

# A Study on Blood Transfusion in Obstetrics at Dhiraj Tertiary Care Hospital

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**Abstract:** Background: Blood Transfusion is identified as one of the eight essential component of emergency obstetric care that decrease the maternal mortality.<sup>1,2</sup> In a tertiary care hospital where haemorrhagic emergencies are common either by reference or otherwise, a good blood banking system is a requirement. Aims & objectives: (1) To study clinical status and pattern of blood components on the patients' well being. (2) To screen patients of high risk pregnancy (3) To study causes of maternal mortality. Methods: Retrospective study of requirement of blood transfusion components in obstetrics patients who admitted in Dhiraj Hospital during July-December 2019. Results: In the whole study 150 patients required blood transfusion among which 68% required due to obstetric haemorrhage and 32% due to severe anaemia. Major associated complications in the patients were anaemia (32%) and PPH (30%). 2 patients expired among them 1 was due to development of DIC and septicaemia, and 1 due to severe refractory PPH. Conclusions: Blood transfusion helped to save many lives in this study. Severe anaemia and obstetric haemorrhage of diverse aetiology were the common indications for blood transfusion. Component therapy was useful to rectify specific deficiency

**Keywords:** Blood transfusion, Preeclampsia, Anaemia, PPH, Septicaemia

## 1. Introduction

In India, one of the direct major cause of maternal mortality is still obstetrical haemorrhage where as most common indirect causes are Preeclampsia, sepsis, and anaemia.

WHO has estimated that prevalence of anaemia in developing countries in pregnant women is 51%. India has prevalence of 65-75% for anemia.<sup>3</sup> Post partum haemorrhage is the most common cause of maternal morbidity and mortality in developing county like India.

Globally about 10% of women having live births have severe PPH amounting to 14 millions women a year.<sup>4</sup> The incidence of PPH is 3-4% in vaginal deliveries & 6-7% in caesarean deliveries.<sup>5</sup>

In India, according to a review of the sample registration survey, postpartum haemorrhage is responsible for nearly 38% of all maternal deaths.<sup>6</sup>

Access to a safe and sufficient blood and blood component supply could help to prevent deaths of a large number of mothers and the neonates. Blood transfusion is associated with many complications such as allergic reactions (fever, anxiety, chest pain, tachycardia and breathlessness), acute immune haemolytic reaction, delayed haemolytic reaction and risk of transmission of viral and infectious disease (HIV, hepatitis B & C). Millions of people are exposed every year to preventable, life-threatening risks via transfusion of unsafe blood. So the first referral units should be fully equipped with specialist staff, infrastructure, machines, medicines, and blood-transfusion facilities that can decrease maternal mortality.<sup>7</sup>

## 2. Methods

Retrospective study of requirement of blood transfusion components in obstetrics patients who admitted in Dhiraj Hospital during July-December 2019.

### Inclusion criteria

- 1) All delivered or undelivered emergency and registered patients who admitted in Dhiraj hospital.
- 2) All patients who required blood transfusion in antepartum, intrapartum and postpartum were selected.
- 3) Severe anaemic patients with Haemoglobin level less than 7 gm/dl were selected.
- 4) Postpartum patients who had more than 1 litre of blood loss were included.

## 3. Results

Total 150 patients required blood transfusion.

**Table 1:** Patients requiring blood transfusion

Cause	No. of patients	Percentage
Obstetrical haemorrhage	102	68
Anaemia	48	32

In this study 68% patients required blood transfusion because of obstetric haemorrhage and 32% patients required blood because of anaemia of pregnancy.

**Table 2:** Total blood and blood products given to the patients

Type of transfusion	No. of patients	Percentage
Only PCV	129	86
PCV with blood components	21	14

During this study 86% patients were transfused with PCV only and 14% patients received combination of blood and blood product components like FFP, PRC, and Cryoprecipitate.

**Table 3:** Blood transfusion in according to hemoglobin level

Haemoglobin(gm/dl)	No. of patients	Percentage
Less than 7	93	62
7 to 9.9	45	30
More than 10	12	8

62% of patients with Hb less than 7 gm/dl required blood transfusion in present study.

**Table 4:** Associated complication which requiring blood and blood products

Complications	No. of patients	Percentage
Anaemia	48	32
1 <sup>st</sup> trimester bleeding	9	6
Preeclamsia	30	20
Abruptio placenta	12	8
PPH	45	30
DIC	3	2
Other medical conditions (fever, jaundice)	3	2

Major associated complications in the transfused patients were anaemia (32%) and PPH (30%).

