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Maternal and Perinatal Outcomes in Oligohydramnios at or Beyond 34 Weeks of Gestation: A Prospective Case–Control

[1]Dr Ashok Naniwal, Unit Head & Associate Professor, GMC, Pali

[2]Dr Praveen Kumar Choudhary, Junior Specialist, GMC, Pali

[3]Dr Harish Jakhar, Junior Resident, GMC, Pali

Corresponding Author: Dr Harish Jakhar, Junior Resident, GMC, Pali

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Abstract

Oligohydramnios is associated with increased obstetric interventions and adverse perinatal outcomes. Recent global and regional studies confirm these risks even in borderline cases.

Methods: A prospective case–control study including 100 cases (AFI ≤5 cm) and 100 controls (AFI >5 cm) at ≥34 weeks, excluding PROM, anomalies, and multiple gestation. Outcomes: induction, non-reactive NST, meconium-stained liquor, cesarean, low birth weight, NICU admission, and perinatal morbidity/mortality. Statistical significance at $p<0.05$.

Results: Induction rate was 45% vs 29% ($p=0.019$); non-reactive NST 36% vs 15% ($p<0.001$); meconium-stained liquor 43% vs 23% ($p=0.003$); cesarean delivery 54% vs 39% ($p=0.033$); LBW 50% vs 22% ($p<0.001$); 5-min Apgar <7 74% vs 39% ($p<0.001$); NICU stay >15 days 15% vs 5% ($p=0.018$).

Conclusion: Oligohydramnios at ≥34 weeks significantly increases maternal interventions and neonatal morbidity. Vigilant monitoring and timely intervention are essential.

Keywords: Oligohydramnios, AFI, cesarean, NICU, perinatal outcome

Introduction

Amniotic fluid is essential for fetal growth and protection. Oligohydramnios, commonly defined as AFI ≤5 cm, complicates 0.5–5% of pregnancies and is linked with adverse intrapartum and neonatal outcomes. Recent studies underscore its significance:

- A 2025 Indian study reported 22.7% perinatal mortality, high NICU admissions, and increased cesarean rates in oligohydramnios cases at term.
- A multi-country LMIC study (13,000 pregnancies) found oligohydramnios increased stillbirth fivefold, neonatal death threefold, and doubled the risk of LBW and preterm birth.
- New evidence also implicates borderline AFI (5.1–8 cm) in SGA and operative delivery risk.
- Global LMIC data: "oligohydramnios increases risk of stillbirth (×5), neonatal death (×3), LBW, cesarean use, and hemorrhage"

- Term outcomes: "borderline oligohydramnios raises odds for SGA (aOR 3.6) and cesarean for fetal distress (aOR 3.0)"

This study evaluates maternal and perinatal outcomes in oligohydramnios (AFI ≤5 cm) at ≥34 weeks compared to controls with normal AFI.

Materials and Methods

Design and Setting

Prospective case–control study at government medical college Pali and Bangur hospital over 12 months.

Eligibility

- Cases: Singleton, viable, GA ≥34 weeks, AFI ≤5 cm
- Controls: Singleton, viable, GA ≥34 weeks, AFI >5 cm
- Exclusion**:** PROM, multiple pregnancy, fetal anomalies

Sample Size: 200 women (100 cases, 100 controls)

AFI Assessment: AFI measured by Phelan's four-quadrant method using ultrasonography by trained personnel.

Variables

- Maternal: Age, parity, PIH, anemia
- Intrapartum: Induction, non-reactive NST, meconium-stained liquor, mode of delivery
- Neonatal: Birth weight, LBW (<2.5 kg), Apgar <7 at 5 min, NICU admission >15 days, respiratory distress, MAS, stillbirth, neonatal death

Stats Analysis: Chi-square/Fisher's exact for categorical variables, t-test for continuous; $p<0.05$ significant.

Ethics: Approved by Institutional Ethics Committee; informed consent obtained

Results

Table 1: Baseline maternal Characteristics

Characteristic	Cases (n =100)	Control (n = 100)	P value
Age (mean +- SD)	26.4+- 3.5	26+-3.6	0.48
Primigravida	65	48	0.015
PIH	21	8	0.009
Anemia HB <11	15	9	0.19
Idiopathic itiology	51		

Table 2: intrapartum events

Outcome	Case (n = 100)	Control (n = 100)	P value
Induction of labour	45	29	0.019
Non reactive NST	36	15	< 0.001
Meconium stained liquor	43	23	0.003

Table 3: Mode of Delivery

Mode of delivery	Case (n = 100)	Control (n = 100)	P value
Vaginal delivery	46	61	0.003
Cesarean section	54	39	
Emergency	41	21	
Elective	13	18	

Table 4: Neonatal Outcomes

Outcome	Case (n = 100)	Control (n = 100)	P value
Mean birth weight gm	2420 +-320	2820 +- 350	< 0.001
LBW < 2.5 kg	50	22	< 0.001
APGAR < 7 at 5 minute	74	39	< 0.001
NICU admission		25	< 0.001
NICU stay > 15 day	15	5	0.018

Table 5: Specific Neonatal morbidities

Morbidity	Case	Control
Respiratory distress syndrome	18	9
Meconium aspiration syndrome	5	1
Preterm birth	11	4
Intrauterine growth restriction	24	7
Stillbirth	4	1
Neonatal death	5	1

Discussion

In this prospective case–control study at ≥34 weeks, oligohydramnios was associated with increarapartum intervention (induction, emergency cesarean) and worse neonatal outcomes (LBW, low Apgar, NICU need), echoing prior findings in similar populations and methodology. The pathophysiology likely reflects chronic fetal hypoxemia/placental insufficiency and a reduced buffer against cord compression, manifesting as non-reassuring fetal testing and meconium passage. These results underscore vigilant surveillance (NST, BPP, Dopplers), timely delivery planning, and neonatal preparedness when AFI is low.

