

International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622
© Gynaecology Journal
www.gynaecologyjournal.com
2022; 6(5): 28-32
Received: 02-06-2022
Accepted: 06-07-2022

Iwo-Amah R
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

Nwogu C
Department of Anesthesia, University
Teaching Hospital, Rivers State, Nigeria

Chisor-Wabali Nkasiobi
Department of Anesthesia, University
Teaching Hospital, Rivers State, Nigeria

Mkpe Abbey
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

Amadi SC
Department of Obstetrics and
Gynaecology, Rivers State University
Teaching Hospital, Nigeria

Kua P
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

Altraide BO
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

Kwosah NJ
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

John DH
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

Ocheche US
PAMO University of medical sciences, Port
Harcourt, Rivers State, Nigeria

Mba AG
PAMO University of medical sciences, Port
Harcourt, Rivers State, Nigeria

Ohaka CV
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

Awopola J
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

Corresponding Author:
Iwo-Amah R
Department of Obstetrics and
Gynaecology, University Teaching
Hospital, Rivers State, Nigeria

Need for blood transfusion during cesarean section in rivers state university teaching hospital

Iwo-Amah R, Nwogu C, Chisor-Wabali Nkasiobi, Mkpe Abbey, Amadi SC, Kua P, Altraide BO, Kwosah NJ, John DH, Ocheche US, Mba AG, Ohaka Cv and Awopola J

DOI: <https://doi.org/10.33545/gynae.2022.v6.i6a.1227>

Abstract

Background: Cesarean Section (CS) has been associated with major intra operative Blood loss. Obstetric hemorrhage has been identified as a major cause of direct maternal mortality, maternal near miss and Maternal morbidity. Blood transfusion is often associated with CS. With the advent of various medical and surgical techniques to prevent excessive blood loss during CS, the need for blood transfusion in every CS procedure need to be reviewed. High risk pregnancy cases may require blood transfusion. However, 90% of low risk pregnancy cases may not require blood transfusion, especially when the application of blood loss preventive measures are put in place.

Aim: The aim of this study is to ensure thorough review of patients peri-operatively, and to find out if intra-operative measures can reduce the need for blood transfusion during CS.

Method: This was a retrospective cross sectional study of 1000 patients who had Cesarean section between January 2020 to December 2021. Five hundred (500) of them were cases associated with high risk factors for massive hemorrhage at CS, and thus with increased need for blood transfusion.

The other 500 were low risk cases for intra operative hemorrhage during CS. It was expected that blood transfusion will be minimal within this group. The result was that these blood loss preventive measures helped to reduce intra-operative blood loss, thus reduced the need for blood transfusion. In addition, the modal units of blood transfused was 2units, unlike previous studies where modal Transfusion was 3 units^[1, 3, 4]. Two hundred and three (203) 40.6% were transfused in the high risk group. Only 11(2.2%) were transfused in the low risk group.

Conclusion: The need for blood transfusion during cesarean section was reduced with adequate peri-operative preparations. Optimizing maternal hemoglobin concentration during the antenatal period may reduce the incidence of cesarean section related blood transfusion.

Keywords: Cesarean section, blood transfusion, high risk, low risk, RSUTH

Introduction

Cesarean section (CS) is associated with a risk of major intra-operative blood loss^[1]. This often necessitates the need to make blood available for transfusion before surgery is commenced^[1, 2]. With the advent of various medical and surgical techniques to prevent intra operative and post-operative blood loss, unnecessary dependence on blood transfusion or delay of surgery due to lack of adequate pints of blood may soon be a thing of the past^[2, 3].

Although the safety of CS has improved, operative blood loss during CS is still an important medical issue^[1, 3, 4, 5]. Obstetric hemorrhage has been identified as a major cause of direct maternal mortality, maternal near miss and material morbidity^[1, 3, 4].

There is considerable clinical heterogeneity within the population of women who undergo CS^[1]. The quantity of blood loss during CS depends on presence or absence of risk factors associated with massive hemorrhage during CS^[2]. In addition, it also depends on the type of anaesthesia used during the surgery, the skill of the surgeon, availability of various peri operative medications and procedures aimed at reducing blood loss during surgery^[1, 2].

