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Amputation of the Right Pelvic Limb Following Inadequate Management

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Abstract

Limb amputation is a mutilating surgical procedure. The clinical presentation of this case aims to share our management, our indication for amputation, and to raise awareness among the population about the dangers of traditional fracture treatment, as well as to find a consensus between modern medicine and traditional medicine. An 11-year-old boy, a student, was brought in for management of blackening of the right leg following traditional treatment for a closed fracture of the right leg. The diagnosis of dry gangrene was made. A blood transfusion, triple antibiotic therapy, and a high tibial amputation successfully controlled the infection. The postoperative course was uncomplicated. Far from blaming traditional medicine, this work highlights its limitations, as these complications are preventable with modern medicine, aims to raise public awareness, and draws the attention of health authorities to better regulate traditional medicine.

Keywords

Amputation, Fracture, Traditional Treatment, Bangui

1. Introduction

Limb amputation is a mutilating surgical procedure, a last resort for the surgeon [1]. In modern medicine, the causes of lower limb amputations are predominantly secondary to superinfected necrosis, uncontrollable pain (stage III claudication according to Leriche), life-threatening infection (extensive abscess of the leg or foot, multiple septic arthritis of the foot, necrotizing fasciitis), when there are one or more ulcers with insufficient potential for healing, and following debilitating

and irreparable trauma [2], whereas in the African literature, these causes are predominantly the result of traditional treatment [1] [3]. In the Central African Republic, traditional medicine remains widespread due to its affordability for people in remote areas, and its impact is difficult to assess. The traditional treatment for limb fractures involves applying a traditional, often tight, circular bandage to the limb following trauma, which may or may not be preceded by reduction techniques lacking a scientific basis. Often, this injury is minor, and the limb is not always fractured, or the fracture is only slightly displaced, requiring only orthopedic treatment. This traditional treatment can lead to complications, some of which are serious, ranging from simple swelling to compartment syndrome and Wolkmann's syndrome, and even gangrene of the limb, which may result in amputation. Traditional treatment of limb fractures is common in Africa [3] [4]. We present a case of a closed mid-diaphyseal fracture of the right leg bones treated traditionally, complicated by dry gangrene in an adolescent, to share our management approach and our indication for amputation, to raise public awareness of the dangers of traditional fracture treatment, and to foster a consensus between modern and traditional medicine.

2. Case Report

This is an 11-year-old boy who was independent prior to the injury, a student, and had no significant medical history. He was brought in for evaluation of discoloration of his right leg and foot following traditional treatment for a closed fracture of the right leg. Due to severe pain and complete functional impairment of the right lower limb following a traffic accident involving a bicycle and a pedestrian, he was referred to a traditional practitioner who applied a bandage over wooden splints. Five days after treatment, significant swelling of the leg appeared, along with darkening of the right leg and foot accompanied by a foul odor and fever, prompting the parents to bring the child to the Bangui University Pediatric Hospital for care. At admission, he presented with a deterioration of general condition characterized by asthenia, conjunctival pallor, a septic shock state consisting of tachycardia at 120 beats/min, polypnea at 51 respiratory cycles/min, blood pressure at 90/60 mmHg, and a fever of 40˚ Celsius. Physical examination noted: complete blackening extending from the toes to the proximal third of the right tibia, coldness and insensitivity from the toes to the proximal third of the tibia, absence of capillary refill time, present popliteal pulse, absent dorsalis pedis and posterior tibial pulses, and no pulse detectable by oximeter. Echodoppler, arteriography, or CT angiography had not been performed due to their unavailability. An X-ray of the right leg showed a displaced closed mid-diaphyseal fracture of the right leg (**Figure 1**). The blood count revealed anemia with a hemoglobin level of 8 g/dl and white blood cells at 32,000/mm^3. The diagnosis of dry gangrene on a closed fracture of the right leg following traditional treatment complicated by septic shock was made (**Figure 2**). Given the conjunctival pallor and septic shock, an intravenous line was established, administration

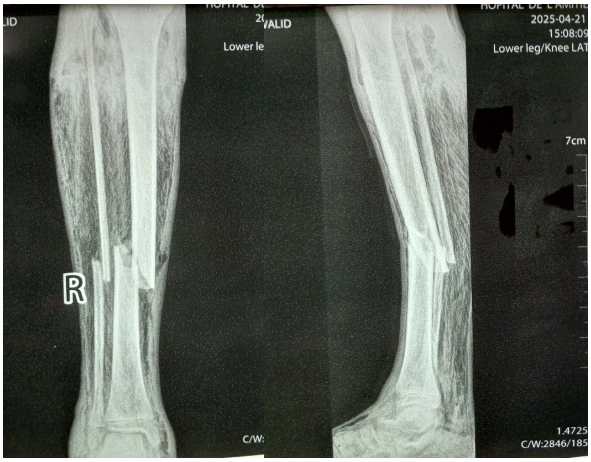

Figure 1. X-ray of the right leg showing a displaced closed mid-shaft fracture.

