

THE ABILITY OF BANANA SHELTS TO IMMOBILIZE THE FEMUR BONE

Sylvana M^{1*}, L Oski², W Abdurrahman³

^{1,2,3}Nursing Science Program, Faculty Of Medicine, Lambung Mangkurat University, Jln A. Yani Km 36,00
Banjarbaru, Kalimantan Selatan, Indonesia 70714

*Mutipaamuy16@gmail.com

Abstract

Fracture of the femur is an emergency condition that has a high risk of complications and even death. Factors causing femoral fractures vary from traumatic and non-traumatic events. This incident can happen anywhere and anytime, so there needs to be an alternative that can be used as an emergency splint in pre-hospital action while waiting for medical assistance. The objective to measure the ability of the banana midrib to immobilize the femur.

Methods: This study used a pre-experimental method with a Static Group Comparison Design. This study has two groups used in this study, one group that will receive treatment (x) and one group as a comparison (-) and then the results are observed. The factory splint did not change the angle i.e. 180-180 for 1 hour. The following is a graph of the change in the degree angle of the factory splint attached to the Femur fracture mannequin media while the banana midrib experienced a decrease in the degree angle from 180 in the 0th minute to 1730 at the 40th minute after the 50th minute there was a change in the angle of 1720 after the 60th minute the angle changed of 1700. It concluded that the factory splint did not experience a change in the angle of degrees, namely from the initial angle of 1800 after 1 hour the angle of degree remained 1800. While the banana midrib experienced a change in the angle of degrees from the initial angle of 1800 after 1 hour it decreased to 1700. Where there was a difference in the decrease of 100 by the midrib banana.

Keywords: Femur Fracture, Immobilization, Banana Midrib

1. Introduction

A fracture is a change in bone structure caused by trauma (Koval, 2006). According to the Ministry of Health of the Republic of Indonesia (Depkes RI) in 2018 found that there were 5.8% of injured victims or 8,000,000 people had fractures with the most types of fractures, namely fractures in the upper extremities by 36.9% and 65% fractures of the lower extremities.

Splinting plays an important role in the initial management of traumatic injuries, such as limb fractures, sprains, and joint dislocations. Installation of a perfect splint will minimize the movement of the injured extremity, reduce comfort and speed up the healing process (Subandono, 2019).

The incidence of fractures if not treated immediately will have an impact on chronic severity and even death, complications of hypovolemic shock as a result of massive bleeding about 20% of the total blood volume. Delayed rehydration of blood fluids will result in hypovolemic shock so that it can damage the organ system and even death (Dewi, 2010).

2. Method

The method used in this study is an experimental method with a quantitative approach. The researcher used a pre-experimental method with the type of design, namely static group comparison design, where the design in this study will have one group that will be used in conducting the research, which will be divided into two groups. One group will receive treatment (x) using banana midrib as an

immobilization medium and the comparison group (Y) will use a factory/wood splint to immobilize which will be attached to a modified mannequin.

3. Results and Discussion

Results

Based on the results of the study, comparing the degree angle of the factory splint with the banana midrib attached to the medical mannequin fracture of the femur for 1 hour, namely the graph of the change in the degree angle on the factory splint and banana midrib can be seen below:

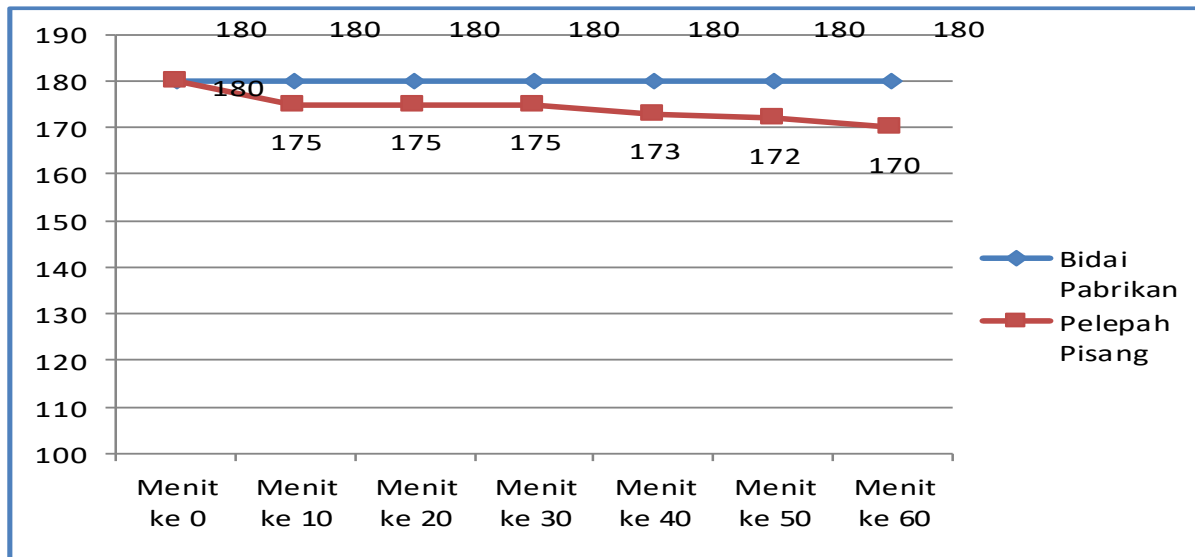


Figure 1. Comparison of degree changes in the factory splint and banana midrib per 10 minutes for 1 hour

As seen in the graph above, it shows that the change in degree angle only occurs on the banana midrib but not on the factory splint. Next, perform statistical tests through a computer program, namely SPSS. Which aims to determine the data on the manufacturer's splints and banana midribs that are normally distributed, a normality test must be carried out. The data can be said to be normal if the significant value is $> (0.05)$. Based on the results of the normality test, it was found that the value of $\text{sig } 0.002 < 0.05$, then the data was not normally distributed so that the Mann-Whitney test was carried out.

The results of statistical tests using the Mann-Whitney test showed a p-value of 0.003. With a value ($\text{p-value } 0.000 < 0.05$) which means that there is a significant difference in the angle change in the media of the modified Femur fracture mannequin within 1 hour, which is signed between the use of factory splints and the use of banana midrib.

Discussion

From the results of the study, it can be concluded that there is a significant difference between the manufacturer's splint and the banana midrib, which means that there is a difference in the angle change in the modified media of the femur fracture mannequin within 1 hour between the use of the factory splint and the use of banana midrib. The factory splint did not experience a change in the angle of degrees, namely 180-180, while on the banana midrib there was a change in the angle of

degrees, namely 1800-1700, which was 100. Where there was a difference of 100 and the change in the angle was the banana midrib, while the one that did not change was the factory splint. It can be concluded that the factory splint is more durable than the banana midrib splint.

There are several types of splints such as hard splints which are generally made of wood, aluminium, cardboard, plastic or other materials that are strong and light. These splints are perfect in an emergency. materials that meet the requirements in the field. For example, wood splints, air splints and vacuum splints. Furthermore, traction splints, which are splints of shape and vary depending on the manufacture, are only used by specially trained experts.

4. Conclusion

Comparison of changes in the angle of degrees on the factory splint with banana stems that have been given a load of 1 kg and observed every 10 minutes for 1 hour, the results show that the factory splint does not experience a change in the angle of degrees, namely from the initial angle of 1800 after 1 hour the angle of degree remains 1800. Meanwhile, the banana midrib experienced a change in the angle of degrees from the initial angle of 1800 after 1 hour decreased to 1700. Where there was a difference in the decrease of 100 by the banana midrib.

Limitations

This study consisted of 6 people who used 1 mannequin frame, due to the limitations of the frame, it was not possible to use a mannequin simultaneously between the manufacturer's splint and the banana midrib, but alternately for 1 hour observing the new manufacturer's splint and then observing the banana midrib. This research was conducted in the tutorial room on the PSIK FK ULM campus, wherein the tutorial room the table used was long so we arranged a frame on the side of the table so that it could be tied with a rope so that the position of the mannequin frame remained hanging. Another limitation is the limitation regarding the weight of the ballast so that the load is replaced by using stones that have been weighed beforehand and the lack of adequate tools and the willingness to sign to compare the factory splints and banana stems.

Suggestion

Future researchers are expected to be able to overcome all the shortcomings contained in this study, namely regarding the use of banana midrib as a splinting medium, it is hoped that there will be no changes in the angle of degrees.

Acknowledgement

The author would like to thank the Chancellor of Lambung Mangkurat University, Dean of the Faculty of Medicine, Head of Nursing Science Study Program, supervisor 1 and supervisor 2, examiner 1 and examiner 2, to parents and family who have provided enthusiasm and motivation so that this research can be completed properly.