Intra-operative extra uterine Hemostatic compression sutures like Purse string compression sutures^[2], B-lynch compression sutures, Hayman uterine sutures and Erika operative techniques are also very useful in reducing blood loss during CS^[2].

Despite all these, some patients will still receive blood transfusion during CS^[1]. Blood transfusion remains a lifesaving intervention despite its attendant risks^[1].

Judicious utilization of available blood is required to achieve the overall goal of blood transfusion [2-3].

In RSUTH, every woman who registers for antenatal care is expected to provide two (2) units of cross matched blood, irrespective of the anticipated mode of delivery during the antenatal period. This is a practice that is obtainable in other tertiary institutions within Nigeria [1, 3, 4, 5, 6].

Aim/Objective

This study is aimed at identifying the need for blood transfusion during cesarean section, need to prevent unnecessary blood preservation and transfusion. It is also aimed at highlighting the current and available methods of preventing, or reducing excessive blood loss during CS, thus preventing unnecessary blood transfusion, with its attendant complications at RSUTH.

Method

This was a retrospective, cross sectional study that was done in RSUTH, Nigeria. This tertiary institution is a referral center. It provides referral services to both public and private hospitals within Rivers State and five states within its environs.

A total of 3,579 deliveries took place between January 2020-December 2021, a *2-year period. Those that delivered by cesarean section were 1,989 within this period (CS rate 55.6%). For the purpose of this study, 1000 cases were selected among the CS group. Five hundred [500] women who had CS with high risk factors for excessive blood loss and intra-operative blood transfusion. Five hundred [500] women who has CS with low risk factors for intra-operative blood loss and possible blood transfusion. Information was obtained from their case notes, antenatal ward, theatre and post-natal ward records of the subjects recruited for the study under review. All the subjects had term pregnancy ≥ 37 weeks gestation. All the subjects had records of pre-operative Haemo globin/Haematocrit, no allergy to anaesthetic drugs or any medication used and had no blood transfusion reactions.

High risk cases in the study included CS done for prolonged

second stage of labour, placenta Previa, abruptio placenta, previous scar on uterus, multiple pregnancy, fetal macrosomia, polyhydramnios, prolonged labor, pre-eclampsia/eclampsia, maternal blood disorders, sickle cell disease patients, fibroids co-existing with pregnancy and patients that had general anaesthesia.

The low risk cases included in this study were primigravida with cephalo pelvic disproportion (CPD), primigravida with mal-presentation, failed induction of labor, pelvic deformity, non-reassuring fetal status and maternal request.

Blood loss reduction strategies taken during the CS procedures included

1. Injection of oxytocin, carbetocin (an oxytocin derivative) Tranexamic Acid, ergometrine and prostaglandin F2 alpha.
2. Tablets used were oral misoprostol (prostaglandin E1 analogue) sublingual misoprostol (after clamping of umbilical cord), rectal misoprostol.
3. Spinal Anaesthesia was used for $\geq 90\%$ of the cases
4. Suture techniques employed were extra uterine compression sutures-purse-string Haemostatic compression sutures, B-lynch Haemostatic brace sutures.

Blood loss estimation during CS was done by counting each fully soaked abdominal pack as 150 ml, fully soaked gauze as 15ml, measurement of blood on delivery mat and floor, blood expelled from uterus and vagina was also measured. Intra operative transfusion was done if blood loss > 800 ml. Post-operative transfusion was done if difference in Pre-operative packed cell volume and post-operative packed cell volume was $> 10\%$. Also clinical status of the patient was used to determined need for transfusion.

The cesarean section procedure for high risk patients were done by consultants and senior registrars. Data were collected to a spreadsheet of SPSS version 25 and analyzed. Data was summarized in a table as frequencies and percentages. A P-value of < 0.05 was significant.