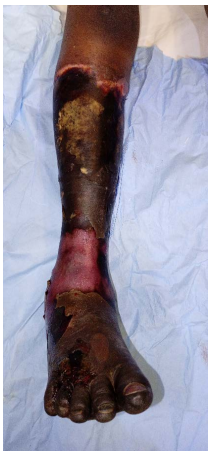

Figure 2. Dry gangrene of the right leg complicating a displaced closed fracture in the mid-shaft region.

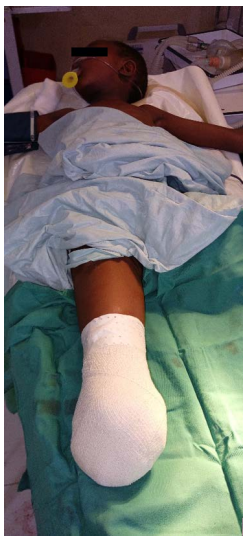

Figure 3. Amputation of the proximal third of the right leg with preservation of the knee joint.

of 0.9% NaCl in a 350 ml bolus was given, followed by a maintenance line with 0.9% NaCl: 1500 ml, a blood transfusion of 500 ml was administered, and triple antibiotic therapy was initiated: Ceftriaxone inj: 2 g/24 h, Metronidazole inj: 350 mg every 8 hours, and Gentamycin inj: 60 mg/day. Given the complete blackening, coldness, insensitivity, absence of capillary refill, absence of dorsalis pedis and posterior tibial pulses, absence of pulse on oximeter, and septic shock, amputation was indicated to control the infection. After obtaining informed consent from the parents, we performed a shark-mouth incision in the proximal third of the leg, ligated the vessels and nerves, and proceeded with the amputation (**Figure 3**). The patient was hospitalized in the ward. From the day after the surgery, to prevent any joint stiffness, we proceeded with hospital rehabilitation with the physiotherapist. The postoperative course was simple with good stump healing, and he was discharged 7 days later. Follow-up appointments were scheduled jointly with a doctor to monitor the stump and plan for a future prosthesis, with a psychologist to help him accept his physical disability and reintegrate into his social and school environment, and with a physiotherapist to continue stump massage and home rehabilitation.

3. Discussion

In the clinical case presented, the clinical diagnosis alone was sufficient to indicate surgery. The presentation was dominated by a deterioration of the general condition, septic shock, a foul odor, complete ischemia of the right leg and foot, cold, insensitive with absence of pedis and posterior tibial pulses, and no pulse in the tips of the toes on the oximeter. The echodoppler, arteriography, or CT angiography had not been performed due to their unavailability. These tests should be performed in cases of ischemia. The Central African Republic does not have access to these diagnostic tests, and their absence should not delay treatment. Since any amputation is a difficult decision for parents, we provided psychological support to the parents. The amputation should be as minimal as possible without compromising the patient's life [5]. The amputation was performed in healthy, non-bleeding tissue, while preserving the knee joint to allow for the use of a prosthesis. The skin was closed without tension over a Delbet drain. The preparation of the stump was key to successful prosthesis fitting, and this stump must be of a certain length.

With regard to both functional and aesthetic sequelae, more effort is needed to prevent complications from traditional treatment of limb fractures, as the treatment of limb fractures is well-established in the literature [6], and the therapeutic protocols of this traditional medicine sometimes appear to fail to meet the mechanical, physiological, and vascular requirements of the human body. It would be difficult to ban this practice, as our communities remain deeply attached to it for both economic and sociocultural reasons [3] [6] [7]; however, reaching a consensus to regulate it could significantly reduce the rate of complications and raise awareness among the public and health authorities.

4. Conclusion

This patient's clinical presentation is by no means intended to cast blame on traditional medicine, but rather to highlight its limitations, as these complications are preventable through conventional medicine. It also aims to raise awareness among the public and our health authorities regarding the need to regulate traditional medicine, as has been done in Nigeria and Ethiopia.

Ethical Considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki. Institutional ethical approval from the Faculty of Health Sciences of the University of Bangui was not required. We obtained informed and voluntary parental consent for the publication of details and photographs as well as informed consent from the head of the department concerning this case. The anonymity of the patient was maintained throughout the study.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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