Traditional bone setting: an avoidable cause of major limb amputations

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ABSTRACT

Background: Despite the availability of modern health care services, patients in Nigeria still seek treatment by traditional bone setters. One of the major complications of this type of native fracture treatment is limb gangrene necessitating amputations. The objective of this study was to determine the role of traditional bone setting in major limb amputations.

Methods: This retrospective study was carried out at a government orthopedic referral hospital. The study involved all patients who underwent major limb amputation between January 2015 and December 2019 in our center. Data were retrieved from medical records and operation registers. Information regarding age, sex, indications and levels of amputation and complications were studied.

Results: During the study period; of the 297 major limb amputations performed, 194 (65.3%) were due to traditional bone setting. The median age of the patients was 11.0 years (1 to 45 years) and the interquartile range was 10 years. Majority of the patients 86 (44.3%) affected were children less than 10 years of age. Male were more affected than female (M:F=1:2). Lower limb is more affected than the upper limb. The commonest amputation done was below knee amputation in 79 (40.7%) of cases. The commonest complication was surgical site infection which occurred in 32 (16.5%) patients.

Conclusions: Traditional bone setting is a leading cause of major limb loss especially in children.

Keywords: Traditional bone setting, Amputation, Gangrene

INTRODUCTION

Traditional bone setters (TBS) are individuals who are recognized by their communities as competent enough to provide healthcare for their musculoskeletal problems (including fractures and dislocations) by using herbs, animal and mineral substances, or other methods.1 Traditional bone setting is widely practiced in developing countries though the principles differ between communities.1,2 However, there are certain characteristics that are common to all. The traditional bone setters are usually uneducated or barely educated and they rely mainly on inheritance, experience and spiritual intuition.2

The practice is usually preserved as a family treasure and it passed from generation to generations. However, individuals outside the family can acquire their skills via apprenticeship.3 They use bamboo stick, rattan cane or palm leaf axis with cotton thread or old cloth to splint the dislocated or fractured limb.4,5 The tightly applied splint is often left in place for few days before it is intermittently released for treatment with herbs and massage as shown in the Figure 1.

This mode of treatment often resulted in compartment syndrome and subsequent limb gangrene or Volkmann ischemic contracture.6 They also make use of scarification and application of unprocessed herbal medicine which often resulted in infections.6 Generally TBS do not have
access to imaging investigations. However, some of the practitioners have started inculcating some orthodox practices into their treatment albeit wrongly. This includes wound dressing and suturing and even use of plain radiographs.\textsuperscript{7,8}

Limb loss has profound economic, social and psychological effects as its associated with disability, marital conflicts and psycho-affective disorder especially in developing countries like ours where effective prostheses when available are not affordable.\textsuperscript{11,12} It may also cause distress not only due to the loss of a body part but due to the role limitation and the need for lifestyle modification.\textsuperscript{13,14} Adolescents and children are the usual victims of the TBS complications as their parents prevent them from removing the tight splints on instruction of the bone setters.\textsuperscript{19}

Many studies have reported various complications of TBS, but only few have quantified their roles in major limb loss.\textsuperscript{3,9,10} Ajibade et al in a five-year retrospective descriptive study of 132 patients who had major limb amputations found that 38.1\% are due TBS.\textsuperscript{13} Similarly, Seid et al in a retrospective study of 99 children who had amputations in Ethiopia noted that 55\% were due traditional bone setter splinting.\textsuperscript{16} Onuminya et al in a study of 25 consecutive complications of TBS treatment, documented compartment syndrome, cellulitis and limb gangrene. They further noted that 15 out of 25 (60\%) complications were limb gangrene.\textsuperscript{10} The objective of this study was to determine the role of TBS in major limb amputations in our setting.

\section*{METHODS}

This retrospective study was carried out at a government orthopedic referral hospital. All patients who underwent major limb amputation between January 2015 and December 2019 in our center were studied. The case files of the patients were retrieved from the hospital medical record for analysis after obtaining approval from the hospital ethics committee. Additional information was collected from the operation register. Data analysed included patients’ demography, indication for amputation, levels of amputation and complications. Statistical analyses were performed using statistical package for the social sciences (SPSS 22.0 IBM, New York City, USA). Categorical data were tabulated with frequencies and percentages, and continuous data were expressed as the median and range.

