VOLUME - 9, ISSUE - 9, September - 2020 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Anaesthesiology

BLOOD TRANSFUSIONS IN PATIENTS UNDERGOING KNEE AND HIP SURGERY – A CLINICAL AUDIT

Dr. Mahima Singh* Senior Resident, Department of Anaesthesiology and Intensive Care, Vardhman Mahavir Medical College and Safdarjung Hospital, New Delhi. *Corresponding Author

Dr. Sunil Singh Consultant and Head of Department, Department of Anaesthesiology and Intensive Care, Columbia Asia Hospital, Palam Vihar, Gurugram.

ABSTRACT Clinical audit is a management tool for the appraisal and justification of appropriateness and efficiency of transfusion therapy, and an important part of the quality assurance programme which can provide necessary information for improving transfusion medicine practice. Adequate documentation of evidence to support a rationale for blood transfusion is considered an essential part of transfusion medicine. More complete and appropriate documentation allowsmore transfusion episodes to be assessed in an audit. Transfusion is considered appropriate when it is used to treat conditions leading to significant morbidity and mortality and which cannot be prevented or managed effectively by other means. The aim of this audit is to determine whether unnecessary transfusions are occurring despite recent recommendations for more restrictive blood transfusion policies

KEYWORDS :

INTRODUCTION

Blood loss in primary hip arthroplasty is 1500 ml or 4.07 ± 1.74 gms of hemoglobin. Eighty seven per cent of patients lose less than 5.8 grams. Blood loss in revision hip arthroplasty is 2000 ml. Loss of blood in primary knee arthroplasty ranges between 1000 ml to 1500 ml, or 3.85 ± 1.4 gms of hemoglobin. 87% of patients lose less than 5.25 grams of hemoglobin. The reported blood loss in single sitting bilateral total knee arthroplasty is 5.42 grams ± 1.8 gram with 87% of patients losing less than 7.22 grams.[1,2,3]after).

AIMS AND OBJECTIVES

To investigate if packed red blood cell transfusion is being done in accordance with established guidelines (NICE guidance).

RESEARCH EVIDENCE AND BEST PRACTICE

Safety issues with blood transfusions are related to transmission of blood borne infection and their immunomodulatory effects, including an increased susceptibility to wound infection. Evidence suggests [4] that a restrictive strategy of red cell transfusion is at least as effective as and possibly superior to a liberal transfusion strategy in critically ill patients. [5] With concerns of safety, cost and paucity of blood, every transfusion should be carefully considered. Several audits examined the appropriateness of their local blood prescribing practice. Large audits revealed that nearly 50% of orthopaedic patients had inappropriate red cell transfusion. This is despite the availability of guidance on blood conservation for elective orthopaedic surgery [6].

SUGGESTED INDICATORS

1. Peri-operative blood loss.
2. Pre-transfusion haemoglobin and haematocrit.
3. Post-transfusion haemoglobin and haematocrit.
4. Use of antifibrinolytic agents peri-operatively.

STANDARDS FOR BRST CLINICAL PRACTICE

For all patients who are not actively bleeding, without chronic transfusion requirements, National Institute of Clinical Excellence[7] (NICE) guidance advocates:

1. Restrictive thresholds: Hb ≤70g/L or in Acute Coronary Syndrome ≤80g/L.
2. Post transfusion targets: Hb 70-90g/L or in Acute Coronary Syndrome 80-100g/L.
3. Single Unit Transfusions: Hb check & patient review after every unit.

METHODOLOGY

Retrospective data of all patients undergoing total knee or hip joint replacement from 2006 to 2012 at Safdarjung Hospital, New Delhi was collected. From 623 patients, 587 could be recruited. Data was collected on the demographic profile, pre-operative haemoglobin, haematocrit, cardiovascular and other co-morbid status, peri-operative blood loss and haemodynamic parameters, and use of pharmacological agents to reduce intra-operative blood loss. The amount of units of packed red cell transfusions along with the haemoglobin level at which it was given and the haemoglobin / haematocrit monitoring done thereafter.

RESULTS

Of the cohort of 623 patients, 587 were included in the audit. The male: female ratio was 2:3 with a mean age of 68 yrs. The average pre-operative haemoglobin in males was 11.8 g/dl while in females it was 10.2 g/dl. Optimised co-morbidities of cardio-respiratory and metabolic dysfunction was identified in 73%. All patients received tranexamic acid 10 mins prior to skin incision. The average peri-operative blood loss for:

a. Unilateral knee replacement was 270 ml.
b. Unilateral hip replacement was 520 ml.
c. Bilateral knee replacement was 330 ml.
d. Bilateral hip replacement was 740 ml.

Closed drainage system was used in 37% of patients. There were 8 (1.36%) patients who were <30 yrs without any co-morbidities who underwent single sitting bilateral hip replacement on account of avascular necrosis of hip. 18% (n=104) received single unit transfusion while 1.6% (n=94) received more than single unit transfusion. 27% (n=54) empirical transfusion without haemoglobin or haematocrit recorded. 5% (n=10) received blood transfusion with a haemoglobin of >8.0 g/dl. A total of 32% (n=64) of blood transfusions were inappropriate.

CONCLUSIONS

1. No patient underwent the surgery with a haemoglobin <10.0 g/dl.
2. The peri-operative blood loss in the audit is much lower than that given in the literature.
3. 32% of the transfusions were inappropriate.
4. 27% of patients receiving blood transfusion were inappropriately monitored.

RECOMMENDATIONS

1. Check haemoglobin & haematocrit after transfusion of every unit of blood.
2. Education and point-of-care testing may facilitate compliance.

REFFERENCES

1. Keating EM, Meding JB, Faris PM, Ritter MA; Predictors of transfusion risk in elective knee surgery; Clin Orthop Relat Res. 1998 Dec; (357):50-9.
2. Carson J, Goodnough L, Keating E. Blood products: Maximal use, conservation pre-deposit blood, when to transfuse and Erythropoietin. Course 128; 66th Annual Meeting of the American Academy of Orthopaedic Surgeons; Anaheim, CA. 1999. Presented at Instructional Course Lectures.
3. Toy PT, Kaplan EB, McVay PA, Lee SJ, Strauss RG, Stehling LC; Blood loss and replacement in total hip arthroplasty: a multicenter study. The Preoperative Autologous Blood Donation Study Group; Transfusion. 1992 Jan; 32(1):63-7.
4. British Orthopaedic Association. Blood Conservation in Elective Orthopaedic Surgery. London: BOA; 2005.
5. Association of Anaesthetists of Great Britain and Ireland. Blood Transfusion and the Anaesthetist: Red Cell Transfusion 2. London: AAGBI; 2008.
6. Hebert PC, Wells G, Blajchman MA, et al. A multicenter, randomized, controlled clinical trial of transfusion requirements in critical care. N Engl J Med. 1999;340:409–417.
7. NICE Guidelines: Blood Transfusion (November 2015); Available from: