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The Fetomaternal Outcome of Induction of Labour in Idiopathic Oligohydramnios

Kinza Alam[1], Afnan Rizwan[2], Amarta Imdad Hussain[3], Sahar Farooq[4], Taqdees Iftikhar[5], Mehreen Mehdi[6]

[1]Head of Unit 1 Gynae & Obs, POF Hospital, WAH Medical College-NUMS.
[2]Assistant Prof Obs & Gynae, Akbar Niazi teaching hospital Barakahu
[3]Senior Registrar at Akbar Niazi Teaching hospital Islamabad. [4]Senior Registrar, Obs & Gynae, HIT hospital
[5]Associate Professor. Obstetrics and Gynaecology, Akhter Saeed Medical College.
[6]HOD Gynae & Obs, POF Hospital, WAH Medical College-NUMS

Author`s Contribution

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Address of Correspondent
Prof. Dr. Kinza Alam
Head of Unit1 Gynae & Obs, POF Hospital, WAH Medical College-NUMS.
drkinzairfan@gmail.com

ABSTRACT

Objective: To assess fetomaternal outcome of induction of labour in patients with idiopathic oligohydramnios at ANTH to reduce the morbidity associated with increased cesarean section rate and deliver alive healthy babies.

Methodology: This quasi experimental study was conducted in the department of Obstetrics & Gynecology, Alsuffah hospital Rawalpindi and Akbar Niazi Teaching Hospital, Islamabad, over a period of six months from June to Dec 2022. A detailed history was taken followed by a thorough general physical examination and obstetric examination. Routine investigations were performed along with obstetrical ultrasonography. CTG was performed and after ensuring a reactive trace along with no contraindication to vaginal delivery; were offered option of induction of labour after informed consent on predesigned consent form with tab. prostin E2 3mg maximum of two doses with 6 hours apart via vaginal route as per induction of labour protocol at 37 weeks or beyond and were followed-up in OPD till postnatal follow up after 1 week.

Results: The mean age of the patients was 26.85 ± 0.46 years. Majority 30 (41.1%) of the patients had parity of 3 or more and most 31 (42.47%) of the females in the study were given induction of labor at 39 weeks' gestation followed by 27 (36.99%) were given IOL at 38 weeks. The mean value of the amniotic fluid index was 4.35 ± 1.84. Main bulk 34 (46.58%) of the females delivered with cesarean section and most common indication for cesarean section Pathological CTG in 15 (20.55%) patients. Mean birth weight was recorded to be 3.25 ± 0.86 kg and about one third of the babies, 24 (32.88%) babies required admission in NICU. A large number 31 (42.47%) of the children had low APGAR score (< 7) at 5 minutes.

Conclusions: The development of foetal distress, meconium-stained liquor, caesarean delivery rates, NICU admission rates, and low birth weight are all linked to pregnancies with isolated oligohydramnios.

Key words: Oligohydramnios, Induction of labor, Feto-maternal outcome,

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Introduction

During pregnancy and childbirth, the amniotic fluid offers a protective environment for the developing foetus. There is evidence connecting a decrease in amniotic fluid volume to higher rates of maternal sickness, foetal morbidity, and mortality. [1]

Hence, amniotic fluid is of prime importance in maintaining balanced fluid, electrolyte and body temp cle, bone and lungs. Fetal urine is the main component of erature of the fetus. It helps in the development of mus amniotic fluid after 18 weeks' gestation. Oligohydramniosis without a congenital defect, foetal growth restriction (FGR), infection, or other known cause is known as idiopathic oligohydramniosis. Prelabour

premature membrane rupture, maternal conditions such as diabetes mellitus, hypertensive disorders of pregnancy, placental abruption, or autoimmune diseases like Antiphospholipid antibody syndrome, connective tissue disorders, or systemic lupus erythematosus in pregnancy.[2]

