

ASSESSING THE HEMATOLOGIC COMPLICATIONS IN SUBJECTS UNDERGOING VARIOUS ORTHOPEDIC SURGERIES: A PROSPECTIVE CLINICAL STUDY

Halappa Manjunatha,¹Muniramaiah Vinod Kumar,^{2}Bharati Nitin More³*

¹MBBS MS(Ortho), Associate Professor, Department Of Orthopedics, East Point College Of Medical Sciences And Research, Bangalore, Email: manjunathahalappa.2@gmail.com

^{2*} [*Corresponding author*] MS (Ortho), Associate Professor, Department Of Orthopedics, East Point College Of Medical Sciences And Research, Bangalore, Email id: orthovin@rediffmail.com

³MBBS, DNB (Pathology), Consultant Pathologist, Asian Diagnostics, Bangalore, Karnataka, Email id: bharatimore@rediffmail.com

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ABSTRACT

Background: Postoperative complications seen following orthopedic surgeries are commonly the hemotologic complications encountered globally.

Aims: The presentretrospective clinical study was conducted to assess the various postoperative hematologic complication seen in the subjects following orthopedic surgery.

Materials& Methods: In 78 subjects who underwent orthopedic surgery medical records were assessed including transfusion details. The collected data were subjected to statistical evaluation and the results were formulated.

Results: Coded strokes were seen in 3.84% (n=3) subjects, blood transfusion was done in 6.41% (n=5) study subjects following surgery, major bleeding following orthopedic surgeries were seen in 24.35% (n=19) subjects, and myocardial necrosis in 2.56% (n=2) study subjects. Other minor complications seen were seen in the 1.28% (n=1) subject. Total complications reported in study subjects were in 37.17% (n=29) study subjects

Conclusion: The present study concludes that the prevalence of hematologic complications in subjects undergoing orthopedic surgeries is high. However, more studies prospectively are needed to reach a definitive conclusion.

Keywords: Complications,Hematological parameters, Orthopedic surgery, Surgical site evaluation

INTRODUCTION

Routine and regular use of a checklist for surgical safety before every surgical procedure is vital and necessary as advised by WHO (World Health Organization). It is estimated by previous literature data that nearly 235 million surgeries are done every year in different parts of the globe.¹ Hence, it is necessary to implement a system that should also be maintained to increase the safety of the subject undergoing surgery. Various clinical data have suggested nearly half of the complications encountered post-surgery can be avoided using a surgical safety checklist.²

The majority of the encountered complications are not seen due to technical issues but due to a lack of situational awareness, decision-making, communication, leadership, and failed

teamwork skills. Owing to the consideration of these factors, WHO had identified various recommendations to ensure surgical safety in subjects undergoing surgery globally.³

Postoperative complications related to hematologic parameters seen in subjects following orthopedic surgery are commonly encountered globally. Following infection, post-surgical mortality rates are increased by 2-3 folds.⁴ Infection of surgical wounds at the surgical site in the wound that was closed under uninfected conditions is related to organ space infection and incisional infections.⁵ Hence, the present study was conducted to assess the various postoperative hematologic complication seen in the subjects following orthopedic surgery.

MATERIALS AND METHODS

The present retrospective clinical study was conducted to assess the various postoperative hematologic complications seen in the subjects following orthopedic surgery. The study was conducted at Department Of Orthopedics, East Point College of Medical Sciences and Research, Bangalore. The study population was comprised of the subjects who underwent orthopedic surgeries in the institute. The study included a total of 78 subjects from both genders.

The inclusion criteria for the study were subjects undergoing orthopedic surgery in the institute and the subjects who were willing to participate in the study. The exclusion criteria were subjects who did not give consent to participate in the study, subjects having systemic diseases, pregnant females, and subjects on steroid therapy. After explaining the detailed study design, informed consent was taken from all the subjects in the study.

After the final inclusion of the subjects in the study, detailed history was recorded for all the subjects along with general examination. For all the included subjects, medical records were retrospectively assessed by reviewing the records along with the data from the blood bank to evaluate the details about blood transfusion. Following surgery, follow-up records were assessed for 1 year.

The collected data were subjected to the statistical evaluation using SPSS software version 21 (Chicago, IL, USA) and one-way ANOVA and t-test for results formulation. The data were expressed in percentage and number, and mean and standard deviation. The level of significance was kept at $p < 0.05$.

