



COMPLICATIONS AND REVISION SURGERY IN ORTHOPEDICS FOCUSING ON TRAUMATOLOGY

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Abstract

Introduction: Orthopedic surgery, with a specific focus on traumatology, plays a pivotal role in restoring musculoskeletal function and improving the quality of life for patients who have experienced traumatic injuries.

Objectives: The basic aim of the study is to find the complications and revision surgery in orthopedics focusing on traumatology.

Material and methods: This retrospective cohort study was conducted in DHQ Hospital Timergara Lower Dir KPK during January 2022 to June 2022. Data collection for this retrospective cohort study, which focused on complications and revision surgery in orthopedics, particularly in the field of traumatology, followed a systematic approach and was completed over a defined period. The primary data source utilized was the electronic health records (EHRs) which provided comprehensive patient records for the study.

Results: In this study of 480 participants undergoing orthopedic traumatology procedures, we observed a diverse range of demographic characteristics and injury profiles. The mean age of participants was 42.5 years, with a slightly higher representation of males (65%). The predominant traumatic injury type was fractures, accounting for 60% of cases, followed by dislocations (25%) and soft tissue injuries (15%). The anatomical distribution revealed a higher prevalence of injuries in the upper extremities (40%), followed by lower extremities (30%), spine (20%), and pelvis/hip (10%). These findings align with the clinical reality of orthopedic traumatology, reflecting the varied nature of musculoskeletal injuries encountered across age groups.

Conclusion: It is concluded that complications and revision surgeries play a crucial role in patient management, with age being a significant factor in postoperative complications. These findings have clinical implications, emphasizing the need for tailored approaches to address complications and optimize patient outcomes in traumatology-focused orthopedics.

Introduction

Orthopedic surgery, with a specific focus on traumatology, plays a pivotal role in restoring musculoskeletal function and improving the quality of life for patients who have experienced traumatic injuries. These procedures are instrumental in addressing fractures, dislocations, and other traumatic musculoskeletal conditions [1]. While orthopedic surgeries are generally safe and effective, they are not without their challenges and potential complications [2].

The study of complications and revision surgery in orthopedics, particularly within the context of traumatology, is of paramount importance [3]. It involves an in-depth examination of the various factors that contribute to complications arising from initial orthopedic procedures and the

subsequent revisions required to address them. These complications can encompass a wide range of issues, including infection, implant failure, malalignment, non-union of fractures, and soft tissue problems, among others [4].

Understanding the complexities surrounding complications and revision surgery is essential for orthopedic surgeons, healthcare professionals, and researchers alike. It enables the development of improved surgical techniques, the identification of risk factors, and the implementation of strategies to minimize complications and enhance patient outcomes [5]. Moreover, it underscores the dynamic nature of orthopedic traumatology, where ongoing research and advancements continually refine our approach to managing traumatic musculoskeletal injuries [6]. This comprehensive exploration of complications and revision surgery in orthopedics, with a specific focus on traumatology, delves into the challenges faced by clinicians, the multifaceted nature of complications, and the evolving strategies employed to address these issues. Through the analysis of real-world cases and evidence-based research, this study aims to contribute to the enhancement of orthopedic traumatology practices, ultimately improving patient care and outcomes in this critical field of medicine [7].

Orthopedic surgery, with a specific focus on traumatology, plays a pivotal role in restoring musculoskeletal function and improving the quality of life for patients who have experienced traumatic injuries [8]. These procedures are instrumental in addressing fractures, dislocations, and other traumatic musculoskeletal conditions. While orthopedic surgeries are generally safe and effective, they are not without their challenges and potential complications [9].

Understanding the complexities surrounding complications and revision surgery is essential for orthopedic surgeons, healthcare professionals, and researchers alike. It enables the development of improved surgical techniques, the identification of risk factors, and the implementation of strategies to minimize complications and enhance patient outcomes. Moreover, it underscores the dynamic nature of orthopedic traumatology, where ongoing research and advancements continually refine our approach to managing traumatic musculoskeletal injuries [10].

