

Fracture complications after treatment by traditional bone setters in Northern Ghana

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ABSTRACT

Traditional bonesetter (TBS) practice is a widely and accepted form of musculoskeletal injuries management in the Northern part of Ghana even though their methods of treatment is often associated with complications. These complications usually lead to referrals for orthodox Orthopaedic management making treatment complicated and costly sometimes leading to limb amputation compounding the fears of the people that the only treatment option by the Orthodox methods is amputation. This study sort to highlight and evaluate complications associated with bone fracture treatment by TBS in the Northern part of Ghana. This was a five years prospective study involving 230 patients presenting with complications after treatment by TBS to the Tania Specialist Orthopaedic Hospital in Tamale, Ghana. Patients who met the inclusion criteria were assessed and appropriate management procedures carried out. In all 156 males and 78 females representing 67.8% and 32.2% respectively with an age range of 7 months to 78 years were recruited. The most occurring complication among the subjects was mal-union fractures accounting for 31% of all complications followed by non-union fractures, 21%, infections, 17% and the least occurring complication was gangreneous body parts with 3%. The rate of non-union showed an increasing trend with age of the patients. Avascular necrosis was significantly associated with increasing age whereas infection was significantly common among subjects 30 years and below. In conclusion this study has highlighted several complications associated with the practice of TBS in Northern Ghana. Mal-union/non-unions and infections are the most common complications that patients are likely to suffer from as a result of fracture treatment by TBS. There is therefore the need for scientific training of TBS on how to prevent/ or manage these common complications associated with their treatment.

Keywords: Complications, Mal-union, Non-union, Northern Ghana, bonesetters

INTRODUCTION

Traditional bone setting is part of traditional medical practice in many developing countries and has existed in Africa long before orthopaedic medical care. In Sub-Saharan Africa over 80% of the people rely on medicinal plants and traditional medicines for their primary health care including fractures [1]. Traditional bone setting is an ancient practice in Africa and many developing countries with a very high level of patronage although this practice is often associated with several complications including mal-union, non-union and infections [2-4]. In Ghana it is estimated that about 78% of all patients with fracture resort to the traditional bone setters for cure [5]. Several reasons have been attributed to the continued patronage of TBS by many Africans including availability and accessibility to modern Orthopaedic facilities, cost and fear of amputation at the orthodox medical centres and the belief that every disease or accidents/misfortunes has a spiritual undertone [3, 6]. The practice of TBS is very common in the Northern part of Ghana due to some cultural beliefs and practices in addition to the generally high poverty level of the people. Patients with fractures as a result of road traffic accidents and fall from height are initially taken to

Clinics or hospitals where they will seek for discharge against medical advice due to pressure from family and friends and are sent to TBS for treatment [6, 7]. However most of the people who patronized the TBS services later return to Orthopaedic hospitals with several complications sometimes very fatal making orthopaedic management very complicated and costly sometimes leading to limb amputation which regrettable strengthens the beliefs of the people that the only treatment option by the Orthodox methods is amputation yet very costly. Even though the practice of TBS is very common in the Northern part of Ghana, there has not been to the best of our knowledge any scientific study to evaluate complications associate with such practice. The present study was thus undertaken to prospectively evaluate the different types of complications presented to the Tania Specialist Orthopaedic hospital by patients previously treated by TBS in the Northern part of Ghana.

MATERIALS AND METHODS

This was a prospective study of all patients with musculoskeletal injuries treated strictly by traditional bonesetters before presenting to the Tania Specialist Orthopaedic hospital in tamale in the northern region of Ghana with various complications related to their treatment from January 2008 to December 2012. Information as to the cause and description of the original injury, the bone involve as well as the initial place where treatment was first sort were obtained from the subjects. In all cases the subjects were assess clinically and radiographically to ascertain the existence and nature of the complications. A total of 230 patients with various complications associated with previous treatment by bone setters were involved in this study. Each of the patients had an antero-posterior and lateral x-rays among others taken to confirm the exact nature of the current injury on admission, since patients could stay with TBS for 1, 2, 3 and even up to 120 months. In all case of mal-union and non-unions fractures treatment was done using the surgical procedure of open reduction and internal fixation (ORIF). Patients who presented with infections were treated with antibiotics base on results of antibiotics sensitivity testing.

Statistical analysis

All categorical variables were analysed using chi-square for trend. A level of $p < 0.05$ was considered as statistically significant. Graphpad prism version 5.00 for windows was used for all statistical analysis (Graphpad software, San Diego California USA, (www.graphpad.com)).

