

# Complications of fracture treatment by traditional bonesetters in southwest Nigeria

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OlaOlorun DA, Oladiran IO and Adeniran A. Complications of fracture treatment by traditional bonesetters in southwest Nigeria. *Family Practice* 2001; **18**: 635–637.

**Background.** Traditional bonesetters (TBS) practice widely in Nigeria.

**Objective.** Our aim was to evaluate the types of complications seen in patients previously treated by TBS and to assess factors that may predispose to the complications.

**Methods.** We carried out a prospective non-randomized controlled study in a general hospital in southwest Nigeria. All patients brought into the hospital over the 10-month study period with fractures who had been treated previously by a TBS and, as a control, all patients brought directly to and treated by us were studied. Each patient was assessed and prescribed the most appropriate treatment for their fracture: reduction, immobilization (operatively and otherwise) and physiotherapy. Malunion, non-union, delayed union, gangrene, stiffness of joints and loss of joint motion, Volkman's ischaemic contracture and tetanus were all investigated.

**Results.** Over half of the patients in the TBS subgroup had malunion, and a quarter had non-union. Only one out of the 36 (2.8%) had no complaints and was satisfied with the outcome of treatment of his fractures by the TBS. In the orthodox subgroup, there were seven complications as a result of treatment of a total of 49 bones (14%). Most of the complications involved the loss of joint motion.

**Conclusions.** There were no statistically significant associations between the complications recorded and the ages of the patients, types of bone fractured or the duration of treatment in patients who were in the TBS subgroup. The introduction of a health insurance scheme in Nigeria may make it easier for individuals and families to be able to afford proper fracture treatment in hospitals.

**Keywords.** Complications, developing world, family practitioners, fractures.

## Introduction

In Nigeria, as in other parts of the developing world, there are traditional medicine practitioners. In one report from eastern Nigeria,<sup>1</sup> 85% of patients who presented with femoral fractures to an Orthopaedic Hospital had been to traditional bonesetters (TBS) prior to going to the hospital. There is widespread belief in our society that TBS are better at fracture treatment than orthodox practitioners.

This study was undertaken to evaluate prospectively the types of complications seen in patients previously treated by TBS and to assess factors that may predispose to these complications such as the type of bones fractured, the age of the patient and the duration of treatment by the TBS.

## Patients and methods

The Baptist Medical Centre, Ogbomoso is a 180-bed general hospital which currently is staffed full-time by trained family practitioners, although an orthopaedic surgeon visits for 3–6 months of the year.

The study was conducted over a 10-month period. Thirty-six patients (TBS subgroup) were entered into the study prospectively. Information was sought as to how the fractures were sustained, the bones that were fractured and whether the fractures were open or closed. The types of complication with which the patients presented were recorded, as were the duration and type of treatment administered by the TBS. We also recorded information regarding the type of corrective procedure performed at our hospital. Patients' personal information was sought. As a control, the records of 34 patients (orthodox subgroup) treated using orthodox methods by us over the same period were reviewed and similar information was extracted for analysis.

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Received 5 January 2001; Revised 14 May 2001; Accepted 9 July 2001.

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The chi-squared test was used for data analysis ( $P = 0.05$ ).

## Results

Thirty-six patients (TBS subgroup) were seen over the 10-month study period. These comprised 24 males and 12 females, giving a male to female ratio of 2:1. The age distribution was bimodal with the two modes at the ages of 11–20 years and 31–40 years. The median age was 36 years. There was no statistically significant association between age and malunion. Sixteen patients (44.4%) sustained their fractures as a result of road traffic accidents, 16 (44.4%) as a result of falls and four (11.2%) as a result of being hit by objects. Forty-two percent of the patients initially were taken to an orthodox hospital. The bones of the axial skeleton were fractured more frequently than others and the most frequently fractured bone was the femur, an event which occurred in nine patients. Eight patients fractured the tibia and seven patients each sustained fractures of the humerus and fibula. Four patients sustained fractures of the ulna and three the radius. One patient each presented with fractures of the spine, finger, foot and pelvis. Over 83% (30 patients) of the fractures were closed fractures. There were six open fractures: two of the tibia, two of the femur, one of the fibula and one of the foot.

The TBS treated their patients for varying periods of time ranging from 3 days to 12 months, but the average duration of treatment (32 patients who remember) by the TBS in this study was 10.78 weeks. When evaluated further, 17 (47.2%) patients underwent treatment for <6 weeks while 15 (41.6%) patients underwent treatment for >6 weeks. Four (11.1%) patients did not remember for how long they received treatment from the TBS. There was no association between the duration of therapy by the TBS and malunion.

