

## PREOPERATIVE BLOOD TRANSFUSION, IS IT ESSENTIAL TO ARRANGE BLOOD FOR PATIENTS UNDERGOING CAESAREAN SECTION?

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### ABSTRACT

**Objective:** To assess the need of blood for the patients undergoing caesarean section.

**Place and Duration of Study:** This retrospective study was conducted in Combined Military Hospital (CMH) Jhelum from December 2011 to November 2012.

**Material and Methods:** A total of 224 Caesarean sections done at CMH Jhelum from Dec 2011 to Nov 2012 having American Society of Anaesthesiology (ASA) I and ASA II were included in the study. Patients, who met the preset inclusion criteria i.e. age 20 to 40 years, ASA I / ASA II, primigravida, previous one, two or three C- sections emergency/ electives were included in the study. Patients with deranged coagulation profile, bleeding disorders, active bleeding (placenta praevia, abruptio placentae) and patients on anticoagulants were excluded from the study. One unit of blood was arranged for patient having hemoglobin (Hb) > 10gm/dl and two units for patient having Hb less than 10gm/dl. Blood was transfused when loss was above 20%, and intravenous fluids given when loss was less than 20%.

**Results:** Out of 224, 181 patients underwent elective C-section and 43 emergency C sections. Emergency surgery was carried out in case of failed induction, cord prolapse, previous C-section in labour and fetal distress. Total 21 patients were considered to receive blood transfusion of which 5 had Hb > 10gm/dl, 5 had Hb between 8-10 gm/dl and 11 patients had Hb < 8 gm/dl. Two patients among 11 who had Hb less than 8 gm/dl were not given transfusion due to non- availability of blood rest nine received blood. So in fact 19 patients were given blood transfusion.

**Keywords:** Blood Transfusion, Caesarean Section, Hemoglobin.

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### INTRODUCTION

Blood transfusion when indicated is extremely valuable and life-saving. Blood should be transfused only when really required/indicated because of the potential serious and fatal complications associated with it like adverse blood reaction, acute lung injury, ARDS, bacterial and viral transmission etc<sup>1</sup>. In addition blood availability is also scarce because people are reluctant to donate blood. Indications for blood transfusion in preoperative period include heavy blood loss (20% to 30% of the patient blood volume), symptomatic anaemia, pre-existing heart disease and haematological disease. If the time permits simple measures should be adopted to raise the hemoglobin levels to acceptable limits

e.g. dietary supplements or iron containing medications orally or parentally<sup>2</sup>, but in case of emergency surgery, one has to resort to blood transfusion<sup>3</sup>. This study is conducted to identify the potential candidates for preoperative blood transfusion and the need to arrange blood preoperatively.

### MATERIAL AND METHODS

This retrospective observational study was conducted at Combined Military Hospital (CMH) Jhelum from December 2011 to November 2012. All patients included in this study were American Society of Anaesthesiology (ASA) I and American Society of Anaesthesiology (ASA) II who underwent planned and emergency C-section. Patients planned for elective C-section were examined by gynecologist at the time of booking for surgery and at the time of admission. However patients for emergency C-section were examined just before surgery on operation

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room only. Physical findings and investigations were recorded on especially prepared chart. One unit of blood was arranged for patients having hemoglobin (Hb) 10 gm/dl or higher and two units for patients having Hb less than 10 gm /dl or below. Decision for blood transfusion was made on the basis of blood loss. Blood was transfused to patients who had blood loss of more than 20% of their calculated blood volume. However patients who had blood loss of less than 20% were given intravenous balanced salt solutions (crystalloids).

Out of 224 patients, 210 received spinal anaesthesia and 14 patients received general anaesthesia. All patients who received spinal anaesthesia were given infusion of 500 ml of crystalloid as preload and Inj bupivacaine 0.75% as a drug for spinal anaesthesia. Blood loss was estimated by weighing the swabs soaked in the blood lost. Blood was made available before surgery for patients who were diagnosed as having placenta praevia.