RESULTS

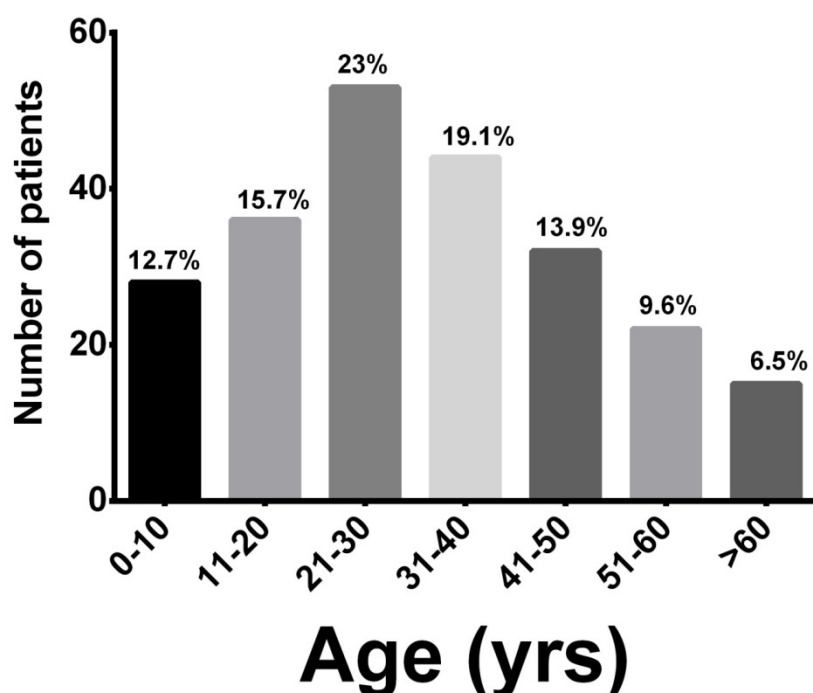
Out of a total of 230 patients with complications from treatment by bonesetters seen over the study period, males constituted about 67.8% (156/230) with 32.2% (74/230) being females. The mean age of the subjects was 32.3 ± 17.5 years (range; 7 months to 78 years). The mean age of the male subject was 33.2 ± 16.8 years while that of the females was 30.9 ± 18.7 years. Majority (23.0%) of the subjects were within the 21-30 year bracket follow by those in the 31-40 and 11-20 years each recording 19.1% and 15.7% respectively (Figure 1).

Various complications including ankylosis, avascular necrosis, infections, gangrene, mal-unions fractures as well as non-union fractures and ischaemic contractures were recorded among the subjects. The most occurring complication among the subjects was mal-union fractures accounting for about 31% of all complications followed by non-union fractures with 21%, infections accounting for 17% and the least occurring complication was gangreneous body parts with 3% (Table 1). When the subjects were stratified by gender the incidence of the various complications still show mal-unions, non-union fractures and infections as been the most common complications in both the male and the female with incidence of 32.1%, 19.2% and 10.5% in the male subjects and 29.7%, 24.3% and 16.2% among the females subjects respectively (Table 1).

Table 1: Types of complications stratified by gender

Type of Complications	N (%)	Male	Female
Ankylosis	18 (7.8)	12(7.7)	6(8.1)
Avascular Necrosis	13(5.7)	6(3.8)	7(9.5)
Contractures	11(4.8)	6(3.8)	5(6.8)
Gangrene	6 (2.6)	3(1.9)	3(4.1)
Infections	39(17.0)	27(10.5)	12(16.2)
Ischaemic Limb	11(4.8)	9(5.8)	2(2.7)
Mal-union fractures	72(31.3)	50(32.1)	22(29.7)
Non-union fractures	48(20.9)	30(19.2)	18(24.3)
Shock/paralysis	12(5.2)	8(5.1)	4(5.4)
Total	230(100.0)	156(100.0)	74(100.0)

Figure 1: Study population stratified by Age



Infections and mal-unions were the two most common complications among the subjects within the 0-10 year age group with an incidence rate of 32.1% and 25% respectively. Within the 21-30 year age group, mal-union and non-unions were the most common complications with 34% (18/53) and 26.4% (14/53) respectively followed by infections with 18.9% (10/53). The rate of non-union show an increasing trend with age of the patients ($P = 0.007$). Avascular necrosis was significantly associated with increasing age ($P = 0.005$) whereas infection was significantly common among subjects 30 years and below ($P = 0.02$) as shown in Table 2.