Twenty-one (58.3%) patients had malunion of their fractures, nine (25%) non-union and one (2.8%) had gangrene, requiring amputation. Other sequelae were one incident each of: quadriparesis, Volkman's ischaemic contracture, fixed knee flexion deformity and osteomyelitis (Table 1). One patient had no complaints at all but was seen in the hospital for other reasons and was entered into the study. This patient had had fractures of both the pelvis and right femur. One of the patients with non-union was a 14-year-old girl with an open fracture who was brought in early because of trismus and she was treated for mild tetanus. There was no statistically significant association between malunion and humeral, tibial or femoral fractures.

Twenty-four (66.7%) patients had no corrective procedure, either because they were offered and they declined, or because they were not offered. Three (8.3%) patients had their bones refractured and recast, three underwent operative reduction and internal fixation with

TABLE 1 Complications in patients treated by the TBS

Complications	Number (%)
Malunion	21 (58.3%)
Non-union	9 (25%)
Gangrene	1 (2.8%)
Quadriparesis	1 (2.8%)
Volkman's ischaemic contracture	1 (2.8%)
Fixed knee flexion deformity	1 (2.8%)
Osteomyelitis	1 (2.8%)
None	1 (2.7%)
Total	36 (100%)

bone grafting, and three received physiotherapy only. The patient with wet gangrene underwent a below knee amputation while the one with osteomyelitis of one of the tarsal bones underwent sequestrectomy.

In the orthodox subgroup, the ages ranged between 9 months and 68 years with a mean of 30 years. There was a fairly even spread between the ages of 0 and 40 years. The male to female ratio was 1.4:1. In >75% of the patients in this subgroup, a road traffic accident was responsible for the fracture. Seven of the patients sustained their fractures after falls and one after an industrial accident. The most frequently fractured bone in this subgroup was the tibia, which occurred in 14 people. Ten sustained fractures of the fibula, eight the femur and seven the humerus. Four people each sustained fractures of the radius and ulna and two sustained pelvic fractures. A total of 49 bones were fractured in 34 patients and >85% (29) of the fractures were closed fractures. There were five open fractures as follows: three tibiae, one femur and one radius.

In just over half of the patients, the fractures were treated with reduction and immobilization in plaster-of-Paris cast. Six patients underwent various operative reduction and internal fixation procedures, four were treated with skeletal traction in bed, three in collar and cuff slings, one with external fixation hardware and one had excision of the fracture piece and reattachment of the triceps tendon into the ulna. Patients in the orthodox subgroup underwent treatment for periods ranging from 11 days to 12 weeks, with an average of 8.4 weeks. Thirteen (38.2%) underwent treatment for 6 weeks or less while 21 (61.8%) underwent treatment for >6 weeks.

In the group of patients treated by orthodox means, there were seven complications as a result of treatment of a total of 49 bones (14%). They were as follows: a stiff wrist in a patient with Colles' fracture, loss of supination/pronation in a patient with both radius and ulna fractures, elbow stiffness in two patients with supracondylar fractures of the humerus, weakness of the triceps function

in a patient with olecranon fracture (piece excised and triceps reattached into the ulna), a delayed union in a patient with segmental femur fracture (treated with skeletal traction) and a three-quarter inch shortening in another with femur fracture.

## Discussion

The goal of fracture treatment by medical practitioners trained in western methods is anatomic reduction, fracture union and restoration of function of the part to as close as possible to 100% of the pre-injury level. Over 83% (30 patients) of the patients in this study who had been treated by the TBS had malunion/non-union. This is not surprising as their treatment consists of the application of herbs and wrapping of the fractured limbs in cloth.<sup>2</sup> No attempts are made to reduce or immobilize fractures. There were no statistically significant associations between the complications recorded and the ages of patients, types of bones fractured and the duration of treatment by the TBS. In the subgroup treated by us from the start, only 23.5% of the patients underwent operative treatment of one type or another. The vast majority (76.5%) underwent non-operative treatment with plaster-of-Paris cast or traction bed, depending on the fracture. Despite this, our complication rate was only 14%.

Only one patient out of the 36 in the TBS subgroup had gangrene and needed amputation. This is different from experience elsewhere<sup>3-6</sup> which seems to highlight a higher incidence of gangrene and a consequently higher rate of amputation. It is also interesting that only one patient had osteomyelitis. This may be explained by the fact that almost half of the patients in the TBS subgroup

initially were taken to hospitals before being withdrawn. Perhaps the initial washing out of the open fractures that may have taken place at the hospitals in addition to the use of antibiotics prior to the patients' departure to the bonesetters helped to prevent this complication in many of the patients.

Almost half of the patients in the TBS subgroup had been withdrawn from hospitals, because of the cost of treatment, which averages N3385 (~US\$30) with the TBS. In our hospital, the cost of fracture treatment (operative or otherwise) averages N12 500, (~US\$130) a 4-fold difference.

As the Nigerian government implements a health insurance scheme, hopefully it should become easier for families and individuals to afford payment for health care in hospitals. In the meantime, all alternative health care practitioners need to have their practices regulated and their awareness and knowledge improved enough to where they recognize their limitations and refer patients promptly and appropriately.

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