



ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

ROLE OF BLOOD AND BLOOD COMPONENTS TRANSFUSION IN OBSTETRIC EMERGENCIES

KEY WORDS: Blood component transfusion, Obstetric emergencies, blood transfusion

Ch N V V Sravya*	Junior Resident, department Of Obstetrics And Gynaecology, Guntur Medical College, Guntur, Andhra Pradesh, India *Corresponding Author
V Aruna	Professor, Department Of Obstetrics And Gynaecology, Guntur Medical College, Guntur, Andhra Pradesh, India
K Swarupa Rani	Associate Professor, Department Of Obstetrics And Gynaecology, Guntur Medical College, Guntur, Andhra Pradesh, India
P Sirisha	Assistant Professor, Department Of Obstetrics And Gynaecology, Guntur Medical College, Guntur, Andhra Pradesh, India

ABSTRACT

Background: Blood transfusion is defined as one of the eight essential components of comprehensive obstetric care module which has been designed to reduce maternal morbidity and mortality rates. Hence use of blood and blood components has become a lifesaving strategy in management of obstetric hemorrhage. This study was aimed to know the incidence, indications of blood and its component transfusion **Methods:** A review of 280 patients of obstetric emergencies requiring blood its component transfusion was done **Results:** Prevalence of blood and blood components transfusion in obstetric emergencies in 3 months period was mostly women who received blood transfusions were multiparous (59.4%). Obstetric hemorrhage was the most common indication (40.1%). 60% of them were unbooked and referred cases. 34.6% had a pre transfusion hemoglobin of <7mg/dl **Conclusion:** Blood transfusion is a lifesaving essential component of obstetric care. It reinforces the importance of blood and its components in obstetric emergencies. functioning blood bank services should be available at peripheries, which helps to reduce referrals to tertiary centers for correction of anemia by blood transfusions

INTRODUCTION:

Blood transfusion services are vital to maternal health because obstetric haemorrhage has been the foremost cause of maternal mortality in India.

Pregnancy although a physiological state, can turn pathological suddenly and unexpectedly if not cared for. Common obstetric emergencies which require blood and blood components transfusion are acute blood loss in first half of pregnancy due to conditions like complications of abortions, ectopic pregnancy rupture and vesicular mole. Later half of pregnancy - placenta previa abruptio placentae During labuor - Postpartum haemorrhage

Blood loss results in hypoxia, metabolic acidosis, ischaemia and tissue damage, resulting in eventual global organ dysfunction. Role of blood transfusion in acute haemorrhage is to maintain tissue oxygenation and reversal or prevention of coagulopathy using appropriate blood components. Obstetric haemorrhage is defined as any blood loss associated with pregnancy or parturition which may be revealed or concealed and is likely to endanger life. Patients usually present with shock which requires urgent blood and its components transfusion. During labour, women may present with severe anaemia and may develop third stage haemorrhage or other complications resulting in severe blood loss and sudden deterioration in general condition can occur. Immediate and rapid replacement of sufficient and safe blood and its components becomes essential to save the lives of women. The use of blood and its components has become a lifesaving strategy in management of obstetric haemorrhage in general and PPH in particular.

Anaemia of pregnancy is defined as haemoglobin concentration

- According to CDC : 1st trimester < 11 g/dl.
- 2nd trimester < 10.5 g/dl.
- 3rd trimester < 11 g/dl.
- According to WHO : Mild - 10 - 10.9 g/dl
- moderate - 7 - 9.9 g/dl
- severe - < 7 g/dl
- very severe - < 4 g/dl

Transfusion is almost always indicated when Hb is less than 7 g/dl to reduce the rate of maternal morbidity and mortality (1) .In India the prevalence of anaemia is around 65-75%(2) Blood and blood components that can be used:

RBC'S can be transfused either as whole blood or as packed red cells. Packed red cells are the one and only blood product that provides oxygen carrying capacity and are one of the most appropriate therapy for patients who require red blood cells due to haemorrhage

Fresh frozen plasma: FFP's should be given for coagulation abnormalities, micro-vascular bleeding when PT and PT-INR are > 1.5 times the mid-range normal reference values

Platelets: Obstetrical patients with micro-vascular bleeding often require platelet transfusions when platelet count less than 50,000/mm3

Cryoprecipitate: Cryoprecipitate is extracted from thawing FFP's slowly and is rich in fibrinogen, fibronectin, factor 13, factor 8 and Von Willebrand's factor. These precipitates can be transfused immediately within 6 hours after thawing

Leucocyte depleted blood: Leukoreduction is the removal of white blood cells from the blood or blood components supplied for blood transfusion. Leucocyte removal from blood components is known to prevent or at least delay leucocyte mediated adverse reactions.

