

Non-Transfusion Surgery In Calabar, Nigeria: Our Experience In Twenty-Eight Major Surgeries

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Abstract

Context: In environment where there is no stable transfusion services it is difficult and very costly to procure blood and blood substitutes. In view of the above and the attendant risks of transfusion there may be need to consider alternative measures during major operations.

Objective: This is to highlight the importance and prospects of non-transfusion and judicious use of blood in surgical patients in our environment.

Patients and Method:

Design: This was a prospective study on patients who underwent major operations without any form of blood transfusion.

Setting: At Testimony Medical Resource, a Private Specialist Clinic in Calabar, Nigeria between January 2000 and December 2004. Before inclusion the patient must have haemoglobin level of 10g/dl and above. All the patients were screened for systemic/immunosuppressive illnesses. All the patients willingly gave their Consent after the full implication of the protocol was explained to them by the surgeons. Pre and postoperative assessments and all the operations were done by the consultant Surgeons.

Results: 28 major surgeries were done without the use of any form of blood transfusion. 90% were elective cases and these included 6 Prostatectomy, 4 Myomectomy, 2 Mastectomy, 4 Thyroidectomy, 4 Open reduction/Internal fixation, and 4 Sequestrectomies. Others were splenectomy, amputation and Debridement/External fixation. Most of them (78.6%) were of the Jehovah's Witness Faith and age range was between 15 and 58 years (Mean-33 years) with 16 male and 12 female. The mean preoperative haemoglobin was 12.2g/dl while the mean postoperative haemoglobin was 10.3g/dl. The average blood loss was 850 ml. There was no mortality and the general outcome was satisfactory.

Conclusion: In this era of HIV/AIDS scourge and among those with strong Religious Faith, carefully planned major surgeries could be done without blood transfusion

INTRODUCTION

In recent times there has been rapid evolution in surgical transfusion services and more risks have been recognized.^{1,2} The once simple act of transfusing blood whenever there is indication has now left the surgeon with complex decisions of either non-transfusion, transfusion of substitutes/whole blood or the patient's preference.³

Blood transfusion, a life-saving procedure whether autologous or homologous is a major requirement for major operation such as Prostatectomy, Myomectomy and cardiac

surgeries. It is also indicated in major Orthopaedic operations such as Open reduction/Internal fixation (ORIF) of fractures and Sequestrectomy of long bones. These Operations are usually associated with moderate to severe blood loss which may result in hypovolaemic shock, anaemia and poor wound healing.^{1,2,4} In these report, twenty-eight consecutive cases were done without blood transfusion. This highlights the fact that blood transfusion could be avoided in carefully planned major surgeries without postoperative complications particularly in patient who cooperate.. The importance and Prospects of such policy if

practiced in large scale in our teaming population cannot be overemphasized.^{5,6}

PATIENTS AND METHOD

This prospective study was carried out at The Testimony Medical Resource, a Private Specialist Clinic in Calabar, Nigeria between January 2000 and December 2004. Patients who had surgical problems that needed major operation were randomly included in this study. The stimulus for the study came from patients who were either unwilling or unable to procure blood for transfusion during their operations. Before inclusion the patient must have haemoglobin level of 10g/dl and above. None had any systemic illness such as Hypertension, Diabetes Mellitus, and Sickle cell anaemia. Patients under study were also free from acute Malaria, malignancy or immunosuppressive illness. All the patients willingly gave their Consent after the full implication of the protocol was explained to them by the surgeons. Pre and postoperative assessments and all the operations were done by the consultant Surgeons involved in this study. Standard intra/postoperative precautions were strictly observed and tissue handling was minimal. Postoperative haemoglobin levels were checked 72 hours, 10days and six weeks after. All but three patients were Elective cases. Haemostasis was by ligation and postoperative wound drains were used in 15(53.6%) cases. All the operations on the lower limbs were done under spinal Anaesthesia and Esmarch tourniquet were used on six of them.⁷

Blood loss was estimated by measuring the total amount obtained by suction and that squeezed out of the gauze packs. The only substitute used in this study was Haemacel in four patients, (2 prostatectomies and 2 Sequestrectomies). All the patients were given haematinics in form of Iron, vitamin c, and Vitamin B-complex in various combinations. Erythropoietin, one of the potent substitutes was not used in this study because patients could not afford it. All the patients had extended Prophylactic antibiotics till the 10th postoperative day.