References

- Apley, D. W., & Lee, H. Y. 2010. Simultaneous identification of remodelled and unmodeled variation patterns. *Journal of quality technology*, 42(1), 36-51.
- Asriwati 2017 *Health Physics in Nursing*, first edition, CV. Main Budi. www.depublish.co.id
- Ayuningtyas, V. D., Triredjeki, H., & Talib, S. T. R. 2018. Psychoeducation on Anxiety Levels in Adolescent Preoperative Fracture Patients. *Journal of Health Research*, 7(2), 110-116.
- Agency for Health Research and Development. 4. Basic health research (Riskesmas) 2010. Jakarta: Ministry of Health RI; 2018
- Blom, E., Warwick, D., Whitehouse, M.R. 2017. *Apley & Solomon's System of Orthopedics and Trauma*. 10th Edition. CRC Press. Boca Raton.
- Breuel, T. M., Ul-Hasan, A., Al-Azawi, M. A., & Shafait, F. (2013, August). High-performance OCR for Printed English and Fraktur using LSTM networks. In 2013 12th International Conference on Document Analysis and Recognition (pp. 683-687). IEEE.
- Bullock, A. N., Henckel, J., DeDecker, B. S., Johnson, C. M., Nikolova, P. V., Proctor, M. R., ... & Fersht, A. R. (1997). Thermodynamic stability of wild-type and mutant p53 core domain. *Proceedings of the National Academy of Sciences*, 94(26), 14338-14342.
- Creswell, J. W. 2009. Mapping the field of mixed methods research.
- Dewi E., Rahayu S., Hypovolemic Shock Emergency. *Journal of UMS.*, 2010.
- Dewie, N. S. 2017. Analysis of Factors Affecting the Fulfillment of Self Care Needs in Patients With Physical Immobilization at Graha Nur Afiah Rsu Haji Surabaya (doctoral dissertation, Universitas Airlangga).
- Fauziati., 2018, Utilization and prospect of kapok banana stem as raw material for furniture., *Industrial Technology Research Journal*.
- Faiz, O., & Moffat, D. B. 2002. *Anatomy at a Glance (At a Glance Series)*. Unspecified.
- Jevsevar, DS, Brown, GA, Jones, DL, Matzkin, EG, Manner, PA, Mooar, P., ... & Goldberg, MJ 2013. The American Academy of Orthopedic Surgeons evidence-based guideline on the treatment of osteoarthritis of the knee. *JBJS*, 95(20), 1885-1886.
- Kim, J., Lee, S. M., Srinivasan, S., & Chamberlin, C. E. 1995. Modelling of proton exchange membrane fuel cell performance with an empirical equation. *Journal of the electrochemical society*, 142(8), 2670
- Koval KJ, Zuckerman JD. *Handbook of fractures*. 3rd Edition. USA: Lippincott Williams and Wilkins; 2006.
- Lokantara, P., & Suardana, N. P. G. 2007. Analysis of the direction and treatment of filter fibre and the ratio of epoxy hardener to the physical and mechanical properties of filtered/epoxy composites. *Journal of Energy and Manufacturing*.
- McCance, K. L., & Shelby, J. 1994. Stress and disease. n: McCance KL, Huether SE, eds. *Pathophysiology of Diseases*. Mosby-Year Book.
- Muttaqin, A., & Sari, K. 2011. Nursing care of urinary system disorders.
- Nikhmatul, E., Achwandi, M., & Peni, T. 2018. Nursing care for post-operative extremity fracture patients who experience physical mobility barriers at Dr Wahidin Sudiro Husodo Hospital, Mojokerto City.

- Ningsih, N. 2009. Nursing care for clients with disorders of the musculoskeletal system.
- Nopriantina, N. 2013. Effect of Thickness of Banana Kepok (*Musa Paradisiaca*) Sheath Fiber on Mechanical Properties of Natural Polyester-Fiber Composite Materials. *Journal of Physics Unand*, 2(3).
- Potter, P. A., & Perry, A. G. 2005. *A textbook of nursing fundamentals: concepts, processes, and practices*.
- Sagaran, V. C., Manjas, M., & Rasyid, R. 2018. Distribution of Femur Fractures Treated at Dr. Hospital. M. Djamil, Padang (2010-2012). *Andalas Health Journal*, 6(3), 586-589.
- Sulistiyowati, D., & Handayani, F. 2012. The Role of Nurses in the Implementation of Personal Hygiene According to Patient Perceptions of Physical Immobilization. *Diponegoro Journal of Nursing*, 1(1), 169-174.
- Smeltzer, S. 2013. C. & Bare, B.
- Udeani J, Kaplan LJ, Talavera F, Sheridan RL, Rice TD, Geibel J. Hemorrhagic Shock 2013: Available from: <http://emedicine.medscape.com/article/432650-overview#showall>.
- Putra, E. P. D., & Saputra, H. 2020. CHARACTERIZATION OF BIODEGRADABLE PLASTIC FROM MULI BANANA SKIN WASTE STARTER WITH SORBITOL PLASTICIZER. *Andalas Agricultural Technology Journal*, 24(1), 29-36
- Wibowo, F. S., & Prasetyaningrum, E. 2015. Utilization of Banana Plant Stem Extract (*Musa paradisiaca*) as Antiacne Drug in Antiacne Gel Preparations. *JIFFK: Journal of Pharmacy and Clinical Pharmacy*, 12(1), 38-46.