Worldwide more than half a million women die each year during childbirth or in postpartum period. Because of unpredictable nature of postpartum bleeding, blood transfusion is recognized as one of the eighth essential components of comprehensive emergency obstetric care, which has been shown to reduce rates of maternal mortality(3)

Rational use means providing the right blood or its components in the right quantity, to the right person and at the right time bridging demand and supply gap. Every year, millions of people are exposed to avoidable, life threatening

risks through the transfusion of unsafe blood. In developing countries like India efforts should be done to make blood transfusion services well maintained and quickly available to reduce maternal morbidity from haemorrhage and thus decrease the incidence of maternal mortality. Because of increasing number of patients requiring blood transfusions due to obstetric emergencies and at the same time adverse reactions encountered, this study is aimed to know the incidence, indications of blood and its components transfusion in our set up at postgraduate department of obstetrics and gynaecology, GGH, Government Medical College, GUNTUR

METHODS:

All patients requiring blood transfusions due to obstetric emergencies at department of obstetrics and gynaecology, GGH, GUNTUR, ANDHRA PRADESH, India were included in the study over a period of 3 MONTHS from NOVEMBER 2023 TO JANUARY 2024

Inclusion Criteria:

All patients requiring blood and its components transfusion in the antepartum, intrapartum and postpartum period due to any obstetric emergency like in the antepartum ,Intrapartum and postpartum period , severe anaemia were included in the study.

Exclusion Criteria:

All obstetric patients requiring planned blood and blood components transfusions.

After applying inclusion and exclusion criteria, history of patients regarding the underlying cause was taken. General physical examination including vitals, systemic examination, per abdomen and per vaginum examination was done. Investigations particularly blood grouping and pre transfusion haemoglobin at the time of admission was noted. Study made a record of number of transfusions, type of transfusion, indication of transfusion, any adverse reaction due to transfusion and post transfusion haemoglobin

Statistical Analysis:

At the end of the study, statistical calculations were performed using the SPSS 16.0 software. Student's t-test was used for comparison of mean values and p value < 0.05 was considered as statistically significant. The present study has been carried out with the objective of assessing the prevalence of blood and blood components transfusion among antenatal and postnatal patients with obstetric emergencies, to study the indications of transfusion among these patients an. A total number of 280 patients were included in the study

RESULTS:

A total number of 280 patients, with 360 transfusions were included in the study.

Table 1: Distribution of age group

Age of patients	No. of patients	Percentage
<20 years	41	13.3%
20 to 29 years	160	57.5%
>29 years	79	28.2%

Table 2 :Parity status

Parity	No. of patients	Percentage
Nullipara	27	9.8%
P1	88	31.3%
>/=P2	166	59.4

Table 3: Pre transfusion haemoglobin:

Haemoglobin	No. of patients	Percentage
<7	98	34.6%
7 -9.9	154	54%
>10	28	9.3%

Table 4:Booking status

Booking status	No. of patients	Percentage
Booked cases	112	40%
Unbooked cases	168	60%

Table 5: distribution in relation to time of transfusion:

Time	no. of patients	Percentage
Antepartum	96	34%
Intrapartum	52	18.6%
Postpartum	132	47.2%

Table 6: mode of delivery

Delivery	No. of patients	Percentage
Vaginal	78	28%
Instrumental deliveries(vaginal)	8	4%
Caesarean section	170	59%
Abortions, molar pregnancies	24	9%

Table 7: Indications of blood transfusions:

Indications	No. of patients	Percentage
PPH	112	40.1%
Severe anemia	64	22.5%
Ruptured ectopic, Incomplete abortion	33	12%
Antepartum hemorrhage	22	7.6%
HELLP syndrome, thrombocytopenia	19	6.7%
Jaundice	6	2.1%
Molar pregnancy	4	1.6%
Others	20	6.7%

