Original Research Article

Clinical study of maternal and perinatal outcome in oligohydramnios in term patients at a tertiary care institute

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Abstract

Background: Oligohydramnios is a state of deficient amniotic fluid defined sonographycally as single deepest vertical pocket less than 2 centimeters and/or amniotic fluid index less than 5 centimeters. Early detection of oligohydramnios and its management may help in reduction of perinatal morbidity/mortality and decreased rate of caesarean deliveries. But there are difference of opinions regarding management of oligohydramnios in term patients. Present study was conducted to study maternal and perinatal outcome in oligohydramnios in term patients at a tertiary care institute. **Material and Methods:** Present study was a hospital-based, prospective, observational study, conducted among pregnant women admitted in labour room/ antenatal ward with gestational age more than 37+0 weeks, singleton gestations and AFI < 5 cms. Study Outcomes were induced or spontaneous labour, mode of delivery, APGAR score at 1, 5 min, birth weight, NICU admission, need for ventilatory support and perinatal death. Data was collected in Microsoft excel sheet and analysed accordingly. Data is presented as frequencies and proportions. **Results:** After applying inclusion and exclusion criteria total 72 patients were included in present study. Most common age group in our study was of 21- 25 years (39 %), followed by 26-30 years age group (35 %). Mean maternal age in present study was 23.29 ± 6.11 years. Mode of delivery in present study was noted as vaginal delivery (61%), LSCS (31%) and instrumental delivery (8%). In present study 39 % patients in our study were primigravida, 36% were 2nd gravida patients. Higher LSCS rate in primipara (15%) and second para (10%) patients is noted due to higher incidence of fetal distress and previous LSCS respectively. Oligohydramnios in term patients was associated with other antenatal complications such as anaemia (11%), prolonged pregnancy (40-42 wks) (14%) and preeclampsia (18%). **Conclusion:** Pregnancies with oligohydramnios (AFI ≤ 5) beyond 37 weeks are associated with increased rate of fetal distress (non-reactive NST, FHR deceleration during labor), rate of caesarean delivery and low birth weight.

Key Words: Maternal outcome, Fetal outcome, Oligohydramnios, AFI <5.

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INTRODUCTION

Oligohydramnios is a state of deficient amniotic fluid defined sonographycally as single deepest vertical pocket less than 2 centimeters and/or amniotic fluid index less than 5 centimeters.[1] Around 0.5-5% of all pregnancies are complicated by Oligohydramnios, the prevalence being dependent upon the definition used and the population studied.[2] Amniotic fluid has a number of important functions like development of musculoskeletal system, gastrointestinal tract development, lung development, provides essential nutrients to fetus, protects fetus from trauma, and maintains body temperature and it has

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bacteriostatic properties.[3] The findings of oligohydramnios can be associated with congenital fetal abnormalities ,premature rupture of membranes, uteroplacental insufficiency, growth retardation, post datism, chronic abruptio placentae, Maternal illness like hypertension, preeclampsia, abnormalities of twinning, history of drug intake etc.[4] Oligohydramnios in term patients is associated with adverse perinatal outcomes of poor first minute APGARs, increased risks of thick meconium in labor and risks of meconium aspiration, high admission rates to neonatal intensive care unit (NICU) and risks of perinatal deaths. Oligohydramnios in term patients, puts the mother at risks of procedures and operative interventions of induction and cesarean delivery.[5,6] The gold standard for measuring amniotic fluid volume is the invasive dye dilution technique. Validated non-invasive methods include the four-quadrant amniotic fluid index (AFI), single deepest pocket (SDP) and two-diameter pocket.[7] Early detection of oligohydramnios and its management may help in reduction of perinatal morbidity/mortality and decreased rate of caesarean deliveries. But there are difference of opinions regarding management of oligohydramnios in term patients. Present study was conducted to study maternal and perinatal outcome in oligohydramnios in term patients at a tertiary care institute.

MATERIAL AND METHODS

Present study was a hospital-based, prospective, observational study, conducted among pregnant women admitted in labour room/ antenatal ward of Department of Obstetrics and Gynaecology, Vardhman institute of Medial Science Pawapuri. Study period was of 1 year (July 2019 to June 2020). Institutional Ethics Committee approval was obtained to conduct present study.

Inclusion Criteria

1. Gestational age after 37+0 weeks of gestation calculated from reliable date or early ultrasound at the first trimester with, intact membranes
2. Singleton gestations
3. AFI < 5 cms and/or SDVP is < 2 centimeters, measurement within 3 days

Exclusion Criteria

1. Women with <37 completed weeks of gestation
2. Ruptured membranes
3. Malpresentations
4. Multiple gestation
5. Fetal Congenital anomalies, Intrauterine Fetal Death
6. Associated medical complications like HDP, GDM, chronic hypertension etc.
7. Pregnant women with post-dated pregnancy (gestational age >42 weeks)

