

Evaluate the Outcome of Labor Induction in Cases of Isolated Oligohydramnios at Term Gestation

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Abstract: ***Background:** Amniotic fluid volume is an important dynamic parameter for the evaluation of fetal well being. The incidence of isolated oligohydramnios ranges from 0.5% to 5% depends on the target population. Isolated Oligohydramnios (IO) refers to the presence of oligohydramnios without fetal anomalies, without fetal growth restriction, without intrauterine infection, and in the absence of known maternal disease. **Methods:** A prospective cohort study was conducted at Department of Obstetrics and Gynaecology, Govt Ranees Hospital Pudukottai, Pudukottai Medical College, Pudukottai over a period of 1 and a half year (January 2021 to June 2022) among Antenatal mothers of singleton term gestation based on inclusion and exclusion criteria. This study has been done to establish the fetomaternal outcome associated with active induction of labour for isolated oligohydramnios in term gestation. **Results:** Mode of delivery in study population, 120 were delivered by labour natural (59.1%), 50 were delivered by assisted delivery (24.6%) and 33 were delivered by LSCS (16.3%) Mode of indication for LSCS, Out of 33, 16 were taken for LSCS due to fetal distress, 11 due to nonreactive CTG and remaining 6 due to failed induction. Type of delivery, 136 were primi, among primigravida, 74 delivered labour natural, 32 by assisted delivery, 30 were LSCS. 67 were multigravida, among multigravida 46 delivered labour natural, 18 by assisted delivery, 3 were LSCS. Induction delivery interval for primigravida is longer than multigravida in all types of induction. G + O group delivered faster than F + G; G + O group delivered faster than F + O. Neonatal outcome was insignificant. **Conclusion:** In this study, both maternal and fetal outcomes are similar to those pregnancies with normal amniotic fluid. Hence early detection of oligohydramnios and its management help in reduction of perinatal morbidity and mortality and also decreased cesarean deliveries.*

Keywords: Amniotic fluid, Oligohydramnios, Labour induction, Early detection, fetomaternal outcome

1. Introduction

Nature has made floating bed in form of amniotic fluid cavity filled with liquor for requirement of fetus, for its existence and growth in sterile environment, regulation of temperature, avoidance of external injury and reduction of impact of uterine contractions.

OLIGOHYDRAMNIOS is most commonly defined as an amniotic fluid index <5 cm or the largest vertical pocket measuring < 2 cm. It is considered as a risk factor for adverse fetal outcome, as well as indicator of the possible presence of maternal and fetal comorbidities. Hence the identification of oligohydramnios usually mandates close fetal surveillance.

When diagnosed at term, it is commonly considered a solid indication for labour. It is well established that oligohydramnios is associated with increased adverse perinatal outcome, possibly as a result of umbilical cord compression, an associated uteroplacental insufficiency and MSAF. Therefore recommendations for labour induction at term has evolved in an attempt to reduce the incidence of these adverse outcomes.

Early detection of oligohydramnios and its management may help in reduction of perinatal morbidity and mortality one side and decreases caesarean deliveries on the other side. Hence, oligohydramnios has got significant impact on neonatal outcome and maternal morbidity.

Aim of the study

To evaluate the outcome of active induction of labour for isolated oligohydramnios in term gestation.

Objective of the study

The main objectives of the study are:

- Assessing the need for monitoring the pregnancies with isolated oligohydramnios
- Assessing the maternal outcome in pregnancies with isolated oligohydramnios on conditions such as mode of delivery and after delivery effects.
- Assessing the fetal outcome in pregnancies with isolated oligohydramnios with using Amniotic fluid index and Non stress test (cardiotocogram during labour).

2. Materials and Methods

Study Design

Prospective cohort study.

Duration of Study

Period of 1 and a half year (January 2021 to June 2022)

Study Population

Antenatal mothers of singleton term gestation at Govt Ranees Hospital Pudukottai, Pudukottai Medical College, Pudukottai.

Inclusion Criteria:

- 1) Single live intrauterine gestation with cephalic presentation
- 2) AFI from 5 to 8 cm
- 3) 3.37 completed weeks of gestation

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4) Intact membrane

Exclusion Criteria:

- 1) AFI less than 5 and more than 8
- 2) Gestational age less than 37 completed weeks.
- 3) Post term
- 4) Ruptured membranes
- 5) Malpresentation and multiple gestations.
- 6) High risk pregnancy (Hypertension, Preeclampsia, Diabetes, Hypovolemia, Associated fetal malformations, Placental insufficiency, Chronic renal disease)

Sampling Procedure

Antenatal mothers of singleton term gestation admitted as Inpatients in Obstetrics and Gynaecology Department in Govt Ranees Hospital Pudukottai, Pudukottai Medical College, Pudukottai.

