

Original article:

Evaluation of Complications Occurring in Patients Undergoing Orthopedic Surgery: A Hospital Based Study

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Abstract

Background: Postoperative complications are defined as any event that represents a deviation in the expected postoperative course and are associated with increased morbidity and mortality rate, hospital stay, decrease in quality of life and increase health costs. Hence; we planned the present study to assess various complications occurring in patients undergoing orthopaedic surgeries.

Materials & methods: A total of 100 patients who underwent different surgical procedure in the department of orthopedics were included in the present study. Detailed data records of all the patients were obtained. Follow-up records of all patients up to a time period of 1 year were obtained. Occurrence of various peri-operative and postoperative complications were recorded.

Results: In the present study, a total of 100 patients were analyzed. Mean age of the patients of the present study was 55.2 years. Majority of the patients belonged to the age group of more than 60 years. 35 percent of the patients belonged to the age group of 40 to 60 years. 20 percent of the patients belonged to the age group of less than 40 years. Table 2, Graph 1 shows the frequency of occurrence of complications among patients in the present study. Delirium was seen in 20 percent of the patients. Decubitus ulcers and postoperative bleeding was found to be present in 15 percent and 12 percent of the patients. Venous thromboembolic disease was found to be present in 2 patients. Post-operative ischemia/ heart failure was found to be present in 1 patient.

Conclusion: Occurrence of complications in patients undergoing orthopedic surgery is quite common.

Key words: Complications, Hospital, Orthopedic surgery.

INTRODUCTION

Musculoskeletal conditions are the most prevalent chronic conditions in developed countries affecting 20% to 40% of the adult population. As the symptoms of the majority of these conditions last more than a year they offer challenges for the right level of provision of care at the right time.^{1- 3} Musculoskeletal conditions are recognized to be such a tremendous burden on individuals and societies that the World Health Organization has declared the years 2000 to 2010 to be the Bone and Joint Decade. Postoperative complications are defined as any event that represents a deviation in the expected postoperative course and are associated with increased morbidity and mortality rate, hospital stay, decrease in quality of life and increase health costs.^{4- 6} Hence; we planned the present study to assess various complications occurring in patients undergoing orthopaedic surgeries.

MATERIALS & METHODS

The present study was conducted in the department of orthopedics Department of Surgery, Government S.K. Hospital, Sikar, Rajasthan, India and it included assessment of complications in patients undergoing different orthopedic surgeries. A total of 100 patients who underwent different surgical procedure in the department of orthopedics were included in the present study. Detailed data records of all the patients were obtained. Follow-up records of all patients up to a time period of 1 year were obtained. Occurrence of various peri-operative and postoperative complications were recorded and compiled in Microsoft excel sheet and were analyzed by SPSS software.

RESULTS

In the present study, a total of 100 patients were analyzed. Mean age of the patients of the present study was 55.2 years. Majority of the patients belonged to the age group of more than 60 years. 35 percent of the patients belonged to the age group of 40 to 60 years. 20 percent of the patients belonged to the age group of less than 40 years. Table 2, Graph 1 shows the frequency of occurrence of complications among patients in the present study. Delirium was seen in 20 percent of the patients. Decubitus ulcers and postoperative bleeding was found to be present in 15 percent and 12 percent of the patients. Venous thromboembolic disease was found to be present in 2 patients. Post-operative ischemia/ heart failure was found to be present in 1 patient.

DISCUSSION

Mean age of the patients of the present study was 55.2 years. Majority of the patients belonged to the age group of more than 60 years. 35 percent of the patients belonged to the age group of 40 to 60 years. 20 percent of the patients belonged to the age group of less than 40 years. Willhuber GC et al determined the prevalence and severity of postoperative complications in the department of orthopedic unit in a tertiary hospital. Complications were classified based on their severity according to Dindo-Clavien system: Grade I complications do not require alterations in the postoperative course or additional treatment; Grade II complications require pharmacological treatment; Grade III require surgical, endoscopic, or radiological interventions without (IIIa) or with (IIIb) general anesthesia; Grade IV are life-threatening with single (IVa) or multi-organ (IVb) dysfunction(s), and require ICU management; and Grade V result in death of the patient. Complications were further classified in minor (Dindo I, II, IIIa) and major (Dindo IIIb, IVa, IVb and V), according to clinical severity. 1960 surgeries were performed. The overall 90-day complication rate was 12.7% (249/1960). Twenty-three complications (9.2 %) were type I, 159 (63.8%) type II, 9 (3.6%) type IIIa, 42 (16.8%) type IIIb, 7 (2.8%) type IVa and 9 (3.6%) were grade V according to Dindo-Clavien classification (DCC). The most frequent complication was anemia that required blood transfusion (27%) followed by wound infection (15.6%) and urinary tract infection (6%). Discussion: The overall complication rate after orthopedic surgery in our department was 12.7%.⁷ Hirose J et al investigated the incidence in patients with hemophilia of postoperative complications and risk factors for these complications. Overall, 12 (6.5%) patients developed a postoperative infection. There were 6 (3.4%) postoperative surgical site infections. The presence of an inhibitor was the only risk factor for surgical site infection. Risk factors for delayed wound healing were older age, higher preoperative serum albumin level and procedures other than joint replacement or arthroscopy. HIV infection status was not a risk factor for postoperative complications.⁸

