ORIGINAL ARTICLE

FETOMATERNAL OUTCOME IN WOMEN WITH OLIGOHYDRAMNIOS INDUCED WITH MISOPROSTOL

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Background: Oligohydramnios, defined as an amniotic fluid index (AFI) of less than the 5th percentile (at term ≤5 cm, or at per-term ≤8.0 cm), has an incidence of 8.5–15.5%. It is associated with an increased perinatal morbidity and mortality. The objective of this study was to explore whether induction with misoprostol can safely be offered to patients with reduced amniotic fluid index and that vaginal delivery can be achieved without major adverse effects. **Method:** All women at term who gave consent to be part of the study and required labour induction were recruited. Total 120 women were included in study. They had a per-induction ultrasound to calculate amniotic fluid index (AFI). Based on AFI., the patients were divided into two groups: group 1, had AFI ≤5 cm and was oligohydramnios group. The other was group 2 with normal amniotic fluid, i.e., AFI >5 cm. Both these groups then underwent labour induction with misoprostol (cytotec–Pfizer) 50microgram. The dose was repeated 6 hourly for a maximum of three doses. The outcomes studied were number of tablets used, induction to labour interval, induction to the delivery interval and method of delivery. The foetal outcomes were meconium staining, Apgar score, NICU admission and advance neonatal resuscitation. **Results:** In maternal parameters, it was observed that there was a significant difference in induction to delivery interval only and in foetal parameters it was observed that in group 1, there was statistical significance in meconium staining, Apgar score and NICU admission. **Conclusion:** Induction with misoprostol and vaginal delivery can safely be offered to women with oligohydramnios at term.

Keywords: Misoprostol; Induction of labour; Oligohydramnios

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INTRODUCTION

Oligohydramnios is defined "as an amniotic fluid index of less than the 5th percentile". It has an incidence lying between 8.5% and 15.5%.[1–3] Oligohydramnios may result in compression of umbilical cord because of loss of protective cushioning effect thereby leading to foetal distress, increased risk of stillbirth and more chances of operative interventions in labour. If oligohydramnios is diagnosed in second trimester or beginning of third trimester, the perinatal mortality rates may reach 80–90%.[4–6] In the absence of foetal anomalies, oligohydramnios can occur because of decrease in foetal urine production. This can occur due to chronic hypoxia and placental dysfunction, as a result there is shunting of foetal blood flow away from the kidneys to more vital organs leading to a fall in glomerular filtration rate.

Oligohydramnios is accompanied by foetal growth restriction as well. Thus, assessment of amniotic fluid volume is an important parameter used for foetal surveillance (e.g., as part of the biophysical profile or in conjunction with a non-stress test). Induction of labour is initiation of labour before its spontaneous onset by artificial method. The decision for induction is taken when advantages of vaginal delivery outweigh the continuation of pregnancy. About 25% of all deliveries at term require induction of labour in developed countries[7]. In our part of world, the rates are generally lower, but in some settings, they can be as high as those observed in developed countries. After going through literature research there were two trials, In one randomized trial carried by Hofmeyr, 5400 women were enrolled and were given vaginal misoprostol for labour induction[8] and second trial carried out by Kelly in which approximately 9400 women were included, misoprostol was compared with other prostaglandins for induction of labour.[9]

It has been identified that the adverse outcomes associated with misoprostol are rare. The misoprostol in low doses is at least equivalent, if not more effective at inducing vaginal delivery and it is much less expensive. When appropriate measures are taken, risks are minimized.[10] However not much studies are available showing labour induction with misoprostol in high risk pregnancies like those with decreased AFI. The objective of this study was to explore whether induction with misoprostol can safely be offered to patients with reduced amniotic fluid index and that vaginal delivery can be achieved without major adverse effects.

MATERIAL AND METHODS

This is a Quasi Experimental Study carried out at Shifa foundation community health Centre. Sample size, with 8% prevalence rate, was 60 for cases and they were matched with 60 controls., Thus 120 women will be inducted in this study.

All women coming to Shifa foundation antenatal clinic at 37 completed weeks of pregnancy (term) during the study period, who fulfil criteria and need induction of labour, were enrolled. Women with previous one caesarean section, those not consenting to be part of study and those with a nonreactive pre-induction cardiotocography (CTG) were excluded from the study.

The amniotic fluid index (AFI) was calculated by ultrasound using the four-quadrant technique, within 24 hours prior to labour induction. Patients were divided into two groups based on their AFI: Group1 with AFI ≤5 cm and group 2 with AFI >5 cm. Then a 20 minutes CTG was performed. Both these groups then underwent standard procedure of labour induction with misoprostol (coyote–Pfizer) 50microgram 6 hourly. They had continuous electronic foetal monitoring, and were kept on oral and intravenous fluids. The cytotec was repeated till three doses or till labour started whichever occurred first. Both groups were provided similar care and analgesia and labour progress was plotted on partogram. If foetal distress or failure to progress developed in any of the groups, caesarean delivery was done.

Maternal factors such as number of tablets used, induction to labour and induction to delivery interval was calculated. Method of delivery was recorded and indication for assisted delivery and caesarean section was documented.