RESULTS

28 major surgeries done during the period did not use any form of blood transfusion. 90% were elective cases and these included 6 Prostatectomy, 4 Myomectomy, 2 Mastectomy, 4 Thyroidectomy, 4 Open reduction/Internal fixation, and 4 Sequestrectomies. Others were splenectomy, amputation and Debridement/External fixation. Most of them (78.6%) were of the Jehovah's Witness Faith and age range was between 15 and 58 years (Mean-33 years) with 16 male and 12

female. The mean preoperative haemoglobin was 12.2g/dl while the mean postoperative haemoglobin was 10.3g/dl. The average blood loss was 850 ml. Three patients with external appliances had pin-tract infections; otherwise, there was no established postoperative wound infection. Wound healing and general recovery were satisfactory. Results of patients who had prolonged pin-tract infection and slow recovery (14.3%) were graded as Fair. These were 4 Orthopaedic cases and they took up to six weeks to build up their postoperative hemoglobin to 10g/dl. No mortality was recorded. Summary of results are shown in the Tables.

Figure 1

Table 1: Procedures and the patients' characteristics

Procedure	Average Age	Sex		Total
		Male	Female	
Prostatectomy	53.6 yrs	6	-	6
Myomectomy	40.5 yrs	-	4	4
Thyroidectomy	33.8 yrs	-	4	4
ORIF	28.5 yrs	3	1	4
Sequestrectomy	24.5 yrs	3	1	4
External fixation	32.5 yrs	2	-	2
Amputation	35yrs	1	-	1
Splenectomy	18yrs	1	-	1
Mastectomy	31yrs	-	2	2
TOTAL	33.0yrs	16	12	28

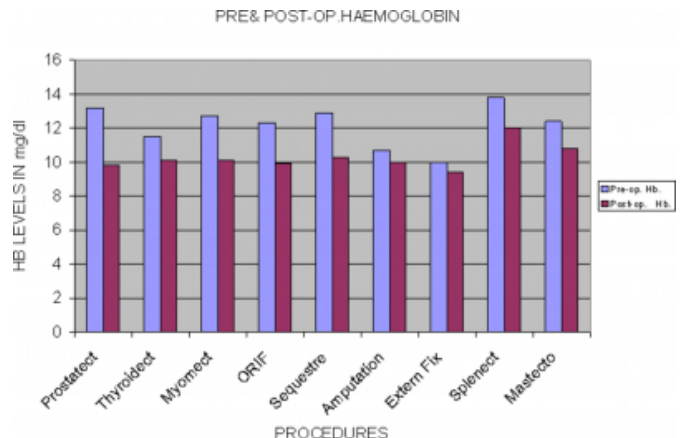
Figure 2

Table 2: Mean Intra-operative Blood Loss

Procedure	Mean Blood Loss
<i>Prostatectomy</i>	1800ml
<i>Thyroidectomy</i>	388ml
<i>Myomectomy</i>	1400ml
<i>ORIF</i>	1000ml
<i>Sequestrectomy</i>	1280ml
<i>Amputation</i>	400ml
<i>External Fixation</i>	500ml
<i>Splenectomy</i>	350ml
<i>Mastectomy</i>	530ml
Group mean	850ml

Figure 3

Figure 1: Pre And Postoperative Haemoglobin



DISCUSSION

In recent times there are restraints in the use of blood transfusion as a Life-saving procedure during Surgical Operations.⁶ This arose because of the dreaded complications of HIV/AIDS transmission. Religious Beliefs particularly among the Jehovah Witnesses is another cause of restraint. Our major reasons for non-transfusion in this study were Religious belief and Research inclinations. Twenty- two (78.6%) of the patients were Jehovah's Witnesses. Members of this Sect are known to have Non-blood transfusion policy as one of their Doctrines.^{5,6}