All patients are selected according to inclusion criteria and informed about the condition and informed written consent were obtained after explaining the procedure, their AFI, and absence of adverse effects in the study with assurance that their fetus will be monitoring all the time and no adverse effect will be on fetus. Detailed history was elicited and recorded. General examination, Systemic examination and Obstetric examination was carried. Investigated for urine routine, Hb, Blood grouping and typing, Random blood sugar, BT, CT were done. Ultrasonogram was done and documented.

On admission, NST is done for all women. If NST found reactive, then patients are induced according to protocol and monitored. All cases will be monitored by CTG in labour. If there are any signs of fetal distress, emergency LSCS done.

After 3 centimeter dilatation of the cervical os in primigravida and 4 cms dilatation in multigravida ARM done and will be classified as clear and meconium stained liquor. Cases with meconium stained liquor will be taken for emergency LSCS.

AS per FOGSI guidelines,

Failure to achieve regular uterine contractions (every 3 minutes) after one cycle of completion of cervical ripening are taken as failed induction.

All new borns will be attended by Pediatrician.

Various outcome measures recorded are induced vs spontaneous labour, nature of amniotic fluid, FHR tracings, mode of delivery, indication for caesarean section or instrumental delivery, APGAR score at 1 minutes and 5 minutes, birth weight, admission to neonatal ward, perinatal morbidity and mortality.

3. Results

Data were entered in the excel spreadsheet and variables were coded accordingly. The statistical analyses were performed using Graph pad Prism version 5 software. Data were presented as mean with Standard deviation for normal distribution/scale data. Data were presented as frequency with proportion n (%) for categorical data. One - way ANOVA with Tukey's post hoc test was used to compare the mean of six groups (Foley, Gel, Oxytocin, Foley +Gel, Gel + Oxytocin, Foley + Gel + Oxytocin). Fisher's exact test was used to compare the frequency distribution of parameters between the groups. $p < 0.05$ were considered statistically significant.

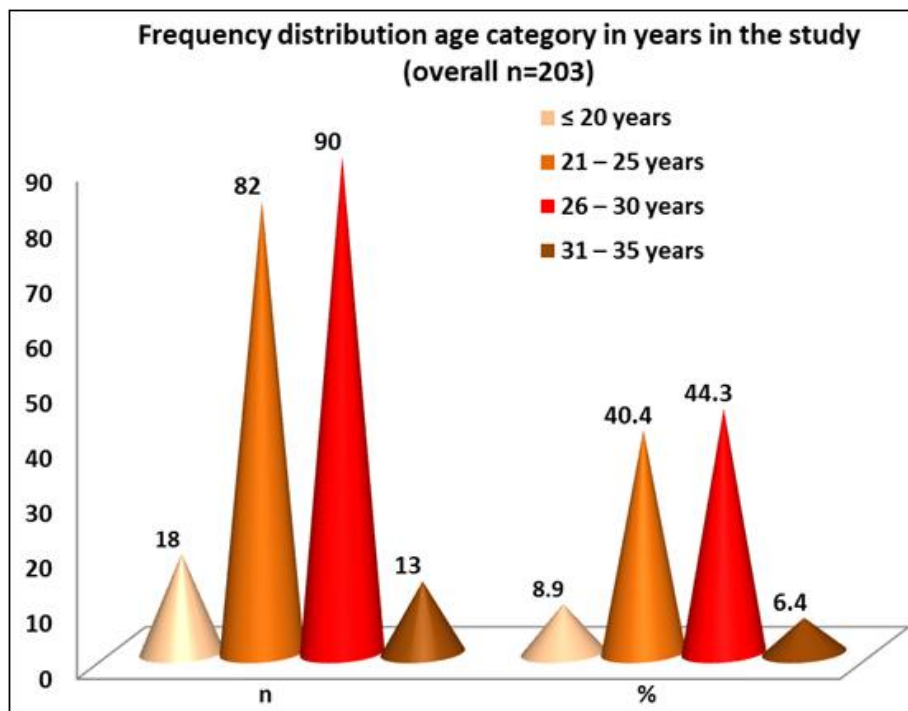


Figure 1: Vertical cone chart depicting the frequency distribution of age category in years in the study population

The overall mean age was 25.2 years with SD of 3.31 years. The minimum age was 19 and the maximum age was 35 years.

