Section: Obstetrics & Gynecology

Original Research Article

INTRAUTERINE FETAL DEATH-A STUDY OF EPIDEMIOLOGY, CAUSES, AND METHODS OF INDUCTION

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ABSTRACT

Background: Pregnancy loss is a distressing problem for both the couple &the obstetrician. ACOG refers to IUFD as the demise occurring at or later than 20 weeks. Many factors contribute to IUD including complications during labour, hypertension, diabetes, congenital and genetic disorders, infections, placental dysfunction, and pregnancies that extend more than 40 weeks. Advanced maternal age raises the risk of IUD due to higher chances of aneuploidy and pregnancy complications. Chromosomal abnormalities, which are more common in elder mothers, can also lead to IUD. The risk of intrauterine fetal death increases with increasing gestational age particularly post-term pregnancies. Chronic hypertension triples the risk of IUD.

Materials and Methods: This is a cross sectional study in Government General Hospital, Obstetric department, Kadapa, Andhra pradesh from July 2023 to January 2025. Patients with a diagnosis of IUFD who attended the labor room at GGH, Kadapa, and satisfied the inclusion criteria were selected. These patients were included in the study after obtaining their informed consent. A detailed history was taken, including past obstetric history, to identify maternal risk factors leading to IUFD. Fetal causes like IUGR and congenital malformations were studied. The mode of termination was also examined. These patients were followed up during labor to determine if there were complications like placental abruption or umbilical cord issues. . Finally, the prevalence of these risk factors among IUFD patients in the labor room at GGH, Kadapa, was studied.

Results: During the period of our study 80 cases of IUFD are noted. The risk of IUFD generally increases with advancing maternal age, particularly after 35 years(41.25%).Primigravidae constituted 51.25% among 80 cases when compared to multipara 48.75%. Majority of them are primi-gravidae. In current study among 80 cases 45% (36) of the mothers had 'O' blood group causing IUFD, when compared to other blood groups. Among 80 cases 11.25% of the mothers had diabetes, 10% had abruptio placenta,5% had oligohydramnios,11.25% had hypertension- in the form of preeclampsia or eclampsia. Among 80 cases 55% (33) of the cases were induced with misoprostol. Remaining 25%(15) with dinoprost,20% (12)with oxytocin. Induction to delivery interval of dinoprostone was found to be 12.63 hrs.

Conclusion: Present study shows that majority of IUFDs are preventable. Diabetes, preeclampsia, and abruption which are the major causes of IUFD can be reduced by improving education of the patient to avail obstetric care, more frequent visits for high risk pregnancies, timely reference to specialist, early registration is an important pre-requisite for early detection of risk factors.

Keywords: IUFD, Methods of induction, dinoprostone, oxytocin.

INTRODUCTION

Intrauterine fetal death(IUFD) is the death of fetus before its complete expulsion or extraction from the mother, occurring after the age of viability, which is defined by the American College of Obstetricians and Gynecologists (ACOG) as 22 weeks of gestation. IUFD can be categorized into three main stages: Early: Before 20 weeks of gestation, Intermediate: Between 20 and 27 weeks of gestation, Late: After 27 weeks of gestation.[1] It is emotionally difficult adverse outcome of pregnancy and their family, obstetrician, and even more if it occurs near the term. The prevalence of IUFD is reported as the number of fetal deaths per 1,000 live births, with rates varying across different regions.[2] Knowing the risk factors and causes is important as it would enable implementation of proper screening and treatment to prevent its recurrence. There are many factors associated with IUD like hypertensive disorders, maternal diabetes, intrauterine sepsis and fetal growth restriction.[3,4]