## RESULTS

Two hundred and twenty four patients were included in the study. A total of 210

maximum 14.4 gm/dl. 181 patients underwent elective C-Section and 43 had emergency C-section. Total 21 patients were considered to receive blood transfusion. Five patients had Hb > 10gm/dl, 5 had their Hb between 8-10 gm/dl and 11 patients had HB < 8 gm/dl. Two patients who had Hb less than 8 gm/dl were not given transfusion due to non-availability of blood rest three received blood so in actual only 19 patients received blood transfusion. All the patients who received transfusion had low Hb concentration. (Fig-1 & 2).

## DISCUSSION

Blood transfusion is a life saving procedure. Its indications are specific; these include anemia and acute blood loss more than 20% to 30% of total blood volume<sup>4</sup>. The indications of whole blood transfusion are limited and mostly various blood products are used<sup>5</sup>. In our study we used packed red blood cells and Hartman's solution in 1 to 1 and 1 to 3 ratios respectively for each part of blood loss. Blood transfusion carries some serious risks which include acute hemolytic reactions, transmission of communicable disease especially hepatitis B, C and HIV, febrile reactions, mild allergic reactions and circulatory

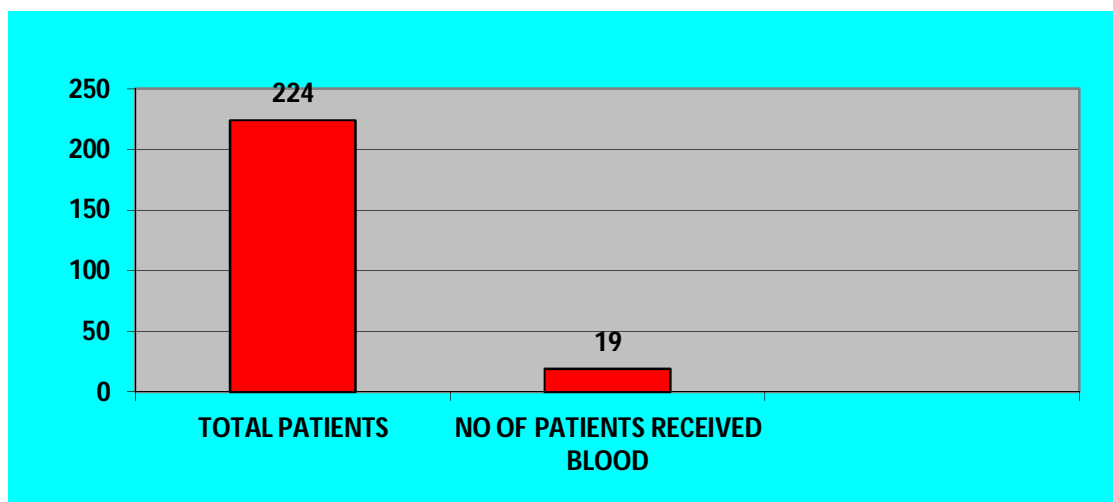


Figure-1: Number of patients who received blood.