A written informed consent was taken from participants. The pregnant women included in the study underwent history taking (for socio-demographic data, relevant clinical history) and thorough clinical examination. pregnant women were then subjected to routine ultrasound examination and assessment of amniotic fluid volume using Amniotic fluid index (AFI). Amniotic fluid index technique - In supine position and a curvilinear transducer was used to examine the uterus sonographically. The maternal abdomen was divided into virtual quadrants taking the umbilicus, symphysis pubis and the fundus as the reference points. The largest vertical pocket in each quadrant is measured sonographically and the sum of the four measurements (cm) was computed as the AFI. Oligohydramnios was defined when the maximum vertical pocket of liquor was less than 2 cm or when amniotic fluid index (AFI) was less than 5 cm. AFI 5-8 cm as borderline oligohydramnios and AFI 8-18 cm as normal amniotic fluid index. Routine and necessary investigations like haemogram, blood grouping and Rh typing, TFT, VDRL, viral markers, Ultrasound doppler study, urine routine and microscopy were done. Routine management in form of adequate rest, left lateral position, oral and intravenous hydration, corticosteroids for fetal lung maturation was done. Decision for induction of labour or for spontaneous onset of labour will be taken considering all obstetric factors. Labour progress, mode of delivery, any complications, maternal and early neonatal outcome will be recorded on case report proforma. All women will be followed up until delivery and their babies will be followed up till early neonatal period (7 days). Study Outcomes were induced or spontaneous labour, mode of delivery, APGAR score at 1, 5 min, birth weight, NICU admission, need for ventilatory support and perinatal death. Data was collected in Microsoft excel sheet and analysed accordingly. Statistical analysis data entry was done using the Microsoft Excel and analysis using SPSS version 23. Data is presented as frequencies and proportions.

RESULTS

After applying inclusion and exclusion criteria total 72 patients were included in present study. Most common age group in our study was of 21- 25 years (39 %), followed by 26-30 years age group (35 %). Mean maternal age in present study was 23.29 ± 6.11 years. Mode of delivery in present study was noted as vaginal delivery (61%), LSCS (31%) and instrumental delivery (8%).

Table 1: Age and maternal outcome (mode of delivery) in oligohydramnios.

Age (Years)	Vaginal delivery (%)	LSCS (%)	Instrumental delivery (%)	Total (%)
≤ 20	4 (6%)	2 (3%)	1 (1%)	7 (10%)
21-25	19 (26%)	7 (10%)	2 (3%)	28 (39%)
26-30	14 (19%)	9 (13%)	2 (3%)	25 (35%)
≥ 31	7 (10%)	4 (6%)	1 (1%)	12 (17%)
Total	**44 (61%)**	**22 (31%)**	**6 (8%)**	**72**

In present study 39% patients in our study were primigravida, 36% were 2nd gravida patients. Higher LSCS rate in primipara (15%) and second para (10%) patients is noted due to higher incidence of fetal distress and previous LSCS respectively.

Table 2: Parity and maternal outcome of labour in oligohydramnios.

Parity	Vaginal delivery (%)	LSCS (%)	Instrumental delivery (%)	Total (%)
Primi	16 (22%)	11 (15%)	1 (1%)	28 (39%)
2	18 (25%)	7 (10%)	1 (1%)	26 (36%)
3	6 (8%)	3 (4%)	3 (4%)	12 (17%)
4 or more	4 (6%)	1 (1%)	1 (1%)	6 (8%)
Total	**44 (61%)**	**22 (31%)**	**6 (8%)**	**72**

39-40 weeks gestational age (35 %) was most common group in present study. Other gestational age groups were 38-39 weeks (25 %), 40-42 weeks (21 %) and 37-38 weeks (19 %).

Table 3: Gestational age wise distribution

Gestational age	No. of patients	Percentage
37-38 weeks	14	19%
38-39 weeks	18	25%
39-40 weeks	25	35%
40-42 weeks	15	21%

When we compared AFI values, most common group was with AFI 2-3 cm (46 %) patients, 33 % patients had AFI 4-5 cm and 21 % patients had AFI 0-2 cm. The mean amniotic fluid index in or study was 2.81 ± 1.24 cm.

Table 4: Distribution according to AFI

AFI	No. of patients	Percentage
0-2	15	21%
2-3	33	46%
4-5	24	33%

In our study we noted that oligohydramnios in term patients was associated with other antenatal complications such as anaemia (11%), prolonged pregnancy (40-42 weeks) (14%) and preeclampsia (18%). 57% patients had none complications/high risk factors.

Table 5: Maternal complications/high risk factors

Maternal Factors	No. of patients	Percentage
None	41	57%
Anaemia	19	26%
Prolonged pregnancy (40-42 wks)	15	21%
Preeclampsia	9	13%
Breech	8	11%
Gestational Hypertension	7	10%

Induction of labour was done in 32 % patients, 54 % had spontaneous onset of labour and 14% were posted for elective LSCS. Early decision for LSCS was considered in patients with abnormal doppler study along with any other obstetric complication. Most common indications for LSCS were fetal distress followed by severe oligohydramnios.