Table 2: Fracture complications stratified by Age

Variable	0-10 N (%)	11-20 N (%)	21-30 N (%)	31-40 N (%)	41-50 N (%)	51-60 N (%)	>60 N (%)	P Value
Total	28(12.7)	36 (15.7)	53(23.0)	44(19.1)	32(13.9)	22(9.6)	15(6.5)	
Ankylosis	4(14.3)	2(5.6)	1(1.9)	4(9.1)	4(12.5)	2(9.1)	1(6.7)	0.983
Avascular necrosis	0(0.0)	3(8.3)	1(1.9)	3(6.8)	1(3.1)	0(0.0)	6(40.0)	0.005
Gangerene	1(3.6)	0(0.0)	1(1.9)	1(2.3)	1(3.1)	1(4.5)	1(6.7)	0.335
Infections	9(32.1)	9(25)	10(18.9)	5(11.4)	6(18.8)	0(0.0)	0(0.0)	0.02
Ischaemic Cont	2(7.1)	5(13.9)	3(5.7)	5(11.4)	2(6.3)	3(13.6)	3(20.0)	0.479
Mal-union	7(25.0)	12(33.3)	18(34.0)	17(38.6)	9(28.1)	8(36.4)	1(6.7)	0.384
Non-union	1(3.6)	4(11.1)	14(26.4)	10(22.7)	7(21.8)	8(36.4)	4(18.2)	0.007
Shock/paralysis	3(10.7)	1(2.8)	5(9.4)	0(0.0)	3(9.4)	0(0.0)	0(0.0)	0.144

Table 3: Bone involvement

Type of Bone	N (%)
Radius/Ulna	27 (11.7)
Ulna	10 (4.3)
Radius	15 (6.5)
Humerus	34 (14.8)
Acetabulum	8 (3.5)
Femur shaft	56(24.3)
Tibia	20 (24.3)
Patella	10 (4.3)
Distal fibula	26 (11.3)
Clavicle	14 (6.1)

From this study the most frequently fractured bone was the Femur Shaft occurring in 56 patients representing 24.3%. Some of the other bones involved were radius-ulna fracture 27 (11.7%), ulna fracture 10 (4.3%), fracture radius 15 (6.5%), fracture of the Tibia 20 (24.3%), Fracture patella 10 (4.3%), fracture Clavicle 14 (6.1%), femur

shaft 56 (24.3%), fracture of the humerus 34 (14.8) as shown in table 3. There were 163 (70.7%) closed fracture with 67 (29.7%) patients presenting with open fractures of the extremities.

DISCUSSION

The practice of bone setting by Africans has been in existence since antiquity and has continued to be a part of the healthcare delivery in many African countries including Ghana. The services of traditional bonesetters is highly patronized in the Northern part of Ghana yet the mode of treatment by the TBS are not scientific and usually leads to several complications which if not treated early usually lead to loss of limbs and even death [3]. The present study has revealed various complications resulting from treatment of fractures by TBS which span across gender and age with majority of the patients in this study been male within the most productive age bracket of 21-40 years. Earlier studies have reveal that more males presents with fractures in this part of Ghana compare to females and that most of the affected are within the most active age group of 21-40 years [8]. In this study no particular complication was significantly associated with any particular gender and this is in conformity with the findings of [7] who also reported that complication from fracture treatment by TBS is not associated with ones gender. The incidence of fracture cases has been on the increase secondary to high impact injuries from road traffic accidents. Several body parts are usually associated with these injuries but mostly it is the limbs which are usually high as was the case in the present study with majority of the presentations been femur shaft and radius/ulna fractures.

In this study over 52% (120/230) of the patients treated by the TBS had mal-union/non-union fractures. In Orthopaedic practice the main objective of fracture treatment is anatomical reduction and the restoration of function of the affected part. However in Traditional bone setting the methods that are usually employed including the application of herbs, massaging and the wrapping of the affected part in bamboo sticks and cloths usually fail to achieve anatomical reduction in certain fractures such as clavicular fractures, distal fibula fractures and may therefore leads to mal-union/non-union usually among the elderly as was the case in the present study. OlaOlorun *et al* [7] also reported a similar finding among patients treated by TBS in Southwest Nigeria however their study did not show any age association with mal-union/non-union as was the case in the present study. In the line of practice of the TBS concoctions and herbs are applied to the affected part after incision are made regardless of whether the fracture in open or close. In addition incantations and scarification are commonly used which may lead to the high rate of infections as was reported in this study where infections accounted for 17% of complications among the patients. Studies have shown that closed collaboration between bonesetters and orthodox practitioners where bonesetters refer open fracture to local clinic has produced satisfactory results [9]. According to Nabeel *et al* [4] in a study in Lahore, about 17.4% of patients with musculoskeletal injuries treated by TBS presented with infections which is in conformity with the findings in the present study.

CONCLUSION

In conclusion this study has shown that there are several complications associated with the practice of TBS in Northern Ghana. Mal-union/non-union and infections are the most common complications that patients are likely to suffer as a result of fracture treatment by TBS. In view of the high patronage enjoy by the TBS in Northern Ghana couple with the attendant complications, there is the need for scientific training of TBS on how to prevent these common complications associated with their treatment methods as well as encourage them to refer patients with complications early for orthodox management.

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