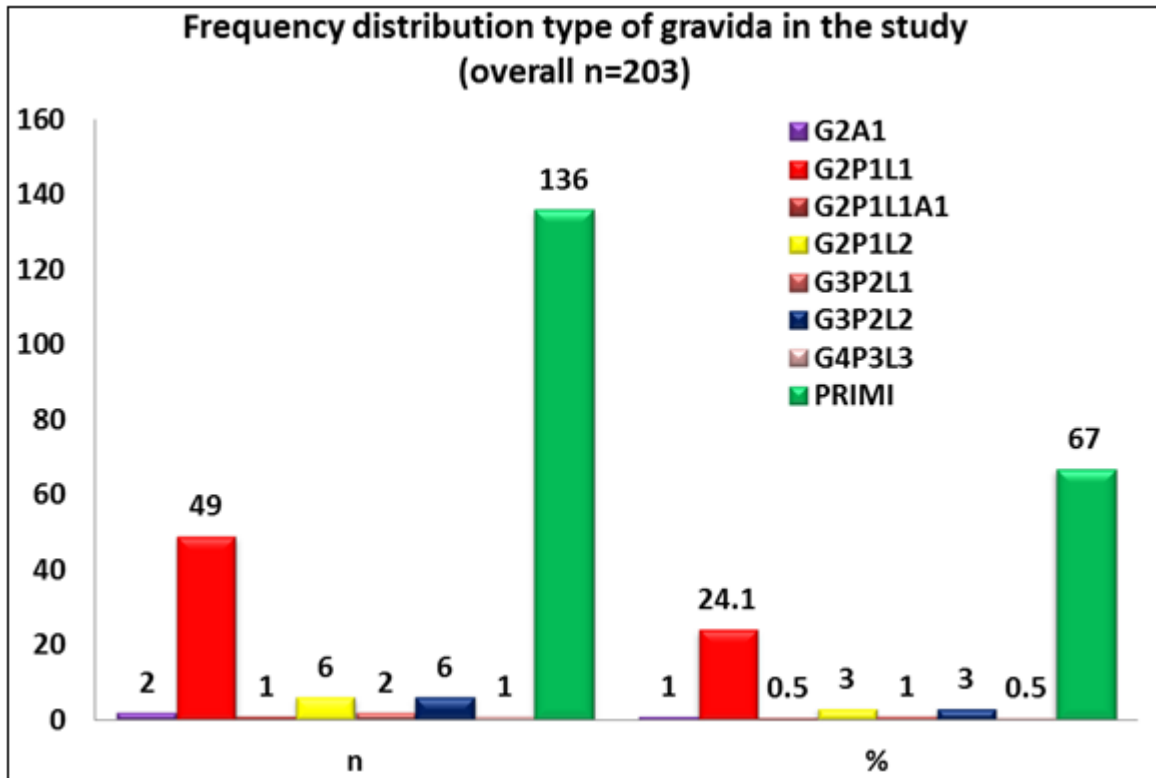


Figure 2: Vertical bar diagram depicting the frequency distribution of type of gravida observed in the study population. N=203

Data are expressed as n (frequency) with % (proportions). The Total N=203. In this study total no. of 203 patients 136 were primigravida (67%) and others are multigravida (33%).

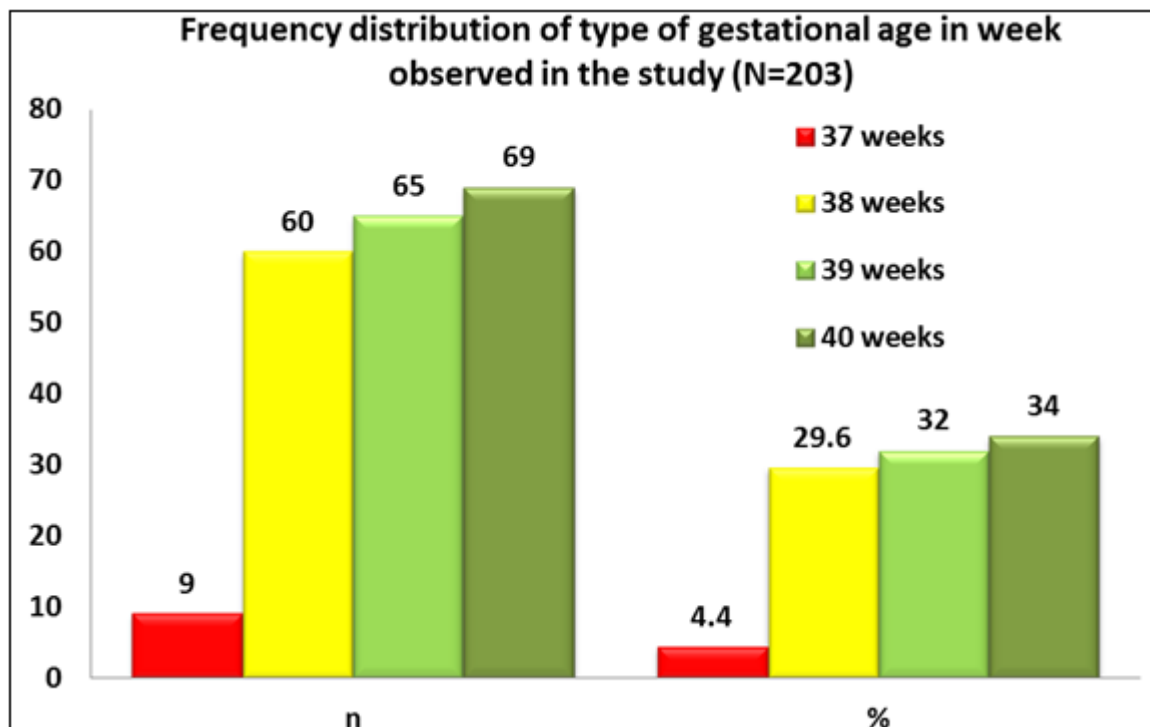


Figure 3: Vertical bar diagram depicting the frequency distribution of type of gestational age in weeks observed in the study population. N=203

