Scientific Research Publishing

Open Journal of Obstetrics and Gynecology, 2023, 13, 780-791
https://www.scirp.org/journal/ojog
ISSN Online: 2160-8806
ISSN Print: 2160-8792

The Place of Blood Transfusion in the Management of Obstetric Emergencies in the Gynaecology and Obstetrics Department of the Reference Health Center of Fana (Mali)

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How to cite this paper: Sema, K., Sidi, K.B., Seydou, F., Cheickna, S., Youssouf, S., Momine, T., Solomane, T., Ramatoulaye, H., Abdrahamane, D., Yacouba, S., Mamadou, K., Mahamoudou, C., Mamadou, H., Dramane, H., Daouda, C., Dramane, F., Mamadou, K., Boubacar, M., Sitapha, D., Dao, S.Z. and Amara, S.S (2023) The Place of Blood Transfusion in the Management of Obstetric Emergencies in the Gynaecology and Obstetrics Department of the Reference Health Center of Fana (Mali). *Open Journal of Obstetrics and Gynecology*, **13**, 780-791.
https://doi.org/10.4236/ojog.2023.134067

Abstract

This is a prospective and descriptive study carried out at the gynecology and obstetrics department of the reference health center of Fana from 01 May 2019 to 30 November or 7 months. The main objective was to study the role of blood transfusion in the management of obstetric emergencies. During the study period we recorded 434 cases of obstetric emergencies of which 116 cases required an emergency blood transfusion or 26.73%. The most frequently found indications for blood transfusion are hemorrhages of the immediate postpartum 46.6% followed by severe malaria on pregnancy 27.6%. Blood remains the most prescribed and available Labile blood product in the department. Maternal prognosis was improved in 92.2%.

Received: March 5, 2023
Accepted: April 25, 2023
Published: April 28, 2023

Keywords

Obstetric Emergencies, Blood Transfusion, Hemovigilance

1. Introduction

Homologous blood transfusion involves transfusing blood or one of the cellular or plasma components of one or more subjects called "donor" to a sick subject called "recipient" [1]. It is one of the most sensitive activities in a health system, because of the nature of the products used, which are products of human origin blood and blood products and the quality of the recipient, the patient. As a result, the health authorities are subject to ethical requirements to protect the human person and technical imperatives to introduce the most appropriate techniques, guaranteeing the quality and safety of the product. Its beginnings are at the dawn of the twentieth century after Landsteiner's discovery of ABO blood groups in 1900 [2]. The logic of selective transfusion is to offer each blood product in the most suitable form in purity and concentration on the basis of a principle which is: "the patient should receive only the blood component he needs" [2]. The Department of Gynecology and Obstetrics is one of the services where the demand for blood is one of the highest and this is because of unpredictable hemorrhages related to pregnancy abnormalities including placenta previa and retroplacental hematoma, scheduled interventions especially myomectomies.

Obstetric haemorrhage is and remains the major cause if not the leading cause of mortality and serious morbidity, 80% of maternal deaths worldwide result directly from complications of pregnancy, childbirth and postpartum [3]. A quarter of all these deaths are due to severe bleeding during the postpartum period, or 25% worldwide [4]. The frequency of blood transfusion is increasing in Africa. According to a study carried out by Azanhoué in 2008 at the Mother and Children Hospital of Langune (Homel) in Cotonou on 524 admissions, the total number of patients transfused was 137 patients, a rate of 26.14% [5].

In Mali, a study was carried out by Souleymane on the place of blood transfusion in the management of obstetrical emergencies in the Department of Gynecology and Obstetrics at the Regional Hospital of Gao on 338 admissions for obstetrical emergencies 93 patients were transfused or 27.3% [6].

Another study carried out in 2017 by the Goita team in the Gynecology and Obstetrics Department of the Reference Health Center of Commune V of Bamako estimated the frequency of blood transfusion at 13.23% [7]. Our team proposes to do a study on blood transfusion in Obstetrics.

2. Objectives

The aim was to assess the prevalence of blood transfusion, determine unmet transfusion needs in obstetrics, describe the epidemiological profile of transfused

patients, determine the main indications for blood transfusion, determine complications related to blood transfusion and report maternal prognosis after blood transfusion.

