Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/mjafi

Short Communication

Blood transfusion practices among delivery cases: A retrospective study of two years

Brig S.K. Kathpalia^{a,*}, Jaya Chawla^b, Lt Col A.K. Harith^c, Priyanka Gupta^d,
Anupam Anveshi^d

^a Consultant (Obst and Gynae), Base Hospital, Delhi Cantt 110010, India

^b Associate Professor (Obst and Gynae), Army College of Medical Sciences, Delhi Cantt 110010, India

^c Classified Specialist (Biochemistry), Base Hospital, Delhi Cantt 110010, India

^d Intern Medical Officer, Army College of Medical Sciences, Delhi Cantt 110010, India

ARTICLE INFO

Article history:

Received 12 September 2015

Accepted 26 January 2016

Available online 29 March 2016

Keywords:

Blood transfusion

Normal delivery

Cesarean section

ABSTRACT

Background: Many women die while going through childbirth; hemorrhage being common cause for maternal mortality. Many maternal deaths can be saved by building up hemoglobin antenatally and timely blood transfusion. The transfusion may result in many complications hence the blood transfusion practices should be streamlined and adhered to and reviewed periodically. This retrospective study was undertaken at one of the tertiary care hospital to find out the blood demand and utilization practices among the delivery cases and suggest measures if any to improve the existing practices.

Methods: The study was performed over two years; normal standard practice like in any other hospital is being followed. Urgent blood demand is requisitioned whenever there is an emergency like a patient having post partum hemorrhage or abruptio placenta etc. Blood demand forms, blood administration and delivery records were checked and analyzed.

Results: 121 cases were given blood transfusion indicating the incidence as 2.67% among total delivery cases, blood transfusion among elective CS cases was 1.58% and 3.84% in emergency cesarean section; 2.82% of vaginal delivery were given blood transfusion for various unforeseen indications.

Conclusion: In spite of taking all measures hemorrhage can still occur at times so perilous that it must be managed energetically and promptly. The mode of delivery has some influence on blood transfusion. It is suggested that blood demand could be restricted only to high risk cases both for normal delivery and CS. This will reduce the work load on blood banks and there by improve efficiency.

© 2016 Published by Elsevier B.V. on behalf of Director General, Armed Forces Medical Services.

* Corresponding author.

E-mail address: kathpaliasukesh@gmail.com (S.K. Kathpalia).

<http://dx.doi.org/10.1016/j.mjafi.2016.01.010>

0377-1237/© 2016 Published by Elsevier B.V. on behalf of Director General, Armed Forces Medical Services.

Introduction

Parturition is the most important and risky phase in a woman's life; while giving birth to a new life, her own life is put to a great jeopardy. Today also many women die while going through pregnancy and childbirth, both in the developed and developing world. Each year, more than 528,000¹ women die worldwide from complications of pregnancy and childbirth; up to 80% of these maternal deaths are directly due to five complications: hemorrhage, sepsis, eclampsia, ruptured uterus from obstructed labor, and complications of abortion. Of the direct and indirect causes of maternal morbidity and mortality, obstetric hemorrhage is among the leading causes of direct maternal mortality in obstetric practice.²⁻⁴ In one of the studies, hemorrhage during pregnancy accounted for 34% of maternal deaths in Africa.⁵

Many maternal deaths can be saved by building up hemoglobin, as incidence of anemia in India during pregnancy is still as high as 65–75% as reported by WHO⁶ and timely blood transfusion can reduce maternal mortality rates.⁷ Requirement of blood transfusion may be anticipated in certain situations like low Hb, placenta previa, or obstructed labor, but the necessity may come up without any warning also like inversion uterus, instrumental deliveries, or rupture uterus. In high-risk situations, blood can be arranged and kept ready beforehand but it may be required without any forewarning when it has to be arranged at a short notice. Blood transfusions play an integral, essential, and life-saving role in obstetric practice.

Certainly, blood transfusion is a life-saving procedure, but it is not without risk. The transfusion may result in many major or minor complications; hence, the blood transfusion practices should be streamlined and adhered to and reviewed periodically. This study was undertaken at one of the tertiary care hospitals to find out the blood demand and utilization practices among the delivery cases and suggest measures, if any, to improve the existing practices. This was a retrospective study performed on the records maintained in the blood bank and labor room.