Timely detection of risk factors by clinicians can decrease the incidence of fetal deaths. Termination of pregnancy with intrauterine fetal death is crucial to prevent serious maternal complications. The ideal drug for the termination of pregnancy in cases of IUFD should not only be effective and safe, but should also be affordable to avoid additional financial burden. The surgical methods of induction like stripping of membranes and amniotomy are contraindicated in case of IUFD as it may precipitate infection. Termination of pregnancy with intrauterine fetal death is crucial to prevent serious maternal complications.[5] The ideal drug for the termination of pregnancy in cases of IUFD should not only be effective and safe, but should also be affordable to avoid additional financial burden. The surgical methods of induction like stripping of membranes and amniotomy are contraindicated in case of IUFD as it may precipitate infection. RCOG in its Green-top Guideline No. 55 recommends a combination of mifepristone and a prostaglandin preparation as the first-line intervention for induction of labour in IUFD which is also endorsed by the NICE guidelines especially for late IUFD. and WHO recommends oral or vaginal misoprostol for induction of labour in the third trimester of pregnancy, in women with a dead or anomalous fetus.[6] While the time-tested method of induction with Oxytocin is painful and less successful as the uterus is less sensitive to oxytocin before term. In view of less literature on epidemiology and causes of IUD in India, the current study was undertaken.[7]

Aims &Objectives

1. To identify the risk factors of IUD
2. To study the mode of termination of pregnancy.

MATERIALS AND METHODS

The current study was conducted in the Department of Obstetrics and Gynecology, Govt. Medical College, Kadapa, Andhra Pradesh, India. Study period: 18 months from July 2023 to January 2025 Type of study: Cross-sectional study. Source of data: Mothers admitted at our tertiary care center Sampling procedure: Convenience sampling. The minimum sample size came to be 73. Hence, we included 80 patients in the current study.

Inclusion Criteria:

Patients attending OPD and labour room with diagnosis of IUFD during the study period with >28 weeks

Exclusion Criteria:

Patients with gestational age below 28 weeks. Patients with baby weight below 1000gms Patients with twin pregnancy. Patients not willing to participate in the study.

Patients with a diagnosis of IUFD who attended the labor room at GGH, Kadapa, and satisfied the inclusion criteria were selected. These patients were included in the study after obtaining their informed consent. A detailed history was taken, including past obstetric history, to identify maternal risk factors leading to IUFD. Fetal causes like IUGR and congenital malformations were studied. The mode of termination was also examined. These patients were followed up during labor to determine if there were complications like placental abruption or umbilical cord issues. Finally, the prevalence of these risk factors among IUFD patients in the labor room at GGH, Kadapa, was studied. After delivery, these patients were counselled.

RESULTS

In my study, 8699 deliveries took place in Government General Hospital,Kadapa, a tertiary care center from July 2023 to January 2025.Out of these 80 cases of IUFD were noted . The risk of IUFD generally increases with advancing maternal age, particularly after 35 years. 41.25% of mothers admitted with IUD belonged to age group above 35 years. Lower socio - economic status is linked to increased risk of IUFD, while higher socio - economic status is associated with fewer IUFD's. Highest risk of IUFD may be associated with high maternal parity but also risk of IUFD is equally seen with primi-gravidas due risk of eclampsia/preeclampsia, first exposure immune responses Primigravidae constituted 51.25%(41) among 80 cases when compared to multipara 48.75%. Majority of them are primi-gravidae.

Table 1: Maternal parity-Association with IUFD

Maternal parity	Frequency	Percentage
PRIMI	41	51.25%
MULTI	39	48.75%
Total	80	100.00%

Adequate antenatal care is crucial in preventing or minimising IUFD. In many cases IUFD is associated with a lack of or inadequate antenatal care. Among 80 cases 73.75% (59) had no antenatal visits. Only 26.25% (21) cases had antenatal care. None of the patients had regular antenatal care.

IUFD can occur at various gestational ages,it is associated with later pregnancies ,particularly around 39 weeks /passed dates due to oligohydramnios and meconium stained liquor, often can also occur in preterm cases in cases like GDM and pregnancy induced hypertension. In my study majority of cases were admitted at 36 weeks and term gestation (37.50%) when compared to 33-36 weeks/28-32 weeks.

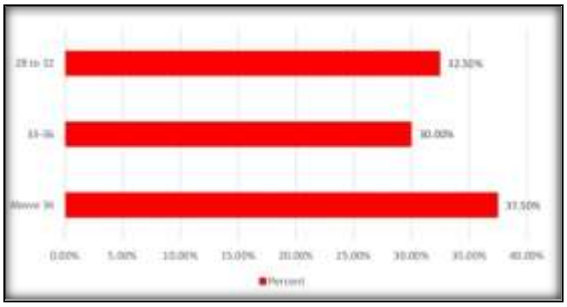

Figure 1: Maternal Gestational age -related to IUFD

Maternal blood group O has been associated with higher IUFD due to ABO incompatibilities. In current study among 80 cases 45% (36) of the mothers had O group causing IUFD compared to other blood groups. In current study among 80 cases 45% of IUFD cases are related to maternal causes like hypertensive disorders, diabetes, thyroid, Infections. Remaining are distributed with fetal and placental causes.

