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ORIGINAL ARTICLE

A Study on Pregnancy with Disseminated Intravascular Coagulation and its Fetomaternal Outcome

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Abstract

Background: Obstetric bleeding continues to be the leading cause of maternal death worldwide, and the cornerstone of treatment is early detection of the factors that contribute to hemorrhage and early management of the underlying pathological process. Disseminated intravascular coagulation (DIC) is the most significant pregnancy-related condition that causes bleeding with a high rate of maternal mortality and morbidity. **Aims and objectives:** To find out common causes of DIC in pregnancy. To know the obstetric interventions. To evaluate the maternal and fetal outcome in DIC cases. **Methods:** From January 2012 to December 2015, our institute conducted a retrospective analysis of 90 cases of pregnancy with DIC in order to identify the different aetiology and problems linked to DIC that result in maternal death and morbidity as well as to examine the perinatal outcomes of pregnant women with DIC. **Results:** Three percent of our study has DIC. DIC was frequently caused by abruption (36%), hemorrhage (34%), severe hepatic failure (6%), preeclampsia (18%), and infection (6%). In 89 (98%) postnatal patients and 1 (02%) prenatal patient. DIC emerged as a composite severe maternal morbidity result. HELLP (8.13%), placenta previa (2.66%), embolism (1.33%), uterine rupture (11.6%), abruption (27.9%), PIH (17.4%), PPH (34%), and sepsis (33.7%). Women with hemorrhage had a considerably higher composite maternal morbidity result than those with abruption and preeclampsia, out of the three most common causes (abruption, hemorrhage, and preeclampsia). **Conclusions:** High rates of death and morbidity are linked to DIC, a sign of serious obstetrical problems. This morbidity may be decreased by identifying the underlying causes, conducting an early diagnosis, and actively managing DIC.

Keywords: fetomaternal, intravascular coagulation in pregnancy, Maternal morbidity, DIC

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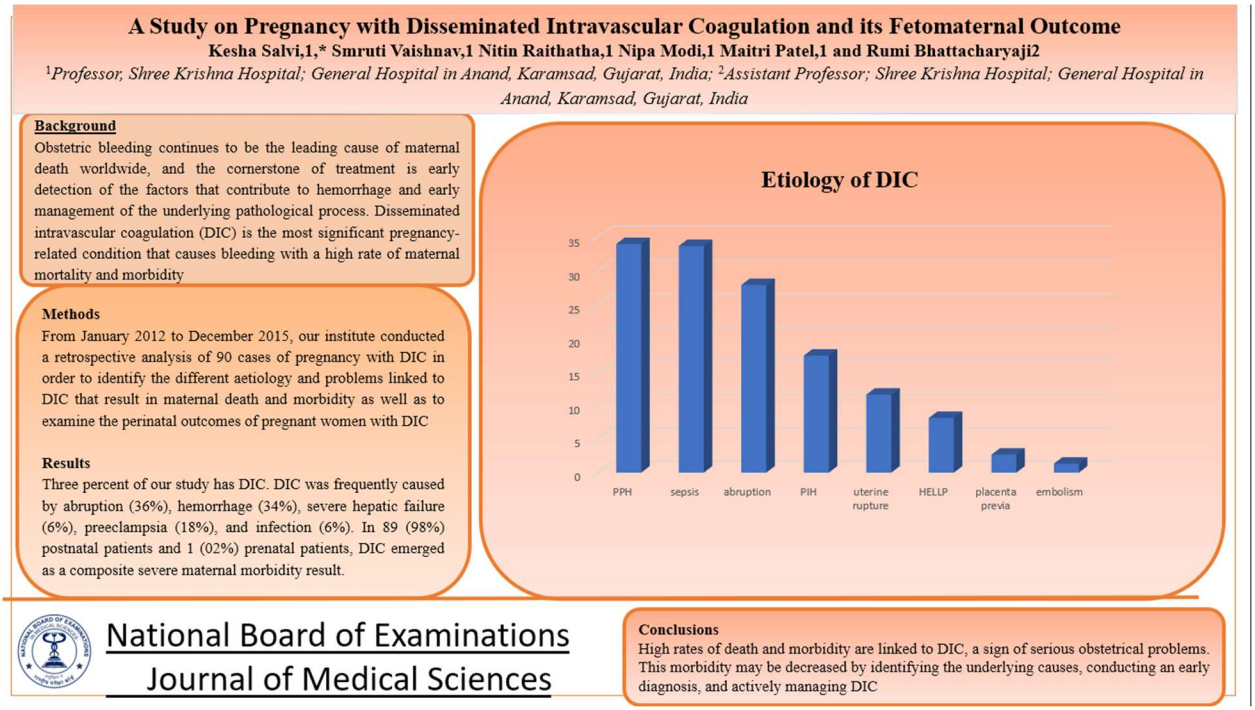
Graphical Abstract