Results

Table 1: Socio-Demographic Characteristic of Patients Who Had Cesarean Section

Variable	Number of respondents (n=1000)	Percentage
Age (Years)		
16-20	15	1.5
21-25	118	11.8
26-30	339	33.9
31-35	290	29.1
36-40	168	16.8
≥ 40	70	7.1
Mean age	95% ci*	
31.09	30.64,	31.55
Parity		
0	290	29.0
1	300	30.0
2	214	21.4
3	84	8.4
4	62	6.2
≥ 5	50	5.0
Education status		
No formal Education	5	0.5
Primary	34	3.4
Secondary	474	47.4
Tertiary	487	48.7
Religion		
Christianity	946	94.6

Islam	44	4.4
Others	10	1.0
Occupation		
Business	180	18.0
Civil servant	380	38.0
House wife	307	30.7
Public servant	6	0.6
Student	73	7.3
Other	54	5.4
Total cesarean section n=1000		

Table 2: Total Deliveries Within the 2 year Period in RSUTH

Year	2020	2021	Total
Total	1,798	1,781	3579
Cesarean section			
Elective	308	387	695
Emergency	681	613	1294
Total	989	1000	1989

CS rate (1989/3579) * 100 = 55.57%

Table 3: Total number of CS cases used for the Study n=1000

CS	Cases	Transfused	Not Transfused
High risk	500	203	297
Low risk	500	11	489
Total number	1000(100%)	214(21.4%)	786(78.6)

Transfusion rate 21.4%

Table 4: Units/pints of blood Transfused n=214

Units	Number of cases	Percentages
1-2	185	86.4
3-4	24	11.2
5-6	5	2.4

Modal unit of blood Transfusion =2 units

Table 5: Types of High risk and Low risk factors considered for this study

High risk factors n=500		
Type	Number	
Second stage CS	22	
Placenta Previa	58	
Abruptio Placentae	26	
Hypertensive Disorders	102	
Sickle cell diseases	5	
Multiple pregnancy	20	
General Anaesthesia	4	
Polyhydramnios	8	
Previous scar on uterus	152	
Leiomyoma co-existing with pregnancy	21	
Ammonites	30	
Prolonged Labor	30	
Blood disorders	4	
Prolonged operation time	10	
Pre-operative anaemia	8	
Low Risk factor n=500		
Types	Number	Percent
Primigravida with CPD	250	50.0
Primigravida with Malpresentations	195	39.0
Post term pregnancy/failed induction	32	6.4
Pelvic Deformity	3	0.6
Non reassuring fetal heart sound	10	2.0
Patients' request	10	2.0

Analysis of Result

Socio demographic characteristics were similar for patients with high and low risk factors for blood transfusion (Table 1). The mean age of women who had cesarean section (CS) was 31.09

SD 4.5(95% CI: 30.6, 31.1) (range 20-43 years). This is similar to findings in other hospital based studies among hospital booked pregnant women [10, 11, 12].

Highest parity among study group was para 1 (30%)

CS rate was 55.57%.

Blood Transfusion rate was 21.4%

Modal unit of blood transfused was 2 units

Discussion

The rate of blood transfusion in this study group was 21.4%, which was high compared to 20.8% in the study by FM Akinlusi *et al.* at the Lagos State University Teaching Hospital (LASU) in 2018, though the number studied in this group is larger^[1].

The modal transfusion in that study was 3 units of blood, compared to this study where modal transfusion is 2 units of blood^[2-4]. More than 86% of patients that had blood transfusion received only 1-2 units of blood. This was possible because of the different preventive measures available in obstetric unit of RSUTH to reduce blood loss during CS.

These measures include injectables like; Oxytocin, Carbetocin (an oxytocin derivative) Tranexamic acid, Ergometrine and Prostaglandin F2 alpha.

Tablets like Oral Misoprostol (Prostaglandin E1 analogue), sublingual misoprostol and rectal misoprostol. Extra uterine haemostatic compression sutures like purse-uterine haemostatic compression sutures and B-Lynch brace sutures.

Ezike techniques for management of post-partum haemorrhage is also effective. Others measures to reduce blood loss at CS are uterine artery ligation and embolization.

Regional anaesthesia (spinal and epidural) were used to perform >90% of the cases studied. It has been confirmed that regional anaesthesia contributes to reduced blood loss during surgery¹², thus reduced need for blood transfusion. General anaesthesia pre-disposes to uterine atony and thus increased blood loss during surgery. The increase in CS rate over the years have resulted in high incidence of repeat CS/Scar on the uterus, with its attendant complications leading to transfusions. The World Health Organization recommended a Cesarean section rate of 5-15% in any facility, but this has been difficult to attain in most studies carried out^[1, 3, 5, 6].