In the present study, delirium was seen in 20 percent of the patients. Decubitus ulcers and postoperative bleeding was found to be present in 15 percent and 12 percent of the patients. Venous thromboembolic disease

was found to be present in 2 patients. Post-operative ischemia/ heart failure was found to be present in 1 patient. Scarano KA et al analyzed morbidity, mortality, and overall outcome of patients aged 90 years and older after orthopedic surgical fracture repair. The trauma registry of their level I academic medical center was queried to identify potential study participants over the past decade. Two hundred and thirty-three surgical procedures among 227 patients were included and retrospectively assessed. 4.3% of the cohort died in the hospital following surgery. Of the patients who survived, 89.7% were discharged to a professionally supervised setting. The nonagenarian population displayed a considerable follow-up rate, as 82.8% of individuals returned for their first postoperative office visit. Their investigation demonstrated that orthopedic surgery is an appropriate treatment in this population with an acceptable complication rate.⁹ Meeuwis MA et al provided a description of errors and complications in relation to fracture surgery, as well as the circumstances in which they occur, for example urgency, type of surgeon, and type of fracture. During the study period 4310 osteosynthesis procedures were performed. In 78 (1.8 %) procedures an error in osteosynthesis was registered. The number of procedures in which an error occurred was significantly lower when an orthopaedic trauma surgeon was part of the operating team. Of all 3758 patients who were admitted to the surgical ward for osteosynthesis, 745 (19.8 %) had one or more postoperative complications registered. There was no significant difference in the number of postoperative complications after osteosynthesis procedures in which an orthopaedic trauma surgeon was present or absent. Their study suggested that an osteosynthesis procedure performed by or actively assisted by an orthopaedic trauma surgeon decreases the probability of an error in osteosynthesis.¹⁰

CONCLUSION

Under the light of above mentioned results, the authors concluded that occurrence of complications in patients undergoing orthopedic surgery is quite common. Therefore, careful precision is required by the orthopedicians while performing different orthopedic surgeries.

References

1. Picavet HSJ, Hazes JMW. Prevalence of self reported musculoskeletal diseases is high. *Ann Rheum Dis.* 2003;62:644–650.
2. Cunningham LS, Kelsey JL. Epidemiology of musculoskeletal impairments and associated disability. *Am J Public Health.* 1984;74:574–579.
3. Perruccio AV, Power JD, Badley EM. Revisiting arthritis prevalence projections – it's more than just the aging of the population. *J Rheumatol.* 2006;33:1856–1862.
4. Badley EM, Webster GK, Rasooly I. The impact of musculoskeletal disorders in the population: are they just aches and pains? Findings from the 1990 Ontario Health Survey. *J Rheumatol.* 1995;22:733–739.
5. Dindo D, Demartines N, Clavien PA. Classification of surgical complications: a new proposal with evaluation in a cohort of 6336 patients and results of a survey. *Ann Surg.* 2004; 240: 205–213.
6. Permpongkosol S, Link RE, Su L-M, et al. Complications of 2775 urological laparoscopic procedures: 1993 to 2005. *J Urol.* 2007; 177, 580–585.
7. Willhuber GC, Stagnaro J, Petracchi M, et al. Short-term complication rate following orthopedic surgery in a tertiary care center in Argentina. *SICOT J.* 2018;4:26.

8. Hirose J1, Takedani H2, Nojima M3, Koibuchi T4. Risk factors for postoperative complications of orthopedic surgery in patients with hemophilia: Second report. J Orthop. 2018 May 7;15(2):558-562.
9. Scarano KA, Philp FH, Westrick ER, Altman GT, Altman DT. Evaluating Postoperative Complications and Outcomes of Orthopedic Fracture Repair in Nonagenarian Patients. Geriatr Orthop Surg Rehabil. 2018;9:2151459318758106.
10. Meeuwis MA, de Jongh MA, Roukema JA, van der Heijden FH, Verhofstad MH. Technical errors and complications in orthopaedic trauma surgery. Arch Orthop Trauma Surg. 2015;136(2):185-93.

Table 1: Age-wise and gender -wise distribution of patients

Parameter		Number of patients
Age group (years)	Less than 40 years	20
	40 to 60 years	35
	More than 60 years	45
Gender	Males	60
	Females	40

Table 2: Frequency of occurrence of complications

Complications	Number of patients
Postoperative ischemia/ heart failure	1
Venous Thromboembolic Disease (VTE)	2
Postoperative bleeding	12
Delirium	20
Urinary tract complications	8
Decubitus Ulcers	15
Others	10

Graph 1: Frequency of occurrence of complications

