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EFFECT OF TERM OLIGOHYDRAMNIOS ON MATERNAL AND PERINATAL OUTCOME

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ABSTRACT **Background:** Oligohydramnios is one of the main causes of maternal morbidity and a major contributor of perinatal morbidity and mortality. The diagnosis is made by sonographic measurement of AFI <5 or a single deep vertical pocket of <2cm. [2] The most common causes of Oligohydramnios are Premature rupture of Membranes and placental insufficiency. Decreased amniotic fluid has been associated with risk of fetal growth restriction, meconium aspiration, birth asphyxia and congenital abnormalities. The present study is undertaken to assess the maternal and perinatal outcome in term pregnancies with oligohydramnios. **Aim:** To determine the maternal and perinatal outcome in term pregnancies with Oligohydramnios **Materials and Method:** A prospective study was conducted in the department of OBG at Sree Balaji Medical College and Hospital from June 2023 – December 2023 on the maternal and perinatal outcome in term pregnancies with Oligohydramnios. **Conclusion:** Oligohydramnios is associated with an increase in operative deliveries and adverse perinatal outcome Oligohydramnios with an underlying co-morbid is associated with poor outcome. Oligohydramnios with non-reactive NST is associated with an increase incidence of NICU admission, neonatal death, low APGAR score at 5 mins.

KEYWORDS : AFI, Maternal outcome, Neonatal outcome, Oligohydramnios

INTRODUCTION

Amniotic fluid, present within the amniotic cavity, a closed sac between the embryo and the amnion, provides a medium for the developing embryo by means of nutrition, protection. [12][8]

An appropriate amount of amniotic fluid is essential for the foetus as it acts as a cushion against trauma [12]. It also plays a part in thermoregulation of the foetus and fluid homeostasis. By allowing adequate space for the foetus to move around, it prevents joint contractures and cord compression, thereby protecting the foetus from vascular compromise. [1]

The constituents of liquour amnii include proteins, lipids, carbohydrates, antibodies, inorganic salts, cells derived from fetal epithelium, amniotic membrane, dermal fibroblast. [8][9] In order to assess the fetal lung maturity, L:S ratio in the amniotic fluid is used. Dermal fibroblasts grow well in culture and is used for karyotyping. [9][10]

Amniotic fluid volume increases gradually throughout pregnancy. the main contribution during the first trimester is via transudate of plasma from nonkeratinized fetal skin or placental surfaces [9]. Fetal urine becomes a major contributor from the second trimester. Fetal skin exudate continues until skin keratinization occurs at 22-25 weeks. [6]

Table 1: Amniotic Fluid Source And Amount[6]

Pathway	Approximate daily volume (ml)
Fetal Urination	1000
Fetal lung fluid secretion	350
Fetal swallowing	750
Intramembranous flow across placental surface	400

According to ACOG guidelines, Oligohydramnios is diagnosed in ultrasound if AFI < 5 or single deep pocket is <2cm. Oligohydramnios in the first trimester is commonly due to renal abnormalities or drug exposure, [4] such as Angiotensin converting enzyme inhibitors or Angiotensin receptor blocker which are associated with renal malformations. Exposure to NSAIDs is associated with impaired fetal urine production.

Oligohydramnios diagnosed in the second and third trimesters are mainly associated with uteroplacental insufficiency, such as pre-eclampsia or vascular diseases after excluding rupture of membranes.

In case of chronic placental insufficiency, there is re-shunting of blood to the brain from the renal and hepatic supply. This phenomenon is called the brain sparing effect. Due to the reduced renal blood supply, there is decreased urine output leading to oligohydramnios. Hence, Oligohydramnios serves as an indirect marker for placental insufficiency before doppler changes occur. [7]

Prolonged oligohydramnios leads to pulmonary hypoplasia, Potter's syndrome, club foot, club hand and dislocation of hip. [11]

Maternal morbidity arises from the causes of oligohydramnios such as Pre-eclampsia, premature rupture of membranes increasing the risk of Eclampsia, Placental abruption, chorioamnionitis, sepsis. [3][5]

This study was conducted to analyse the significance of oligohydramnios at term in maternal and perinatal outcome.

MATERIALS AND METHOD

The present study was conducted in the department of OBG at Sree Balaji Medical College and Hospital from June 2023 – December 2023. 100 patients in the third trimester with oligohydramnios were selected for the study.

Enrolled patients were subjected to a detailed history, obstetric examination and were subjected to USG examination for AFI.