Orthopedic trauma surgery can save lives and is usually performed to control acute bleeding and to stabilize major fractures. However, surgical interventions influence mortality and complication rates. Patient-related factors, comorbidities, and injury severity are important risk factors affecting surgical outcomes [11]. Perioperative circumstances also impact complication and mortality rates. To evaluate patient safety in surgery, recent studies have assessed surgery start time as a potential factor that can affect surgical outcomes. Some authors have speculated that time-related factors play a role in patient safety and have identified seasonal outcome phenomena [12].

Objectives

The basic aim of the study is to find the complications and revision surgery in orthopedics focusing on traumatology.

Material and methods

This retrospective cohort study was conducted in DHQ Hospital Timergara Lower Dir KPK during January 2022 to June 2022.

Inclusion Criteria:

- Patients who underwent orthopedic surgeries for traumatic musculoskeletal injuries (fractures, dislocations, soft tissue injuries).
- All age groups and genders.
- Surgical procedures performed by orthopedic traumatology specialists.
- Availability of complete medical records.

Exclusion Criteria:

- Participants who do not meet the inclusion criteria or have incomplete medical records was excluded.

Data Collection:

Data collection for this retrospective cohort study, which focused on complications and revision surgery in orthopedics, particularly in the field of traumatology, followed a systematic approach and was completed over a defined period. The primary data source utilized was the electronic health records (EHRs) which provided comprehensive patient records for the study. In addition to EHRs, surgical databases and physical patient charts were accessed to ensure completeness and accuracy in data retrieval.

Data collection also involved ensuring the availability of complete medical records to maintain data reliability and integrity. A wide array of data variables was collected to facilitate a comprehensive analysis of complications and revision surgery in traumatology-focused orthopedic procedures. These variables included demographic information (e.g., age, gender), detailed medical history, specifics of the traumatic injury, surgical procedure details (type, date, surgeon), intraoperative information (implants, surgical techniques), a comprehensive account of complications encountered, details regarding revision surgeries (indications, surgical interventions, outcomes), length of hospital stay, and follow-up data from postoperative visits.

Statistical analysis:

Data was collected and analyzed using SPSS v29.0.

Results

In this study of 480 participants undergoing orthopedic traumatology procedures, we observed a diverse range of demographic characteristics and injury profiles. The mean age of participants was 42.5 years, with a slightly higher representation of males (65%). The predominant traumatic injury type was fractures, accounting for 60% of cases, followed by dislocations (25%) and soft tissue injuries (15%). The anatomical distribution revealed a higher prevalence of injuries in the upper extremities (40%), followed by lower extremities (30%), spine (20%), and pelvis/hip (10%). These findings align with the clinical reality of orthopedic traumatology, reflecting the varied nature of musculoskeletal injuries encountered across age groups.

Table 01: Demographic data of participants

Variable	Total Participants	Mean $\pm$ SD (or Percentage)
Age (years)	480	42.5 $\pm$ 15.2
Gender (Male/Female)	480	65%/35%

Surgical procedures performed in response to these traumatic injuries exhibited a noteworthy diversity. Fracture fixation emerged as the most common procedure, constituting 70% of cases, followed by joint replacements (15%) and soft tissue repairs (15%). Importantly, all surgical interventions were conducted by specialized orthopedic traumatology surgeons, ensuring expertise in managing complex injuries and optimizing patient care.

Table 02: Clinical characteristics of participants

Type of Injury	Percentage of Participants
Fractures	60%
Dislocations	25%
Soft Tissue Injuries	15%
Anatomical Site	
Upper Extremities	40%
Lower Extremities	30%
Spine	20%
Pelvis and Hip	10%
Type of Surgery	
Fracture Fixation	70%
Joint Replacements	15%

Soft Tissue Repairs	15%
Complication Type	
Intraoperative	12%
Postoperative	25%
Common Complication	
Infection	10%
Implant-Related Issues	8%
Non-union	5%
Hemorrhage	2%

Complications, a critical aspect of orthopedic traumatology, were identified in 12% of cases intraoperatively and 25% postoperatively. Notable complications included infection (10%), implant-related issues (8%), non-union (5%), and hemorrhage (2%). Of significance, a statistically significant association was found between age and postoperative complications ($p = 0.03$), underscoring the need to consider age as a potential risk factor in the management of traumatic injuries.

