

## Assessment of Patients' Haematological Complications in A Hospital-Based Prospective Study

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Received: 20-03-2023 / Revised: 11-04-2023 / Accepted: 30-05-2023

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Conflict of interest: Nil

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### Abstract

**Objective:** In orthopaedic surgery, haematological post-operative problems are a worldwide issue that frequently occurs. Therefore, the purpose of the current study was to evaluate different post-operative haematological problems that could arise in people having orthopaedic surgery.

**Method:** 100 patients who underwent orthopaedic surgery at the PGIMER & Capital Hospital, Bhubaneswar for a year were the subject of this prospective study, which was done. All blood bank data, including the number and date of transfusions obtained, were reviewed for medical records. Each postoperative data point was recorded separately and examined in an Excel sheet. The 17.0 version of SPSS was used to analyse the data. The level of significance was evaluated using the chi-square test.

**Results:** The current study involved a total of 100 individuals. The subjects' average age was 57.3 years. 58 of the 100 participants were men, and 42 were women. 91 of the individuals had elective orthopaedic procedures, whereas the remaining 9 had emergency procedures. In our study population, knee and hip surgery were the next most frequently performed surgical procedures after spine surgery. Post-operative haematological problems were observed in 31 patients in total. 21 patients experienced transfusion as a result of these problems. There was significant bleeding in 4 cases.

**Conclusion:** Haematological problems do happen to a considerable percentage of patients having different kinds of orthopaedic procedures. Future research including a larger sample size is advised to examine the relationship between haematological problems and patient prognosis.

**Keywords:** Orthopaedic surgery, complications, haematology, and surgical site checklist (SSC)

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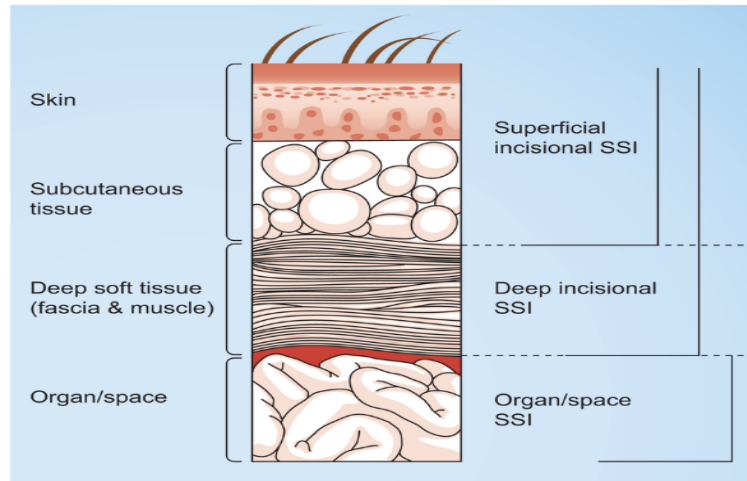
### Introduction

A surgical safety checklist should always be used in advance of any surgical procedures, according to the World Health Organisation (WHO). A framework to establish and sustain practises meant to increase patient safety is required because

there are reportedly 234 million surgical procedures performed annually worldwide [1]. At least 50% of all surgical adverse events, according to a retrospective assessment, are preventable [2]. A lack of collaborative abilities, leadership,

communication, decision-making, and situational awareness is the main factor behind the majority of these, not technological issues [3]. In order to guarantee the safety of surgical patients globally, the World Health Organisation (WHO) identified a number of recommended practices [4]. In orthopaedic surgery, haematological post-operative

problems are a worldwide issue that frequently occurs. After infection, the mortality rate increases by two to three times. Incisional and organ space infections are examples of surgical site infections in clean wounds (closed uninfected wounds). Following infection, the death rate increases by two to three times [Figure 1; 5].



**Figure 1: Surgical site infection**

Therefore, the goal of the current study was to evaluate different post-operative haematological problems that can develop in patients having orthopaedic surgery.

## Methods

**Study Design:** This prospective study was carried out within a year at PGIMER & Capital Hospital, Bhubaneswar.

**Methodology:** The hospital administrative database provided the data for the current investigation. All subjects' complete demographic and clinical information was gathered. All blood bank data was reviewed for medical records, and the number and date of transfusions were collected. Data from the lab were used to determine the taptonin level. All patients' follow-up records were completed and kept for a full year.

**Sample Size:** 100 patients that met the inclusion criteria were included in this study.

**Inclusion criteria:** Every patient who underwent orthopaedic surgery was of every age.

**Exclusion criteria:** Patients who refuse to provide their consent, expecting mothers, any underlying illness those receiving corticosteroid treatment

**Statistical analysis:** Each postoperative data point was recorded separately and examined in an Excel sheet. The 17.0 version of SPSS was used to analyse the data. The level of significance was evaluated using the chi-square test.