Inclusion Criteria: Term antenatal patients
: Intact membranes
: Oligohydramnios diagnosed on USG via AFI

Exclusion Criteria: Premature rupture of membranes
: Multiple gestation
: Intrauterine fetal demise

Patients diagnosed with Oligohydramnios were managed according to their severity. Fetal surveillance was performed by NST, USG, Modified biophysical profile and Doppler studies.

Decision regarding delivery by induction or caesarean section was done as per protocols. Patients who were in labour were observed for the progress and if required, intervention was done.

The cases were studied for maternal and perinatal outcomes. All the data was analysed and observations were made.

RESULTS

The total number of patients included in the study were 100. Maximum of number of patients in this study were between the age group of 20-25yrs accounting for 55% of the study population. The mean age of the patients was found to be 26.2 years (Table 2)

Table 2: Age Distribution Of Patients

Age (yrs)	No. of patients	Percentage
<20	3	3%

20-25	55	55%
25-30	24	24%
>30	18	18%

Table 3: Mode Of Delivery

Mode of Delivery	No. of patients	Percentage
Vaginal delivery	58	58%
1. Spontaneous onset	30	51.7%
2. Induced	28	48.2%
LSCS	42	42%

58 patients (58%) had a vaginal delivery among whom 30 patients (51.7%) had a spontaneous onset of labour. 28 patients (48.2%) had to be induced for various obstetric reasons. 42 patients (42%) ended up in LSCS due to obstetric reasons.

Table 4: Parity And Mode Of Delivery

Parity	Vaginal delivery	LSCS	Total
Primi	25(44.6%)	31 (55.3%)	56%
Multi	33(75%)	11 (25%)	44%

Oligohydramnios was more common in primigravida (56%) when compared to multigravida (44%). The rate of LSCS was also observed to be more among the primigravida (55.3%) than multigravida (25%).

Out of 56 primigravida, only 25 (44.6%) had a vaginal delivery, while 31 (55.3%) ended up in LSCS. Among multigravida, 33 (75%) had vaginal delivery and only 11 (25%) underwent in LSCS. (Table 4)

Table 5: Causes of Oligohydramnios

Causes	Number of patients	Percent
Post dated pregnancy	17	17%
Hypertensive disorders of pregnancy	31	31%
Idiopathic	52	52%

The most common cause of oligohydramnios was observed to be Idiopathis accounting for 52%. Hypertensive disorders were found to 31% among the patients with oligohydramnios. Post dated pregnancy contributed to 17%.

Table 6: Relation Of Fetal Heart Rate, Doppler Usg And Mode Of Delivery

Mode of Delivery	Fetal heart rate pattern		Doppler USG	
	Re assuring	Non-reassuring	normal	abnormal
Vaginal	53 (73.6%)	5 (17.8%)	58 (76.3%)	Nil
LSCS	19 (26.3%)	23 (82.1%)	35 (41.6%)	7 (100%)
Total	72	28	84	16

Among the patients who delivered vaginally, 73.6% of them had a reassuring fetal heart rate pattern, whilst 17.8% of them had a non-reassuring fetal heart rate pattern. All the patients who delivered vaginally had a normal doppler USG.

All the patients with an abnormal Doppler USG underwent LSCS. 41.6% of the patients who has LSCS had a normal USG doppler. 82.1% of the patients who underwent LSCS had non-reassuring fetal heart rate.

Hence, there were more number or LSCS in the patients who had a non-reassuring fetal heart rate and Abnormal Doppler USG. (Table 6)

Table 7: Liquour Characteristics And Fhr Pattern

Indication	Percentage
Fetal distress	23%
Oligohydramnios	8%
IUGR	7%
Breech	3%
Other	1%

Among the patients who had meconium stained liquor, 60% had non-reassuring Fetal heart rate while only 40% among the patients who has clear liquor had a non-reassuring fetal heart. (Table 6)

Table 8: Indication for LSCS

Outcome	Percentage
Growth retardation	15%
APGAR <7 at 5 mins	25%
NICU admission	18%
Congenital anomalies	3%
Normal	39%

23% of the patients underwent LSCS because of fetal distress. 7% of the patients had IUGR and underwent LSCS. Severe oligohydramnios constitutes 8% of LSCS cases observed in this study. 3% of the babies were delivered via breech through operative delivery. (Table 8)

Table 9: Outcome Of The Baby

Liquor	No. of patients	Fetal Heart rate pattern	
		Re assuring	Non-reassuring
Clear	45	54 (75%)	11 (40%)
Meconium stained	55	18 (25%)	17 (60%)
Total	100	72	28