The incidence of isolated oligohydramnios in a term pregnancy is 0.5 to 5 %. Due to its association with adverse pregnancy outcomes, patients with oligohydramnios undergo induction of labour. However, induction of labour leads to increase in risk of operative delivery and perinatal risks.[3]

According to one study, the positive predictor of vaginal birth in patients undergoing induction of labour were to induce at term gestation with continuous electronic fetal monitoring in active labour [4]

Pregnancies with idiopathic oligohydramnios, which account for over 50.7% of cases detected in the third trimester, are linked to a higher risk of low birth weight, meconium-stained liquor, caesarean delivery, and foetal distress.[5,6]

In addition to a study reported a significant association between isolated oligohydramnios and long term neurological deficits of the offspring including developmental disorders, movement disorders, degenerative and demyelinization disorders.[7]

In one study, 22,280 low-risk pregnancies with a normal amniotic fluid index were compared to 987 pregnancies complicated by isolated oligohydramnios. A higher incidence of isolated oligohydramniosis (IOL) 27.7% compared 3.7% was linked to a higher rate of caesarean section (due to non-reactive foetal heart rate) 2.3% versus 1.1% and a composite unfavourable outcome (9.7% 7.1%).[8]

As it has been observed that patients with idiopathic oligohydramnios are being induced frequently in view of fetal risks associated with oligohydramnios. In a different study conducted in India, 60% of patients showed AFI between 5-7 cm, and 3833% of patients who were induced to deliver vaginally had AFI <5 cm. Forty percent of patients underwent an operation. 97% of babies were released from the hospital in good health as a result of the perinatal outcomes. In 20% of the cases, foetal discomfort was the sign that a caesarean section was necessary. 60% of the cases had an induction failure, which the poor bishop determined to be a marker of LSCS at the time of assessment.[9]

Our local study indicates that NICU stays are more common, low birth weight, and lower APGAR scores are all associated with moms who have idiopathic oligohydramnios. Moms with oligohydramnios had a significant correlation (OR= 1.85, P<0.001) with caesarean sections [10]. The rationale of this study is to evaluate the fetomaternal outcome of induction of labour in patients with idiopathic oligohydramnios in terms of mode of delivery; whether cesarean section or spontaneous vaginal birth, APGAR scores, how many babies went into fetal distress, meconium staining and duration of NICU stay. It is observed that rate of cesarean section performed due to fetal distress is higher in idiopathic oligohydramnios when compared to postdated and post term pregnancies who undergo induction of labour. There is still a debate ongoing regarding the relation between oligohydramnios and cesarean section rates. In view of all above mentioned outcomes, we want to study our local population and effects of idiopathic oligohydramnios on the decision making regarding induction of labour and its outcome i.e. vaginal versus operative mode of delivery, duration of labour, birth weight, Apgar score, admission in NICU and meconium staining. So, we want to conduct this study as our local literature is scarce, so that we may implement the results of this study in our local setting to manage pregnancies with idiopathic oligohydramnios as a team work and reduce the burden of cesarean morbidity and successfully delivering vaginally and to reduce related adverse feto-maternal outcomes.

Methodology

This quasi experimental study was conducted in the department of Obstetrics & Gynecology, Alsuffah hospital Rawalpindi and Akbar Niazi Teaching Hospital, Islamabad, over a period of six months from June to Dec 2022.

The sample size was calculated by using WHO sample size calculator with confidence level of 95%, anticipated population proportion, rate of oligohydramnios of 5% and absolute precision required of 5% [11]. The sample size turned out to be 73 females fulfilling selection criteria were enrolled in the study from outpatient department. All females were either booked or non-booked. Informed consent was taken from all patients. Patients confidentiality and privacy was maintained by not disclosing their identity on proformas used for study.

Females of age 18-40 years, parity <5, presenting ≥37 weeks of gestation were included in the study sample. Females with previous Cesarean sections, multiple

gestations, Women with pre-existing medical conditions or pregnancy induced medical disorders i.e. hypertensive disorders in pregnancy, chronic hypertension, established diabetes, gestational diabetes, anemia hemoglobin <10g/dl, chronic renal disease, women with low lying placenta were excluded from the study.