Table 8: blood and blood components

Type of blood	No. of transfusions	Percentage
PRBC's	282	77.4%
FFP	65	18.4%
Platelets	42	12%
Whole blood	4	1%
Leucocyte depleted blood	2	0.5%

DISCUSSION:

Obstetric haemorrhage is the most common cause of maternal death, causing one-fourth of maternal deaths yearly [9]. Massive and life-threatening obstetric haemorrhage occurs in 3–5% and 0.1% of deliveries respectively, and blood product transfusion is required in 0.3–1% [10]. Anaemia during pregnancy is significant cause of maternal mortality and morbidity. In this study, transfusion was done when the Hb < 7 gm%, and expected date of delivery < 4 weeks or in labour

Majority of transfusions of blood and its components were done in unbooked & referred cases. This indicates the importance of regular antenatal visits in providing iron prophylaxis which prevents anaemia of pregnancy, early detection and treatment of anaemia with both oral or parental iron therapy and screening for high risk cases at earlier stage. Platelets & fresh frozen plasma (FFP) are to be given as required. FFP is used in PIH, Jaundice, multiple coagulation factor deficiencies, massive transfusion with coagulation abnormalities. Platelets are used commonly in thrombocytopenia, dengue conditions. One unit of platelets increases the platelet count by 5000–7000/mm3. There is no role of prophylactic platelet transfusion; one needs to investigate and treat the cause

In this study, the prevalence of blood transfusion was 16.6% , in another study the prevalence of blood and blood components transfusion was 14.4 %(4)

The maximum number of patients were in the age group of 20 to 29 which was comparable to the results found in a study by

Chawla S et al, in India where majority of patients receiving blood transfusion were in the age group of 21-30 years and in the study conducted by Fazal S et al, in Kerala where maximum number of patients were in the age group of 20-29 years[5,6] Also in another study, it was reported that the risk of blood transfusion was more in extremes of age(7)

While observing the parity status we found that 59.4% out of 280 women who received transfusions, were multiparous with at least 2 previous viable births. In a study by Mahalakshmi G et al, 42.3% of women were multiparous and had at least 2 previous viable births(4) Bindal J et al, also found that maximum number of patients (50%) in the study were multigravida(8) Also in a study by Chowdhury F et al, done in Bangladesh, 68.3% of women were multiparous(11) So, multiparity as such is a risk factor and these patients require utmost care in their management.

28% of women had normal vaginal delivery, 4% of women had instrumental assisted vaginal delivery, and 59% cases underwent caesarean delivery. This indicates caesarean delivery is associated with more number of transfusions as compared to vaginal delivery. So, vaginal delivery should be encouraged in all cases when there is no contraindication to vaginal delivery

Booked patients were regarded as those who received antenatal care at the hospital while un-booked patients were those who did not access antenatal care at all or received care at health centers other than the hospital. In this study, majority of the patients who received blood and its components belonged to un-booked cases (60%) This was in accordance with another study, where un booked cases receiving blood transfusion were 73%(4). This can be attributed to the fact that majority of the patients with obstetric emergencies were referred to the hospital from periphery and some of them have not maintained any antenatal record. This indicates the importance of regular antenatal visits in providing iron prophylaxis which prevents anaemia of pregnancy, helps in early detection and treatment of anaemia by providing both oral or parental iron therapy and also screening for high risk cases can be done at an earlier stage so that blood transfusion and subsequent complications of blood transfusion can be avoided.

34 % of cases received transfusions during antepartum period, 18 % of women received transfusions during Intrapartum or intraoperative period and 47 % received transfusions during postpartum or postoperative period. Majority of transfusions were done in postpartum or postoperative period indicating the importance of preventing PPH by active management of 3rd stage labour Mean pre transfusion hemoglobin in this study was 7 to 9.9 (g/dl). So, anemia as such is a risk factor for obstetric emergencies and patients should be screened for anemia during antenatal check-ups. This was similar to study by Singh RK et al, where mean pre- transfusion Hb was 7.84 g/dl(13) Also in another study it was seen that majority of patients 46.83% were recorded in hemoglobin range of 7-9 (g/dl)(12)