3. Materials and Methods

This was a prospective, cross-sectional, descriptive, analytical study at the reference health center of Fana from 01 May 2019 to 30 November 2019, a period of 07 months. Inclusion criteria: These were all pregnant and/or postpartum women admitted on an emergency basis, who received a blood transfusion. Exclusion criteria: These were all pregnant and/or postpartum women admitted on an emergency basis, whose management did not require a blood transfusion. Comprehensive sample size: We used a sample of 116 pregnant and/or immediate postpartum women who received emergency blood transfusions in our survey. Data carrier: We used a questionnaire for the survey, completed from the patient chart, the interview, the transfusion registry and the emergency registry. Variables studied: Observation of blood transfusion focused on the following variables: characteristics of patients to be transfused, criteria for blood transfusion, conditions of blood transfusion, and risks of blood transfusion. Data processing and analysis: Data were entered and analysed on the computer using the SPSS 19 trial software.

4. Results

Epidemiological aspects

The prevalence of blood transfusion in our series was 26.73% or 116 blood transfusions out of 434 admissions for obstetric emergencies with a peak observed in September as shown in Figure 1.

The 15 - 20 age group was the most affected with an average age of 29 years. The extremes were 15 and 43 years. Standard deviation = 0.883. Approximately

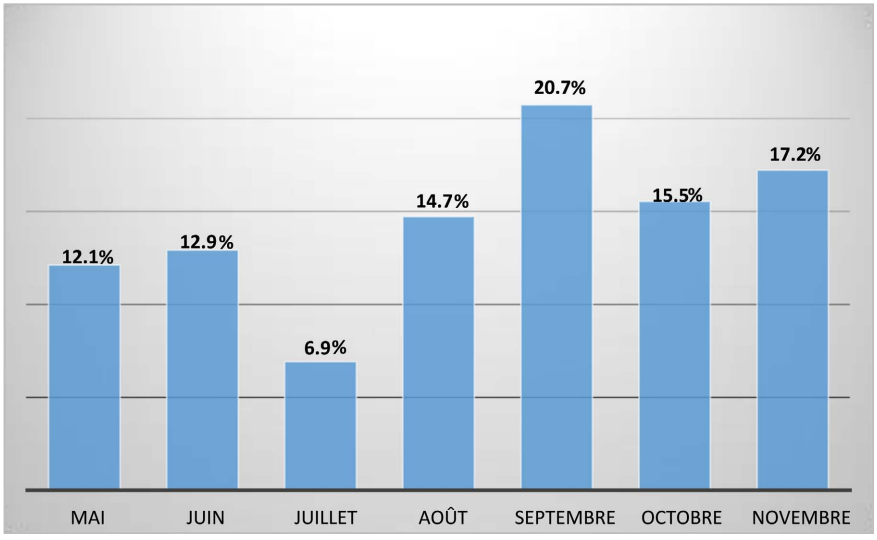

Figure 1. Distribution of patients by month of study.

94.8% of the women transfused were housewives. The Bambara ethnic group was the most concerned by blood transfusion, with 59.5% of cases, followed by the Fulani and Sarakoles. The majority of the women transfused came from the villages of Fana, 63.8%. In our series, 97.4% of the women transfused were married. Of these, 81.0% were out of school. Table 1 and Figure 2 show the

Table 1. The epidemiological aspects of obstetric emergencies transfused from May 1, 2019 to November 30, 2019 at the reference health center of Fana (1).

Ages	15 - 20	46	39.7%
	20 - 29	32	27.6%
	29 - 39	36	31.0%
	40 and over	2	1.7%
	Bambara	69	59.5%
	Fulani	27	23.3%
Ethnic group	Dogon	6	5.2%
	Sarakolé	7	6.0%
	Malinké	4	3.4%
	Bozo	1	0.9%
	Souarhai	2	1.7%
Origin	Fana City	35	30.2%
	Villages of Fana	74	63.8%
	Other	7	6.0%
	Bachelor	3	2.6%
Situation Marriage	Bride	113	97.4%
	Out of school	94	81.0%
Educational attainment	Primary	20	17.2%
	Secondary	2	1.7%