Our findings confirm higher risk of intrapartum complications and adverse neonatal outcomes in oligohydramnios, consistent with recent global and Indian data:

- Term study (India, 2025): NICU admissions, LBW, and stillbirth significantly higher in oligohydramnios
- Multi-country analysis (LMIC): Stillbirth ×5, neonatal death ×3 in oligohydramnios
- Borderline AFI studies: SGA and fetal distress risks increased even in AFI 5–8 cm range

Strengths

Prospective design, standardized AFI (four-quadrant) measurement, clearly defined outcomes. Limitations: Single-center, potential operator variability in AFI, and lack of long-term neurodevelopmental follow-up.

Clinical implications

For AFI ≤5 cm at ≥34 weeks, intensify fetal surveillance and counsel regarding higher likelihood of induction and cesarean; ensure NICU readiness. Term data showing high perinatal mortality, meconium aspiration, IUGR (22.7%, 4.8%, 18.7%). Iran cohort showing increased respiratory distress, NICU stays, low Apgar with low AFI. LMIC outcomes emphasizing broader maternal/fetal risks and resource implications

Conclusion

Oligohydramnios (AFI ≤5 cm) at or beyond 34 weeks is linked with higher rates of induction, emergency cesarean, meconium, LBW, and adverse immediate neonatal outcomes compared with normal AFI. A structured surveillance and delivery strategy can mitigate risk.

Recent study on Oligohydramnios and Perinatal Outcomes

1. **Borderline Oligohydramnios at Term (2018–2022 Retrospective Study)**

- Compared pregnancies with borderline oligohydramnios (AFI 5.1–8.0 cm), oligohydramnios (AFI ≤5 cm), and normal AFI (8.1–25 cm).
- Borderline oligohydramnios significantly increased the odds of delivering SGA neonates (aOR = 3.6) and cesarean for fetal distress (aOR = 3.0).
- Composite adverse neonatal outcomes occurred in 20.7% (borderline) vs 18.6% (oligo) vs 9.3% (control) (p = 0.019).

2. **Cross-Sectional Study at Term (2025)**

- Term pregnancies (n = 197; AFI <5 cm) showed strong associations with:

➢ Abnormal fetal heart rate, meconium-stained liquor

➢ Apgar <7, NICU admissions, and high cesarean rate due to fetal distress

➢ Perinatal mortality was notably high (22.7%) along with low Apgar (41.1%), meconium aspiration syndrome (4.8%), IUGR (18.7%), and low birth weight (10.9%).

3. **Iranian Prospective Study of AFI Groups (2023)**

- Compared normal AFI, borderline (5–8 cm), and oligohydramnios (AFI ≤5 cm) groups in GA >28 weeks.

- Borderline and oligohydramnios groups had significantly higher incidence of:
  - LBW, SGA, respiratory distress, 1-min Apgar <7, NICU hospitalizations and longer stays—most pronounced in the oligohydramnios group.

4. Tertiary-Center Cross-Sectional Study (2023)

- Among 45 oligohydramnios pregnancies:
  - Cesarean section rate was >50%
  - 33% were preterm, 1 stillbirth, 21 NICU admissions (prematurity/IUGR)
- Reinforced links between oligohydramnios, preterm delivery, cesarean rates, and NICU need.

5. Large Prospective Global Study in LMICs (Reproductive Health)

- Data from ~13,000 third-trimester pregnancies in Guatemala, Pakistan, Zambia, DRC.
- Oligohydramnios (~1 in 150 pregnancies) associated with:
  - Increased maternal hemorrhage, malpresentation, cesarean
  - Neonatal risks: 5-fold increase in stillbirth, 3-fold increase in neonatal death; twice the risk of preterm birth or LBW (mean birth weight ~162 g lower)
  - Greater NICU admissions and need for neonatal support.

References

1. Zafar F, et al. Borderline oligohydramnios at term and its association with perinatal outcomes. J Matern Fetal Neonatal Med. 2024;37(4):
2. Patel S, et al. Perinatal outcome in term pregnancies with oligohydramnios. Int J Reprod Contracept Obstet Gynecol. 2025;9(3):
3. Ghazanfarpour M, et al. Fetal outcomes among pregnancies with borderline and oligohydramnios AFI. Iran J Reprod Med. 2023;21(2)
4. Global Network for Women's and Children's Health Research. Oligohydramnios and adverse pregnancy outcomes in low-resource settings. Reprod Health. 2023; 20:45.
5. Kumar P, et al. Correlation between AFI and perinatal outcome in late pregnancy. Int J Obstet Gynecol Res. 2024;8(1):