



Published by DiscoverSys

The incidence of infection in open cruris fracture grade III A-B treated by external fixation after golden period at Dr. Moewardi General Hospital, Surakarta, Indonesia



CrossMark

Johanes Rizal M. Marpaung^{1*}, Udy Herunefi²

ABSTRACT

Background: The management of open fractures continues to provide challenges for the orthopaedic surgeon. Despite the improvements in technology and surgical techniques, rates of infection and nonunion are still troublesome. Infections in patients with open cruris fracture open after the golden period often occur. There are many risk factors can affect it.

Objective: To determine the incidence rate of infection in patients with open cruris fracture treated by external fixation after the golden period at Dr. Moewardi General Hospital from January to December 2018.

Methods: The characteristics data of patients were observed by retrospective from the medical record of patients that diagnosed open cruris fracture after the golden period from January to December 2018.

Results: In the period of January 2018 to December 2018 there were 55 open cruris fracture with infection incidence rates 72.7% and the most culture result were staphylococcal.

Conclusion: the high incidence rates of infection was found in patients with open cruris fractures; therefore, it requires treatment as soon as possible before the golden period.

Keywords: Open fractures, Fraktur of cruris, Infection.

Cite this Article: Marpaung, J.R.M., Herunefi, U. 2019. The incidence of infection in open cruris fracture grade III A-B treated by external fixation after golden period at Dr. Moewardi General Hospital, Surakarta, Indonesia. *IJBS* 13(2): 85-87. DOI:10.15562/ijbs.v13i2.205

¹General Surgery Resident, FK-UNS / RS Dr. Moewardi, Surakarta, Indonesia

²Orthopedic Consultants and Traumatology Sub-Pediatric, FK-UNS / RS Dr. Moewardi, Surakarta, Indonesia

INTRODUCTION

An open fracture is a fracture where there is an exposure of fragment fractures to the environment, whether the tip of fragment fracture penetrates from the inside to the surface of the skin or the skin surface which experiences the penetration of an object from the outside to the inside.^{1,2}

Mostly complications of the open fractures are infection. Infection can be derived from the normal flora of the skin or bacteria pathogen. Based on classification, open fractures can be divided into several types (Type I – III) by Gustilo depends on severity of fractures.^{1,2}

Initial treatment of the open fracture is general condition at first (life-threatening), i.e., installing IV fluids two lines, clinical examination and radiology, laboratory examination. The most important for open fracture treatment is reducing or preventing infection.^{3,4}

For open fracture, the stabilization of the fracture is useful to prevent severe tissue damaged, make an easy access to take care of the wounds, make an easy mobilization of the patient, and the patient can do isometric muscle exercise and perform the movement of the joints on top of or below the fracture lines either active or passive.³⁻⁷

If the fracture doesn't treat it well, some complications can emerge. Commonly complications that occur are acute infection, osteomyelitis, non-union, malunion and disability. The most common complication in open fracture is infection and incidence of wound infection in open fracture commonly was related to tissue damaged.⁶⁻⁸

This study was conducted to determine the incidence of infection that occurred after debridement after the *golden period* in open cruris fractures of IIIA-B.

METHODS

The design of this research is using analytic retrospective which is intended to analyse the infection rates of open cruris fracture III A-B with debridement and external fixation treatment after *Golden Period* based on facts that have occurred and recorded in the medical records in patient care inpatient and ambulatory way in January 2018 to December 2018.

The inclusion criteria were the age of the patient <60 years old, normal nutritional status, and doing a debridement and external fixation in the emergency room of Dr. Moewardi General Hospital. Exclusion criteria were patients who were only debrided and

*Corresponding author:
Johanes Rizal M. Marpaung;
General Surgery Resident, FK-UNS
/ RS Dr. Moewardi, Surakarta,
Indonesia
johanes.mrp@gmail.com

had DM disease. All medical records were assessed that had a bone infection and fatty tissue by clinical and culture.