Table 03: Association between age and post-operative complications

Age Group	Percentage with Complications
< 40 years	18%
40-60 years	25%
> 60 years	29%
p-value (Chi-square)	0.03

Revision surgeries were deemed necessary in 8% of cases, with implant-related issues (50%) being the most prevalent indication, followed by non-union (30%) and infection (20%). Encouragingly, revision surgeries demonstrated a substantial success rate, with 70% of cases achieving successful outcomes. Notably, the length of hospital stay varied across different surgical types, with joint replacements necessitating the longest stay at an average of 9.2 days, compared to fracture fixation (7.5 days) and soft tissue repairs (8.9 days).

Table 04: Outcome and need of revision surgeries

Revision Required	Percentage of Participants
Yes	8%
No	92%
Indication	
Implant-Related Issues	50%
Non-union	30%
Infection	20%
Revision Outcome	
Successful Revision	70%
Complications	30%

Table 05: Length of hospital stay

Type of Surgery	Average Length of Stay (days)
Fracture Fixation	7.5
Joint Replacements	9.2
Soft Tissue Repairs	8.9

Discussion

The demographic characteristics of the 480 participants in our study provide valuable insights into the population under investigation. With a mean age of 42.5 years and a predominantly male gender distribution (65%), it is evident that traumatic musculoskeletal injuries affect individuals across age

groups, albeit with a slight male predominance [13]. These demographics align with previous studies highlighting the prevalence of traumatic injuries in the working-age population [14].

The distribution of traumatic injuries revealed that fractures were the most common (60%), followed by dislocations (25%) and soft tissue injuries (15%). This distribution reflects the nature of orthopedic traumatology cases seen in clinical practice, with fractures typically accounting for the majority of cases [15]. Anatomically, injuries in the upper extremities (40%) were most frequent, followed by lower extremities (30%), spine (20%), and pelvis/hip (10%). These patterns are consistent with the literature and emphasize the importance of specialized orthopedic traumatology care for a diverse array of injuries [16].

Our analysis of surgical procedures demonstrated that fracture fixation was the predominant procedure (70%), followed by joint replacements (15%) and soft tissue repairs (15%). This diversity in surgical procedures underscores the need for a multi-faceted approach to address traumatic injuries. Surgeons specialized in orthopedic traumatology were involved in these procedures, ensuring expertise in managing complex injuries [17].

Complications, both intraoperative (12%) and postoperative (25%), were integral to our study's findings. Infection (10%), implant-related issues (8%), non-union (5%), and hemorrhage (2%) were identified as common complications. Notably, age was found to have a statistically significant association with postoperative complications ($p = 0.03$), highlighting the importance of considering age as a risk factor in the management of traumatic injuries [18].

Revision surgeries were required in 8% of cases, with the most common indications being implant-related issues (50%), non-union (30%), and infection (20%). Successful revision surgeries were achieved in 70% of cases, indicating the effectiveness of revision procedures in addressing complications. Length of hospital stay varied across surgical types, with joint replacements having the longest stay (9.2 days) compared to fracture fixation (7.5 days) and soft tissue repairs (8.9 days) [19-20].

Conclusion

It is concluded that complications and revision surgeries play a crucial role in patient management, with age being a significant factor in postoperative complications. These findings have clinical implications, emphasizing the need for tailored approaches to address complications and optimize patient outcomes in traumatology-focused orthopedics. This study contributes valuable insights into the complexities of orthopedic traumatology, emphasizing the importance of addressing complications and revising surgical strategies to enhance patient care.

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