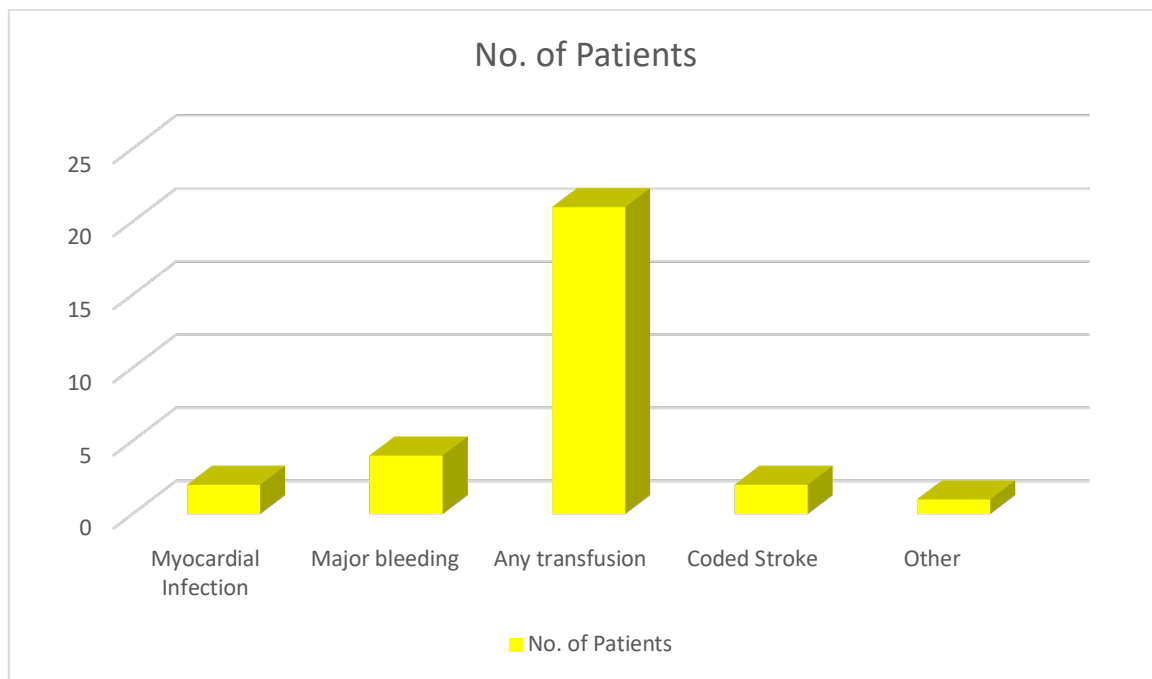
## Results

The subjects were 57.3 years old. Out of 100, 58 of them were men and 42 of them were women [Table 1]. 91 of the individuals had elective orthopaedic procedures, whereas the remaining 9 had emergency procedures.

**Table 1: Baseline demography of the study population**

Criteria	No. of Patients [n=100]	Percentage
Gender		
Male	58	61%
Female	42	39%
Age [years] [Mean±SD]	57.3±5.67	
Type of Orthopedic surgery		
Knee Surgery	24	27.4%
Hip Surgery	32	30.2%
Spine Surgery	44	42.4%
Type of Orthopedic surgery		
Emergency	93	91%
Elective	7	9%

In our study population, knee and hip surgery were the next most frequently performed surgical procedures after spine surgery. Post-operative haematological problems were observed in a total of 30 individuals [Figure 2].



**Figure 2: Post-operative haematological complications**

21 patients experienced transfusion as a result of these problems. 4 patients experienced significant bleeding.

**Discussion**

The results of our investigation revealed that the subjects' mean age was 57.4 years. 58 of the 100 participants were men, and 42 were women. Retrospective comparisons of adult patients receiving knee, hip, or spine surgery at a tertiary care

facility over a two-year period were conducted by Smilowitz NR et al [6]. 5690 patients in all had 2791 surgeries in the present era compared to 3075 joint and spine operations in the reference era. 59% of the population was female, with a mean age of 61±13. Incidences of myocardial damage, haemorrhage, and red blood cell transfusion were reduced in the modern era in terms of the general population. In-hospital aspirin use among 614

participants with a preoperative diagnosis of coronary artery disease (CAD) was numerically lower in the contemporary period compared to the reference period, and there were fewer participants who experienced myocardial injury, haemorrhage, and red blood cell transfusion. The frequency of perioperative bleeding and cardiovascular events decreased over time in a sizable tertiary care facility. Perioperative aspirin use rose and seemed safe in participants with CAD. 31 people had post-operative hematological problems, as seen by us. 4 of our individuals experienced significant bleeding.

In a different study by Oberweis BS et al. [7], the average age was 60.8 years, and 59% of the participants were female. Troponin levels following surgery were assessed in 1,055 individuals (34.6%). In 179 cases (5.9%), myocardial necrosis occurred, and in 20 (0.7%), MI was recorded. 111 fatalities (3.6%) happened throughout a follow-up period of 9,015 patient years. Long-term mortality was 5.8% in patients with a troponin in the normal range and 16.8% in those with myocardial necrosis.

9376 citations from various databases were evaluated by Acedillo RR et al [8] for cohort studies released between 1990 and 2011.

Studies having a sample size of at least 100 patients with chronic renal disease and patients undergoing any major surgery passed the inclusion criteria. A reference group of at least 100 patients without chronic renal disease has to be used to compare their results to. The two main outcomes were the requirement for a second operation due to bleeding and the necessity for perioperative blood transfusions. The criteria for review were met by 23 studies. Weighted incidence among individuals with normal renal function was 53%, and in those with chronic kidney disease, it was 73%; the

pooled odds ratio for this was 2.7 (95% CI: 2.4, 2.7).

The SSC is worried about what happens in the surgery room. It necessitates a formal break prior to surgery for introductions and briefings, followed by another break after surgery for team debriefings. These behaviours are linked to better safety precautions and interpersonal communication [9,10]. The guiding principle of the checklist is that a hierarchical structure that relies on individuals is less safe and effective than a true team approach with adequate communication between operating team members [11].

In this study, over 91% of patients had procedures performed on scheduled operating lists with theatre staff who were familiar with one another beforehand and used to working together, despite a high percentage of urgent situations (9%). This could be one factor in the failure of the checklist to significantly reduce early serious complications or mortality. Potential advantages of the checklist at our institution may have also been negated by policies already in place [12,14] for lowering the surgical risk to patients undergoing orthopaedic surgery.

### Conclusion

A sizable percentage of patients having various kinds of orthopaedic procedures do experience haematological problems. To determine the relationship between haematological problems and patient prognosis, future research with a larger sample population are advised.

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