Antepartum Intrauterine Foetal Deaths In Third Trimester At A Tertiary Care Center

Shital Kapadia* Kartikeya Parmar**

*Assistant Professor In Obstetrics And Gynecology, **Assistant Professor In Medicine,
B.J.Medical College And Civil Hospital, Ahmedabad-380016, Ahmedabad.

Abstracts: **Objective:** Study was conducted to determine the rates, documented causal factors and obstetric outcome for intrauterine fetal deaths at a tertiary care centre in Gujarat. The study also aimed to prove the value of antenatal care in prevention of intrauterine fetal death. **Methods:** A prospective descriptive study was conducted at a tertiary hospital in Gujarat, India. The study was performed over 14 month's period (Jun 2004 to July 2005). Patients having intrauterine fetal death on admission in the third trimester were included in this study. Total number of deliveries during this period was 9802. Among this, total numbers of antenatal IUFD in third trimester were 161. The causes of IUFD were determined purely on close clinical observations and preliminary investigations. **Results:** Total number of deliveries were 9802.Incidence of still birth at our centre was 31 per 1000. Antenatal IUFD rate was 16.5 per 1000 after excluding early trimester fetal deaths and intra partum fetal deaths. IUFD amounts to one third of perinatal mortality in this study. Among the identifiable causes,Hypertensive disorders (31%), placental abruption (15.5%), severe anemia (13%), were most common causes. Congenital malformations were responsible for 4.3% cases .Induction was done in 36, augmentation was done in 53 patients,67 patients had spontaneous onset of labor and caesarean section was done in 5 patients. The most devastating complication of IUFD was DIC found in 3 patients (1.9%). **Conclusions:** The present study is an effort to compile a profile of maternal, fetal and placental causes culminating to IUFD at our centre. This emphasizes the Importance of proper antenatal care and identification of risk factors and its treatment. Considerable number of IUFD are still labeled as unexplained, hence cannot be prevented. Decrease in the incidence of IUFD would significantly reduce the perinatal mortality. [Dawari S NJIRM 2014; 5(2) :5-9]

Key Words: intrauterine fetal death (IUFD), DIC (disseminated intravascular coagulation)

Author for correspondence: Shital Kapadia, "O" block, Dept of Obstetrics and Gynecology, Civil Hospital Campus, Asarwa, Ahmedabad-380016.E Mail: sheetalobgy@gmail.com

Introduction Intra uterine fetal death is one of the unhappy events in the field of obstetrics; it is really distressing situation for caregiver and a traumatic event for the family. Loss of baby is a tragic and devastating experience for woman and her family, which leaves a lasting psychological scar. IUFD definition includes ante partum deaths beyond 20 weeks of gestation or birth weight 500gms or more (WHO). The stillbirth rate varies sharply by country, from the lowest rates of 2 per 1,000 births in Finland and Singapore and 2.2 per 1,000 births in Denmark and Norway, to highs of 47 in Pakistan and 42 in Nigeria, 36 in Bangladesh, and 34 in Djibouti and Senegal. It is estimated that some 1.8 million stillbirths occur in ten countries — India, Pakistan, Nigeria, China, Bangladesh, Democratic Republic of the Congo, Ethiopia, Indonesia, Afghanistan and United Republic of Tanzania. Half of all stillbirths occur in India, Pakistan, Nigeria, China and Bangladesh alone. These same countries account for a high number of maternal and newborn deaths. Rates also vary widely within countries. In India, rates range from 20 to 66 per 1,000 births in different states[1].

Intrauterine fetal death is a significant contributor to perinatal mortality in developing countries although improved antenatal care and better intrapartum monitoring has reduced the incidence. Intrauterine fetal death may be ante partum or intrapartum. Ante partum fetal deaths are associated with several maternal, placental or fetal factors. Hypertensive disorders of pregnancy, anemia, obesity, diabetes, high parity, advanced maternal age are well recognized maternal factors whereas congenital anomalies, intrauterine growth retardation are important fetal factors. Placental causes include abruption and ante partum hemorrhage. Intrapartum fetal death is usually the result of fetal distress, obstructed labor and reflects poor quality of clinical care. Cord complications include cord prolapse, tight cord around neck and true knot[5]. This study was conducted to determine the rates, documented causal factors and obstetric outcome for

intrauterine fetal deaths at a tertiary care centre in Gujarat. The study also aimed to prove the value of antenatal care in prevention of intrauterine fetal death.

