

## Neglected fracture tibia dextra with gangrene pedis, post treatment by traditional bone setter

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Case Report

### ABSTRACT

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The patient is a 9-year-old female who comes from Oba District, Tidore island. Come to Emergency Department Ternate General Hospital with the right leg limbs which have blackened, some open wounds on the skin that give exposure to soft and hard tissue (bone). According to the alloanamnesis, before entering the hospital, she treated for three weeks in traditional bonesetter due to fractures. Given the traditional treatment of herbal concoction cream and in splints with a bamboo stick and the therapy wasn't successful. Clinical evaluation revealed a gangrenous right leg for which she had the risk of an above knee amputation. The diagnosis was gangrene pedis dextra e.c. neglected fracture tibia dextra post-treatment by the traditional bone setter. Operative management was wound debridement and amputation I-V metatarsal. Neglected fracture is a fracture that is not handled correctly, resulting in delays in handling, worse conditions and even defects. The purpose of writing this case report is to provide an overview of the neglected case of fractures caused by traditional bonesetter.

*Anak perempuan berusia 9 tahun yang berasal dari Oba, pulau Tidore. Datang ke IGD RSUD Ternate dengan tungkai kaki kanan yang telah menghitam, dengan beberapa luka terbuka pada kulit sehingga memperlihatkan jaringan lunak dan keras dibawahnya. Dari alloanamnesis diketahui pasien bahwa sebelum masuk rumah sakit dia dirawat selama 3 minggu di dukun tulang tradisional karena patah tulang. Diberikan perawatan tradisional berupa krim ramuan herbal dan di bidai dengan tongkat bambu tetapi terapi tersebut tidak berhasil. Evaluasi klinis menunjukkan adanya kaki kanan yang mengalami gangren yang berisiko mengalami amputasi setinggi diatas lutut. Diagnosisnya adalah gangren pedis dextra e.c. neglected fracture tibia dextra pasca pengobatan oleh dukun tulang tradisional. Manajemen operatif adalah debridemen luka dan amputasi metatarsal I-V. Neglected fracture adalah fraktur yang tidak ditangani dengan semestinya sehingga mengakibatkan keterlambatan penanganan, kondisi yang lebih buruk bahkan cacat. Tujuan dari penulisan laporan kasus ini adalah agar bisa memberikan gambaran terhadap kasus Neglected fracture yang disebabkan oleh dukun tulang tradisional.*

#### INTRODUCTION

Fractures are a common condition in musculoskeletal trauma. According to the

Riskesdas (2013) fractures cases as much as 5.3% of injury cases in Indonesia.<sup>1</sup> Neglected fracture with or without dislocation is a fracture

that is not handled correctly, resulting in delayed handling, worse conditions and even defects. Most fracture patients in Indonesia have still entrusted the treatment to the traditional bonesetters and will come to the doctor when there are worse conditions or complications.<sup>2,3</sup>

Neglected fractures are found in patients of productive age. There were 26 cases of neglected fracture within 2 years in Probolinggo, and 92.5% was dominated by patients in the productive age. 5.8% of all types of injuries in Indonesia are fractures and 72.3% occur at productive ages.<sup>1,2</sup>

TBS is typical in developing countries. The complications include, nonunion, malunion, shortening, gangrene and other complications.<sup>4</sup> Gangrene extremities are the fatal complications that often occur due to the handling of fractures in traditional bonesetters.<sup>5</sup>

North Maluku is one of the provinces in Indonesia that has the geographical condition of the archipelago. There is a total of 10 main islands with medium population densities with minimal inter-island transport. Additionally, the diverse nature of the topographic conditions and the strong community's belief in traditional medicine make frequent delays or improper handling of an illness; a fracture is one of them. This case is one case of neglected fracture in North Maluku province.