Data are expressed as n (frequency) with % (proportions). The Total N=203. The mean gestational age observed was 38.9 weeks with SD of 0.91 weeks

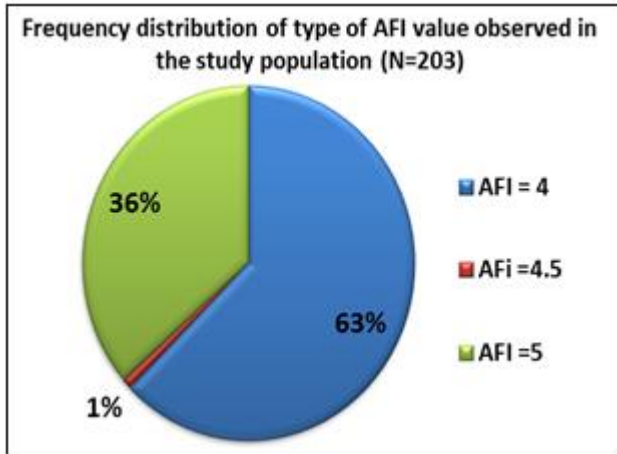


Figure 4: Pie chart depicting the frequency distribution of type of AFI value observed in the study population. N=203

Data are expressed as n (frequency) with % (proportions). The Total N=203. The mean AFI value observed was 4.36 with SD of 0.48

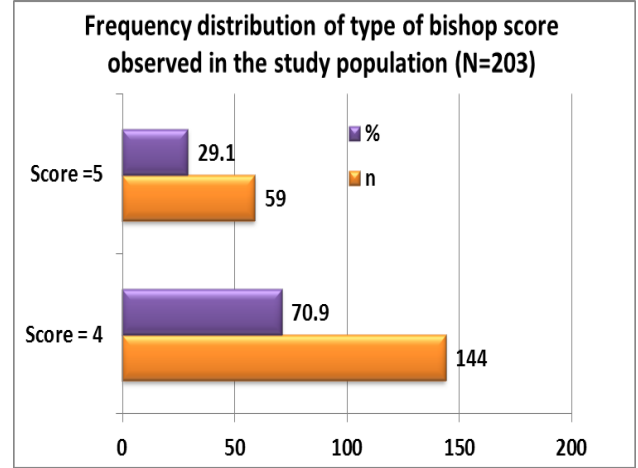


Figure 5: Horizontal bar diagram depicting the frequency distribution of type of Bishop score observed in the study population. N=203

Data are expressed as n (frequency) with % (proportions). The Total N=203. The mean bishop score observed was 4.2 with SD of 0.455.