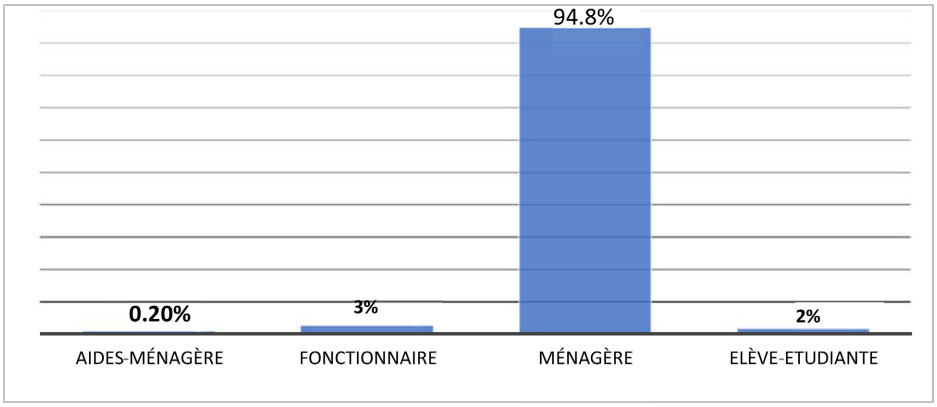

Figure 2. The epidemiological aspects of obstetrical emergencies transfused from 01 May 2019 to 30 November 2019 at the reference health center of Fana (2).

epidemiological aspects of transfused obstetric emergencies.

Clinical aspects

Evacuation was the most common mode of admission in our study series, 45.7% followed by those who came themselves. Anemia on pregnancy and hemorrhage on pregnancy were the most common reasons for admission during our study, 26.7% and 20.7% respectively. In our sample, pauci-gestures were the most represented with 34.5% of cases. The majority of transfused patients were pauci-parous or 31.9% of cases. Blood transfusion and hypertension are the frequently encountered history 7.8% and 6%. On the other hand, 84.5% had no associated factor. 6.9% had a history of caesarean section and 69.8% of patients had impaired general condition at admission. The clinical aspects of the transfused women are presented in Table 2 and Table 3.

Table 2. Clinical aspects (1).

	Actual	Percentage
Method of admission		
Came by herself	37	31.9%
Reference	26	22.4%
Evacuations	**53**	**45.7%**
Reason for admission		
Pelvic cluster headache	2	1.7%
Postpartum hemorrhage	17	14.7%
Haemorrhage on Pregnancy	24	20.7%
Anemia on pregnancy	**31**	**26.7%**
Painful uterine contraction	20	17.2%
Other	22	19.0%
Gestite		
Primigeste	37	31.9%
Pauci-gesture	**40**	**34.5%**
Multi gesture	16	13.8%
Great multi gesture	23	19.8%
Total	116	100.0%
Parity		
Nulliparous	16	13.8%
Primiparous	25	21.6%
Pauci pares	**37**	**31.9%**
Multiparous	16	13.8%
Large multiparous	22	19.0%
Total	116	100.0%

Continued		
Medical ATCD		
None	98	84.5%
HTA	7	6.0%
Sickle cell disease	1	0.9%
Previous transfusion	**9**	**7.8%**
Other	1	0.9%
Total	116	100.0%
Surgical ATCD		
None	107	92.2%
Caesarean section	**8**	**6.9%**
Prolapse cure	1	0.9%
Total	116	100.0%

Table 3. Clinical aspects (2).

	Actual	Percentage
General condition at the entrance		
Altered	**81**	**69.8%**
Passable	35	30.2%
Total	116	100.0%
Admission blood pressure		
Normal	44	37.9%
Hypotension	**63**	**54.3%**
Hypertension	9	7.8%
Total	116	100.0%
Obstetrical profile		
Pregnant	43	37.1%
Parturient	10	8.6%
Postpartum	**55**	**47.4%**
Post abortum	8	6.9%
Total	116	100.0%
Number of NPCs		
0 CPN	**77**	**66.4%**
1 NPC	3	2.6%
2 NPCs	12	10.3%
3 CPN and above	24	20.7%
Total	116	100.0%
Prenatal check-up		
Fact	20	17.2%
Not done	**96**	**82.8%**
Total	116	100.0%

More than half had hypotension or 54.3% at admission. 47.4% of transfused women were postpartum and 20.7% had made at least 3 antenatal visits compared to 66.4% who had no follow-up during pregnancy. Of the women transfused, 82.8% had not had a prenatal check-up.

Biological aspects and main indications of blood transfusion

Patients with blood type O were the most represented followed by B with 39.7% and 31.9% respectively. Rhesus positive was the most frequently encountered, with 90.5% of patients. 52.6% of transfused women had severe anaemia on admission. During our study, 363 whole blood bags were prescribed, an average of 3.13 per patient. Of the 363 bags requested, 310 were served, representing 85.39% of needs covered.

