) than Group II (5, 11.90%). Similarly, poor APGAR at 1 min was found in 11 (26.19%) in Group I and 4 (9.52%) in Group II p=0.046). Ante- or intrapartum fetal distress and NICU admission show no significant difference in both groups (p>0.05).

Table 1: Maternal factors and maternal outcome

Maternal Variables	Group I (n=42)	Group II (n=42)	p-value
Mean Age (in years)	25.9±4.3	26.4±5.8	0.65*
Doses of misoprostol required	2.1±0.38	2.2±0.46	0.28*
Induction to labor interval (in minutes)	381±56	396±44	0.17*
Induction to delivery interval (in minutes)	618±48	722±47	0.0001*
Mode of delivery			
Vaginal/Assisted vaginal delivery	26 (61.90%)	23 (54.76%)	0.51#
Cesarean section	16 (38.10%)	19 (45.24%)	
Complication	4 (9.52%)	3 (7.14%)	0.45#

*Test of significance – student t-test, #Test of significance – Chi-square test

Table 2: Fetal factors and fetal outcome

Maternal variables	Group I (n=42)	Group II (n=42)	p-value
Live birth	42	42	1#
Mean neonatal birth weight (Gm)	2564±206	2620±198	0.21*
Meconium staining	13 (30.95%)	5 (11.90%)	0.033#
Ante/intra partum fetal distress	7	5	0.53#
Apgar score<7 at 1 min	11	4	0.046#
NICU admission	6	2	0.13#
NICU stay>72 h	3	0	0.23#

*Test of significance – student t-test, #Test of significance – Chi-square test

DISCUSSION

The onset of spontaneous labor is a robust and effective mechanism which is preceded by the maturation of several fetal systems and should be given every opportunity to operate on its own [12]. There is a list of indications for induction of labor and oligohydramnios is one such indication. Hence, for these indications, induction of labor is often the principal medical intervention utilized to decrease both maternal and fetal morbidity and mortality [6]. To diagnose and confirm such conditions, antenatal screening is considered must by government as well as doctors. The primary objective of the antenatal screening is to detect any conditions which can lead to a high-risk pregnancy. Ultrasound examination during that period is a sensitive and reliable method of assessing the amniotic fluid and to detect oligohydramnios or polyhydramnios [5]. AFI<5 related with expanded danger of intrauterine growth retardation, meconium aspiration syndrome, severe birth asphyxia, low Apgar score, pulmonary hypoplasia, and congenital anomalies. Hence, timely induction of labor is necessity of such condition and misoprostol is one of the safe methods for this [13].

In the present study, mean age of study participants was 26.1±5.2 years (Group I 25.9±4.3, Group II 26.4±5.8). For induction of labor, dose of misoprostol was similar for both groups (p=0.28). Induction to labor interval did not show any significant difference (p=0.17), while induction to delivery interval was significantly different among two groups (p=0.0001). Out of total 84 patients, 49 (58.33%) patients had a vaginal delivery or assisted vaginal delivery and among them 26 were from Group I and 23 were from Group II. Complications were observed in 04 (9.52%) and 03 (7.14%) in Group I and Group II.

Study conducted by Amir *et al*. [6] also found no significant difference in mean induction to labor interval in both groups (AFI<5 group 6 h and 20 min, AFI>56 h and 30 min), while time between induction to delivery was significantly different in these groups (AFI<5 group 10 h and 5 min, AFI>56 h 12 h and 15 min). Out of total 120 patients, 71 patients had a vaginal delivery with Group I having a number of 37 (52%) and Group II having a number of 34 (47%) which were not significant. Out of 71 patients who had vaginal delivery, 65 delivered after two tablets

(Group I=34 and Group II=31), two delivered after three tablets, and two delivered after one tablet.

Biradar *et al*. [5] conducted study on 410 pregnant women of gestational age >37 weeks and found that the incidence of oligohydramnios was 14% (n=58). Mean age of the study participants was 22.4±3.5 year and one-third of them were primigravida and two-thirds were multigravida. Among them, 38% had vaginal delivery and 62% underwent LSCS.

The present study shows that live births were 100% with no pregnancy losses in any group. Mean birth weight was above the cutoff of low birth weight with no difference in two group. Meconium staining was found significantly higher (p=0.033) and APGAR score at 1 min was found significantly lower in among Group I. NICU admission was similar in both groups (p>0.05).