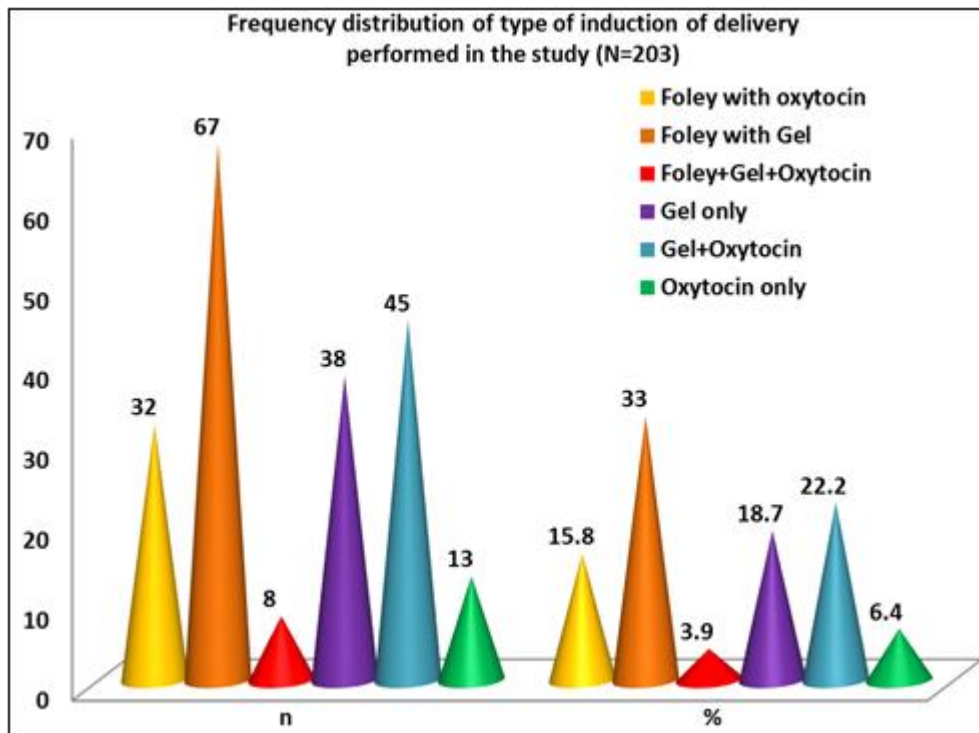


Figure 6: Vertical cone diagram depicting the frequency distribution of type of induction of delivery observed in the study population. N=203

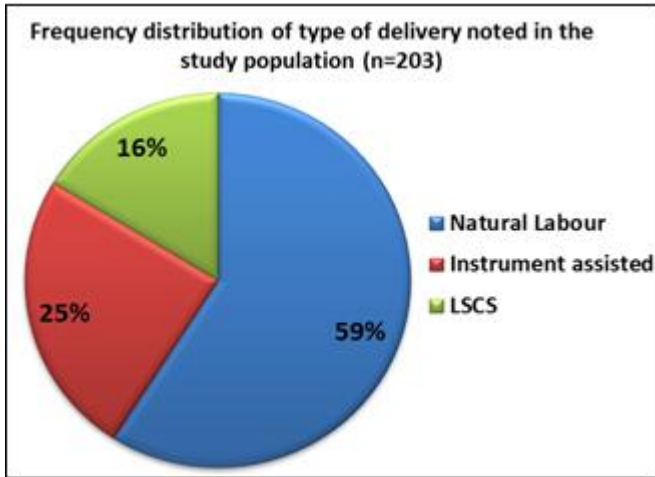


Figure 7: Pie chart depicting the frequency distribution of type of delivery performed in the study population. N=203

Data are expressed as n (frequency) with % (proportions). The Total N=203. Mode of delivery in study population, 120 were delivered by labour natural (59.1%), 50 were delivered by assisted delivery (24.6%) and 33 were delivered by LSCS (16.3%)

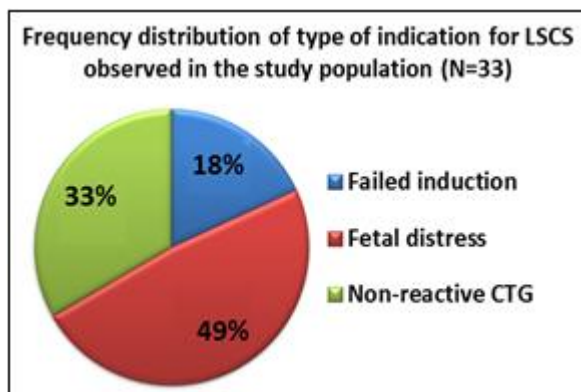


Figure 8: Pie chart depicting the frequency distribution of type of indication for LSCS observed in the study population. N=203

Data are expressed as n (frequency) with % (proportions). The Total N=33. Mode of indication for LSCS observed in study population out of 33, 16 were taken for LSCS due to fetal distress, 11 due to nonreactive CTG and remaining 6 due to failed induction.

Table 3: Comparison of time interval from induction to delivery (in hours) between the groups in respect to type of induction in the study

S. No	Parameter	F+O (n=32)		F+G (n=67)		F+G+O (n=8)		G only (n=38)		G+O (n=45)		O only (n=13)	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	Time interval from induction to delivery (hrs)	15.1	1.9	16	1.7	22.3	1.5	10.1	2.9	9.8	1.9	9.1	1.9
ANOVA Statistics: F value = 113.04; df1 = 5; df2=197; p <0.001*													
Tukey Post hoc test:													
1	F+G Vs G+O	P<0.001*		2	F+G Vs G	P<0.001*		3	F+G Vs O	P<0.001*			
4	F+G Vs FGO	P<0.001*		5	F+O Vs G+O	P<0.001*		6	F+O Vs G	P<0.001*			
7	F+O Vs O	P<0.001*		8	F+O Vs FGO	P<0.001*		9	G+O Vs FGO	P<0.001*			

Data are expressed as mean with SD. One - way ANOVA with Tukey's post hoc test was used to compare the variance. *indicated p<0.05 and considered significant. F= Foley; G=Gel and O=Oxytocin for induction.

Table 1: Comparison of type of delivery between the type of parity with respect to the type of induction.

