



Postoperative pain of patients treated with lower limb bone fusion at 7A Military Hospital in 2019

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General Note

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ABSTRACT

Objectives: This study aimed to assess the postoperative pain within 72 hours after surgery of patients treated with lower limb bone fusion at the Department of Orthopedics of 7A Military Hospital in 2019. **Materials and methods:** This study employed a descriptive, cross-sectional approach, performed from January 2019 to June 2019 on 173 patients treated with lower limb bone fusion (femur, femoral neck, tibia plateau, lower leg bones) at the Department of Orthopedics of 7A Military Hospital. The participants were interviewed with four predesigned questionnaire sets including 19 questions. **Results:** Male patients made up of 57.23% and female patients of 42.77%. The average age, lowest age, highest age were 52.89 (15.97), 18, and 86 years, respectively. Most of the patients were agricultural laborers (43.93%) and workers (35.26%). Junior secondary education was achieved in 46.24% of the patients and 76.30% were married. The average total pain scores within 72 postoperative hours were 27.23, 23.28, and 18.81, respectively. **Conclusion:** The highest pain scores were achieved within the first postoperative 24 hours, and were reduced gradually in the second and the third day.

Keywords: Lower limb fractures, postoperative pain, pain scores, patients.

1. INTRODUCTION

The pain was caused by existing and potential tissue injuries. Its intensity depends on the level of the damages. Pain causes stress, anxiety, and fear for the patients and their relatives, negatively affects daily life, mental health, and social relationship. It also leads to many disorders in the cardiovascular, respiratory, gastrointestinal, endocrine, and immune systems. Amongst the various circumstances of pain, postoperative pain is a tough issue in both the developing and developed countries. According to the US Institute of Medicine, 80% of patients reported post-surgery pain and amongst them, 88% had moderate to extreme pain (Gan, 2017). Mayda *et al.* (2014) reported 86% of cases with post-surgery pain, amongst which 75% had medium to a high level and 74% still had pain after discharged (Mayda *et al.*, 2014). Eshete *et al.* (2019) in Ethiopia recorded 88.2% cases of moderate to severe pain and took notice of 58.4% cases of improper pain relief. WHO and IASP consider pain relief as a human right and pain was considered as the fifth vital sign after a vascular beat, blood pressure, breath rhythm, and body heat (Thomas and Lavanya, 2013).

The Vietnam Ministry of Health considered pain prevention and relief as one of the priorities besides pre-anesthesia, anesthesia, resuscitation (Vietnam Ministry of Health. Circular No. 13/2012/TT BYT on the Direction of anesthesia and resuscitation. Hanoi: 20 Aug 2012. (In Vietnamese)). Due to the high growth of transportation in Vietnam, the number of traffic accidents also increases and, together with work and domestic accidents, causes an overload of the orthopedic units which impairs the postoperative pain management and assessment activities.

In Vietnam, there are studies of clinical traits and treatment of lower limb fractures. However, there has been no study in our Orthopedics Department of the postoperative pain situation in patients treated with lower limb bone fusion. Therefore to have a better evaluation and care of the patients' postoperative pain, a study was carried out to evaluate the pain within 72 hours after surgery of the patients treated with lower limb bone fusion in the Department of Orthopedics of the 7A Military Hospital.

2. MATERIALS AND METHODS

Experimental participants

The study was performed on patients treated with lower limb bone fusion (including fusion of femoral neck, femur, tibial plateau, and lower leg bones). The patients must age at least 18 years and could communicate in Vietnamese. Patients with mental disorders, multiple injuries, patients in a deep coma, unconsciousness, delirium were excluded from the study.

Date and location

The study was carried out from Jan 2019 to Jun 2019 at the Department of Orthopedics of 7A Military Hospital.

Study design

The study employed a descriptive, cross-sectional approach.

Sampling method

The study used a convenience sampling approach. Selected patients available in each day were interviewed for data collection at the Department. From Jan 2019 to Jun 2019 the study managed to survey 173 patients.