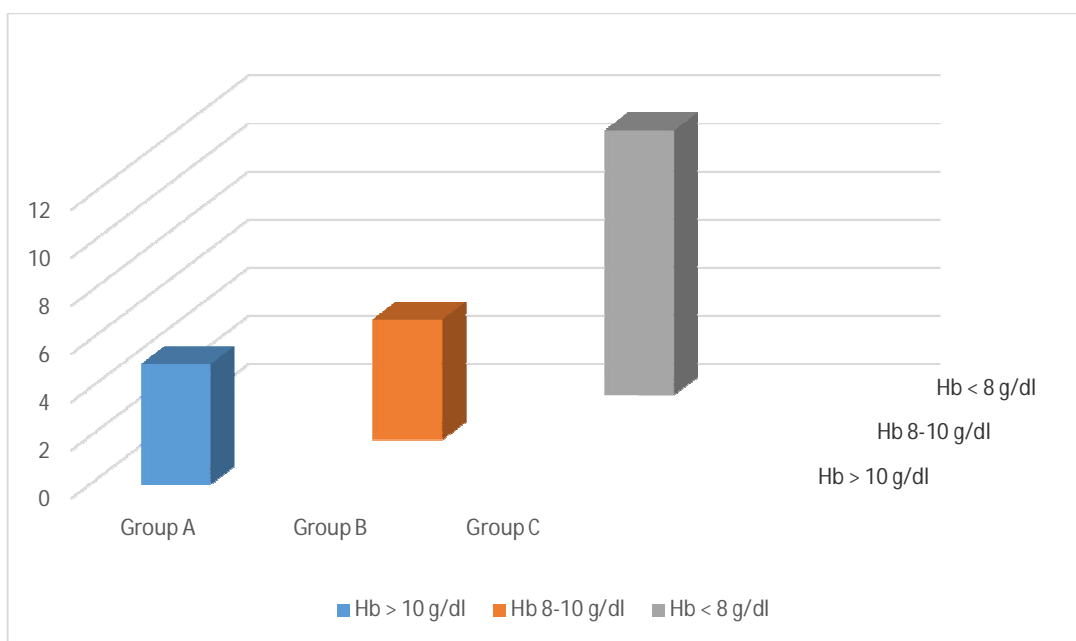
patients received spinal anaesthesia and 14 general anaesthesia. Their ages were between 20 to 40 years, average age being 26 years. Minimum Hb noted was 5.7 gm/dl and

overload<sup>6</sup>. Idress et al found a high seroprevalence of anti HCV antibodies in a general and apparently healthy population of the Punjab Province of Pakistan<sup>7</sup>. The classical

signs and symptoms of severe anaemia include exertional dyspnea, chest pain, lethargy, hypotension, pallor and impaired consciousness. These signs usually do not occur until Hb is less than 7 grams% in non pregnant patient but due to pregnancy it occurs before reaching 7g/dl of hemoglobin<sup>8</sup>. The critical hematocrit is 8g/dl below which the delivery of oxygen rapidly deteriorates<sup>9</sup>. Studies showed that hemoglobin concentration below 5 grams% is associated with cardiac decomposition in dogs and baboon<sup>10</sup>. In an anaesthetized surgical patient the symptoms of anaemia are marked. In such cases Hb concentration is the indicator for blood transfusion<sup>11</sup>. Recently thromboelastography (TEG) has been suggested as an additional means of evaluating coagulation in a trauma patient<sup>12</sup>. In our study

blood costs more than Rs 4000. Since we are a poor country, arranging blood for every patient puts a lot of burden on the family and the state. Even in developed countries this is a costly affair. For example producing blood components in UK Costs 1.2 billion pounds a year to NHS (National Health Services) and each unit cost about 180 pounds<sup>13</sup>.

We should make all the efforts to conserve blood. Different techniques of restricting blood transfusion are haemodilution, autologous blood transfusion and blood salvage. These techniques can be adopted for the conservation of blood. But use of these techniques may not be feasible and very effective anaemic patients presenting as obstetric emergencies. In elective surgeries injection Erythropoietin and nutritional therapies like iron preparations can



**Figure-2: Hemoglobin level in patients who receive blood transfusion.**

patients who received blood transfusion had Hb less than 10 gm/dl. A study by Yan et al indicated that by improving intravascular volume and hemoglobin concentration the mortality rate is reduced. In our country availability of blood is a problem due to generalized my that blood donation has adverse effects on health of the donor. Another issue is the cost of arranging blood, a single unit of

minimize the requirements for transfusion<sup>14</sup>.

## CONCLUSION

Caesarean section is the most common obstetric surgical procedure. Blood transfusion triggers the multitude of debate because of its life saving role, potentially dangerous /fatal complications, tedious process of arranging allogenic blood and unanticipated blood loss

during the surgical procedure which can lead to shocking results like hysterectomy and death of the neonate or mother. So timely transfusion, even given once, generates justification for the arrangement of the blood preoperatively.

Secondly, in our study 8.48% of the patients received blood transfusion, this represents a high proportion that justifies the arrangement of pre-operative blood for every C Section.

### CONFLICT OF INTEREST

The authors of this study reported no conflict of interest.

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