S. No	Type of induction	Primi (n=136)			Multi (n=67)		
		NL	AD	LSCS	NL	AD	LSCS
1	F+G	28	14	11	11	3	0
2	F+G+O	4	1	2	1	0	0
3	F+O	16	3	9	2	2	0
4	G	10	6	3	13	4	2
5	G+O	12	6	4	15	8	0
6	O	4	2	1	4	1	1
Total		74	32	30	46	18	3

Data are expressed as n.

Type of delivery between the type of parity with respect to the type of induction Total N = 203, 136 were primi, among primigravida 74 delivered labour natural, 32 by assisted delivery, 30 were LSCS.67 were multigravida, among multigravida 46 delivered labour natural, 18 by assisted delivery, 3 were LSCS.

Table 2: Comparison of time interval from induction to delivery in hours between the type of parity with respect to the type of induction.

S. No	Type of induction	IOD time in Primi (h)			IOD time in Multipara (h)			P value
		n	Mean	SD	n	Mean	SD	
1	G only	19	11.47	3.4	19	8.73	1.28	0.002*
2	O only	7	10.1	1.06	6	8	2.2	0.045*
3	F+O	28	15.28	1.9	4	13.7	1.7	0.126 (NS)
4	F+G	53	16.5	1.48	14	14.14	0.94	<0.0001*
5	G+O	22	10.86	1.9	23	8.78	1.38	<0.001*
6	F+G+O	7	10.1	1.7	1	7	--	--

Data are expressed as mean with SD. Unpaired 't test was used to compare the means between the groups. * indicates p<0.05 and considered statistically significant.

Comparison of time interval from induction to delivery in hours between the type of parity with respect to the type of induction. When double intervention F + G and G + O; P < 0.01 which is significant. In single intervention gel only and oxytocin only P < 0.02 and P < 0.045 respectively which is significant. Induction delivery interval for primigravida is longer than multigravida in all types of induction.

Comparison of time interval from induction to delivery (in hours) between the groups in respect to type of induction in the study, P value less than 0.01 which is significant. G + O group delivered faster than F + G; G + O group delivered faster than F + O.

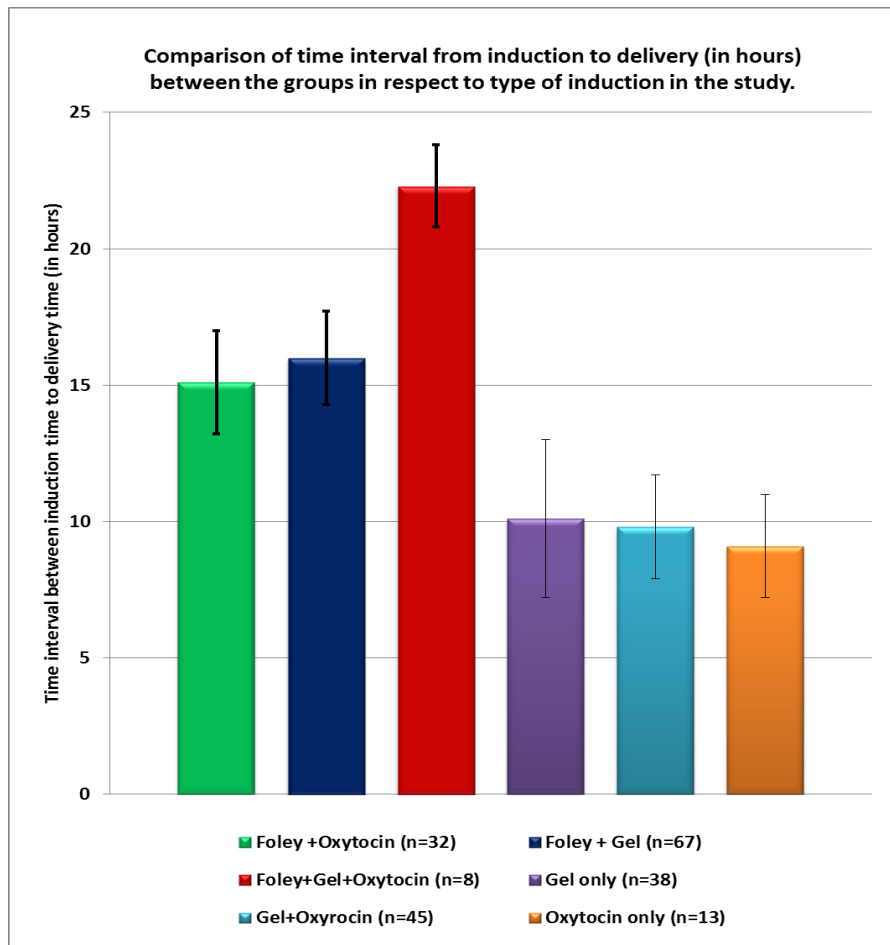


Figure 9: Vertical bar diagram depicting the comparison of mean time interval in hours between induction to delivery between the groups in the study population

