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Research Article

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Analysis of the Risk Factors of IUD After 20 Weeks of Gestation

Roshini P[1], Chandrachur Konar[2], Shreelatha S[3] and Chaitanya Indrani[4*]

[1]Assistant Professor, ESICMC&PGIMSR, Bangalore, India
[2]Assistant Professor, ESICMC&PGIMSR, Joka Kolkata, India
[3]HOD AND UNIT HEAD, ESICMC & PGIMSR, Bangalore, India
[4]Associate Professor, MVJ MC& RH, Bangalore, India

[*]**Corresponding author**
Chaitanya Indrani, Associate Professor, MVJ MC& RH, Bangalore, India.

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ABSTRACT

Fetal loss is a sensitive indicator of maternal care during antenatal period. It directly reflects the obstetrician's vigilance during pregnancy. This present study was done to determine the risk factors for IUFD.

Methods: Prospective study was undertaken at MVJ MC & RH in department of OBG for a period of 2 year (October 2020 – August 2022). All cases with IUFD were included.

Results: Out of 2080 deliveries 73 were IUD. In our study PE and eclampsia (32.88%) and abruptio placenta (20.55%). Majority were term gestations (30.13%) and birth weight <2.0 kg (28.76%). 22% of these patients had undergone LSCS and 78% had vaginal delivery.

Conclusion: IUDs can be prevented if proper antenatal care was given

Keywords: Intrauterine Fetal Death, Pre-Eclampsia, Eclampsia, LSCS, Abruption

Introduction

On 5th November 1817, Princess Charlotte of Wales had labored for 26 hours in the first stage and for 15 hours in the second stage, when the uterine discharges became dark green in color. It was then suspected that the child might be dead or be born in a state of suspended animation. This suspension was of interest because auscultation of the fetal heart was only described in the subsequent year. The delivery of a stillborn infant after 50 hours followed by maternal death and the later suicide of Sr. Richard Craft, the accoucheur is a well described tale.

The death of a fetus is one of the unhappy events in the field of obstetrics. It is really distressing when it occurs without warning in a pregnancy that has previously seemed entirely normal. The loss of a desired pregnancy by miscarriage, stillbirth or termination for genetic indications can result in grief, guilt, self-doubt, anxiety and post-traumatic stress disorder (PTSD). Still birth is defined as sudden death of fetus in 2nd half of pregnancy before birth, which can happen antepartum or intrapartum [1]. It can be further classified into early or late IUFD, with early IUFD occurring before 28 weeks of pregnancy and late IUFD occurring after 28 weeks [2].

If the reason of an IUFD is recognized, it is possible to initiate necessary treatment to avoid recurrences. The recognition of IUFD causes will aid in both counselling parents and developing preventive measures [3].

Fetal loss is a sensitive indicator of maternal care during antenatal period. It directly reflects the obstetrician's vigilance kept during particular pregnancy. For an obstetrician, documentation of primary event or factor which has led to fetal death is of paramount importance. Only when probable etiology is known

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the patient can be given guidance for the treatment, prevention of recurrence as required.

Illiteracy, poor socioeconomic condition and social status of women and misbeliefs are important contributory factors responsible for higher fetal mortality rate, as all these prevent women to go to the hospital for health check-up. One should appreciate that the grief response following stillbirth is severe and is similar to that following loss of an adult family member.

Around 10% of stillbirths are associated with congenital abnormalities, whereas other causes such as maternal infection, malnutrition or obesity, diabetes, prolonged pregnancy, or placental dysfunction are all potentially modifiable risk factors. Approximately 60%—of antepartum stillbirths are a consequence of placental dysfunction due to Abruption/Preeclampsia [4]. Late stillbirth causes are usually GDM, severe preeclampsia [5].

Fetal death remains a significant and understudied problem that now accounts for almost 50% of all perinatal deaths. The availability of prostaglandins has facilitated delivery options for patients with fetal deaths. Risk factors for fetal death include African American race, advanced maternal age, obesity, smoking, prior fetal death, maternal distress and fetal growth impairment. Antenatal surveillance and emotional support are the mainstays of subsequent pregnancy management. Outcomes may be improved in women with diabetes, hypertension, red cell alloimmunization and antiphospholipid syndrome. However, there is considerable room for further reduction in fetal death rate [3].

IUFD usually presented as absent/ reduced fetal movements. On examination recorded as absent fetal heart rate. But confirmation of IUFD should always be done by a documentary ultrasound scan.