In the present study, meconium staining was 30.95% in Group I (13, 30.95%) and 11.90% in Group II, although some researchers have reported increase rate of meconium staining with use of misoprostol [14,15].

Study of Amir *et al*. [6] reflects that out of 120 patients, 24 had meconium staining of liquor. Out of these 24, Group I patients were 18 and Group II patients were 6. The APGAR score between two groups had significant p value of <0.05. NICU admissions were eight in total, out of which six were of Group I and two of Group II.

CONCLUSION

For management of oligohydramnios cases, intervention either in form of induction of labor or LSCS is recommend for successful fetomaternal outcome. In respect to maternal outcome, labor induction at term with misoprostol in Group I (AFI ≤5 cm) compared to Group II (cases with AFI >5 cm) did not show significant difference, although fetal outcome is affected in respect to meconium staining and APGAR score at 1 min. Before concluding about safety and effect of misoprostol on fetomaternal outcome, a multicentric trial with large number of patients is required.

ACKNOWLEDGMENT

We acknowledge the cooperation extended by patients, Obstetrics and Gynecology department and Ethic committee of Jhalawar Medical College, Jhalawar.

CONFLICTS OF INTEREST

All authors declare that they have no conflicts of interest.

AUTHORS FUNDING

None.

REFERENCES

1. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY. Williams Obstetrics. 23rd ed. New York: McGraw-Hill; 2010.
2. National Health Data Authority; 1997. Available from: https://www.esundhed.dk/Emner#tabpanel61119A72216248AC86DB508579760DED [Last accessed on 2019 May 12].
3. Sanchez-Ramos L. Induction of labour. Obstet Gynecol Clin North Am 2005;32:181-200. doi: 10.1016/j.ogc.2004.12.004, PMID 15899354
4. World Health Organization. Recommendations for Induction of Labour. Geneva: World Health Organization; 2011.
5. Biradar KD, Shamanewadi AN. Maternal and perinatal outcome in oligohydramnios: Study from a tertiary care hospital, Bangalore, Karnataka, India. Int J Reprod Contracept 2016;5:2291-4. doi: 10.18203/2320-1770.ijrcog20162113
6. Amir F, Ara G, Basharat A, Amir S. Fetomaternal outcome in women with oligohydramnios induced with misoprostol. J Ayub Med Coll Abbottabad 2019;31:407-10. PMID 31535516
7. Divon MY, Marks AD, Henderson CE. Longitudinal measurement of amniotic fluid index in postterm pregnancies and its association with fetal outcome. Am J Obstet Gynecol 1995;172:142-6. doi: 10.1016/0002-9378(95)90103-5, PMID 7847525
8. ACOG committee opinion no. 560: Medically indicated late-preterm and early-term deliveries. Obstet Gynecol 2013;121:908-10. doi: 10.1097/01.AOG.0000428648.75548.00, PMID 23635709
9. ACOG practice bulletin no. 107: Induction of labor. Obstet Gynecol 2009;114:386-97. doi: 10.1097/AOG.0b013e3181b48ef5, PMID 19623003
10. Alfirevic Z, Aflaifel N, Weeks A. Oral misoprostol for induction of labour. Cochrane Database Syst Rev 2014;6:CD001338.
11. Carlan SJ, Blust D, O'Brien WF. Buccal versus intravaginal misoprostol administration for cervical ripening. Am J Obstet Gynecol 2002;186:229-33. doi: 10.1067/mob.2002.119630, PMID 11854640
12. Thakur S, Singh K, Saroha I, Sharma P, Sharma J. To study the perinatal outcome in women with labor induction by sublingual vs. Vaginal misoprostol. Ann Pediatr Res 2020;4:1030.
13. Yadav S, Shah P, Patel RV, Chavda A, Shah MK. Oligohydramnios: A common problem with increasing incidence in term pregnancy and its fetomaternal outcome. WJPMR 2019;5:181-3.
14. Hofmeyr GJ, Gülmezoglu AM, Pileggi C. Vaginal misoprostol for cervical ripening and induction of labour. Cochrane Database Syst Rev 2003;1:CD000941. doi: 10.1002/14651858.CD000941.pub2
15. Danielian P, Porter B, Ferri N, Summers J, Templeton A. Misoprostol for induction of labour at term: A more effective agent than dinoprostone vaginal gel. Br J Obstet Gynaecol 1999;106:793-7. doi: 10.1111/j.1471-0528.1999.tb08399.x, PMID 10453828