Data collection

The study used a predesigned questionnaire consisted of 19 questions, including 7 for patient general information (name, address, age, gender, occupation, education, marital status), 8 for clinical information (diseases, date and time of hospitalized, date and time of operation, pre-operative condition, post-operative immediate result, wound healing, activity, medication used) and 4 for postoperative pain assessment. The questions for general and clinical data were designed by the research team. The questions for pain level were based on the first part of the score scale proposed by Cleeland (2009) to evaluate the instant, highest, lowest and average pain level in a day of the patients. The questions were "Please rate your pain by circling one number that best describes your pain at its worst/least/average in the last 24h" and "Please rate your pain by circling one number that tells how much pain you have right now"). The lowest score was 1 and the highest was 10. The average pain score was the averaged sum of the four pain values mentioned above.

During the interview, the participated patient was informed of the study and was asked to fill the presented questionnaire. Any required data already available in the clinical records would be collected from the records instead of the interview. The interview was done right before pain relief treatment in the day and was performed thrice in total, once within the first 24 postoperative hours, once in the second postoperative day and once on the third day. The postoperative period was counted from the instance when the anesthetic effect faded away and the patient was transferred back to the Department. In the case of transferring between 6PM to 6AM on the following day, the research members available at the night of transferring would conduct the first instance of the interview. The research team also had the duty to instruct the respondents to answer correctly and answer any questions from the respondents.

Data analysis

The data was encoded, processed and analyzed using Stata 12.0.

Ethical declaration

Medicine Scientific Research Ethics Committee of the 7A Military Hospital approved this study (Number: 03/QĐ-HDYD-BV7A, date: 12.01.2019).

3. RESULTS

General information

Table 1 General information of the patients

Information		Number of patients	Percentage (%)
Gender	Male	99	57.23
	Female	74	42.77
Age	18-20 years	6	3.47
	21-40 years	24	13.78
	41-60 years	80	46.24
	>60 years	63	36.42
Occupation	Agriculture laborers	76	43.93
	Workers	61	35.26
	Officials	22	12.72
	Others	14	8.09
Marital status	Married	132	76.30
	Single; Widowed; Separated/Divorced	41	23.70
Education	Primary schools	30	17.34
	Secondary schools	80	46.24
	High schools	34	19.65
	Vocational education and above	29	16.76

Amongst the participants, male patients were more numerous than females (99 patients, 57.23%, and 74 patients, 42.77%, respectively). The average age, lowest age, and highest age were 52.89, 18, and 86 years, respectively. The age group from 41 to 60 was the largest (80 patients, 46.24%), followed by over 60 (63 patients, 36.42%), 21 to 40 (24 patients, 13.78%) and 18 to 20 (6 patients, 3.47%). Most patients were agriculture laborers (76 cases, 43.93%), followed by workers (61 cases, 35.26%), officials (22 cases, 12.72%) and other careers (14 cases, 8.09%). Most of the cases (132 patients, 76.30%) were married, the remaining are single, divorced, separated, or widowed. Junior secondary education was achieved in 80 patients (46.24%), upper secondary in 34 cases (19.65%), primary in 30 cases (17.34%), and vocational in 29 cases (16.76%). There was no specific correlation noted among personal information to the pain level of patients (table 1).

Pain level within the first 72 postoperative hours

The average instant pain score achieved its max value within the first 24 postoperative hours (7.23 ± 0.61), and decreased gradually in the second (6.35 ± 0.76) and third postoperative day (5.08 ± 0.62). The average highest pain score also achieved its max value within the first 24 postoperative hours (8.43 ± 0.76), decreased in the second (7.48 ± 0.68) and third postoperative day (6.22 ± 0.62). The average lowest pain score (4.92 ± 1.03 , 4.11 ± 0.91 , and 3.09 ± 0.81 , respectively) and average pain score (6.39 ± 0.75 , 5.42 ± 0.71 , and 4.28 ± 0.73 , respectively) also followed the same pattern. The total average pain score hence was gradually decreased in the same way (27.23 ± 2.82 , 23.28 ± 2.63 , and 18.81 ± 2.45) (figure 1).