Prevention by screening is most important in still birth. Competing risk approach is the treatment paradox for Still birth. Ashoor et al. proposed a second-trimester algorithm for the prediction of stillbirths related to placental dysfunction defined by PE and/or a birthweight <10th percentile [6]. Screening in second trimester for combining maternal risk factors, uterine artery Dopplers, and estimated fetal weight (EFW). If first and second-trimester combined screening might detect the majority of early-onset placental dysfunction, there is no equivalent screening tool for late-onset placental dysfunction. Newer screening modalities like Placental growth factor, Soluble endoglin, soluble FMS Like tyrosine kinase-1 is under intense study for use in Preeclampsia cases [7,8].

Methodology

Method of collection of data:

A prospective study is undertaken in MVJMC & RH, in department of OBG. All the cases of intra- uterine fetal death with ultrasound reports proving IUD.

Period of study: From October 2020 to August 2022.

Inclusion criteria:

- All cases of IUD with gestational age > 20 weeks.

Procedure of Study:

All the cases of intra- uterine fetal death which come to the above-mentioned hospital during the study period are studied. The age, parity, literacy, socio- economic status of these patients were recorded. Detailed obstetric history, details about present complaints and duration, present pregnancy, past obstetric performances and outcomes (including previous abortions, previous IUFD, associated toxemias, etc.,) were studied. Details of ante- natal check- ups, medical illness, presence of ante patum hemorrhage, pregnancy induced hypertension, eclampsia, severe anemia and other significant illness in the present study were noted. Those patients who had attended antenatal clinic at least thrice before delivery were considered booked cases.

Clinical examination is done. General condition of the patient and initial parameters was noted. Abdominal examination was done for height of uterus, tone of uterus, presentation and position of fetus, liquor and its quantity. Absent FHS is noted. An USG examination was done to confirm the diagnosis of intrauterine fetal death and to note any possible causes of the IUD.

Mode of delivery and birth weight of fetuses were noted. All the fetuses were examined for any malformations, each placenta was checked for its appearance, weight, retro-placental clot/ infarcts and calcification.

All patients were be followed for 3 days for post-delivery complications.

Results

Table 1: Total Intrauterine deaths

	Total No. of deliveries	Total No. of IUDS	Still birth rate (per 1000 birth)
Total	2080	73	35.09

Still birth rate in this study is 35.09 / 1000 births.

Table 2: Age, Parity

Age of mothers	Primi	Multi	Grand multi
=20 years	11	07	0
21-30 years	17	33	0
>30 years	01	03	01
Total	29	43	01
Percentage	39.73	58.9	1.37

In our study, 43 patients were multipara constituting 58.9% of patients

Table 3: Risk factors

Sl. No	Causes	Total	%
1	Pre-eclampsia	18	24.66
2	Eclampsia	6	8.22
3	Abruptio placenta	15	20.55
4	Unexplained	16	21.91
5	Placenta praevia	3	4.11
6	Cord prolapse	1	1.37
7	Transverse lie with hand prolapse	1	1.37

8	Post- maturity	2	2.74
9	Rh- isoimmunization	0	0
10	Infections (sepsis)	0	0
11	Diabetes	2	2.74
12	Oligohydramnios	1	1.37
13	SLE	1	1.37
14	Rupture uterus	1	1.37
15	Prolonged and obstructed labour	1	1.37
16	Breech presentation	2	2.74
17	Anemia	3	4.11
	Total		100

In this study, pre-eclampsia constituted for 24.66% of all still births. PE with eclampsia together accounted for 32.88%; abruptio placenta accounted for 20.55%; unexplained 21.91%.

Table 4: Birth weight and gestational age distribution

Gestational age in weeks	500 to 1000 gms	1001 to 1500 Gms	1501 to 2000 gms	2001 to 2500 gms	2501 to 3000 gms	>3000 gms	Total	%
20-28	11	5	0	0	0	0	16	21.9
29-32	1	10	3	0	0	0	14	19.17
33-36	0	1	16	2	0	0	19	26.02
37-42	0	0	2	8	11	1	22	30.13
>42	0	0	0	0	1	1	2	2.73
Total	**12**	**16**	**21**	**10**	**12**	**2**	**73**	
Percentage	**16.43**	**21.91**	**28.76**	**13.69**	**16.43**	**2.73**		

Maximum number of still births occurred at term (37- 42 weeks) in this study (30.13%) and birth weight between 1500 to 2000 gm (28.76%) followed by birth weight between 1000 to 1500 gm – 21.91% and 2501 to 3000 gm – 16.43%. Taken together, preterm constituted maximum number of still births (49; 67.12%) and 59 (80.82%) fetuses were of birth weight less than 2500 grams.