## LITERATURE REVIEW

A fracture is the structural discontinuity of a bone.<sup>6</sup> The consequences of trauma to the bone may vary depending on the type, strength and direction of injury. Neglected fracture with or without dislocation is a fracture that is not handled correctly, resulting in delays in handling, worse conditions and even defects. According to Subroto Sapardan, the neglected fracture is the wrong handling of fracture which done by traditional bonesetters.<sup>7</sup> Arief Darmawan specifically mentions that neglected fracture is a handling fracture of more than 72 hours or referred to as abandoned cases due to incomplete treatment of either medical personnel or traditional bonesetters<sup>8,7</sup> Patients

with bone fractures in Indonesia mostly entrust treatment to traditional bone shamans as they are perceived to be more affordable and shorter distance, and avoid invasive surgery. Patients often come to a surgeon/orthopaedic after failing on traditional medicine and under these conditions usually the condition has worsened or with a complication.<sup>2</sup>

TBS is typical in developing countries, and most TBS is not educated, they work only on experience and spiritually instinct and usually TBS practices are a genetic heritage of family practice.<sup>4</sup> No formal training, no official regulation. Treatment methods vary, but the problems caused by TBS usually similar each other and with the worst complications are gangrene.<sup>9</sup>

The problems of the first health facility include the lack of health personnel and the uneven distribution between the rural and urban areas, the lack of rural transport facilities to the urban centers with more comprehensive health facilities, demanding access to the rural areas that have topographical natural conditions such as hilly, mountainous, islands, lack of roads, lack of involvement and participation in the health community, and misuse and inappropriate use of human, material, and financial resources by local leaders. All these problems trigger the inaccessibility of the first health facility and cause community dependence on traditional medicine.<sup>5</sup>

Therefore, omolulu + Onuminya says that there is a need to recognise and train the traditional bonesetters in the effective management of both open and closed fractures to minimising mismanagement of fracture and avoiding fracture complications.<sup>9</sup> This way requires a collaborative effort from the stakeholders such as government, professional orthopaedic and health workers societies, as well as the public.<sup>5</sup>

## CASE REPORT

The patient is a 9-year-old female who comes from Oba District, Tidore island. Come to Emergency Department Ternate General Hospital with the right leg limbs which have

blackened, some open wounds on the skin that give exposure to soft and hard tissue (bone) (Fig.1). According to the alloanamnesis from her parents, three weeks earlier, he fell from a mango tree, there is a bend in his right leg accompanied by pain, then brought by his family to traditional

bone treatment in Gurabati, Tidore. In traditional medicine, the legs are given traditional herbs cream, splints with bamboo stems and recited mantras. After three days, the patient felt more painful and difficult to move. When the bidaidi is open, the entire right leg to foot has blackened.



Figure 1. Pre-operative view of right leg. Showing the area of gangrene and radiological view of the fracture

Under these conditions, the child still has not been taken to a proper health facility and continued in that place by using traditional blends applied on the legs, after three weeks the limbs do not improve, and the limb condition is worsening, the child is taken to the Emergency Department Ternate General Hospital. Clinical evaluation revealed a gangrenous right leg for which she had the risk of an above knee amputation.

Complete blood tests were performed, there were an increase in leukocytes (13.7) and platelets (578), decreasing Hb (9) and others within normal limits. As an initial treatment, wound care with normal saline and daily dressing changes, ceftriaxon 500 mg/12 hours,

metronidazole 250 mg/8 hour as prophylactic antibiotics and mefenamic acid as painkillers while waiting for stable child condition for debridement. The stabilisation process takes approximately seven days because of the child's Hb decreases(8.5).

Once stabilised, an operation is performed in the form of debridement. Pedis Dextra tissue is not viable, so the I-V metatarsal amputation must be done up to the carpal joint, remaining necrotic tissue in the waste and washed with H<sub>2</sub>O<sub>2</sub> + irrigation with NaCl, hecting, then covered with gauze and elastic bandage. The number of bleeding during operation is ± 150 cc. The postoperative diagnosis is gangrene pedis dextra e.c neglected fracture tibia dextra.



Figure 2. Post-operative view of right leg. Showing viable tissue and metatarsal amputation of the right leg.

Postoperative care for nine days, patients are allowed to go home with suggestions for routine wound control in polyclinics for evaluation of viable limb tissue conditions. However, unfortunately, until this case report was made the patient never came back again, so no further follow-up. This is likely due to the remote location, economic reasons or even the reliance of the patient and the people around him towards traditional medicine.