Material And Methods: A Prospective descriptive study was conducted at a tertiary hospital in Gujarat, India. The study was performed over 14 months period (Jun2004 to July 2005). Patients having intrauterine fetal death on admission in the third trimester were included. Total number of deliveries during this period was 9802. Among this, total numbers of antenatal IUFD in third trimester were 161. Detailed history; thorough general and obstetric examination was carried out. Laboratory investigations were carried out in each case. All deliveries were conducted by doctors. Mode of delivery was studied in each case. Fetal characteristics were noted in respect to sex, birth weight, and gross congenital anomalies. A detailed examination of placenta, cord and membranes were done. Placenta was sent for histopathology examination. The causes of IUFD were determined purely on close clinical observations and preliminary investigations.

Obsevervations And Discussion: Out of total 9802 deliveries there were 161 intrauterine fetal deaths over period of 14 months. There were 480 perinatal deaths. 161 IUFD amount to 33.5% of total perinatal deaths, which is discussed here.

Table 1: Demographic data

Variables		No. of cases	Total delivery	IUFD/1000
Age	18-20	16	1418	11
	21-25	57	4004	14
	26-30	41	3120	13
	>31	47	1260	37
Gravidity	Primi	16	3180	05
	2-4	104	6129	17
	> 4	41	493	83
No. of fetus	Single	159	9740	16
	Multiple	02	62	32

Maximum no of IUFD occurred in the age group of 21-30 years but this is the period of maximum fertility, so compared with the total number of the deliveries in each age group IUFD rate is lower in this age group. IUFD rate is three times higher in the age group more than 30 years. Advance maternal age is associated with age related medical problems like hypertension, multiple gestation, placental abruption, diabetes mellitus etc which ultimately affects fetal outcome.

In present series IUFD rate is significantly increasing with increasing gravidity. IUFD rate is higher in multigravida. This higher rate is because of high incidence of malnutrition, anemia, other complications like placenta previa, multiple gestation, rupture uterus, malpresentaion ect. A similar study reported higher parity as a risk factor for still births[12].

IUFD rate is almost double in multiple pregnancies than the singleton pregnancy. The risk is even higher in the study conducted by Bronwen Kahn[2].

Table 2: Demographic data

Variables		No. of cases	Frequency (%)
Status of patient	Emergency	129	80.1
	Booked	32	19.9
Residence	Rural	64	39.8
	Urban	97	60.2
Education	Uneducated	126	76.6
	Educated	35	23.4
Past obstetric history	Spontaneous abortions	8	4.9
	Preterm delivery(SB+ND)	48	29.8

32(19.9%) patients were booked cases in this study. 129(80.1%) were emergency patients either they had come directly to hospital or had been referred to hospital. This category explained by poor socio-economic class, PHC-hospital distance, poor knowledge and lack of awareness regarding the antenatal care in both rural and urban areas. Bushra Naseem also observed similar results.[3]

64 patients (39.8) were from rural area where 97(60.2%) patients were from urban area. Patients who had joined the primary school were considered as educated. Majority of the patients 78.3% were uneducated in the present study, who lack health awareness regarding antenatal care and lack of attention for most of the health

programmes implemented by the government and NGOS. So education is also important for the health care seeking behavior of the patients. Few studies in support with our observations indicated that socioeconomic status and literacy also influence pregnancy outcome[13- 15]. One third patients (34.7%) gave past adverse obstetric history. Amongst them 4.9% had spontaneous abortion and 29.8% had previous preterm delivery. Same etiological factor may be responsible for the recurrent pregnancy loss. So, all patients who have previous bad obstetric history are advised to take intensive antenatal care to prevent recurrence and if such patients consult obstetrician in early months of pregnancy vigilant care and appropriate time for delivery can reduce IUFD rate. This observation is comparable to Andrew B Kairalla study[4]

Table 3: Fetal characteristics

Variables		No. of cases	Frequency (%)
Birth weight (kg)	1-1.5	54	33.5
	1.6-2	45	27.9
	2-2.5	30	18.6
	2.6-3	25	15.5
	More than 3	7	4.4
Maturity	Pre term	106	65.8
	Full term	55	34.2
Sex	Male	99	61.5
	Female	62	38.5

Universally baby birth weight is the single most important determinant of the chances of the new born to survive. In present study 66.4% babies were weighing more than 1.5kg, which are salvageable with good neonatal care. 65.8% babies were premature. Savvas efkarpidis studied 161 singleton pregnancies with intrauterine fetal death and found that median gestational age is lesser in still born babies than in live babies. Present study is in accordance with the study conducted by Sawas Efkarpidis. [6] Intrauterine fetal deaths were more frequent in the male fetus, this confirms the usual observation that female fetus have more intrinsic capacity to survive in utero. Ratio for male: female fetus in present study is 1.59:1, comparable with the observation by Smith GC at Cornell University with ratio of 1.2:1.[7] Some evidence from previous studies suggest that male fetuses are more likely to suffer from antenatal hypoxia (ante or intrapartum). Other studies have shown an association of male fetal sex with intrapartum hypoxia(fetal distress) in terms of low Apgar Scores at 5minutes, low umbilical artery pH, and risk of emergency cesarean section.[8-10] So it's possible that there is an association between sex of the fetus and risk of still birth.[9,11]