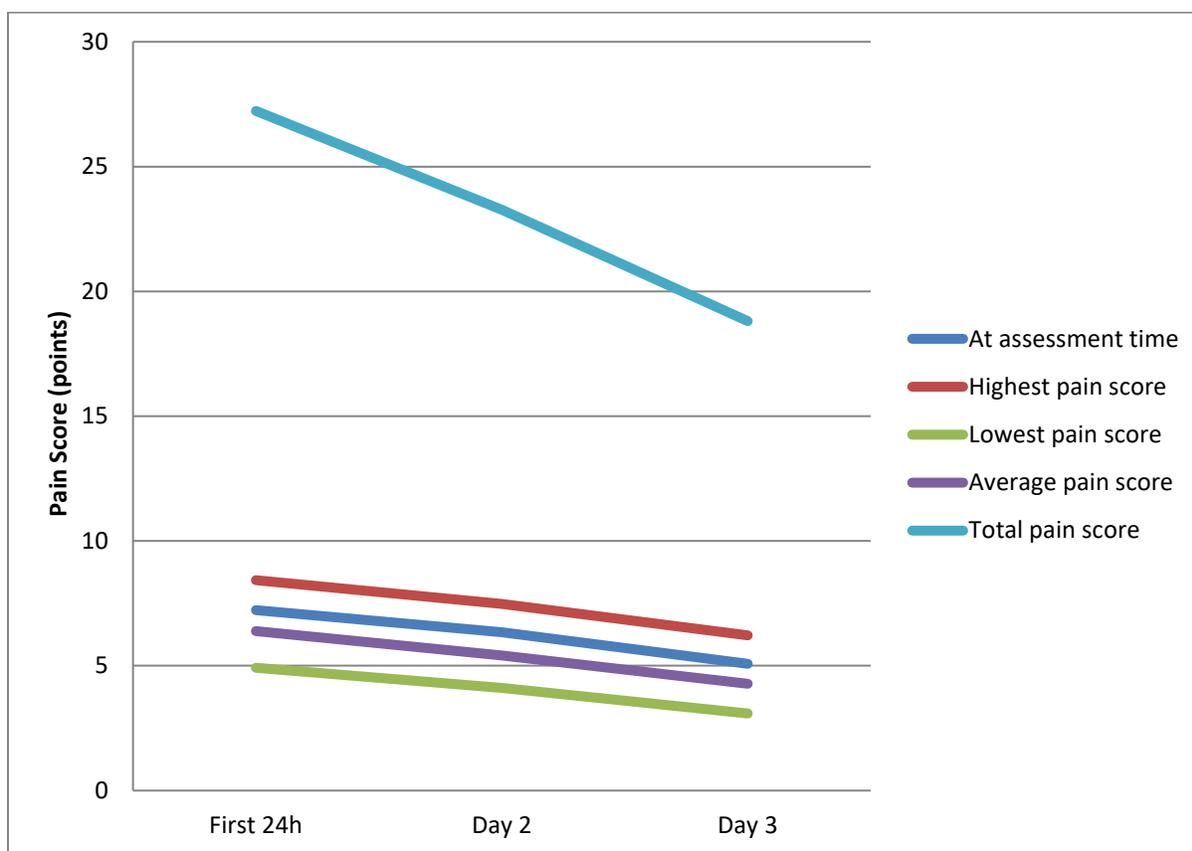


Figure 1 Pain level within the first 72 postoperative hours

4. DISCUSSION

General information

Male ratio (57.23%) was not higher than females (42.77%) although the difference was not significant. This result was similar to the work of LeMone and Burke (2008) (55.5% males and 44.5% females), Phan *et al.* (2016) (57.8% males and 42.2% females). Povoroznyuk *et al.* (2018) also reported a moderately higher lower limb fractures rate in men (446.2/10000 people) than women (347.45/10000 people). In some other studies such as Hoang and Nguyen (2016), the majority of male patients were much more prominent (81.3%), but the researched sample only included 43 patients; moreover, only the femoral fractures were investigated. Studies such as Pham and Tran (2014), Balabola *et al.* (2018) and Chigblo *et al.* (2017) also reported a dominant high prevalence of male patients, especially amongst the ages between 15 and 75.

