

## Complications of Fracture Treatment by Traditional Bone Setters at Dinajpur

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Traditional bonesetters (TBS) practice widely in different parts of our country. Their treatment method often lead to several complications, most dangerous being extremity gangrene which usually leads to amputation. Our aim was to analyze the types of complications seen in patients previously treated by TBS and to assess factors that may predispose to the complications in Dinajpur District. We carried out a prospective study at Dinajpur Medical College Hospital and at private practice. All patients brought into the Hospital and Chamber from July 2008 to June 2009 with fractures/traumatic injury who had been treated previously by bone setters and later on to us were included. Each patient was assessed and prescribed the most appropriate treatment for their fracture- reduction, immobilization (operatively and otherwise) and physiotherapy. Mal-union, non-union, delayed union, gangrene, stiffness of joints and loss of joint motion, Compartment syndrome, Volkmann's ischaemic contracture and tetanus were all investigated. Out of 120 patients, 20 patients (16.7%) had union of the fracture in acceptable position with near to normal range of movements at different joints and 100 (83.3%) out of 120 were having complications. Out of 100 patients with 148 pathologies, 114 (77.0%) had mal-union (shortening and angulations), 10(6.8%) delayed union, 20(13.5%) had non union including 3 infected nonunion, & 2(1.4%) developed gangrene. 4 (2.7%) reported compartmental syndrome, 30 (20.3%) had extensive blister formation / cellulites, and 5 (3.4%) had Volkmann's ischemic contracture and rest of the patients had stiffness of elbow and shoulder. One third of the patients developed more than one complication. Traditional bone setting is an ancient trade practiced in most developing countries and also in Bangladesh without government regulations and they lack guidance. The result of this study indicates that treatment of musculoskeletal injuries by Traditional bone setters create very difficult problems in orthopedic practice. Many patients develop complications and loose their limbs due to inappropriate treatments. It is recommended that affordable and accessible hospital services, education of the bone setters, the public and the patients is necessary in minimizing or abolishing the preventable complications associated with traditional bone setting.

[Dinajpur Med Col J 2011 Jan; 4 (1):15-19]

**Key words:** Complications, TBS, developing world and fractures

### Introduction

**T**raditional bonesetters (TBS) is an old practice established more or less in all societies of the world.<sup>1,2</sup> Up to 85% of patients with fractures present first to the traditional bonesetters before coming to the hospital and therefore this mode of care

delivery cannot be overlooked in our country. The traditional bone setter's practice is a highly specialized form of traditional medicine. It is usually passed from father to son but some outsiders also receive their training via apprenticeship.

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In Bangladesh as in other parts of the developing world, there are traditional medicine practitioners. In one report from eastern Nigeria 85% of patients who presented with femoral fractures to an Orthopaedic Hospital had been to traditional bonesetters (TBS) prior to going to the hospital.<sup>3</sup> There is widespread belief in our society that TBS are better at fracture treatment than orthodox practitioners.

Little published data exist on the morbidity and mortality associated with poor trauma care in many of the developing countries especially in Bangladesh. 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. This report highlights our experience with iatrogenic complications including limb gangrene related to fracture management by traditional bone setters.

### Methods

The study was conducted in Dinajpur Medical College Hospital and in the private chambers of two orthopedic surgeons practicing in Dinajpur over 1 year period. A total of 120 patients were entered into the study prospectively. Patient with all ages and both sexes with fracture and soft tissue injuries treated by TBS were included in the study. Information like patients bio-data, clinical data - how the fractures were sustained, the bones that were fractured and whether the fractures were open or closed, types of treatment at bone setter center, type of material and technique used by TBS were also asked and filled in to the predesigned questionnaire. The types of complications with which the patients presented were recorded, as were the duration and type of treatment administered by the TBS.

### Results

A total of 120 patients treated by Bone setters were seen over the 1 year study period. These comprised 80 males and 40 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. Sixty patients (50%) sustained their fractures as a result of road traffic accidents, 30 (25%) as a result of fall from height and 6 (5%) as a result of being hit by objects. 24(20%) from miscellaneous causes. 36(30%) patients initially were taken to a hospital from where patients were shifted to TBS. The bones of the axial skeleton were fractured more frequently than others and the most frequently fractured bone was the tibia. In our series there were 11 fracture femur, 5 fracture neck of femur, 27 fracture Tibia, 10 Fracture patella, 6 fracture Clavicle, 10 fracture of the shaft of humerus, 20 supracondylar fracture, 6 fractures of the ulna, 20 fracture radius-ulna , 10 Fracture Colles, , 11 misc. fracture, and 3 hip, 3 elbow , 2 shoulder dislocations.

There were 116 (78.3%) close fractures, 20 (13.5%) open fractures: (11 of the tibia, 3 of the radius ulna, 6 supracondylar fracture of humerus), 8(5.5%) dislocations, 4 (2.8%) soft tissue injury among 120 patients with 148 pathologies, There were more than one pathology in a patient. The TBS treated their patients for varying periods of time ranging from 3 days to 3 months,

One of the patients with open supracondylar fracture was a 14-year-old girl who was brought in early because of trismus and she was treated for mild tetanus.