Many countries in the Tropics do not have strict Transfusion policies and it may be necessary to adopt and enforce the General surgical Transfusion policies as reported R.K Spencer and other workers as follows: ^{1, 3,5}

1. Transfusion needs should be assessed on a case-by-case basis.^{1,7}
2. Blood should be transfused one unit at a time, followed by an assessment of benefit and further need.
3. Exposure to allogeneic blood should be limited to appropriate need.
4. Perioperative blood loss should be prevented or controlled.
5. Autologous blood should be considered for use as an alternative to allogeneic transfusion.^{7,8,9}
6. Efforts should be made o maximize oxygen delivery in the surgical patient.
7. Red cell mass should be increased and /or restored

by means other than red cell transfusion.

8. The reason for and the result of the transfusion decision should be documented contemporaneously in the patient's record.
9. The patient should be involved in the transfusion decision.¹⁰
10. Hospital transfusion policies and procedures should be developed as a cooperative effort that includes inputs from all those involved in the transfusion decision, e.g., surgeon, anaesthesiologist, blood banker, etc.
11. Transfusion practices, both individual and institutional, should be reassessed yearly or more often.

The above policies can be practiced in the Developing World if our priorities are right and resources properly channeled. Reduction of poverty and institution of the National health insurance policy would help.

Some of the reasons for the successful outcome of this study included:

1. Meticulous Surgical Technique as explained in the Methodology. The minimal invasive techniques are not yet established in our environment. ^{7,10, 11}
2. Adequate pre and intra operative blood conservation. ^{8,11,12} About 90% were elective. For example, patients for Myomectomy had their operation during the mid-cycle when they would have recovered from menstrual blood loss and before the next menses when haemoglobin level would drop. Immediate preoperative preloading at induction with 500-1000ml of Normal saline to ensure intravascular blood dilution and reduce total loss of red cell mass during Surgery was used by the authors. Intraoperative blood pressures were maintained at the lower level of normal to minimize bleeding. However, preoperative donation and intraoperative Autologous blood salvage which are better options were not done in this series because of patients' demand, cost and lack of facilities.⁵ The use spinal Anaesthesia is known to cause regional hypotension and thereby reducing Intraoperative haemorrhage.^{8,9,10} The use of tourniquet though may not cause significant

reduction in blood loss, actually provides bloodless operation field thereby reducing tissue trauma and postoperative infections.^{13,14,15} Though the use of clotting agents (such as fibrin glue, collagen and topical thrombin) and antifibrinolytic agents such as aprotinin, epsilon aminocaproic acid (EACA), Desmopressin and tranexamic acid are helpful in reducing blood loss, they were not used because they are not available in our hospitals. These are also very expensive and where patients can afford, they have to be imported from overseas.^{1,10} Erythropoietin, a of the potent stimulus of haemopoiesis was not used in this study because the patients could not afford it.¹¹

3. Postoperative potent haematinics and good Nutrition
4. Strong cooperation from the patient, particularly among the Jehovah's Witnesses.^{3,10,11}

In addition to preventing the transmission of diseases and immunological reactions the patients saved an average of N18, 000 (\$140) through this procedure. Monk and other workers observe that autologous blood transfusion is cheaper and safer but our observation is that non-transfusion is even the safest.^{4, 8} It should be noted here that the authors do not advocate non-transfusion policy for all situations. Therefore, in dire emergencies and life threatening situations where non-transfusion policies may not be feasible blood transfusion in any of its forms should not be withheld.

CONCLUSION

Blood transfusion is a life-saving requirement for major operations and has many advantages and disadvantages. In this study, 28 major operations were done without blood transfusion and the results were satisfactory. In this era of HIV/AIDS scourge and among those with strong Religious Faith, carefully planned major surgeries could be done without blood transfusion.^{10,11} Apart from the above two reasons the increasing cost of acquiring and screening the blood should be another reason why transfusion policies should be reviewed in our hospitals.¹² However, the pre and intraoperative blood salvage procedures which are the current trend in Developed countries should also be a routine in our sub region if the basic facilities and infrastructures are made available.

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