Table 4: Aetiology

Causal factors		No. of cases	Frequency (%)
Maternal	Hypertensive disorder of pregnancy	35	21.7
	Severe anemia	22	13
	Eclampsia	15	9.3
	Maternal infection	08	4.9
	Diabetes mellitus	02	1.2
	Uterine rupture	02	1.2
Fetal	Congenital malformation	07	4.3
Placental	IUGR	04	2.4
	Placental abruption	25	15.5
	Placenta previa	05	3.1
	Post maturity	03	1.8
Unexplained	No apparent cause	33	20.4

Hypertensive disorders of pregnancy were responsible for the fetal deaths in about one third of patients (31 %) in present study. Out of that, 21.7% were because of preeclampsia and chronic hypertension while rests were associated with eclampsia. This is one of the major causes of maternal and fetal mortality in our country, but by proper antenatal monitoring we can control the severity of preeclampsia and prevent more morbid and severe complications.

Placental abruption is responsible for 15.5 % of fetal deaths in our study. Most of them are associated with severe preeclampsia, again one of the preventable causes, by regular antenatal care and early diagnosis of preeclampsia.Placenta previa is responsible for 5(3.1%) fetal deaths in our

study. Early diagnosis, follow up with USG, meticulous antenatal care and timely intervention(LSCS) even for preterm or near term fetus with excellent neonatal care units can help in reducing the IUFD rate, in the patients with placenta previa. Abruption is associated with higher fetal loss than placenta previa.

Severe anemia was present in 22 (13%) of the patients. Severe anemia causes hypoxemia, placental insufficiency, IUGR and IUFD. But by regular ante natal care, regular iron folic acid supplementation and proper diet advice can help to reduce anemia and subsequent complications.

Maternal infection was responsible for 8 (4.9 %) fetal deaths. Out of 8, 4 patients were having jaundice with acute hepatitis, 3 patients were having grade four malaria and one had syphilis. These are again preventable cause with regular ante natal care and health education.

Among the fetal causes, congenital malformation accounted for 7(4.3%) cases. Out of 7, 4 babies had anencephaly, two had meningocele and one had hydrocephalus. Two patients had overt diabetes (1.2%) and two patients came with rupture uterus (1.2%). Post maturity accounted for 3 (1.8%) fetal deaths. 20.4% of fetal deaths were unexplained.

Table 5: Obstetric outcome

		No. of cases	Frequency (%)
Type of delivery	Spontaneous	67	41.6
	Augmented	53	32.9
	Induced	36	22.4
	Operative	05	3.1
	Total	161	100
Mode of delivery	Normal delivery	120	74.5
	Assisted breech	27	16.8
	Instrumental	09	5.6
	LSCS	05	3.1
	Total	161	100

Onset of labor was spontaneous in 67(41.6) cases, while36 (22.4%) patients needed induction. Induction was done with prostaglandins. Labor augmented with injection oxytocin in cases 53 (32.9%).

Maximum of patients delivered vaginally and operative intervention kept at minimum. In present study cesarean had to be performed in 5 (3.1%) patients. Out of 5, 2 LSCS was performed for rupture uterus, two were done for face presentation and compound presentation and one LSCS was performed for placental abruption. 9 patients (5.6%) required instrumental delivery.

Table 6: Abnormal Placental Histology

Histology findings	No. of cases	Frequency (%)
Focal calcification	10	6.2
Infarction	12	7.5
Ischemia	07	4.3
Total	29	18

All placentas were weighed, grossly examined and sent for histopathology examination. 29 (18%) had abnormal placental histology in form of focal calcification, infarction or ischemia.

Table 7: Maternal Morbidity

Morbidity		No. of cases	Frequency (%)
Psychological upset (mild)		18	11.2
Deranged coagulation profile		03	1.9
Blood transfusion		60	37.3
	One unit	35	27.8
	2-4 unit	22	13.7
	> 4 unit	03	1.9
PPH		04	2.5
Total		85	52.8

Most common morbidity encountered in patients with IUFD was psychological upset seen in 18 (11.2) patients. The most dreaded complication of IUFD requiring intensive care unit admission was disseminated intravascular coagulation encountered in 3 (1.9%) of patients. Out of three one had ante partum eclampsia, one had abruption and one had rupture uterus. Though they were saved with timely transfusion of blood products and meticulous care. There was no mortality in this study. Blood transfusion was required in one third (37.3%) of cases because majority of the patients were severely anemic.