RESULTS

The present retrospective clinical study was conducted to assess the various postoperative hematologic complication seen in the subjects following orthopedic surgery. In 78 subjects who underwent orthopedic surgery medical records were assessed including transfusion details. There were 47 males and 31 females in the present study. 71 surgeries were elective and 7 were emergency surgeries conducted in the Department of Orthopedics. The most commonly performed surgery was that of the spine followed by the hip and knee surgeries.

The demographic characteristics of the study subjects are listed in Table 1. The mean age of the study subjects was 57.6 ± 5.66 years and the age range of 14-72 years. There were 39.74% (n=31) females and 60.25% (n=47) males in the present study. Orthopedic surgery type done in the present study were hip surgery in 28.20% (n=22) subjects, knee surgery in 29.48% (n=23) subjects, and spine surgery in 42.30% (n=33) study subjects. Emergency orthopedic surgery was done in 8.97% (n=7) subjects and elective surgical procedures in 91.02% (n=71) subjects (Table 1).

On assessing the postoperative hematologic complications in the present study subjects following orthopedic surgeries, the results of the present study have shown that coded strokes were seen in 3.84% (n=3) subjects, blood transfusion was done in 6.41% (n=5) study subjects following surgery, major bleeding following orthopedic surgeries was seen in 24.35% (n=19) subjects and myocardial necrosis in 2.56% (n=2) study subjects. Other minor complications seen were seen in the 1.28% (n=1) subject. Total complications reported in study subjects were in 37.17% (n=29) of study subjects as depicted in Table 2.

DISCUSSION

The present retrospective clinical study was conducted to assess the various postoperative hematologic complication seen in the subjects following orthopedic surgery. In 78 subjects who underwent orthopedic surgery medical records were assessed including transfusion details. There were 47 males and 31 females in the present study. 71 surgeries were elective and 7 were emergency surgeries conducted in the Department of Orthopedics. The most commonly performed surgery was that of the spine followed by the hip and knee surgeries. These results were consistent with the studies of Kable AK et al⁶ in 2002 and Catchpole K et al⁷ in 2008 where authors have reported similar results as in the present study.

On assessing the demographics in the study subjects, it was seen that the mean age of the study subjects was 57.6±5.66 years and the age range of 14-72 years. There were 39.74% (n=31) females and 60.25% (n=47) males in the present study. Orthopedic surgery type done in the present study were hip surgery in 28.20% (n=22) subjects, knee surgery in 29.48% (n=23) subjects, and spine surgery in 42.30% (n=33) study subjects. Emergency orthopedic surgery was done in 8.97% (n=7) subjects and elective surgical procedures in 91.02% (n=71) subjects. These results were in agreement with the studies of Lingard L et al⁸ in 2008 and Mathur P et al⁹ in 2013 where authors assessed subjects with comparable disease characteristics.

Concerning the evaluation of postoperative hematologic complications in the present study subjects following orthopedic surgeries, the results of the present study have shown that coded strokes were seen in 3.84% (n=3) subjects, blood transfusion was done in 6.41% (n=5) study subjects following surgery, major bleeding following orthopedic surgeries was seen in 24.35% (n=19) subjects and myocardial necrosis in 2.56% (n=2) study subjects. Other minor complications seen were seen in the 1.28% (n=1) subject. Total complications reported in study subjects were in 37.17% (n=29) of study subjects. These results were comparable with the studies of Oberweis BS et al¹⁰ in 2015 and Smilowitz NR et al¹¹ in 2016 where comparable complications were reported by the authors in their studies.

CONCLUSION

Within its limitations, the present study concludes that there is a significant incidence of hematologic complications reported in the subjects following orthopedic surgeries. However, the present study had a few limitations including small sample size, cross-section nature, and geographical area biases. Hence, more longitudinal studies with larger sample size and longer monitoring period will help reach a definitive conclusion.

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TABLES

Characteristics	Subgroup	Percentage (%)	Number (n)
Mean age (years)		57.6±5.66	
Age range		14-72	
Gender	Females	39.74	31
	Males	60.25	47
Orthopaedic surgery type	Hip	28.20	22
	Knee	29.48	23
	Spine	42.30	33
Orthopaedic procedure type	Emergency	8.97	7
	Elective	91.02	71

Table 1: Demographic and disease characteristics of the study subjects

Complications	Percentage (%)	Number (n)
Coded strokes	3.84	3
Transfusion	6.41	5

Major bleeding	24.35	19
Myocardial Necrosis	2.56	2
Others	1.28	1
Total	37.17	29

Table 2: Postoperative complications seen in orthopedic subjects following surgery