Most patients belonged to age groups of 41 to 60 years (46.24%) and over 60 years (36.42%), few aged 18 to 20 (3.47%), and the average age was 52.89 (15.97). Mayda *et al.* (2014) reported the average age of orthopedics patients was 33.6 years. Chigblo *et al.* (2017) reported an average of 33.7 years, the age group of 25 to 34 years had the highest frequency (30.3%), and the majority (84.8%) was under 50 years of age. Balabola *et al.* (2018) took notice of the high frequency in younger age groups, which constitutes a large part of the labor forces.

The majority of the participants were agricultural laborers (43.93%) or workers (35.26%). Few were officials (12.72%), or students and freelancers (8.09%). Phan *et al.* (2016) also reported a low ratio of students (5.3%) however the unemployed patients (26.7%) and workers (65.6%) had higher rates. The dominant of males, workers and agricultural laborers and the age group from 21 to 60 years amongst the patients probably was because people male laborers usually participate in more rigorous and risky works and activities than female (Balabola *et al.*, 2018) and the ages from 21 to 60 were the labor ages, hence the risks of work accidents and traffic accidents were higher.

Pain level within the first 72 postoperative hours

The total postoperative average pain scores in our study in the first 24 hours, the second and the third day after surgery, were 27.23, 23.28, and 18.81, respectively, which means the pain level reached its max value within the first 24 hours and then reduced on the second and third day. The total average pain score within the first 24 hours was 27.23, which was a high pain level and required timely relief to prevent the negative effects such as slow healing, an increase of infection risks, and other conditions caused by sympathetic stimulation, for example, local cardiac muscle anemia, sleep disturbance, anxiety, depression, and stress disorder, which directly impairs functional rehabilitation. Pain management during this period should include a strict discipline in medical protocol and administration (oral or injection) of pain killers, coupling with appropriate nutrition and a comfortable recuperating environment, including proper resting posture and encouragement from the nurses. The total average pain score on the second day was declined (23.24). Pain management and complication prevention might include analgesic and mental therapy such as comfort from the medical staff or therapeutic music. The pain score further went down significantly on the third day (18.79) thanked physical therapy, rehabilitation exercises, and a comfortable recuperating environment.

The acute level of pain in surgeon patients (and patients treated with lower limb bone fusion in specific) within the first 24 postoperative hours was probably because of tissue injuries and bone anatomical damages because of the accident trauma and the surgical dissections, lead to the stimulation of the pain nerves and the transmission of pain signals to the brain, caused the highest pain level for the patients. The pain would gradually go down on the following days due to medical treatment (Pham, 2006). Eshete *et al.* (2019) reported the rate of moderate to severe pain dropped from 88% at 6 postoperative hours to 63% at 24 postoperative hours and 40% at 48 hours postoperatively.

The surveyed pain level showed that pain management should receive high attention during the postoperative period. The nurses should make frequent pain assessments on the patients to have a corresponding planned, timely and appropriate intervention and patient care. Analgesic administration (oral or injection) should be employed coupling with mental therapy such as encouragement, comfort, therapeutic music and rehabilitation exercises to relieve pain and prevent pain-related complications.

5. CONCLUSION

The pain level within the first postoperative 72 hours expressed by the total average pain score of the patients treated with lower limb bone fusion (fusion of femur, femoral neck, tibial plateau, and lower leg bones) had a gradual decline over time with the highest pain level achieved within the first postoperative 24 hours, a lower pain score on the second day and a further reduced intensity on the third day.

List of abbreviation

WHO: The World Health Organization

IASP: The *International Association for the Study of Pain*

Declaration

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article. This study is original and is not published in other scientific journals.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

Contribution

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript. The patients and relatives were well-informed about their conditions and equal treatment and were asked to take part in the study. The participation was strictly voluntary, verified by signed documents.

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