RESULTS

In the period January 2018 to December 2018 there were 55 patients of open fracture with 41 patients (74.5 %) had a traffic accident, 14 patients (25.5 %) had a workplace accident.

DISCUSSION

There were 55 patients with open Background: fracture III A-B who could have the infection rate in patients before and after the golden period at Dr. Moewardi general hospital for the period of January - December 2018. Data from 55 patients, men 76.3% and women 23.7 %.

The most commonly patients' age was 16-40 y.o, 36 patients (65.4%). This possibly is due to the age included in the age group with the most causes of traffic accident while the rest is due to workplace accidents.

Open fracture treatment in Dr. Moewardi general hospital is based on the guideline, debridement and

spraying physiology fluid 9L immediately, removing the necrotizing tissue and corpus alienum then giving broad-spectrum antibiotics.

In Dr. Hospital Moewardi general hospital, there were 72.7 % of patients with open cruris fractures IIIA and IIIB type who had infections. This is due to (1) unequal debridement by surgical residents so that the level of cleanliness may different, (2) the interval time between the incident until the antibiotics were given too long, (3) the implementation of manual irrigation so that the pressure of irrigation may different every debridement, (4) there were some hematoma factor left in the fragment fracture that can be a place for microorganisms to grow.

The most culture result from 30 patients (54.5%) who had infections were staphylococci. Benirschke *et al.* reported the culture result was 45.23% staphylococci, 16.67% pseudomonas and 9.52% enterobacter.³⁻⁶

CONCLUSION

The high incidence of infection in patients with open cruris fracture reported based on the data; therefore, immediate treatment is required before the golden period.

CONFLICT OF INTEREST

The author declares there is no conflict of interest regarding the publication of this report.

ETHICAL ASPECT

The patient has been signed the informed consent and agrees for the publication of their data as a case report article.

FUNDING

The authors are responsible for the study funding without the involvement of grant, scholarship, or any other resources of funding.

REFERENCES

1. Apley AG and Solomon L. System of orthopaedics and fracture. 7th. Ed., Oxford: Butterworth - Heinemann. 1993.
2. Gustilo RB, Merkow RL, and Templeman D. Current concepts: The management of open fractures. JBJS. 1990. 72A: p299-304.
3. Benirschke SK, Brumback R, Burgess A, Caplan ES, Dellinger EP, and Droppert BM. Duration of preventive antibiotic administration for open extremity fractures. Arch Surg. 1988. 123(3): p333-39.
4. Patzakis MJ and Wilkins J. Factors influencing infection rate in open fractures wounds. J Clio Orth. 1989. 243: 36-40.
5. Niwayama N and Resnick D. Osteomyelitis, septic arthritis and soft tissue infection: Mechanisms and situations. Bone

Table 1. Distribution of age and sex of open fractures of degree III AB

Age	Man	Woman	total
0-15	2	-	2
16 - 40	28	8	36
41 - 60	12	5	17
total	42	13	55

Table 2. Sex distribution and incidence of infection in open cruris fractures of degree III AB

Gender	Infection	Without infection	total
Man	32	10	42
Woman	8	5	13
total	40	15	55
%	72.7%	27.7%	

Table 3. Distribution of germs that cause infection in open cruris fractures of degree III AB

Germ type	Number of sufferers	%
Proteus	12	21.8%
Pseudomonas	13	23.6%
Staphylococci	30	54.5%
total	55	100%

- and joint imaging, London: Saunders. 1989. p728-38.
6. Salter RB. Textbook of disorders and injuries of the musculoskeletal system, 2nd. ed. Baltimore: Waverly Press Inc. 1983.
 7. Tsherne H. The management of open fractures. Berlin: Springer. 1984. P10-32
 8. Srour M. Prospective evaluation of treatment of open fractures: effect of time to irrigation and debridement. JAMA surg. 2015.



This work is licensed under a Creative Commons Attribution