Table 6: Comparison of labour

Onset of labour	No. of patients	Percentage
Spontaneous	39	54%
Induced	23	32%
Elective LSCS	10	14%

2.5-3.4 kg birthweight was most common group (61%). Total 26 % babies required neonatal resuscitation. Babies requiring neonatal resuscitation were admitted in NICU for observation and for any further management. Total 29 % babies needed NICU admission during study period. Majority of them were birthweight less than 2000 gm, meconium aspiration, cord looped around neck etc. We noted early neonatal death in 2 babies. No maternal mortality was noted.

Table 7: Perinatal outcome measures

Outcome measure	No. of patients	Percentage
Birth weight		
1.5-2.4kg	19	26%
2.5-3.4kg	44	61%
3.5-4.4kg	9	13%
Meconium aspiration	8	11%
APGAR ≤ 7 at 1 min	15	21%
APGAR ≤ 7 at 5 min	5	7%
Required neonatal resuscitation	19	26%
Cord looped around neck	9	13%
Admission to NICU	21	29%
Perinatal death	1	1%
Neonatal death	1	1%

DISCUSSION

Oligohydramnios in term patients is associated with increased maternal morbidity in terms of increase rate of induction of labour, prolonged labour and caesarean section due to malpresentation. It is also associated with adverse perinatal outcomes such as preterm delivery, low birth weight, fetal distress in labour, meconium passage, low Apgar score, neonatal resuscitation and NICU admission.[1,8] Due to intrapartum complication and high rate of perinatal morbidity and mortality associated with oligohydramnios, rates of caesarean section are rising, but decision between vaginal delivery and caesarean section should be well balanced so that unnecessary maternal morbidity is prevented and perinatal morbidity and mortality are reduced.[9,10] Oligohydramnios can be an idiopathic finding in women who have low risk pregnancies and no medical or fetal complication.[11] Termination of pregnancy is advocated even in otherwise uncomplicated pregnancies with oligohydramnios. However, some of the recent studies have shown no adverse effect of isolated oligohydramnios on perinatal outcome and recommends continuation of pregnancy till term.[12,13] Jagatia K *et al.*[10] and Jandial *et al.*[14] reported the incidence of oligohydramnios, more in primipara as 52% and 60% respectively. In present study we noted 39% incidence in primigravida. Most common cause of oligohydromnios reported by Jagatia K *et al.*[10] was idiopathic followed by hypertensive disorder in pregnancy which is comparable to my study. A study done by Bhat *et al.*,[15] in patients at third trimester of pregnancy with oligohydramnios; noted that the most common cause of oligohydramnios was idiopathic followed by PIH.Similar findings were noted in present study. Sangeetha *et al.*[16] (56%) and Guin *et al*.[12] (56%) found higher percentage of induction in oligohydramnios patients. While in present study 32% required induction. Gupta CP *et al.*.[17], Bansal D *et al.*.,[4] found that there was 46% of cases of oligohydromnios who undergone caesarean section. In present study 31% patients required LSCS. Fetal distress (44.2%) and IUGR (34.6%) were the most common indications for caesarean sections in study by Jeyamani B *et al.*[18] While Biradar KD *et al.*,[1] noted that fetal distress (42%) followed by intra uterine growth retardation (18%) and failed induction (13.4%) were most common indications for LSCS. Similar findings were noted in present study. Zhang J *et al.* examined fetal growth and perinatal outcomes in pregnancies with isolated oligohydramnios in 15,151 low risk pregnant and noted perinatal outcome similar to pregnancies with a normal amniotic fluid index.[19] In present study there were 29% admissions in NICU. Jagatia k *et al.*,[10] who also found 20% of neonates had NICU admission. Jandial *et al.*,[14] noticed that the rate of NICU admission was found to be 18% . The perinatal morbidity and mortality is due to foetal distress, low APGAR scores and meconium aspiration syndrome in the foetus due to umbilical cord compression and potential uteroplacental insufficiency. In the low-risk pregnancies with, there is an increased risk of MAS, Cesarean delivery for fetal distress and admission to the NICU. A critical outcome that could not be evaluated is the risk of stillbirth or perinatal mortality.[20] Doppler velocimetry of the umbilical artery must be performed and an increased S/D ratio in cases of oligohydramnios helps to identify fetus at risk, 80% of the fetus had an adverse perinatal outcome when the umbilical artery Doppler was abnormal.[21] Another study assessed the optimal definition of Oligohydramnios associated with adverse neonatal outcomes and concluded that AFI < 5th percentile better predicts foetuses at risk for adverse perinatal outcomes compared to an AFI < 5 cm.[22] However, this needs further validation. Present study was a single institute based, small sample study. Large sample, comparative studies are requires for further evidences.

CONCLUSION

Pregnancies with oligohydramnios (AFI ≤ 5) beyond 37 weeks are associated with increased rate of fetal distress (non-reactive NST, FHR deceleration during labor), rate of caesarean delivery and low birth weight. Routine induction of labor for isolated oligohydramnios is not recommended and spontaneous labor is preferred with continuous fetal heart rate monitoring. LSCS should be done at the onset of fetal distress.

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