## DISCUSSION

Tibia fractures in children constitute 10-15% of all cases of pediatric fractures.<sup>10,11</sup> The high number is due to the high level of physical activity of the child and the topography of the playground.<sup>10</sup> If handled correctly, tibia fracture in children is a fracture with an excellent long outcome although processed with the traditional handling or non-operative methods.<sup>10,11</sup> This is because there are anatomical advantages of thinner periosteum and when submitted to angular impacts can provide younger children with greater stability that makes the fracture in young children more stable and have a better prognosis than older children.<sup>11</sup>

Nevertheless, fractures in children still present a risk of complications such as nonunion, malunion, infection, vascular or nerve injuries and compartment syndrome.<sup>11</sup>

In this case, the I-V metatarsal amputation was performed with the consideration that on the leg there were still many viable tissues, only the necrotising tissue was thrown away, so amputation below knee could be avoided. The second consideration is that in the metatarsal amputation, the patient still has a chance to walk well even without a prosthesis.<sup>12</sup>

Patients, in this case, were taken to traditional bonesetters for treatment. Traditional bonesetters are the beliefs of people and families, who are believed to have the power or knowledge of their ancestors to treat fractures. At traditional bonesetters, the patient's leg is examined, after it is confirmed there is a fracture, then tried to straighten manually and rubbed with some traditional plant creams. Then the foot is splinted

with a bamboo stick which is circled in the lower leg from below the knee to the ankles so that the joints above and below are not involved.

In the traditional bonesetter's practice, they do not use radiological photographs to diagnose and manage fractures. When the diagnosis of fracture has been established, the first treatment is the reduction of fracture by direct manipulation, can be added with a massage first in the trauma area without using analgesic. Then proceed with the provision of cream/concoction of traditional plants are smeared on the skin of the location of fractures/wounds. Then splinting, at most by using wood, rattan, and bamboo.<sup>5,9</sup> Almost all of the splinting principles of traditional bonesetters are tight and without padding, thus allowing disruption of blood flow and venous return on the extremity.<sup>4</sup> This condition can produce compartment syndrome due to the tourniquet effect of the splint. Ukere also discuss the procedure of bone handling. Usually joints above and below from the location of injury not involved.<sup>4</sup> Onumiya said that the treatment of bonesetter by using simple materials such as bamboo stems is part of the culture. Otherwise, it feels more quickly available, accessible, affordable and accepted by native.<sup>13</sup>

Gangrene extremities are the most common complications of fracture management in traditional bonesetters.<sup>5</sup> This complication is very devastating because most patients with limb fractures are young and still productive. Some patients should be amputated and lead to disability. The outcome of TBS interventions often leads to loss of limb, lifelong deformities and even death.<sup>9</sup> 80% fracture morbidity in Nigeria is a complication of TBS practices.<sup>4</sup>

There is needed to educate and train the traditional bonesetters that are expected to bridge the culture of the local community and the conventional handling by the appropriate medical expert (orthopaedic / surgeon).

## CONCLUSION

This case provides evidence that although fractures in children are relatively easy to

manage if handling is incorrect then it can pose significant risks such as gangrene with the threat of limb amputation. In this case, the amputation above the knee is successfully avoided because the tissues in the lower limbs are still quite viable. But, unfortunately, the patient does not come back to control so no further follow-up is known. In pedis tissue, the necrotic tissue is thick so it is not possible to be saved and amputation of the I-V metatarsal was done. Total length of hospital stay for approximately 18 days.

The case of neglected fracture is still a problem with the orthopaedic practice. This case is ubiquitous in areas that have a firm culture, beliefs of ancestors and traditional medicine, the influence of close family or local people, and also lack of affordable health services strengthen traditional bonesetters against the community.

Because of the risks and the high number of neglected fracture cases, it needs improvement of all factors. Neglected Fracture cases can be reduced, with public education about fractures and neglected fractures, and government support is required in all areas to raise public awareness and provide excellent health care facilities in rural areas.

### Conflict of Interest

The authors declares that there is no conflict of interest regarding the publication of this article.

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