Most of the patients in this study required blood and blood component transfusion because of obstetric hemorrhage where PPH (40.1%) was the most common indication. This was also seen in another study, where 70% patients admitted as obstetrical emergencies, required blood and its components transfusion due to obstetric hemorrhage and 30% required blood and its components transfusion due to severe anaemia(14) In another study done, 81% of blood transfusions were associated with obstetric haemorrhage(15) The findings in this study are also in accordance with those reported by Chhabra et al, where obstetric hemorrhage and severe anemia were the major indications of blood and its components transfusion in obstetric emergency cases(16)

CONCLUSION:

Blood transfusion is life saving essential component of obstetric care. Acute obstetric blood loss is usually unpredictable and sudden. The decision to transfuse should be time taken to maintain adequate tissue oxygenation in the face of acute haemorrhage. Identifying the risk factors for haemorrhage in antenatal period and anticipating bleeding is essential in managing obstetric haemorrhage. Particular emphasis should be placed on active management of third stage of labor to prevent complications such as PPH, which require blood and its components transfusions. Functioning blood bank services should be available at peripheries, which helps to reduce referrals to tertiary centres for correction of anaemia by blood transfusions

REFERENCES :

1. Reveiz L, Gyte GM, Cuervo LG. Treatments for iron-deficiency anemia in pregnancy. *Cochrane Database Syst Rev*. 2007;4:CD003094.
2. DeMayer EM, Tegman A. Prevalence of anaemia in the world. *World Health Organ Qlty*. 1998;38:302-16.
3. Chandry BK. WHO fact sheet. *Kuwait Med J*. 2007;39(3):298-302.
4. Mahalakshmi G, Nimma W, Mounika K, Amulya G. The study of peripartum transfusions of blood and its products in a tertiary hospital. *IOSR J Dent Med Sci*. 2016;15(5):23-7.
5. Chawla S, Bal MHK, Vardhan BS, Jose CT, Sahoo I. Blood transfusion practices in obstetrics: our experience. *J Obstet Gynecol India*. 2018;68(3):204
6. Fazal S, Poornima AP. A study on transfusion practice in obstetric hemorrhage in a tertiary care centre. *Glob J Transfus Med*. 2018;3:41
7. Jou HJ, Hung HW, YANYH, Wu SC. Risk factors for blood transfusion in singleton pregnancy deliveries in Taiwan. *Int J Gynaecol Obstet*. 2012;117(2):124-7.
8. Bindal J, Agrawal N, Sharma DC. Over view of referred obstetric patients and their outcome in tertiary care Hospital. *JMSCR*. 2017;5(5):22485-91.
9. Fazal S, Poornima AP. A study on transfusion practice in obstetric hemorrhage in a tertiary care centre. *Glob J Transfus Med*. 2018;3:41-5.
10. Jou HJ, Hung HW, YANYH, Wu SC. Risk factors for blood transfusion in singleton pregnancy deliveries in Taiwan. *Int J Gynaecol Obstet*. 2012;117(2):124-7.
11. Chowdhury F, Akhter S, Islam A, Rayend J, Begum N, Begum F. Evaluation of blood transfusion practices in obstetrics and gynaecology in a tertiary hospital in Bangladesh. *J Bangladesh Coll Phys Surg*. 2016;34:9
12. Chowdhury F, Akhter S, Islam A, Rayend J, Begum N, Begum F. Evaluation of blood transfusion practices in obstetrics and gynaecology in a tertiary hospital in Bangladesh. *J Bangladesh Coll Phys Surg*. 2016;34:9-14.
13. Singh RK, Anne S, Ravindran PS. Changing trends of Blood transfusion requirement in obstetrics and gynaecology. *Int J Reprod Contracept Obstetric Gynecol*. 2018;7(5):2018-22. 15. Patel VP, Patel RV, Shah PT, Patel CK. Study of
14. Patel VP, Patel RV, Shah PT, Patel CK. Study of role of blood transfusion in obstetric emergencies. *Int J Reprod Contracept* 2014;3(4):1002-5. *Obstet Gynecol*.
15. Patterson JA, Robers CL, Bowen JR, Irving DO, Isbister JP, Morris JM, et al. Blood transfusion during pregnancy, birth, and the postnatal period. *Obstet Gynecol*. 2014;123(1):126-33.
16. Chhabra S, Namgyal A. Rationale use of blood and its components in obstetric-gynecological practice. *J Mahatma Gandhi Institute Med Sci*. 2014;19(2):93-9.