Introduction

The primary cause of maternal mortality worldwide is still obstetric bleeding; therefore, early detection of the conditions that contribute to bleeding and prompt treatment of the underlying pathological process are essential components of care. The most significant disorder connected to pregnancy that causes bleeding and has a high prevalence of maternal death and morbidity is disseminated intravascular coagulation [1-3]. Joseph DeLee first identified and documented the risks associated with obstetrical disseminated intravascular coagulation in 1901, following a fatal case of hemorrhagic diathesis with placental abruption [4]. According to the International Society of Thrombosis and Haemostasis, DIC is as follows: An acquired syndrome characterized by intravascular coagulation activity and loss of localization brought on by a variety of circumstances [5,6]. It may start in the microvasculature and damage it to the point where organ dysfunction results from severe enough damage. Up to 1% of hospitalized individuals may have DIC, according to estimates. DIC is always a secondary phenomenon that might result from cancer to obstetrical mishaps [6]. DIC is linked to a number of obstetrical conditions, including as placenta previa, severe preeclampsia/eclampsia, HELLP syndrome, PPH, retained dead baby, delayed miscarriage, septicemia, amniotic fluid embolism, acute fatty liver of pregnancy, and disruption [7-9]. Deep vein thrombosis (DIC) was caused by a systemic coagulation activation, which was followed by microvascular thrombosis, widespread fibrin deposition, and organ failure [10]. Clinical manifestations of DIC can range widely, from overt and uncontrollable bleeding to microvascular damage and thrombosis. Clinicians working in obstetrics

may find it easier to diagnose and treat DIC patients early on if they are aware of the antecedents linked to the disorder [11]. The second most prevalent severe maternal morbidity indication, according to reports, was DIC. It was linked to about one-fourth of maternal fatalities. According to a 2015 study by Cunningham, the causes of DIC included sepsis, major obstetric hemorrhage 23 to 30:1000, acute fatty liver of pregnancy 1:10000, abruption 1:200, and AFE 2:10000. Bleeding, shock, acute renal failure, pleural effusion, pulmonary oedema, haematuria, hepatic encephalopathy, cardiac arrest, hypoxic brain damage, and other complications are associated with DIC [13]. Here, from January 2012 to December 2015, our institute conducted a retrospective study on 90 cases of pregnancy with DIC in order to identify the different aetiology and complications linked to DIC that result in maternal mortality and morbidity as well as to investigate the perinatal outcome in pregnant women with DIC.

Material and Methods

A retrospective cross-sectional study was carried out from January 2012 to December 2015 at the Obstetrics and Gynecology department of Shree Krishna Hospital (SKH), Karamsad, Gujarat, India. Inclusion criteria: Women who are pregnant and have been admitted to our hospital due to DIC. Women who are pregnant and have coagulation abnormalities or bleeding issues are excluded. Process There were 23014 antenatal indoor patients in total over this time. of which about ninety cases of diabetic eye disease were identified.

The demographic information collected included the age, parity, education, socioeconomic status, address, gestational age at delivery, method of birth, number of hospital days, and maternal weight of the affected lady. Laboratory testing includes routine assays (full blood count, blood group, blood sugar, urine routine microscopy, and HIV/HBsAg status). Platelet count, PTINR/aPTT, serum fibrinogen, BTCT, FDP, and Ddimer are among the assays that are unique to DIC.

The presence of overt DIC was assessed using the ISTH DIC scoring technique, which assigns points based on factors such as elevated fibrin-related marker, prolonged prothrombin time, decreased platelet count, and fibrinogen level. The institutional ethics committee provided ethical approval. Analysis of statistics SSPS and Microsoft Excel were used for data analysis.

Results

The frequency of DIC at our institution was 3%. There were 58 (64%) emergency patients and 32 (36%) booked patients in the current study; the emergency patients had a higher prevalence of DIC. Eighty-four percent of the patients were found to be between the ages of 20 and 30. In 1 (02%) prenatal and 89 (98%) postnatal patients, DIC developed. PPH (34%), sepsis (33.7%), abruption (27.9%), PIH (17.4%), uterine rupture (11.6%), HELLP (8.13%), placenta previa (2.66%), and embolism (1.33%) were the most common causes of DIC (Figure 1).