Table I: Age Distribution of Patients (n=120)

Age Group	Number of Patients	Percentage (%)
1 -10	10	8.3%
11 -20	35	29.5%
21 -30	13	11.0%
31 -40	37	30.6%
41 -50	15	12.5%
51- above	10	8.3%

Table II: Extremity involvement (n=120)  
(One hundred and twenty patients with 148 musculoskeletal injuries)

Types of injuries	Bone Involved	Number (%)
Fracture	Femur	11 (7.4%)
	Neck of femur	05(3.4%)
	Patella	10 (6.8%)
	Tibia	27(18.3%)
	Clavicle	06(4.1%)
	Shaft of femur	10(6.8%)
	Supracondyl of humerus	20(13.5%)
	Radius-ulna	20(13.5%)
	Ulna	06((4.1%)
	Colles	10(6.8%)
	Miscellaneous	11(7.4%)
Dislocation	Hip	03(2.0%)
	Elbow	03(2.0%)
	Shoulder	02(1.4%)
	Soft tissue injury without fracture	04(2.7%)

Table III: Injury patterns (n=120, number of pathology 148)

Types of Injury	Number of pathology	Percentage (%)
Closed fracture	116	78.3
Open Fracture	20	13.5
Dislocation	08	05.5
Soft tissue injury	04	02.8

Table IV: Complications in patients treated by the TBS (n = 120) (100 patients with 136 fractures and 8 dislocations )

Complications	Number	%
Mal-union	114	83.9%
Delayed union	10	7.4%
Non-union	20	14.7%
Gangrene	2	1.5%
Compartment syndrome	6	4.4%
Volkman's ischaemic contracture	7	5.1%
Joint Stiffness	15	11.0%
Chronic Osteomyelitis	5	3.7%
Soft tissue infection with blister formation	30	22.1%
Tetanus	1	0.7%
Unreduced dislocated joint (8 cases)	4	5.0%

### Discussion

The goal of fracture treatment by medical practitioners is anatomic reduction, fracture union and restoration of function of the part to as close as possible to the pre-injury level.<sup>4</sup>

All the patients in the study group had some form of complications. 20 patients who had union of the fracture in acceptable position with near to normal range of movements at different joints and no problems with usual household activities reported to us for an expert opinion .

In our study of complicated 100 cases with 136 fractures, 114 (83.9%) fracture ended with mal-union and 10 (7.4%) delayed union ,20(14.7%) fracture (5 fracture neck of femur, 8 fracture patella, 3 infected fracture of tibia, 06misc fracture) ended with non union and 2(2%) fracture with gangrene needed amputation. Another study by OlaOlorun DA in 2001 presented 36 patients having been treated by TBS resulted in 83% (30 patients) complications like mal-union and non-union,<sup>5</sup> study of Faheem A Memon et al showed 43% mal union/& non union in their series.<sup>6</sup> This is not surprising as their treatment consists of the application of herbs and wrapping of the fractured limbs in bamboo splint & cloth.<sup>4</sup>

and no attempts are made to reduce fracture accurately or immobilize fractures. Only the complicated patients were attended us causing higher incidence in our series.

Only two patients out of the 120 in the TBS group had gangrene and needed amputation. This is different from experience elsewhere<sup>7,8,9,10</sup> which seems to highlight a higher incidence of gangrene and a consequently higher rate of amputation. It is also interesting that only 5 patients had osteomyelitis. This may be explained by the fact that almost one third of the patients treated by the TBS initially were taken to hospitals before being withdrawn and the bone setters now prescribe antibiotics. 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 bone setters and the antibiotics prescribed by the TBS helped to prevent this complication in many of the patients.

Thirty (22.1%) patients had soft tissue infection with extensive blister formation. LOA Thani et al 2003 in 41 patients revealed soft tissue complication in 9.8%.<sup>11</sup> Another study by Faheem A Memon et al 17 % patients developed soft tissue complications due to tight bandage.<sup>10</sup> Higher incidence in our series may be due to initial tight bandage containing herbal paste and wrapping of fractured limb in bamboo splint and cloth. Material used by our TBS is herbal medicine applying over fracture site and wrapping with clothes and wooden/bamboo sticks which creates wounds and swelling.

Different types complications in our series are almost same as with other researchers.<sup>9 10 11</sup> Incidences are higher in our series because we included patients who came to us with complications. Only 20 patients with

acceptable results came to us for their mental satisfaction.

The patients treated by the TBS had been withdrawn from hospitals, because of non availability of doctors immediately, non cooperation from hospital staff and the higher cost of treatment in our hospital.

### *Conclusion*

Traditional bone setting is an ancient trade practiced in Bangladesh as elsewhere in the developing countries without government regulations and they lack guidance. The bone setters create very difficult problems for orthopedic surgeons. Many patients develop complications and lose their limbs due to inappropriate treatments. It is recommended that affordable and accessible hospital services should be provided to reduce the TBS patronage. Despite all the complications associated with their treatment, majority of the people still have a strong belief in their capability. Education of the bone setters, the public and the patients will go a long way in minimizing or abolishing the preventable complications associated with traditional bone setting. Awareness programs regarding inadequate treatment given by traditional bone setters are necessary and their patronization should be discouraged to avoid these types of complications.

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