



A RETROSPECTIVE ANALYSIS OF TRANSFUSION MANAGEMENT IN OBSTETRICS IN A TERTIARY CARE CENTER

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ABSTRACT

BACKGROUND: Severe Anaemia in pregnancy and obstetric haemorrhage remain major causes of maternal mortality and morbidity in developing countries. Blood transfusion is a lifesaving intervention responsible for decreasing maternal mortality significantly.

METHODS: This was a retrospective study of 502 patients who received blood transfusion from January 2019 to October 2019. Hb concentration < 7g/dl was determined to be an indication for transfusion of blood product.

RESULTS: The most common indication for blood transfusion was anaemia correction in antenatal and intrapartum (65.3%) period followed by obstetric haemorrhage (34.6%). Antepartum transfusions were given in (25.2%), Intrapartum and postpartum transfusions in (74.7%). The commonest cause in obstetric haemorrhage was PPH (51.7%). Major and massive obstetric haemorrhage occurred in (4.02%).

CONCLUSION: Severe anaemia in pregnancy needs to be diagnosed and treated early to significantly reduce the need of blood transfusion in developing countries. The safety, adequacy and effectiveness can only be achieved if unnecessary transfusions can be prevented.

KEYWORDS : Blood Transfusion, Anaemia, Obstetric Haemorrhage

INTRODUCTION:

Blood transfusion is identified as one of the eight essential components of comprehensive emergency obstetric care which has significantly reduced maternal mortality.^[1] Anaemia and obstetric haemorrhage contribute to majority of blood transfusions in obstetrics. In developing countries, anaemia is still the most common problem in pregnancy. 10-15% of direct maternal deaths in India is due to anaemia. According to WHO anaemia is prevalent in 65-75 % of pregnant women in India.^[2] Nearly half of the global maternal deaths due to anaemia occur in South Asian countries, 80% alone is contributed by India.^[3]

Obstetric haemorrhage is another leading cause of maternal mortality in developing countries.^[4] It accounts for 24% of an estimated 127,000 maternal deaths annually.^[5] The frequency of blood transfusion in obstetric care is reported to be 0.2- 3.2% in high resource countries.^[6,7] but several recent reports have shown an alarming increase in PPH requiring blood component transfusions.^[8] Blood transfusions are generally considered safe and life-saving, but there are concerns of adverse effects like transfusion reactions, transfusion-transmitted infections, immunisations and increased risk of thrombosis, which are important reasons for lowering blood transfusion rate.^[9] This study retrospectively reviewed blood transfusion patterns in patients admitted to our obstetric unit and analysed the obstetric indications, risk factors for transfusion, timing of transfusion and the various blood components and their volumes used.

METHODS:

This was a retrospective study of 502 patients admitted to the obstetrics department of a large tertiary care center in Delhi, who received blood component transfusion. The study period was 10 months from January 2019 to October 2019. The blood products that were transfused were whole blood (WB), red cell concentrates (RCC), fresh- frozen plasma (FFP) and platelet concentrates (PC). Haemoglobin concentration (Hb) of > 7 g/dl is required to maintain appropriate haemodynamics and oxygen supply. Blood transfusion was indicated when haemoglobin concentration was < 7 g/dl. In addition to this, the patient's age, medical condition, vital signs, state of haemorrhage, blood biochemical data and need for

emergency caesarean section were taken into consideration. RCC transfusion was performed to achieve a Hb concentration of 7-8 g/dl. FFP was supplemented when required until the coagulation function normalized. PC transfusion was undertaken to achieve a platelet count above 50,000/mm² in labouring patients and above 75,000 for Caesarean Section.

The main objective of the study was to find out the indication of blood component transfusion in obstetric care. The secondary outcome measure were the risk factors for transfusion, type of blood product used and their transfused volume.

RESULTS:

OBSTETRIC PATIENTS WHO UNDERWENT BLOOD COMPONENT TRANSFUSION:-

During the study period there was a total of 7,557 deliveries in our hospital. 502 women admitted to obstetrics department received blood transfusion. 126 (25%) were prim gravidas and (74.9%) were multigravidas. There were 199 (39.6%) antepartum transfusions and 303 (60.3%) intrapartum and postpartum transfusions. 190 (37.8%) who received blood component transfusion had caesarean section and 218 (43.4%) had vaginal delivery. The mean age of patients who received transfusion was 26 years.

Table 1: Demographics of obstetric patients with blood transfusion (n=502)

Mean age in years	26 ± 4.8
Primipara, n (%)	126 (25%)
Multipara, n (%)	376 (74.9%)
Antepartum transfusions, n (%)	199 (39.6%)
Intrapartum & postpartum transfusions, n (%)	303 (60.3%)
Caesarean delivery, n (%)	190 (37.8%)
Assisted vaginal delivery, n (%)	218 (43.4%)

Obstetric and hematologic indications for blood component transfusion

Table-2 shows the 502 cases of blood component transfusion. 328, (65.3%) was for anaemia correction alone and 174 (34.6%) for obstetric haemorrhage. Emergency LSCS with severe anaemia accounted for 190 (37.8%) cases. The

underlying conditions for obstetric haemorrhage on analysis were APH 40 (7.9%) mainly due to placenta Previa and placental abruption. Most of the above cases underwent peripartum transfusion except a few who had secondary haemorrhage. Majority of the obstetric haemorrhage was due to Postpartum haemorrhage 90 (19.5%). Uterine rupture was seen in 7 cases. Genital tract trauma was seen in vaginal wall or cervix and in 2 cases anterior wall haematoma was seen in previous 3 LSCS. There were 8 cases of ruptured ectopic and 2 cases of emergency obstetric hysterectomy for placenta accreta.