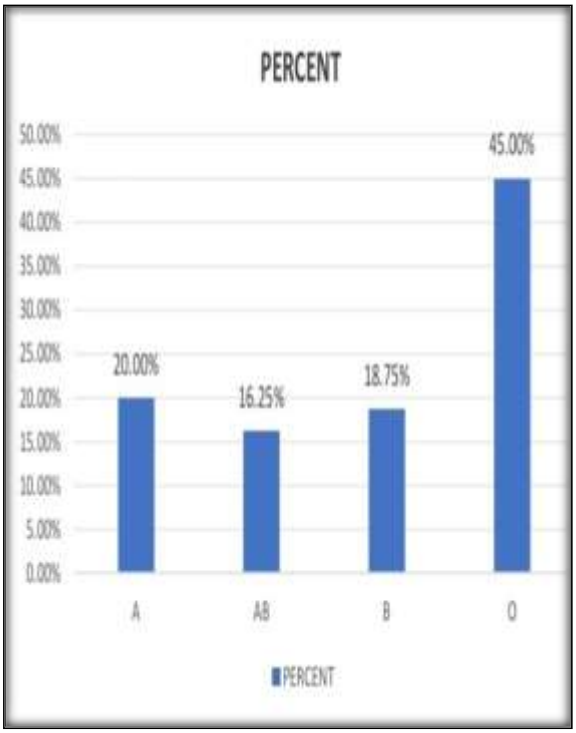

Figure 2: Maternal blood group-Association with IUFD.

Among 80 cases 11.25% of the mothers had diabetes, 10% had abruptio placenta. 5% had oligohydramnios- These are some of the causes of IUD. 11.25% had hypertension- in the form of preeclampsia or eclampsia.

Table 2: Cause of IUFD

Cause of IUD	Frequency	Percentage
ABRUPTION	8	10.00%
CHORIOAMNIONITIS	1	1.25%
CONGENITAL ANAMOLY	2	2.50%
DIABETES	9	11.25%
EPILEPSY	3	3.75%
IUGR	8	10.00%
OLIGOHYDRAMNIOS	4	5.00%
PLACENTA PREVIA	7	8.75%
POLYHYDROMNIOS	5	6.25%
POSTMATURITY	5	6.25%
PREECLAMPSIA/ECLAMPSIA	9	11.25%
RH INCOMPATABILITY	2	2.50%
RUPTURE UTERUS	3	3.75%
SEVERE ANEMIA	7	8.75%
UNIDENTIFIED	7	8.75%
Total	80	100.00%

Mode of induction in IUFD: Inducing labour is a common approach to deliver the deceased fetus. Among 80 cases 55% (33) of the cases were induced with misoprostol. Remaining 25%(15) with dinoprost,20% (12) with oxytocin. With total 80 cases among the study group 60 cases were induced.

Table 3: Mode of induction -IUFD

Mode of induction	Frequency	Percentage
DINOPROST	15	25.00%
OXYTOCIN	12	20.00%
MISOPROSTOL	33	55.00%
TOTAL	60	100.00%

Mean induction to delivery interval of misoprostol was found to be 9.64 hrs and mean induction to delivery interval of dinoprostone was found to be 12.63 hrs.

Mode of delivery can include induction of labour or cesarean section. Vaginal delivery is often preferred to minimize maternal morbidity. However cesarean section is necessary if induction fails or if there are maternal contraindications. Among 80 cases 51.25% (41) cases were delivered vaginally. Remaining 48.75%(39) underwent c-section including both failed induction and direct indication of c-section like CPD/PRIOR LSCS.