Table 5

Antenatal care	Total	Percentage
Booked	24	32.88
Unbooked	49	67.12
Total	**73**	**100**

In our study, IUDs were seen in more in unbooked cases 49 (67.12%), than in booked cases 24 (32.88%)

Table 6: Mode of delivery

Mode of delivery	Total	Percentage
Vaginal	57	78.08
LSCS	15	20.55
Laparotomy for rupture uterus	1	1.37

In our study, 57 patients (78.08%) delivered vaginally, 15 patients (20.55%) required LSCS and laparotomy was done in 1 patient (1.37%).

Discussion

The definition of fetal death adopted by the Centers for Disease Control and Prevention National Center for Health Statistics is based on the definitions recommended by the World Health Organization (MacDorman, 2012). This definition is as follows: Fetal death means death prior to complete expulsion or extraction from the mother of a product of human conception irrespective of the duration of pregnancy and which is not an induced termination of pregnancy. The death is indicated by the fact that after such expulsion or extraction, the fetus does not breathe or show any other evidence of life such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.

Sl. No.	Author	Incidence (per 1000 births)
1	Ravikumar M. et al [9]	43/1000
2	Nayak et al [10]	23.4/1000
3	Vaishali N., et al [11]	35.2/1000
4	Lucy D. et al [12]	46.38/1000
5	Kumari C. et al [13]	64.1/1000
6	Present study	35.09/1000

In our study Still birth rate is same in the present study when compared to the study of Vaishali et al but lower when compared to Kumari C. et al, Lucy D. et al and Ravikumar M.

Age distribution and IUDs: In our study, most of the patients were in the age group of 21 – 30 years. Maximum number of IUDs in various studies are in age group 21-30 years. These results where similar to Arun Nayak and Asha Dalal and Lucy D. et al studies

Risk Factors associated with IUD: In our study, Pre- eclampsia and Eclampsia is the major cause of intrauterine fetal death followed by abruptio placenta and unexplained fetal demise similar to compared to Kumari C. et al, Lucy D. et al.

Kumasawa et al. succeeded to obtain impaired vasculogenesis, hypertension, proteinuria, and intrauterine growth restriction by genetic manipulation and expression of sFlt-1 in murine placental tissue [14]. The authors demonstrated that excess placental sFlt1 causes impaired placentation and IUGR (intrauterine growth retardation).

Incidence of Abruptio Placenta: Abruptio placenta is one of the major causes of still birth and its incidence corresponds to the study of Kumari C. et al, and Vaishali N. et al [11,13].

Rupture Uterus: The incidence of rupture uterus causing still birth in our study is 1.37% which is low when compared to the study by Ravikumar et al where the incidence is high (10.3%) [9].

Incidence of Severe PE and Eclampsia in Various Studies on Still Births: The incidence of PE and eclampsia as a cause of still birth in the present study is comparable to the studies by Kumari C. et al and Lucy D. et al [12,13].

Incidence of Unexplained Causes of Still Birth: The incidence in the present study is higher than other studies, but lower than the study by Ravikumar et al [9].

Birth Weight and Gestational Age Distribution of IUDs: In the present study, maximum number of IUDs occurred in gestational age 37-42 weeks (30.13%). Ravikumar et al. stated very high incidence of stillbirth between 37 – 42 weeks (51 %) whereas Vaishali et al. quoted 26.04 % [9,11]. In gestational diabetes, elevated fasting glucose (Class A2) has been associated with unexplained still births similar to overt diabetes. The American Diabetes Association (1999a) has concluded that fasting hyperglycemia defined as more than 105 mg/dL may be associated with an increased risk of fetal death during the last 4 to 8 weeks of gestation.

IUDs and antenatal care: A higher percentage of IUD has occurred in unbooked cases in our study when compared to other studies. This may be delay in referral or failure of timely admission of the patient.

Mode of delivery: The modes of delivery and the percentage of LSCS is same and comparable to study by Vaishali N. et al [11].

Conclusion

Modifiable risk factors causing still birth can be prevented by lifestyle modification, weight reduction, health education, regular Antenatal care. Placental dysfunction is one of the causes for still birth requiring early preventive measures like adding aspirin, serial growth scan, doppler monitoring, elective delivery after 37 completed weeks.

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