Table 2: Blood transfusion for obstetric indication (n = 502)

Obstetric indication	Frequency	Percent
ANC with Severe Anaemia	138	27.4
Emergency LSCS with Severe Anaemia	190	37.8
Antepartum haemorrhage	40	7.9
Ruptured Ectopic	08	1.5
Rupture Uterus	07	1.3
Miscarriage	06	1.1
Postpartum haemorrhage	98	19.5
Obstetric hysterectomy	02	0.3
Severe preeclampsia & Eclampsia	11	2.1
Puerperal Sepsis	02	0.3

Table 3: During the study period 60 units of whole blood, 675 units of Red cell concentrates, 139 units of FFP and 80 units of platelets were transfused. Majority of patients 273 (54.3%) received single unit transfusion mostly for correction of anaemia. Among the 174 obstetric haemorrhage group there were 6 patients (3.44%) with major obstetric haemorrhage who received more than 4 units of PRBC and other blood components. One patient had massive obstetric haemorrhage requiring 12 units of PRBC and 12 units of FFP. 4 units of FFP alone was required in two patients with severe preeclampsia who presented with haematuria postoperatively. Only platelet transfusion was required in 4 patients who presented with thrombocytopenia only.

Table 3: Type and number of blood component transfusion

Units transfused	Whole blood (n = 60)		Packed RBC/ (RCC) n= (675)		FFP (n=139)		Platelet (n=80)	
	No.	%	No.	%	No.	%	No.	%
1	40	66.6	233	34.5				
2	10	16.6	147	21.7	08	5.7	16	20
3			28	4.1	02	1.4	02	2.5
4			08	1.1	20	14.3	07	8.7
5			03	0.4				
6			01	0.1				
7			01	0.1			01	1.2
8					01	0.7		
9							01	1.2
10								
11								
12			01	0.1	02	1.4		

DISCUSSION:

This study highlights the fact that severe anaemia during pregnancy and obstetric haemorrhage are the two leading causes for blood component transfusion in obstetrics. Majority of the antepartum transfusion (65.3%) were for the correction of severe anaemia and its complications. This is in accordance with findings reported by Patel et al and Chhabra and Namgyal.^(11,12)

The incidence of blood product transfusion in our delivering

obstetric patients was 4%, which is higher than previously reported incidences, 0.3-1%.⁽¹³⁾ The reason could be the high prevalence of severe anaemia in our pregnant patients which decreases the women's reserve to tolerate bleeding either during or after childbirth.

Patients who were posted for emergency LSCS had severe anaemia requiring blood component transfusion in 37.8% of cases signifying that antenatal care needs to be improved and anaemia should be diagnosed early and actively treated to prevent the need of these transfusions. Deleterious effects of chronic tissue hypoxemia along with risk of major blood losses during the perioperative period need to be anticipated and managed.

Single unit transfusion occurred in majority of women who were admitted with severe anaemia. However most of the patients with haemorrhage required 2-4 units. Vachhani et al observed that single unit transfusion has not declined much and has reported it to be 15.12%.⁽¹⁴⁾ However in our study it was 46.4%. The probable explanation could be that a lot of women have moderate to severe anaemia in the pre-pregnant state. These women after becoming pregnant have lower haematocrit values due to physiological changes and dilutional effect, but they can tolerate this chronic anaemia better. This may be one of the reasons for the reduced need of multiple blood component transfusion in these patients rather than those who had haemorrhage. Chronic anaemia is better tolerated than acute anemia. In chronic anaemia, cardiac output does not change usually until Hb concentration falls below 7 g/dl.⁽¹⁵⁾

Blood transfusion has been identified as an important indicator of severe obstetric morbidity. Transfusion rates have been increasing in recent years due to the increase in the rates of PPH. In our study 34.6% of blood component transfusion was due to obstetric haemorrhage. 19.6% had PPH. Six women (3.44%) , who had major obstetric haemorrhage requiring more than 4 units of packed RBC, had a history of prior CS with abnormal placentation. Severe obstetric haemorrhage was seen in one patient who had a caesarean hysterectomy for atonic PPH followed by DIC.

Regarding component transfusion in the whole study 89.4% received PRBC. Most women with obstetric haemorrhage required two units of PRBC. Most women with major obstetric haemorrhage required plasma and platelet transfusion which highlights the importance of coagulation factors in the management of obstetric haemorrhage. Major obstetric haemorrhage was a significant risk factor for DIC and ICU admissions.

CONCLUSION:

Severe anaemia and obstetric haemorrhage are the two most important indications for blood transfusion in obstetrics. While obstetric haemorrhages are sudden and unpredictable, transfusions for severe anaemia can be prevented. Early detection and treatment of anaemia in the reproductive age group, regular antenatal care along with optimal treatment of anaemia during pregnancy will significantly decrease the need for blood transfusion. Caesarean section with abnormal placentation was found to be a significant risk factor in major obstetric haemorrhage. Identifying these risk factors and lowering the caesarean section rate might be the best way to reduce the rate of major and massive obstetric transfusions.

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