In this study, the high risk factors for excessive blood loss and need for transfusion were majorly-previous CS scar on uterus (152=30.4%). It predisposed to morbidly adherent placenta and increased intra-operative blood loss.

This was followed by hypertensive disorders in pregnancy (Pre-eclampsia/Eclampsia) 102=20.4%. The emergent presentation of these cases led to increased need of blood transfusion. Placenta Previa and Abruption Placentae were high risk cases in which the patient had bleeding episodes before surgery (antepartum Haemorrhage) and this predisposed them to increased blood loss and need for intra-operative transfusion. Second stage CS, prolonged labour, multiple pregnancy, polyhydramnios and General anaesthesia predisposed patients to uterine atony and increased blood loss. With increased intra-operative blood loss, there was increased need for blood transfusion. The sickle cell disease patients usually have reduced pre-operative Haemoglobin/Haematocrit prior to surgery, thus the need for intra-operative blood transfusion. Patients with blood disorders like thrombocytopenia, antiphospholipid syndrome need adequate fresh whole blood and blood product during surgery to prevent excessive blood loss and mortality.

The low risk patients in this study mainly were primigravida with cephalo pelvic disproportion (CPD) 250=50%. Some of them who did not receive antenatal care in our facility, had pre-operative packed cell volume of <30%. Deeply impacted fetal head at CS led to lateral extension of the transverse lower segment incision with increased blood loss.

Primigravida with mal presentations (breech, transverse lie) were also amongst low risk patients in this study (205=41%). Non-reassuring fetal heart sounds were also indication for emergency CS.

Patient's request for elective CS is a trend in this century that is gradually gaining ground. With increase in number of women becoming more educated, more aware of their rights and becoming more motivated, the desire of some to avoid labour pain is increasing. They request for elective CS during their antenatal visits. When there is respect for human rights and dignity, such requests should not be overlooked.

Conclusion

Adequate Perioperative preparation is needed for prevention of massive blood loss and blood transfusion for every case of cesarean section. This is more so, if there are high risk factors associated with that pregnancy.

The practice of low risk patients providing 2 units of blood during the antenatal period, should be revisited as most of them in this study did not need transfusion, in presence of adequate blood loss preventive mechanisms. There should be a need for blood transfusion before it is given, in order to prevent and reduce blood transfusion reactions and transmission of infections.

Optimizing maternal hemoglobin concentration during antenatal period may reduce the incidence of cesarean related blood transfusion.

Ethical Approval

Ethical approval was obtained from RSUTH ethical research committee before commencement of studies.

Author's Contribution

Not available

Conflict of Interest

Not available

Financial Support

Not available

References

1. Akinlusi FM, *et al.* BMC. Pregnancy and child birth. 2018;18:24. DOI 10.1186/s 12884-017-1643-7.
2. Iwo Amah RS, Pepple DKO, Ikiroma SE, Eli S. Purse-string sutures at cesarean section: its role in prevention of primary post partum Haemorrhage (PPH) in Port Harcourt. Greener journal of medical sciences. 2021;11(2):143-148.
3. Matot I, Emav S, Goodman S, Zeldin A, Weissman Cetal. A survey of physician's attitude towards blood transfusion in patients undergoing cesarean section. AMJ. Obstet Gynecol. 2004;190:462-7.
4. Magan E, Evans, Hutchinson M, Collins R, Lameau Morrison JC. Post-Partum Haemorrhage after cesarean delivery: an analysis of risk factors. Southern Med Jour. 2005;98:681-5.
5. Ramadani H. Cesarean Section: Intra operative blood loss and mode of placenta separation. Int. journal of Gynecology and Obstetrics. 2004;(2);114-8.
6. Gulmezoglu AM, Forna F, Villar J, Hofmeyr GJ. Prostaglandin derivatives for preventing postpartum haemorrhage. Cochrane Database of systematic Reviews; c2007, 3. [Art.no.CD000.494 DOI:10.1002/14651858. Pub3]
7. Frances Kellie J. Cochrane Database Syst. Rev; c2018. doi:

- 10.1002/14651858. CD007576. Pub2.
8. Rouse DJ, MacPheson C, Landon M, Varner M *et al*. Blood transfusion and cesarean delivery, *Aco6*. 2006;108(4):891-7.
 9. Goudan A. *et al*. Descriptive study of blood transfusion practices in women undergoing cesarean delivery. *J Obstet Gynecol Res*. 2011;37(10):1277-82.
 10. Ugwu EO, Eze Chukwu PC, Obi SN, Ugwu AD, *et al*. Utilization of insecticide treated Nets in Abaro Community Delta State. *Nig Med*. 2013;22(4):326-331.
 11. RS Iwo-Amah, FCC Wekere, SC Amadi, JN Kwosah. Emergency cesarean section and its sequelae in a tertiary hospital in Niger Delta, Nigeria. *Int. J Reprod contracept. Obstet Gynecol*. 2021 Dec; 10(12):4372-4376.
 12. Huseyin Aksoy, Ulku Aksoy, Burak Yucel, Seyzin saygi Ozyurt *et al*; blood loss in elective cesarean section: is there a difference related to type of anaesthesia? A randomized prospective study. *J Turk Ger Gynecol Assoi*. 2015;16:158-63. DOI:10.5152/jtgga.2015.15034.
 13. Chalmers B, Mangiaterra V, Porter R. World Health Organization principles of perinatal care: the essential antenatal, perinatal and postpartum care course. *Birth*. 2001;28:202-7.
 14. Allen VM, Connell CM O, Baskett TF. Maternal and perinatal morbidity of caesarean delivery at full cervical dilatation compared with caesarean delivery in the first stage of labour. *Br J ObstetGynaecol*. 2005;112:986-90.
 15. Govender V, Panday M, Moodley J. Second stage caesarean section at a tertiary hospital in South Africa. *J Matern Fetal Neonatal Med*. 16. Fasuba OB, Ezechi OC, Orji EO, Ogunniyi SO, Akindele ST, Loto MN *et al*; c2010.
 16. Delivery of the impacted head of the foetus at caesarean section after prolonged obstructed labour: a randomized comparative study of two methods. *Journal of Obstetrics and Gynaecology*. 2002;22:375-78.
 17. Sucak A, Celen S, Akbaba E, Soysal S, Moraloglu O, Danisman N. Comparison of Nulliparas Undergoing Cesarean Section in First and Second Stages of Labour: A Prospective Study in a Tertiary Teaching Hospital. *Obstetrics and Gynaecology International*; c2011. ID; 986506.
 18. Royal College of Obstetricians and Gynaecologists. RCOG Clinical Effectiveness Support Unit. The National Sentinel Caesarean Section Audit Report. London; c2001.
 19. Chu K, Cortier H, Maldonado F, Mashant T, Ford N, Trelles M. Cesarean section rates and indications in sub-Saharan Africa: a multi-country study from Medecins sans Frontiers. *PLoS One*; c2012. p. 7-9.
 20. Ogunbode O. Anaemia in pregnancy. *Tropical Journal Obstetrics Gynaecology*. 1995;12:19-25.
 21. Young MW, Lupafya E, Kapenda E, Boboow EA. The effectiveness of weekly iron supplements in pregnant women of rural northern Malawi. *Trop Dr*. 2000;30:84-8.
 22. Rebarber A, Lonser R, Jackson S, Copel JA, Sipes S. The safety of intra operative autologous blood collection and auto transfusion during caesarean section. *Am J ObstetGynecol*. 1998;179:715-20.
 23. Carmann WR, Datta S. Red cell use during caesarean delivery. *Transfusion*. 1991;31:12-5.
 24. Rainaldi MP, Tazzari PL, Scagliarini G, Borghi B, Conte R. Blood salvage during caesarean section. *Br J Anaesth*. 1998; 80:195-8 fractures -Toronto experience. *Clin Orthop*. 1979;138:94.

How to Cite This Article

Iwo-Amah R, Nwogu C, Chisor-Wabali Nkasiobi, Mkpe Abbey, Amadi SC, Kua P, Altraide BO, Kwosah NJ, John DH, Ocheche US, Mba AG, Ohaka Cv, Awopola J. Need for blood transfusion during cesarean section in rivers state university teaching hospital. *International Journal of Clinical Obstetrics and Gynaecology*. 2022;6(5):28-32.

Creative Commons (CC) License

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International (CC BY-NC-SA 4.0) License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.