Materials and methods & results

The study was performed over two years, from June 2013 to May 2015. The normal standard practice like in any other hospital is being followed. Blood demand for two packs is sent a day prior to planned elective cesarean section (CS) and blood demand is sent at the time decision is taken for emergency CS or a high-risk case like a case of anemia, antepartum hemorrhage, or a post-CS pregnancy admitted to delivery suite. Emergency or urgent blood demand is requisitioned whenever there is an emergency like a patient having postpartum hemorrhage (PPH), abruptio placentae, etc. The authors went through all the blood demand forms and issue forms during the study period and collected, analyzed the data, and compared it with literature. Only delivery cases were included; patients who were administered blood transfusion during pregnancy for indications like ruptured ectopic pregnancy, incomplete abortion, severe anemia during pregnancy, etc. were not included in the study.

Table 1 – Delivery cases over two years of study period.

Year	Vaginal delivery (VD)	Cesarean section (CS)		Total
		Elective	Emergency	
First	1338	586	253	2177
Second	1426	489	424	2339
Total	2764	1075	677	4516

Table 2 – Transfusion cases.

Delivery	Number	Transfusion cases	%
VD	2764	78	2.82
CS (Elective)	1075	17	1.58
CS (Emergency)	677	26	3.84
Total cases	4516	121	2.67

Table 3 – Indications of blood transfusion.

VD (78)	CS (Elective) 17	CS (Emergency) 26
Anemia – 35	Placenta previa – 8	Abruptio – 13
Atonic PPH – 13	Anemia – 2	PPH – 7
Traumatic PPH – 17	PPH – 5	Placenta previa – 4
Vulvar hematoma	Sec hge	CS hysterectomy – 1
Cervical tear	Twins/multiple pregnancy – 2	Rupture – 1
Abruptio – 8		
Secondary hge – 2		
MRP – 2		
Rupture – 1		

4516 cases delivered at the hospital during the study period (Table 1); 2764 had a vaginal delivery (VD) and 1752 underwent CS thereby indicating 38% incidence of CS delivery, which is higher, as this is a referral center for all high-risk cases. Of the 1752 CS, 1075 were performed as an elective and planned procedure whereas 677 had an emergency CS for various indications. 121 cases were given blood transfusion indicating the incidence as 2.67% among total delivery cases.

Blood demand was sent in all the cases of CS, both elective and emergency, thereby indicating that 1752 demands were sent, and of these 17 were given blood transfusion (Table 2) among elective CS cases (1.58%) and 26 in emergency CS (3.84%). 78 of 2764 (2.82%) cases who had a VD were administered blood transfusion for various unforeseen indications and blood demand was sent only when the situation arose. Indications of blood transfusion are depicted in Table 3. One case was administered one pack; 115 cases were given two packs, 3 cases got between 3 and 6 packs. Two required massive blood transfusion.

Discussion

There is no other physiological event like pregnancy and childbirth that is so potentially pathological. Many complications can occur, especially during parturition, hemorrhage being the most common⁸ and life threatening.⁹ Many changes like increased blood volume, hemodilution, and altered

coagulation system occur during pregnancy, which safeguard her life and make parturition safe. In spite of taking all measures, hemorrhage can still occur at times so perilous that it must be managed energetically and promptly to prevent maternal mortality. Ability to tolerate blood loss depends on her hemoglobin and other existing conditions, like preeclampsia and amount and speed of blood loss. Blood transfusion is an essential and important safeguard in handling such situations. The chances of hemorrhage are higher in certain conditions like instrumental delivery, emergency CS, and antepartum hemorrhage.