The rate of unmet needs was 14.60% or 53 blood bags. Postpartum haemorrhage and severe malaria in pregnancy were the main indications for transfusion, accounting for 46.6% and 27.6% of cases, respectively. Complications were dominated by OAP, anaphylactic shock, chill hyperthermia syndrome and 1 case of low back pain. The biological aspects and main indications of blood transfusion are shown in Table 4 and Table 5.

Table 4. Biological aspects and main indications of blood transfusion (1).

	Actual	Percentage
Patient's blood type		
O	**46**	**39.7%**
B	37	31.9%
Has	28	24.1%
AB	5	4.3%
Rhesus of the patient		
Positive	**105**	**90.5%**
Negative	11	9.5%
Total	116	100.0%
Hemoglobine to the input in g/dl		
2 - 4.9	28	24.1%
5 - 7.9	**61**	**52.6%**
8 - 10	27	23.3%
Total	116	100%
Pocket numbers requested		
1 pooches	1	0.9%
2 pooches	39	33.6%
3 poches	32	27.6%
4 pooches	32	27.6%

Continued

5 pôcheset more	12	10.3%
Total	116	100.0%
Pocket numbers received		
0	1	0.9%
1	9	7.8%
2	54	46.6%
3	23	19.8%
4	20	17.2%
5	9	7.8%
Total	116	100.0%

Table 5. Biological aspects and main indications of blood transfusion (2).

	Actual	Percentage %
Obstetric emergencies		
Retro hematoma Placental	6	5.2%
Hemorrhagic placenta praevia	5	4.3%
Ectopic pregnancy	4	3.4%
Uterine rupture	5	4.3%
Molar abortion	2	1.7%
Miscarriage	4	3.4%
Hemorrhagic induced abortion	1	0.9%
Postpartum hemorrhage	54	46.6%
Severe malaria on pregnancy	32	27.6%
Deficiency anemia	3	2.6%
Procedures associated with emergency blood transfusion		
Caesarean section	12	10.3%
Hysterorraphy for uterine rupture	5	4.3%
Manual suction Intrauterine	7	6.0%
Salpingectomy	4	3.4%
Suture of soft parts	6	5.2%
Uterine revision	17	14.7%
Use of misoprostol	31	26.7%
None	34	29.3%

Maternal prognosis after transfusion

Acute lung edema, anaphylactic shock, hyperthermia-chill syndrome and low

back pain were the complications that occurred during our study with respectively: 2.6%, 2.6%, 1.7% and 0.9%. The cure rate was 92.2 percent against a maternal mortality rate of 1.7 percent. The prognosis elements are summarized in Table 6.

5. Discussion

In our series, 116 patients were transfused out of 434 admissions for obstetric emergencies, a prevalence of 26.73%.

Epidemiological aspects

The age group of 15 - 20 years was the most represented with 39.7% or 46 cases and an average age of 29 years with extremes of 15 and 43 years. Housewives were the most represented, with 94.8% of cases. This result is comparable to that of Souleymane in 2011 with 92.5% [6] and significantly higher than that of Goita in 2017 with 84.7% [7]. Among the ethnic groups, the Bambara were dominant with a number of 69 out of 116 or 59.5%. The majority of transfused women came from villages, 63.8 percent versus 30.2 percent. 97.4 percent were married compared to 2.6 percent of single women. Our result is comparable to that of the Goita study [7] in 2017 in Mali which found 97.3% of married women against 2.97% of singles.

Strategies to combat maternal and neonatal mortality include women's literacy, women's involvement in decision-making at the time of care, and improvement of road and health infrastructure. An educated woman can know the danger signs and seek care more quickly than an out-of-school woman who ignores or neglects the danger signs. Our study highlighted these claims.

Clinical aspects

Evacuation was the most frequent mode of admission in our series, 45.7% versus 31.9% of itself. This mode of admission is frequently encountered in

Table 6. Maternal prognosis after blood transfusion.

	Actual	Percentage %
Maternal prognosis after transfusion		
Healing	**107**	**92.2%**
Death	2	1.7%
Referred	2	1.7%
Discharge against medical advice	5	4.3%
Transfusion accidents and incidents		
None	107	92.2%
PAO	3	2.6%
Anaphylactic shock	3	2.6%
Hyperthermia chill syndrome	2	1.7%
Low back pain	1	0.9%

many African studies:

Goita in 2017 and Samaké in 2008 found respectively 53.81% [7] and 71.7% [8] evacuation.