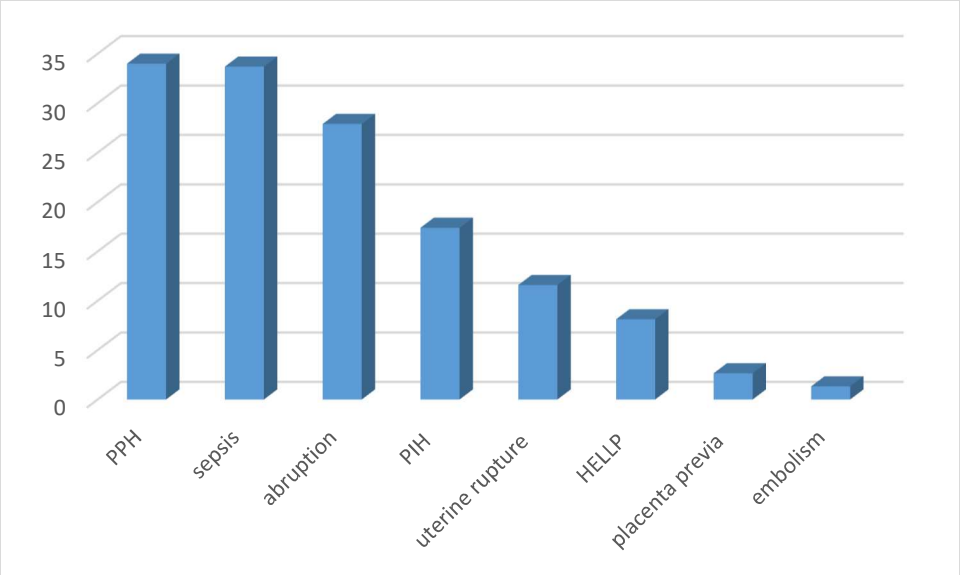


Figure 1. Etiology of DIC

The main causes of DIC in vaginal deliveries are atonic PPH and septicemia, whereas abruption, placenta previa, and intrapartum hemorrhage cause DIC in cesarean sections. The most frequent causes of a caesarean section were severe preeclampsia/eclampsia, abruption, and placenta previa. A cesarean was required in each of these situations (Figure 2).

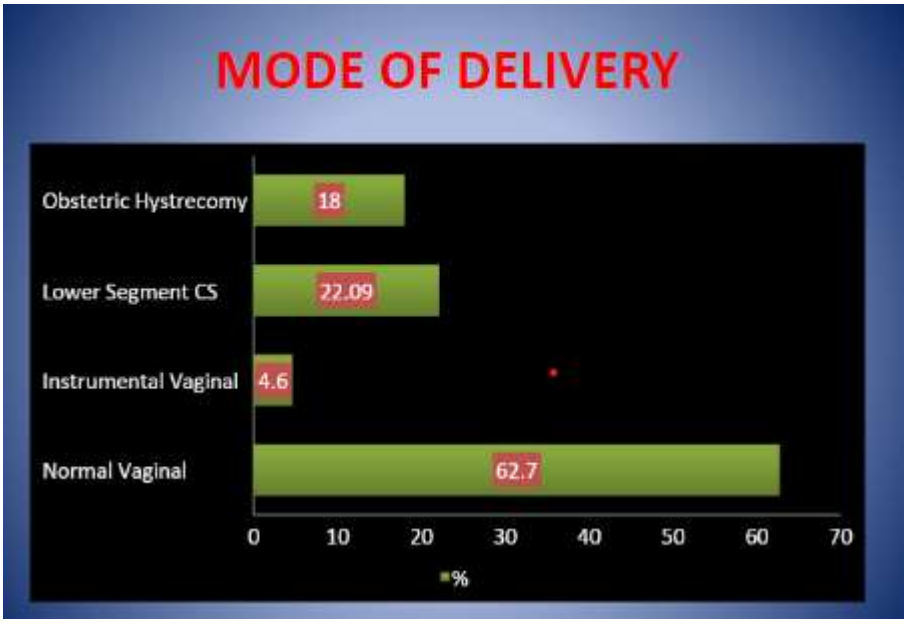


Figure 2. Mode of delivery

In the current study, 22% of patients had a caesarean section, 62.7% had a vaginal delivery, 58% needed to be admitted to the intensive care unit, 32% received a huge blood transfusion, 18% had a hysterectomy, and 9.3% had dialysis. Compared to other causes, hemorrhage (85%) and abruption (56%) require more extensive blood transfusions (Figure 3).