After taking a thorough history, a comprehensive general physical examination and obstetric examination were performed. Obstetrical ultrasonography was conducted in addition to routine investigations. CTG was performed and after ensuring a reactive trace along with no contraindication to vaginal delivery; were offered option of induction of labour after informed consent on predesigned consent form with tab. prostin E2 3mg maximum of two doses with 6 hours apart via vaginal route as per induction of labour protocol at 37 weeks or beyond and were followed-up in OPD till postnatal follow up after 1 week.

Patients with idiopathic oligohydramnios underwent induction of labour at 37 or beyond gestation, resulting in successful vaginal delivery or ended up in cesarean birth. Similarly, fetal outcome was noted on the basis of fetal distress was labelled to those non-reactive traces of CTG in patients undergoing induction of labour or presence of meconium stained liquor during active labour. If neonate requires admission to neonatal intensive care due to fetal distress, poor APGAR score<7 at 5 minutes and low birth weight were recorded. All this information was recorded on a specially designed proforma.

Data will be entered and analyzed with the help of statistical package for social sciences (SPSS v 25). Mean and standard deviation will be computed for quantitative variables. Frequency and percentages will be presented for qualitative variables. Independent sample t-test will be applied on quantitative variables and Chi-square test will be applied for qualitative variables. P-value ≤ 0.05 will be taken as significant. Results will be presented in the form of tables and graphs.

Results

In this study a total of 73 patients were included. The mean age of the patients was 26.85 ± 0.46 years. The distribution of parity showed that majority 30 (41.1%) of the patients had parity of 3 or more followed by 19 (26.03%) patients having parity of 2, and 16 (21.92%) women were pregnant first time. Most 31 (42.47%) of the females in the study were given induction of labor at 39 weeks' gestation followed by 27 (36.99%) were given IOL at 38 weeks and 13 (17.81%) females who were given IOL at 37 weeks. The mean value of the amniotic fluid index was noted to be 4.35 ± 1.84 as shown in table 1.

Table 1: Distribution of Demographic Characteristics of the patients

Characteristics	Frequency	Percentage
Age of the patient		
Mean ± SD	26.85 ± 0.46	
Parity of the Patient		
0	16	21.92%
1	8	10.96%
2	19	26.03%
≥ 3	30	41.10%
Gestational age at time of IOL (weeks)		
37	13	17.81%
38	27	36.99%
39	31	42.47%
Amniotic Fluid Index		
Mean ± SD	4.35 ± 1.84	

Table 2: Distribution of Maternal Characteristics of the patients

Characteristics	Frequency	Percentage
Mode of delivery		
SVD	23	31.51%
Failed IOL	16	21.92%
Cesarean section	34	46.58%
Indication of Cesarean Section		
Failed IOL	8	10.96%
Pathological CTG	15	20.55%
Meconium stained liquour	11	15.07%

Table 3: Distribution of Characteristics of fetal outcome

Characteristics	Frequency	Percentage
Birth weight		
Mean ± SD	3.25 ± 0.86	
NICU Admission		
Yes	24	32.88%
No	49	67.12%
NICU stay (days)		
Mean ± SD	4.5 ± 2.4	
APGAR Score at 5 minutes		
< 7	31	42.47%
> 7	42	57.53%

The distribution of indication for cesarean section shows that Pathological CTG was commonest indication for caesarian delivery in 15 (20.55%) patients followed by meconium stained liquour in 11 (15.07%) patients and in

8 (10.96%) females failed IOL was the indication for cesarean section as elaborated in table 2.

The distribution of fetal outcome showed that mean birth weight of these babies delivered to oligohydramnios women was recorded to be 3.25 ± 0.86 kg. About one third of the babies, 24 (32.88%) babies required admission in NICU. The mean NICU stay was noted to be 4.5 ± 2.4. A large number 31 (42.47%) of the children had low APGAR score (< 7) at 5 minutes as elaborated in table 3.