**Table 5:** Fetal outcome

Fetal outcome	No. of patients	Percentage
Live	129	86
Intra uterine demise	15	10
Neonatal death	6	4

In this study 86% babies were live, 10% babies were IUD and 4% babies were died in neonatal period.

**Table 6:** Maternal mortality

Causes	No. of patients	Emergency/registered
PPH	1	Emergency
DIC	1	Registered

Out of 150 patients maternal mortality occur in 2 patients. In this study one death was occurred in multiparous vaginally delivered woman having severe atonic PPH. One patient required many blood transfusions and blood products like FFP and PRC; eventually she developed DIC and septicaemia and expired due to acute renal failure.

#### 4. Discussion

Because of unpredictable nature of postpartum bleeding and complications blood transfusion has been identified as one of eight essential keys that should be available in healthcare facilities giving comprehensive emergency obstetric care.<sup>1,2</sup> In developing country like India two main causes of maternal mortalities and morbidities regarding blood transfusion in obstetric are;

1. Anaemia of pregnancy 2. Major obstetric haemorrhage  
Anaemia of pregnancy is defined as haemoglobin concentration below 11 gm/dl in 1<sup>st</sup> and 3<sup>rd</sup> trimester and below 10.5 gm/dl in 2<sup>nd</sup> trimester. Anaemia is a late manifestation of iron deficiency and transfusion does not treat the cause of anaemia. Pre existing anaemia worsens as pregnancy advances and it leads to CHF and other complications including mortality of the patient. It also demur the patient's ability to resist infections or cop up with haemorrhage.

The decision of blood transfusion should be made on clinical and haematological grounds. Transfusion is usually indicated when Haemoglobin is less than 7 gm/dl.<sup>8,9</sup>

Obstetric haemorrhage is defined as an acute, usually unexpected blood loss that occurs before, during or after delivery that is likely to endanger life. Haemorrhage is associated with 45-50% of direct cause of obstetric death and 35-40% of all maternal death. Most common obstetric emergencies in India are PPH, APH, eclampsia, obstructed labour and infections.

In this study blood transfusions are mainly indicated to restore red cell count to improve the capacity of blood to transport oxygen and to avert tissue and organ hypoxia, substitution of clotting factors, substitution of vascular volume. Blood component therapy is mainly indicated to treat conditions like micro vascular bleeding, and coagulation factor deficiency.

Obstetrical haemorrhage is extremely unpredictable so volume replacement is done with 2 litres of crystalloid. Plasma expanders should follow until the blood is available.<sup>10</sup> Fresh frozen plasma is used for rectification of hypovolemia and normalization of coagulation in a case. When DIC is suspected and clotting studies take a long time, FFP is given before result is available if haemorrhage is difficult to control.

On one side maternal morbidities and mortalities depends on availability of blood and blood product, on the other side imprudent use of blood and blood products can cause infections, allergic reaction or antibody production which can have major effect on the present or future pregnancies.<sup>11</sup> According to the World Health Organization, the four keystones of a safe and successful blood donor service are a national system, volunteer donations, blood testing, and avoidance of unnecessary transfusions.<sup>12</sup> Each of these keystones poses challenges in developing countries like India, where infrastructure is limited. The cost of blood procurement, screening, and storage is high and blood donation is less. In 2002, 5-10% of newly acquired HIV infections were due to infected blood transfusions.<sup>13</sup> As women are the most likely recipients of blood in areas of both high HIV prevalence and blood supply paucity, they are at disproportionately high risk.<sup>14</sup>

Main purpose of this study is to make the blood available in the blood bank and should be reserved for obstetric emergencies. Blood should also be reserved for the patients of severe anaemia and patients having any type of bleeding in antenatal and postnatal period.

Substitutes for banked blood are autologous blood donation, normovolemic haemodilution, and intraoperative cell salvage. These should be considered in patients who are onerous to cross match and/or who refused banked blood.

#### 5. Conclusion

Ensuring a secure supply of blood and blood products and the relevant and rational clinical use of blood are very important public-health responsibilities of every national

government, especially for saving lives of mothers who need emergency obstetric care facilities because of pregnancy-related haemorrhage, severe anaemia, or abortions. There should be Strategies to maximize the haemoglobin (Hb) level at delivery and minimize blood loss. Particular importance should be placed on the active management of the third stage of labour and to prevent morbidities, such as PPH, retained product of conception, and vaginal lacerations, which require blood transfusions. Until adequate national blood banks take place, we should continue to explore alternatives to allogenic blood transfusion for obstetric haemorrhage. At Dhiraj hospital component manufacture and blood availability has been well ensured and it reflects on decreasing as well as low maternal mortality and increasing number of survivals after moribund obstetrics blood situations.

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