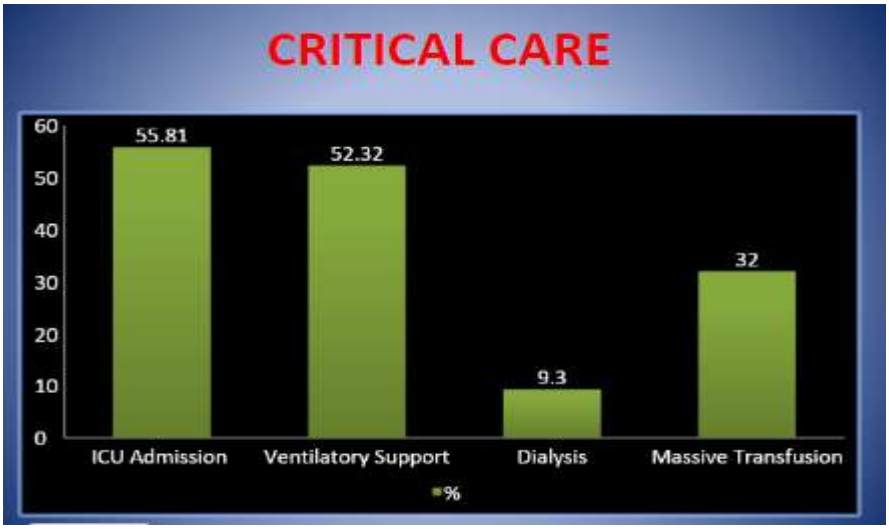


Figure 3. Critical care

In the majority of instances, medical therapy, surgery, and blood product replacement were employed, as shown in statistics 3 and 4 (Figure 4).

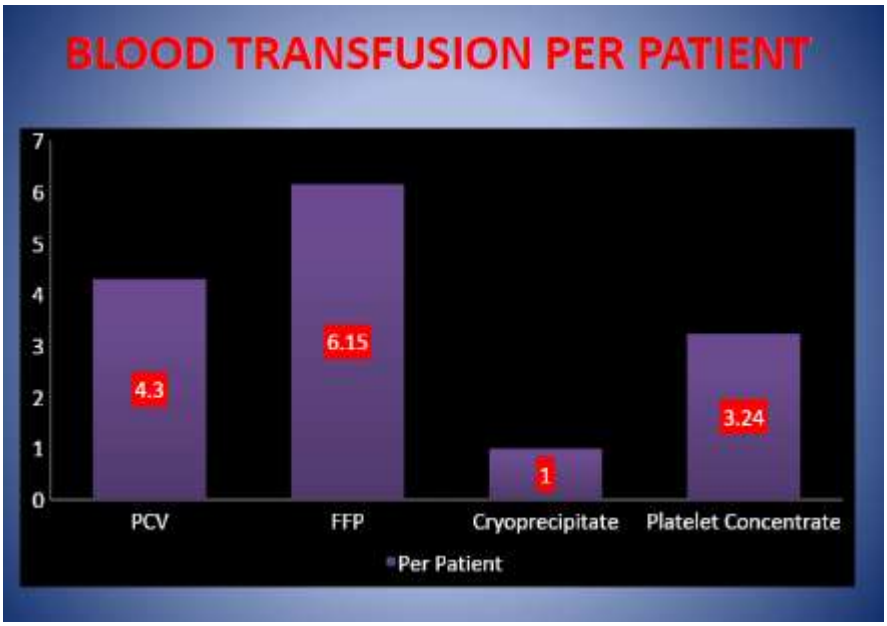


Figure 4. Blood transfusion per patient wise distribution

In addition to uterotonics that include oxytocin (100%), misoprostol (40%), ergometrine (20%), and prostaglandins (37%), antibiotics (100%) and inotropic support (44%). Blood and blood products were administered to nearly every patient. The largest rate of transfusions of blood and blood products occurred after hemorrhage, which was followed by abruption (Figure 5).