Conclusion: The purpose of the study is to understand the contributory factors and to seek ways of avoiding recurrence by proper antenatal care, early pick up of complications and timely management. In our study intrauterine fetal death contributes to one third of perinatal mortality. Hypertensive disorders of pregnancy, eclampsia, severe anemia, abruptio placenta, IUGR, maternal infections, congenital malformations and medical diseases were major causes of intrauterine fetal deaths in this study.

The modifiable maternal risk factors such as hypertension(and thus reduces incidence of abruption too), severe anemia and diabetes control can prevent intrauterine fetal death. First and second trimester ultra-sound evaluation may be helpful in ruling out congenital malformations and placental disorders which are also implicated in intrauterine fetal death.

To conclude, majority of the associated risk factors in this study seem to be preventable. We should pay attention to health education with emphasis on antenatal care. All health care workers at very root level (small village places) should be trained for the routine antenatal advices and health check up of mothers so that any high risk condition can be picked up earlier to minimize complications. Patient compliance is utmost important in reducing most of these preventable fetal losses. Women with a history of IUFD should attend a hospital-based antenatal clinic in their next pregnancy from very beginning and followed up for more close ante natal surveillance.

References:

1. PMNCH Fact sheet "Stillbirths" Updated September 2011, Source: Lancet Stillbirth release April 2011.
2. Kahn B et al, Lumey LH, Zybert PA, Lorenz JM, et al "Prospective risk of fetal death in singleton twin and triplet gestation", Obstet Gynecol , 2003 Oct; 102 (4)685-92.
3. Bushra Naseem,Arif Tajammul, Hameed Tajammul Khan, Ayesha Arif, et al "Intra uterine fetal death" Pak Pead J, March 1997;21 (1):17-22.
4. Andrew B Kairalla et al, "Previous preterm and small for gestational age and subsequent risk for IUFD", New Eng J Med., 2004
5. N. Singh, Kiran Pandey, Neena Gupta, A K Arya, Charu Pratap, Reshika Nayak, et al "A retrospective study of 296 cases of intrauterine fetal deaths at a tertiary care centre" Intl J of Reprod Contracept Obstet and Gynecol. 2013 Jun;2 (2):141-146
6. Sawas EfKarpidis, Evangelos Alexopoulos, et al"Case contoll study of factors associated with IUFD" MedGenMed, 2004;6 (2): 53
7. Smith GC et al "Sex, birth weight, and the risk of still birth in Scotland, 1980-1996"American J of Epidemiology (impact factor : 5,22) 04/2000; 151 (6):614-9.
8.Liberman E, Lang JM, Cohen AP, Frigoletto FD, Acker D, Rao R, et al The association of fetal sex with the rate of cesarean section. Am J Obstet Gynecol 1997; 176:667-671
9.Parazzini F, Pirotta N, La Vecchia C, Bocciolone L, Fedele L, Determinants of perinatal and infant mortality in Italy.Rev Epidemiol Sante Publique. 1992; 40:15-24.
10.Raymond EG, Cnattingius S, Kiely JL, Effects of materal age, parity, and smoking on the risk of still birth. Brit J Obstet Gynaecol. 1994;101:301-306.
11. Petridou E, Kotsifakis G, Revinthi K, Polychronopoulou A, Trichopoulos D, determinants of still birth in Greece. Soz Preventivmed.1996;41:70-78
12. Stanton, C., Lawn, J. E., Rahman, H., Wilczynska-Ketende, K., & Hill, K. (2006). Stillbirth rates: delivering estimates in 190 countries. Lancet, 367, 1487-1494.
13. Bhattacharya, S., Mukhopadhyay, G., Mistry, P. K., Pati, S., & Saha, S. P. (2010). Stillbirth in a Tertiary Care Referral Hospital in North Bengal - A Review of Causes, Risk Factors and Prevention Strategies. Online J
Health Allied Sciences, 9(4), 4.
14. Engmann, C., Matendo, R., Kinoshata, R., Ditekemena, J., Moore, J., Goldenberg, R., … Wright, L. (2009). Stillbirth and early neonatal mortality in rural Central Africa. Int J Gynaecol Obstet, 105(2),
15. Korde-Nayak, V. N., & Gaikward, P. R. (2008). Causes of Stillbirth. J Obstet Gynecol India, 58(4), 314-318.

Conflict of interest: None
Funding: None