Oligohydramnios was associated with fetal growth restriction in 15 babies; APGAR SCORE of <7after 5 mins in 25 babies; NICU admission in 18 babies. 3 babies had congenital anomalies which included 2 posterior urethral valve and one PUJ obstruction (Table 9)

Table 10: Perinatal Outcome

Perinatal Outcome	Reassuring FHR	Non-reassuring FHR	Total
Live	82	13	95%
Dead	Nil	5	5%

Among the babies who had a reassuring FHR, there was no adverse perinatal outcome. Whereas among the babies who had a non-reassuring FHR, 13 survived but 5 died. Babies with non-reassuring heart rate had bad prognosis. (Table 10)

DISCUSSION

In our study, the mean age of the patients was 26.2 years which is similar to the study conducted by Prajapati et al where the mean maternal age was 24.6 years. In Casey et al. [14] the mean maternal age was 23.9 years.

In a study conducted by Bhat et al, [13] incidence of 54% in primigravida and 46% in multigravida was observed which is similar to our study where the incidence of oligohydramnios in primigravida is more than that of multigravida.

In our study, the incidence of LSCS is higher in primigravida (55.3%) than multigravida which was also observed in a study conducted by Modi et al [15], where the incidence of LSCS on primigravida was observed to be 56%, whereas in multigravida was 27%.

Neetu Singh [16] et al found that 19% of postdated pregnancy had oligohydramnios.

Bansal D et al [31] observed 17% of the cases of oligohydramnios were postdated. These results are similar to the findings of our study where 17% of the patients were post-dated.

Hypertensive disorders of pregnancy was associated with 31% of the cases of oligohydramnios which is similar to the study conducted by Sriya R et al [17].

In our study 52% of the patients with oligohydramnios had an idiopathic cause. Panda et al [23] found 54% of his cases were idiopathic.

Casey B et al [14] found that the rate of induction among patietns with oligohydramnios was 42% which is comparable with our study where 48.2% were induced.

In the study by Charu Jandial [20], patients with a nonreassuring FHR had more LSCS delivery which is comparable to our study. 17.8% of vaginal delivery was also observed among the patients who has a non-reassuring FHR. [18]

Based on modified biophysical profile, oligohydramnios and a non-reassuring FHR is an indication of fetal distress, which is reflected in this study as increased operative deliveries. [21]

Study conducted by Kwon JY et al [32] showed an increased operative delivery among patients with abnormal doppler USG (69.7%) which is comparable to our study.

Study by Zahid N et al [26] showed a 100% of cases had MSL when both the Fetal heart rate and AFI were abnormal. Our study showed 60% cases with MSL who had a non-reassuring fetal heart rate.

In the study conducted by Kaur et al [27], LSCS due to fetal distress was 48% among the patients with oligohydramnios. Our study shows 23% of LSCS were due to fetal distress.

Guin G et al [30] noted that 80% of LSCS in oligohydramnios was done due to fetal distress.

Rajwade et al [29] observed that 7.3% of patients having FGR underwent LSCS. Our study shows 7% of patients with FGR had operative vaginal delivery.

Rathod et al [28] observed in his study that the most common indication for LSCS was oligohydramnios in itself (30.9%)

Our study observed an outcome of 15% of FGR babies which is similar to the study conducted by Sriya et al. [17] Manning et al reported FGR of 36% in his study. [22]

In our study APGAR score <7 at 5mins was found to be 25% which is similar to the study conducted by Ahmar et al (33), where 27.8% of the babies had an APGAR of <7 at 5 mins.

Panda et al [23] found that NICU admissions were 24% whereas out study reported 18% of NICU admissions. On the other hand, Asnafi et al. [25] found only 4.8% of term babies requiring NICU admissions.

Ahmar et al [33] found a perinatal mortality of 7.7% in his study while Wolf F et al [24] observed a rate of 7.2%. Our study shows a perinatal mortality of 5%.

CONCLUSION

Oligohydramnios requires a careful fetal monitoring and proper antepartum and intrapartum care. [19] Although most of the cases are idiopathic, identifying an underlying pathology if present can significantly reduce the morbidity and mortality of the mothers and the foetuses. AFI is an important component of Biophysical profile and should be routinely assessed in all antenatal mothers. Timely intervention can prevent the maternal and perinatal morbidity.

Conflict of Interest

No conflict of interest observed

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