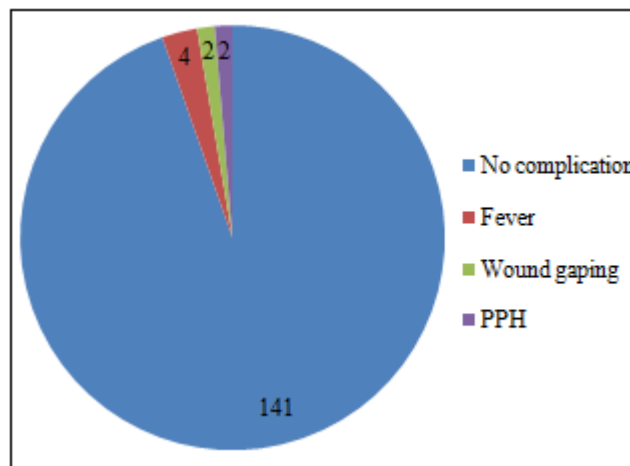


Figure 10: Comparison of maternal complication between the type of induction performed in the study population

Table 4: Comparison of neonatal outcome between the type of induction performed in the study population.

S. No	Neonatal outcome	F+O (n=32)		F+G (n=67)		F+G+O (n=8)		G only (n=38)		G+O (n=45)		O only (n=13)	
		N	%	n	%	n	%	n	%	N	%	n	%
1	Admitted in NICU	5	15.2	7	10.3	2	25	4	11.6	3	6.7	1	7.7
2	No admission	27	84.8	60	89.7	6	75	34	89.4	42	93.3	12	92.3

Statistics: Chi - square value = 0.737 d (f) =5; p=0.241 (NS)

Data are expressed as n with %. F= Foley; G=Gel and O=Oxytocin for induction. Fisher's exact test was used to compare the frequencies. NS= Not significant.

New born admission NICU were 22 neonates, others not get admitted Comparison of neonatal outcome between the type of induction performed in the study population P = 0.241 which is not significant.

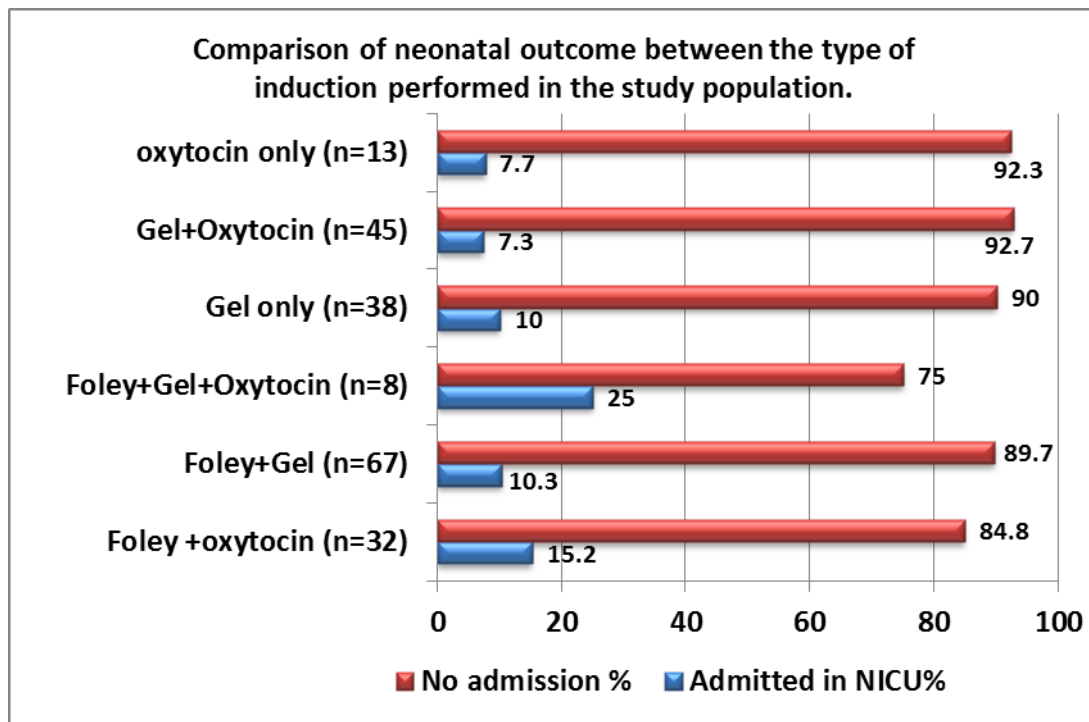


Figure 11: Horizontal bar diagram depicting the comparison of neonatal outcome between the type of induction performed in the study population. N=203

4. Discussion

Amniotic fluid is the protective milieu that nourishes the fetus and in process of labour it helps the fetus to maintain the acid – base balance so that it does not go into distress. With decreasing amniotic fluid the fetus may have increased perinatal risk.