Among the reasons for admission, anaemia on pregnancy was the most common with a rate of 26.7%, followed by hemorrhage on pregnancy 20.7%. Pauci gestes and primigestes accounted for 34.5% and 31.9% respectively. This same observation was made by Azanhoué in 2008 in Benin whose pauci-gestures were the most represented at 47.44% [5]. On the other hand, in the Samaké study in 2008 [9], multi-gestures and large multi-gestures represented respectively 35.4%, 41.3%. The pauci pares represented 31.9% of cases in our study. This same result was found by Azanhoué in 2008 and those of Souleymane [6] in 2011 whose pauci pares represented respectively 38% and 38.7%. Some of our patients were transfused prior to admission. This proportion was 7.8% followed by a history of high blood pressure which was found in 6%. Regarding surgical history, caesarean section was the most frequently observed surgical history. This same observation was made by Samaké in 2008 [9] in Mali. However, it remains accepted that the risk of bleeding is higher in scarred uteruses.

Some situations require an emergency blood transfusion. The clinical examination at the admission of our patients had found hemodynamic instability such as hypotension in 54.3% of them. Of these, 83.6% had conjunctival pallor. 47.4% of women are transfused postpartum. The majority of transfused women did not have any antenatal consultations, 66.4% compared to 20.7% who made at least 3 antenatal visits. In 82.8% of cases, pregnant women had performed biological examinations. The women transfused were group O in 39.7% and B in 31.9%. Positive Rhesus accounted for 90.5%. The Rhesus positive O group is the majority group in the general population [8]. More than half or 52.6% of patients had severe anaemia with a haemoglobin level between 5 - 7.9 g/dl at admission before blood transfusion. This is explained by the fact that his women did not follow up prenatal consultations. Delay in evacuation for the management of obstetric hemorrhagic pathologies.

With an antenatal consultation rate of 20.7%, measures such as iron supplementation, the use of insecticide-treated mosquito nets, the prevention of malaria by taking doses of sulfadoxine pyrimethamine, deworming during pregnancy which are among other means to prevent anaemia during pregnancy are not respected.

Biological aspects and main indications of blood transfusion

During our study, 363 whole blood bags were prescribed, an average of 3.13 per patient. Of the 363 bags requested, 310 were served, representing 85.39% of needs covered. The rate of unmet needs was 14.60% or 53 blood bags. The 14.6% of unmet needs are attributed to the lack of availability of the blood type as well as the voluntary donor. We used only whole blood. This could be explained by the fact that whole blood was still the most available blood product in the center's laboratory.

If in some situations the hemorrhage is predictable in obstetrics. However, it

can occur unexpectedly. This is why continued availability of labile blood products is a key component of strategies to combat maternal mortality. Malaria endemic, low coverage in antenatal preventive care and the influence of socio-economic and cultural factors were found in our series. The main indications for transfusion were postpartum haemorrhage and severe malaria in pregnancy with a rate of 46.6% and 27.6% respectively. The procedures associated with emergency blood transfusion: the use of misoprostol, uterine revision, caesarean section, salpingectomy and hysterorraphy represented respectively: 26.7%; 14.7%; 10.3%; 3.4% and 4.3%. The use of uterotonics can be explained by the frequency of postpartum hemorrhages by uterine atony. 6% of patients underwent Manual Intrauterine Aspiration this result is lower than that of Samaké in 2008 [9] which had obtained 11.6%. Acute lung edema, anaphylactic shock, hyperthermia-chill syndrome and low back pain were the complications that occurred during our study with respectively: 2.6%, 2.6%, 1.7% and 0.9%. GASSER, reported by MANNONI [10] observed after examination of a long series of cases, the following facts: transfusion of an incompatible blood volume of less than 200 ml leads to oliguria in 25% of cases without DIC or death; That greater than 500 ml results in oliguria in 45% of cases a DICV in 55% and death in 67%; infusion of a volume between 200 and 500 ml leads to 27% of cases of oliguria, 22%% of DIC, and 33% of death.

Maternal prognosis after transfusion

Almost all patients had an improved prognosis after blood transfusion, *i.e.* 92.2% against a maternal mortality rate of 1.7%. This mortality rate is comparable to the Malian series of Samaké in 2008 [9] which found 1% maternal deaths. On the other hand, our rate is lower than those reported by two other authors including Souleymane S in 2011 in Gao and Goita with respectively: 4.3% and 2.12% [6] [7].

6. Conclusion

Unmet transfusion needs in obstetrics estimated at 14.6% remain significant. The continued availability of blood products plays a role in reducing maternal mortality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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