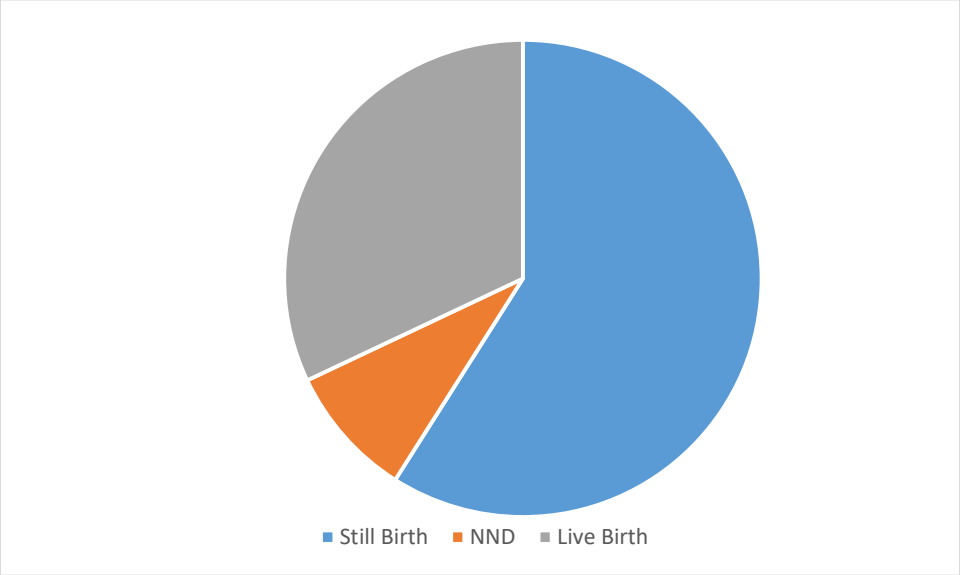


Figure 5. Perinatal out come

Ninety moms gave birth to a total of ninety babies, of which 53.3% were stillborn, 8.13% were NND, and 29% were live births. In our study, 17% of maternal deaths have a case fatality of 16%, meaning that 1 patient out of every 6 was at risk of passing away. Six (80%) of the eight were emergency patients, while only two (20%) were booked patients. The case fatality rate was greater (10%) for emergency patients than for scheduled patients (6%), which may indicate that maternal outcomes are impacted by prenatal treatment. Haemorrhage accounted for 50% of deaths most frequently.

Discussion

In our institute, the prevalence of DIC was 3% from January 2012 to December 2025. Accurate DIC incidence is unknown due to the multiplicity of criteria and the varied severity of the condition. Our investigation was contrasted with Rattray et al.'s investigation.14principal causes of DIC in the current investigation. The most frequent causes of DIC were placenta previa (2.66%), embolism (1.33%), uterine rupture (11.6%), HELLP (8.13%), abruption (27.9%), PIH (17.4%), PPH (34%), and sepsis (33.7%). Here, hemorrhage refers to blood loss brought on by damage to the

vaginal canal, uterine atonicity, or placenta previa. My research yielded no instances of AFE. The causes of DIC in the study by Rattray et al. matched our findings: PPH (29%), AVH (8%), sepsis (6%), preeclampsia (14%), and abruption (37%).14 in the current study, caesarean section was performed on 22.9% of patients, vaginal delivery on 62.7% of patients, ICU admission was necessary for 55.81% of patients, massive blood transfusion was administered to 32% of patients, hysterectomy was performed on 18% of patients, and dialysis was performed on 9.3% of patients. This was in good comparison to a study by Rattray et al., which performed caesarean sections on 22 (44%) and vaginal deliveries in 27 (66%) patients, ICU admission was necessary for 20 (41%), and dialysis was performed on 41% of patients. 29 (59%) patients received major blood transfusions, 9 (18%) had hysterectomy procedures, and 3 (6%), dialysis. Hemorrhage (85%) and abruption (56%) require more significant blood transfusions than other causes.

Blood and blood products were administered to nearly all of the patients (a total of 487 units of blood products and 177 units of blood). The highest rate of transfusion of blood and blood products was observed in cases of hemorrhage, which was followed by abruption. Six maternal deaths in all occurred in our analysis, of which only two were scheduled patients and four were emergency cases. In my study, hemorrhage accounted for 50% of the deaths, followed by severe preeclampsia/eclampsia (25%), and septicemia. These findings suggest that hemorrhage is still the primary cause of maternal morbidity and fatality. The current study has limitations because it was a single-centric investigation with a limited sample size. Therefore, the findings might not apply to the entire nation.

Conclusion

Plasma is life-saving. Thirty days and 48 hours after starting FFP, MMT decreased the overall amount of blood products used. Preventative cardiopathy is crucial because the majority of deaths occur within six hours! It's interesting to note that the maternal mortality rate for DIC related to placental abruption and other reasons is less than 1%, compared to 76% and 23% for hemorrhagic shock and sepsis, respectively. This means that early referral to a tertiary care center can potentially save one or both lives. As a result, we need to approach illnesses known to induce DIC with a high degree of suspicion because, left untreated, modest DIC can quickly develop into fulminant hemostatic failure. Since DIC is always a secondary event, managing it mostly involves identifying and eliminating the trigger as well as offering supportive care.A mother's life can be saved by early detection and intensive treatment for diabetic ketoacidosis (DIC), a late manifestation of obstetric disease.

Statements and Declarations

Conflicts of interest

The authors declare that they do not have conflict of interest.

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