Phelan et al studied about the amniotic fluid index measurements during pregnancy and concluded that its usefulness in assessing the fetal surveillance throughout pregnancy.

Amniotic fluid index is useful screening test for detecting intrapartum fetal distress and early intervention to deliver an infant with good APGAR. Colleen and Mark et al studied the impact of amniotic fluid volume assessed intrapartum on perinatal outcome concluded that its good in predicting the risk.

In this study, we evaluate the outcome of labour induction in cases of isolated oligohydramnios at term gestation.

In Casey et al, the mean maternal age was 23.9yrs, which is comparable to the present study, which was 25.2yrs.

In Donald D et al. the incidence of oligohydramnios was 60% in primigravidas, which is comparable to present study, as it was 67%.

Manzanares S et al shows 84% vaginal deliveries in induced patients of oligohydramnios and 16% by caesarean section.

In this study, 83.7% shows vaginal delivery, among which 59.1% were labour natural, 24.6% were assisted delivery and 16.3% were caesarean section.

In this study, among primigravida, 74 were delivered by labour natural, 32 by assisted delivery, 30 were delivered by LSCS. According to J Matern fetal neonatal medicine, oligohydramnios at term did not influence the outcome of induction of labour in nulliparous women with unfavourable cervix.

In this study, 33 mothers were taken up for LSCS, among these 16 due to fetal distress, 11 were taken up due to non reactive CTG. According to Krishna Jagatia et al, most common indication to CS was fetal distress and abnormal heart rate which is comparable to the present study.

AS per revised biophysical profile scoring by CLERK et al, Fetal jeopardy was reflected as increase operative interference.

In this study, compared with time interval from induction to delivery between groups in respect to type of induction

Prostaglandins +oxytocin were superior to Foley+prostaglandin, Foley+oxytocin, both in cervical ripening and vaginal delivery.

In EYAL KRISPIN STUDY, prostaglandin were superior to foley both in successful cervical ripening and vaginal delivery rates.

In this study, neonatal outcome like NICU admission were 22 only. IN AJOG 2019, the induction of labour for isolated oligohydramnios had similar perinatal outcomes to otherwise normal pregnancies.

5. Conclusion

Isolated oligohydramnios is frequent occurrence and demands intensive fetal surveillance and proper antepartum and intrapartum care.

Since oligohydramnios is often associated with maternal and fetal comorbidities affecting the pregnancy outcome, induction of labour in term pregnancies with IO is common.

IO at term is associated with significantly higher rates of medical intervention and caesarean sections.

Amniotic fluid volume is a predictor of fetal tolerance in labour and its decrease is associated with increased risk of abnormal heart rate and meconium stained fluid. Due to intrapartum complication and high rate of perinatal morbidity and mortality, rates of caesarean section are rising, but decision between vaginal delivery and caesarean section should be well balanced so that unnecessary maternal morbidity prevented and other side timely intervention can reduce perinatal morbidity and mortality.

References

- [1] Rutherford SE, Phelan JP, Smith CV et al: The four - quadrant assessment of amniotic fluid volume: An adjunct to antepartum fetal heart rate testing. *ObstetGynecol* 70: 353, 1987
- [2] Collen B, Morgan mark A, Garite TJ. "The impact of amniotic fluid volume assessed intrapartum on perinatal outcome" *Am J ObstetGynecol* 1995; 173: 167 - 74.
- [3] Kwon JY, Kwon HS, Kim YH, Park YW. Abnormal Doppler velocimetry is related to adverse pregnancy outcome for borderline amniotic fluid index in the third trimester. *J ObstetGynecol Res*2006; 32: 545–549.
- [4] Krishna, jagatia, nishasingh. sachinpatel.; MATERNAL AND FETAL OUTCOME IN OLIGOHYDRAMNIOS; A STUDY OF 100 cases;
- [5] Purvi K patel, Dipa S Pitre, HarishitaGUPTA; Pregnancy outcome in isolated olighydramnios at term; *Pissn* 0976 3325/Eissn 2229 6816
- [6] AJOG AMERICAN JOURNAL OF OBSTETRICS AND GYNECOLOGY 1869 - 2019; Volume 214. page s373
- [7] *JMatern Fetal neonatal med* 2005 feb 17.; Induction of labor in women with oligohydramnios
- [8] INDUCTION OF LABOR; GCPR. Good Clinical Practice recommendations.; FOGSI –ICOG 2018.
- [9] Schwartz N, SweetingR, Young BK; Practice patterns in the management of isolated oligohydramnios; a survey of perinatologists. *JMatern Fetal Neonatal med* 2009; 22; 357 - 336.