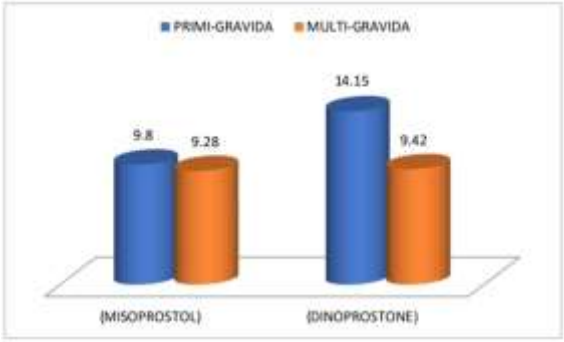

Figure 3: Induction to delivery interval according to gravidity.

Table 4: Mode of delivery

Mode of delivery	Frequency	Percentage
Vaginal delivery	41	51.25%
C-Section	39	48.75%
Total	80	100.00%

Among 80 cases 33 babies delivered were under 2-3kgs may be due placental insufficiency/maternal factors causing IUGR. In current study among 80 cases 72.5% (58) cases were found AGA. Remaining are SGA and LGA. Among 80 cases around 26.25%(21) had fever as post -natal complication may be due to RPOC/Infections.

DISCUSSION

The current study consists of 80 IUFD cases amongst 8699 total births. Thus incidence of IUFD was 9.19/1000 live births. The reason of higher IUFD at our center is, it being a tertiary centre all high risk and complicated cases are referred to our center.

In THAKUR5 study authors did a descriptive study conducted in the Department of Obstetrics and Gynecology, Koirala Institute from January to December 2014.In this study patients with singleton pregnancies who had IUFD after 28 weeks of gestation are studied. There were 11,006 obstetric admissions during the study period, of which 152 women (1.38%) had IUFD. 128 women (84.2%) were between 20-35 years old. 53.3% (81 women) had preterm IUFD. 2.1% (39 women) had post - term IUFD. 50.7% (77 women) were primigravida. 23% (35 women) were second gravida. In the present study it was found that primi-gravidas accounted for 48.7% and is similar to study conducted by THAKUR.

In ANUPAMA DEV et al study 86.5% are unbooked cases. Present study is similar to this study. In BABU LAL BISINOI et al study 19.38% of IUFD are related to preeclampsia, in present study 11.25% of cases are related to preeclampsia.

In present study 51.25% of vaginal deliveries occurred and is similar with Thakur (82.2%), Babulal (86.78%) Divya Saha (85.29%) studies as majority of cases delivered vaginally. POST NATAL COMPLICATIONS: 56.25% had no complications in post-natal period. 26.25% of the mothers had fever. 7.50% of the mothers had PPH. 5% of the mothers had Puerperal sepsis in the current study. SHARMA STUDY6 was a retrospective single-center study. 250 IUFD were reported among 6942 deliveries. The incidence rate of IUFD was 36/1000 live births. Most cases were from unbooked and unsupervised deliveries (222 cases). Main findings are: Rural population: 58%, Previous stillbirth: 9.2%, Low socioeconomic status: 71.2%, Gestational hypertension: 32.8%, Antepartum hemorrhage: 18.8%, Anemia: 74.4%, Congenital malformations: 8.8%.

The objective of MONICA7 study was to assess the incidence rate of IUFD and to analyze the maternal and fetal factors contributing to its occurrence. This retrospective observational study was done using records from 60 IUFD cases among 1,576 total births. Main variables like maternal age, parity, gestational age, and underlying causes were examined. The leading maternal factors associated with IUFD were pre-eclampsia and eclampsia (18.33%), followed by anemia (11.67%). Among fetal causes, IUGR was most common (6.67%), while placenta previa emerged as the most frequent placental factor (8.33%). The study reported an IUFD incidence rate of 38.1 per 1,000 live births. It concluded that regular antenatal care and early detection and management of complications are essential to reduce IUFD rates.

CONCLUSION

Studies on the risk factors associated with intrauterine death (IUD) in India like current study provided important insights into interplay of maternal, fetal, and healthcare-related factors leading to IUFD.

Socioeconomic factors like poor educational status, and limited access to healthcare services have been strongly associated with higher rates of IUFD. Women in rural areas and those with inadequate antenatal care are more vulnerable. Public health

strategies should aim to improve healthcare accessibility and promoting education on maternal health could significantly lower the incidence of IUFD in India.

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