\section*{RESULTS}

During the study period, a total of 297 major limb amputations were performed due to the various indications. Gangrene from traditional bone setting (TBS) accounted for 65.3\% of all cases of major amputations. The median age of the patients with TBS gangrene was 11.0 years, range one to 45 years and interquartile range of 10 years. Majority of the patients 86 (44.3\%) affected were children less than 10 years of age. Males were more affected than females with male to female ratio of 2:1. The lower limb is more frequently involved than the upper limb. For the upper limb amputations; dominant limb was involved in the majority 29 (64.4\%) of cases as shown in the Table 1.
The commonest complication was surgical site infection which occurred in 32 (16.5%) patients. Others include wound dehiscence, phantom limb, phantom pain and chronic osteomyelitis of the stump as shown in the Table 4.

The most common problem was closed fracture of the limb accounting for 70 (36.1%) of cases. The significant number of patients 59 (30.4%) had only soft tissue trauma without fracture or dislocation as shown in the Table 3.

DISCUSSION

Traditional bone setting is a well-known and largely practiced in Africa despite the painful experience by the patients from manipulations of fresh fractures and dislocations (without anesthesia or analgesia) and the high rate of complications including limb gangrene.8,17

In our study, 65.3% of amputations done during the study period were due to traditional bone setting. This has doubled that of Ajibade et al who documented 38.1% over a separate 5-year period in the same study centre.15 This high rate of amputation due to TBS gangrene is similar to what has been found by other studies.19-21 This further stresses the fact that traditional bone setting has become a separate 6 dominance in Africans’ well-being and immediate intervention is needed to curtail the rate of preventable limb loss. This intervention should include enlightenment and education of the practitioners and legislation by the government to control their practice. In addition, citizens should be educated to seek treatment for their trauma victims in approved trauma centers.

The median age of our patients was 11.0 years (range 1-45 years). Majority 86 (44.3%) of the patients are children less than 10 years of age. This is similar to findings of previous studies.10,18 Similarly, Nwosu et al documented that the commonest cause of amputation in children was TBS which accounted for 62.5% in children below the age of 16 years.18 Males are more affected than females as it has been observed by several other studies probably due to undisputed reason that males sustain injury more than females due to their levels of activity.19-22

The most common amputation performed in our study was below knee amputation which was done in 79 (40.7%) of cases. This is similar to what was found by Nwosu et al who documented 44 below knee amputations out 112 major limb amputations (39.3%). The similarity may be
because the studies were done in the same area of north west Nigeria. Other studies with similar results are those of Kidmas, Seid and Umaru et al. 

Our study revealed that a significant number of patients 59 (30.4%) had only soft tissue trauma (with no fracture or dislocation) which ordinarily do not require any manipulation or splinting. However, because of lack of basic clinical skill to rule out fractures or dislocations; traditional bone setters embark on unnecessary manipulations and splintage which lead to vascular compromise and subsequent limb loss.

It was also noted that despite many works that has been done on the menace of traditional bone setting in our setting and the recommendations from those researches, the number of limb loss over the years due to TBS has not reduced. A total of 44 major limb amputations were performed in 2015 and 41 in 2019 due to TBS.

The commonest complication we recorded was surgical site infection which occurred in 32 (16.5%) patients. Others include phantom limb and pain and chronic osteomyelitis. This is in agreement with previous researchers who documented SSI as the most common complication following major limb amputations.

CONCLUSION

In conclusion, traditional bone setting is an avoidable leading cause of major limb loss especially in children in our environment. We recommend enlightenment and change of culture by people. There should be strict legislation by government to monitor and control the activities of traditional bone setters. Primary health care should be improved to make orthodox treatment available at the grassroots and comprehensive health insurance should also be made available by the government for all citizens. These will go a long way in curtailing the lifelong disabilities caused for innocent children by traditional bone setting.

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