In foetal and neonatal parameters, foetal distress on CTG, meconium staining of liquor, one- and five-minute APGAR scores, admission to NICU and need for advanced resuscitation was documented. The data was entered and analysed in SPSS 16. Comparison of quantitative variables like induction to labour and delivery interval was done by using independent sample *t* test. Pearson Chi- square test was applied for comparison of categorical variables, i.e., Foetal and maternal complications. The level of statistical significance was $p<0.05$.

RESULTS

The patients recruited in two groups were comparable in terms of demographic factors which included parity, maternal age, duration of pregnancy and bishop score. The mean induction to labour interval in group 1 was 6 hours and 20 minutes while in group 2 it was 6 hours and 30 minutes ($p<:0.05$). The time between induction to delivery for group1 was 10hours and 5minutes and for group2 was 12hrs and 15 minutes with significant value of .04. Out of total 120 patients, 71 patients had a vaginal delivery with group 1 having a number of 37 (52%) and group 2 having a number of 34 (47%) which were not significant. Out of 71 patients who had vaginal delivery, 65 delivered after two tablets (group1=34, group 2=31,) 2 delivered after three tablets and 2 delivered after one tablet. Assisted instrumental delivery was done in three patients with comparable results, group1=1 and group 2=2. (table1)

24 out of 120 patients had meconium staining of liquor observed with significant *p* value (<.05). Out of these 24, group1 patients were 18 and group2 were 6. The Apgar score between two groups had significant *p* value of .00. NICU admissions were 8 in total, out of which 6 were of group1 and 2 of group2. The 6 babies were discharged on day 3–5, while two stayed for 7 days and belonged to group1. Advanced resuscitation was required in only two cases which belonged one case to each group. (Table-2)

Table-1: Maternal outcome

	AFI>5	AFI<5	*p*-value
Induction to labour interval	6hrs and 30min	6hrs and 20min	0.53
Induction to delivery interval	12hrs and 15min	10hrs and 05min	0.043
Vaginal/Assisted vaginal delivery	36	38	0.30

Table-2: Foetal outcome

Characteristics	AFI>5	AFI<5	*p*-value
Meconium staining	6	18	0.00
Apgar score <7 at 1 minute	5	15	0.00
NICU admission	2	6	0.00

DISCUSSION

Labour induction is initiation of labour before the spontaneous natural onset. There is a list of indications for induction and oligohydramnios is one such indication. Many researchers have found adverse pregnancy outcomes associated with decreased amniotic fluid index. And have compared them to patients with normal amniotic fluid index. These adverse effects may lead to induction of labour, increased operative intervention, foetal

distress, meconium staining, NICU admissions and neonatal resuscitation. Oligohydramnios occurs in association with foetal causes like foetal urogenital anomalies and placental causes leading to IUGR and PIH/ Pre-eclampsia. The cases we chose are without these anomalies and uncontrolled hypertension and PIH. Many agents are used for induction of labour and in this research, we used misoprostol for induction and compared results in patients with normal AFI and decreased AFI. Although a lot of studies are available in which misoprostol is used as a method of labour induction in term and prolonged pregnancies but not much work is done in understanding its role in high risk pregnancies like patients with oligohydroamnios.[11–14] The studies are available to test the efficacy and safety of prostaglandins for induction of labour, but practically there is not much data on efficacy and safety of PgE2.

The purpose of our study is to determine Fetomaternal outcome in patients with oligohydramnios induced with misoprostol. In different systemic reviews there is not much difference in perinatal outcome when induced with misoprostol. In our study, the time interval from induction to delivery was 12 hours and 15 minutes in group2 and 10 hours and 5 minutes in group1 which was significant. The need for instrumental and operative intervention was approximately same in both groups. We have assessed foetal outcome with APGAR score, meconium aspiration and NICU admission. Some researchers have reported increase rate of meconium staining with use of misoprostol.[15–17.] In our study the passage of meconium was observed in 25% of patients with AFI >5 and 75% of patients with AFI<5. There was a significant difference which is comparable to previous studies.[18] APGAR score and NICU admissions were also observed. The APGAR score of <7 was observed in 15 cases of group 1 and 5 of group 2 with normal amniotic fluid index. NICU admissions were 2 in group2 and 6 in group 1. Both the variables showed significant *p* value. No neonatal deaths were observed but advanced resuscitation was required in two neonates one of each group.[19–24] This study suggest that misoprostol effects foetal outcome in patients with AFI less than five and with normal AFI. It has the limitation of not providing sufficient proof to detect association of foetal distress to confirm the association of misoprostol with low APGAR and NICU admission we need larger group of patients and more investigations.

CONCLUSION

Based on analysis and observations it has been observed that labour induction at term with misoprostol in group-1 (AFI ≤5 cm) compared to group-2 (cases with AFI >5 cm) did not show significant difference as far as maternal outcome was concerned although it does affect neonatal parameters in terms of meconium staining, APGAR score and NICU admission. However clinical trials with large number of patients are necessary to compare efficacy of misoprostol in patients with decreased AFI and with normal AFI to access Apgar score and NICU admissions.

AUTHORS' CONTRIBUTION

FA: Conceived and designed the analysis, wrote the article. GA: Conceived the idea and designed the analysis. AB: Collected data. SA: Helped in data analysis

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