Discussion

Poor perinatal outcome has been linked to oligohydramniosis (AFI <5cm). Numerous domestic and international investigations have verified the negative correlation between low AFV and unfavorable foetal outcome. The research' concluding findings showed that low amniotic fluid volume was linked to poor foetal outcomes, which were then addressed by higher rates of labour induction and all of the problems that went along with it. Pregnancies exacerbated by oligohydramnios have negative effects that linger beyond the postpartum period. Research has indicated that babies exposed to oligohydramnios have a two-year old infant mortality risk.[12]

The management of oligohydramnios is still a challenge because there are hazards to the foetus if the pregnancy continues, as well as surgical problems. The current investigation focuses on the relationship between the mode of delivery and feto-maternal outcomes in isolated oligohydramnios. The percentage of caesarean sections performed in this study was 46%. This was consistent with research done elsewhere in the world.[13,14]

The start of labour before its natural, spontaneous onset is known as labour induction. One of the indications for induction is oligohydramniosis, which is listed. Reduced amniotic fluid index has been linked to unfavorable pregnancy outcomes, according to numerous studies. and contrasted them with individuals whose amniotic fluid index was normal. These negative outcomes could result in meconium staining, NICU admissions, foetal distress, inducement of labour, and newborn resuscitation. Foetal urogenital abnormalities and placental reasons that result in IUGR and PIH/pre-eclampsia are linked to oligohydramnios. The cases we selected do not have uncontrolled hypertension, PIH, or these abnormalities.[15]

In this present study it was noted that these females having oligohydramnios most 34 (46.58%) of the females delivered with cesarean section and Pathological CTG was commonest indication for caesarian delivery in (20.55%) patients. These results are in very much agreement with previous studies like According to research by Gita G et al and Sushma M et al, foetal distress was the most common cause of oligohydramnios in 80% and 50% of cases, respectively, while the incidence of CS was 42.8% and 50%.[16,17]

Some studies have shown quite higher rate than these results, like in a study by According to Punithavathi J, et al., foetal distress (78.26%) was the most common cause of oligohydramnios, with 61.33% of patients undergoing C-sections.[18] The quality of foetal monitoring utilised during labour may be a good indicator of the quality of obstetric care, which could explain the disparity in rates.

During pregnancy, amniotic fluid is crucial. Oligohydramnios has been recognized as a likely indicator of placental insufficiency and has been associated with a poorer foetal outcome.[19] Studies have found significantly high rate of poor Apgar score < 7 at 5 minutes and neonatal birth weight significantly lower among oligohydroamnios babies as compared to other control group. This result agreed with the most of the studies that done in this subject.[20] Similar results were observed in this present study in which the distribution of fetal outcome showed that mean birth weight of these babies delivered to oligohydramnios women was recorded to be 3.25 ± 0.86 kg. About one third of the babies, 24 (32.88%) babies required admission in NICU. The mean NICU stay was noted to be 4.5 ± 2.4. A large number 31 (42.47%) of the children had low APGAR score (< 7) at 5 minutes.

Effective management of labour at any stage of pregnancy, prompt referral for additional testing and treatment, and careful clinical examination and ultrasonography can all help to significantly lower the condition's morbidity and death rate. That is when the mother has less physical and psychological pain. It is important to raise public awareness about the importance of receiving quality prenatal care.

Conclusion

A higher incidence of foetal distress development, meconium-stained liquor, caesarean delivery, NICU admission, and low birth weight are linked to pregnancies with isolated oligohydramnios. The higher rate of labour induction in women with oligohydramnios contributes to an increased rate of caesarean sections performed for foetal distress. In order to improve the foetal outcome and prevent complications for the mother, a thorough

examination should be conducted to identify any identifiable congenital anomalies. This should be done in addition to a detailed history, clinical examination, and pertinent investigations to identify the various etiological factors in all cases of abnormal liquor volume.

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