Many studies have indicated that the incidence of blood transfusion in elective CS is low, at times as low as 2.2%.^{10,11} This study showed that the chances of blood transfusion were the highest in cases of emergency CS as reported by other studies.¹² Commonest indication for transfusion in VD was anemia (38/78), and this may have been due to unbooked cases who reported first time in labor. Antepartum hemorrhage was the main reason for transfusion among CS, both elective and emergency. Overall blood transfusion incidence is lower in planned surgery (1.58) as compared to emergency surgery (3.58) and unforeseen emergencies occurring during normal delivery (2.82). A Nigerian study¹³ had indicated a very high incidence of transfusion (25%), which was probably related to preoperative anemia. The mode of delivery has some influence on blood transfusion. PPH was the commonest unforeseen indication for blood transfusion among all the groups including VD, and the same has been reported by Parker et al.¹⁴

It is suggested that blood demand could be restricted only to high-risk cases both for normal delivery and CS. Normally, no blood is kept ready for normal delivery but is arranged whenever the patient develops PPH or any other complication requiring transfusion. The same can be followed for CS where chances of excessive hemorrhage requiring blood transfusion are less, like a cases of preeclampsia or breech presentation. This will reduce the workload on blood banks and thereby improve their efficiency. Efforts should be made to reduce the blood transfusion without increasing maternal morbidity and mortality. This cannot be generalized but should be assessed on case-to-case basis. Overall, BT has become more judicious due to better knowledge of tissue oxygenation fear of transfusion complications.

Periodical audits¹⁵ about blood demand and utilization should be performed and amendments made if required. It is suggested that blood demand for screening and crossmatching can be avoided in elective CS without any high-risk factor for hemorrhage. Blood transfusion is not a replacement for obstetrical care and other measures, like prevention and treatment of anemia, institutional deliveries, women empowerment, etc., help to reduce maternal mortality.

Conflict of interest

The authors have none to declare.

REFERENCES

1. Lawani OL, Iyoke CA, Onyebuchi AK. Blood transfusion trends in obstetrics at the federal teaching hospital in Abakaliki, South East Nigeria. *Int J Women's Health*. 2013;5:407–412.
2. Clark SL, Belfort MA, Dildy GA, Herbst MA, Meyers JA, Hankins GD. Maternal deaths in the 21st century: causes, prevention, and relationship to cesarean delivery. *Am J Obstet Gynecol*. 2008;199(1):31–36.
3. Obaid TA. No woman should die giving life. *Lancet*. 2007;370:1287–1288.
4. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *Lancet*. 2006;367:1066–1074.
5. Bates I, Chapotera GK, Mckew S, Van Den Broek N. Maternal mortality in sub-Saharan Africa: the contribution of ineffective blood transfusion services. *BJOG*. 2008;115(11):1331–1339.
6. Kalaivani K. Prevalence and consequences of anaemia in pregnancy. *Indian J Med Res*. 2009;130:627–633.
7. Jadon A, Bagai R. Blood transfusion practices in obstetric anesthesia. *Indian J Anaesth*. 2014;58(5):629–636.
8. Gandhi MN, Welz T, Ronsmans C. Severe acute maternal morbidity in rural South Africa. *Int J Gynaecol Obstet*. 2004;87(2):180–187.
9. Khan KS, Wojdyla D, Say L, Gülmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *Lancet*. 2006;367(9516):1066–1074.
10. Wuttikonsammakit P, Sukcharoen N. Pregnancy out-comes of multiple repeated caesarean section in King Chulalongkorn Memorial Hospital. *J Med Assoc Thai*. 2006;89:81–86.
11. Aubrey Bassler K, Newbery S, Kelly L, Weaver B, Wilson S. Maternal outcomes of caesarean sections: do generalists' patients have different outcomes than specialists' patients. *Can Fam Phys*. 2007;53:2132–2134.
12. Faponle AF, Makinde ON. Caesarean section: intra-operative blood loss and its restitution. *East Afr med J*. 2007;84:31–34.
13. Ozumba BC, Ezegwui HU. Blood transfusion and Caesarean section in a developing country. *J Obstet Gynaecol*. 2006;26(8):746–748.
14. Parker J, Thompson J, Stanworth S. A retrospective one-year single-centre survey of obstetric red cell transfusions. *Int J Obstet Anesth*. 2009;18(4):309–313.
15. Khan FA, Khan M, Ali A, Chohan U. Estimation of blood loss during Caesarean section: an audit. *J Pak Med Assoc*. 2006;56:572–575.