

# Fracture Management by Traditional Bonesetters: A Tertiary Care Hospital Based Observational Study

Krutibash Subudhi<sup>1</sup>

## Abstract

**Background:** Fracture of bone is a persistent problem encountered in orthopaedic practice. The management of fracture of bone depends on reduction and immobility at the fracture site. The traditional bone setters formulate their own methods and practices for the management of fracture. This age-old art has not only survived since ages but also flourished with time and moreover to our surprise is challenging modern orthopaedic science in many ways.

**Aim of study:** To find out various outcomes of fracture management by traditional bonesetters and the possible reason for their high patronage.

**Methods:** Present study was conducted on patients with some kind of prior treatment received from TBS. The detailed history was collected about age, sex, socioeconomic condition, education, habit and habitats from each patient. Each case was subjected to detailed clinical and radiological examinations to evaluate the outcomes of the interventions of TBSs.

**Results:** One hundred and fifty patients in the age group of (1–70) years were included in the study out of which 103 (69%) are male and 47 (31%) are females. 33% belong to age group of 30–45 years and 54% are of literate and fair socio-economic status. Malunion is the predominant form of presentation with 69 cases (46%) followed by non-union in 30 (20%) cases. 41 cases (28%) presented with impending ischemia at initial stages of treatment. Only 9 cases (6%) were presented with chronic osteomyelitis and infected non-union. Eventually 7 cases were ended with gangrene and amputation. Cost of surgery was the major cause (43%) followed by fear of surgery (23%) was observed for non-acceptance of modern orthopaedic system.

**Conclusion:** The results in our study vindicate the fact that TBS play a major role in providing health care to the fracture patients. Lack of basic knowledge and aversion to referral system by TBS is responsible for complications. So, creating public awareness and integrating TBS in the healthcare system through proper training and due legislation seems to be the apt solution to combat this menace.

**Keywords:** Traditional Bone Setters, Chronic osteomyelitis, Malunion and nonunion

## Introduction

In the process of evolution man has put a continuous effort in developing methods & practices for improvement of his own health. With passage of time many of such arts have become prey to modern medical sciences. But that one refuses to die is the art of traditional bone setting. In spite of criticism and adversities this age old art has managed not only to survive but also to flourish in every sector of society.

Since 400 B.C till date many prophets like Hippocrates, Susruta, Hugh Owen Thomas etc. have tried to justify the usefulness and reasonability of this art. It was Susruta in 3000 years ago in his famous classic Susrutasanhita detailed the “Khandabhagna” (fracture in general), its type, clinical diagnosis, various techniques and principles

of treatment. (“Science & Society in ancient India” by D B. Chottopadhyaya 1977 [1]. Studies accept that many fractures do heal with the traditional method of treatment. (Eshete M. JBJS 2005) [2]. The traditional bone setting plays a vital role in meeting the needs of orthopedic problems especially in rural areas where the formal primary and secondary health care is not adequate. It has been reported that about 70000 traditional bonesetters are prevalent in India and treat about 60% of total trauma patients Eshete. M. et al JBJS: 2005 [2]. Approximately 30–40 patients are attended by single bonesetter per day. In the country like India about 350 traditional bone setters are documented in 16 districts in Tamil Nadu, Pondicherry and 4 districts in Kerala. Many of the journals reveal the prevalence of traditional bone setters in African countries to be very high [3]. Various psychosocial and economic factors embolden these bone setters in society particularly in the developing countries. However their credibility is challenged from time to time by various studies. Can the art of TBS be relied up on or to be reviewed particularly when the modern orthopedic science with its well developed armamentarium is at the door step? This is a growing debate across the globe rather. With this background, we have done an observational prospective study to evaluate the methodology and



<sup>1</sup>Department of Orthopaedic Surgery, SCB Medical College and Hospital, Cuttack, Odisha, India.

### Address of Correspondence

Dr. Krutibash Subudhi,  
Department of Orthopaedic Surgery, SCB Medical College and Hospital, Cuttack, Odisha, India.  
E-mail: krutibashdada@gmail.com

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various outcomes of treatment by traditional bone setters and to find out the facts enacting behind their survival.

**Materials & Methods**

Present observational study included 150 cases presented to the Outpatient department of Orthopedics, SCB Medical College, Cuttack at different stages of treatment by Traditional Bone Setters during period of November 2018 to October 2020. Informed consent obtained from all the cases. Thorough history was collected regarding age, sex, socioeconomic condition, education, habitand habitats etc. Subsequently each case was subjected to detailed clinical and radiological examinations to evaluate the outcomes of the interventions of TBSs. Special emphasis was given on the fracture union, functional recovery in terms of weight bearing, range of moment at joints, infection, deformity or any other relevant results. The method of interventions provided in hospital were

**Conservative Close Manipulation**

- (Osteoclasia) POP cast under anaesthesia
- PTB cast
- Functional bracing

**Operative**

- External fixation for neglected open wounds
- CRIF under anaesthesia
- ORIF under anaesthesia with or without bonegrafting
- Ilizarov ring fixator for infective non union
- Amputation and rehabilitation for gangrenous limb.

**Data analysis**

All data obtained with questionnaire and biochemical analysis were analyzed using the Graph Pad’s web site. Statistical significance was accepted when the two-tailed P value is less than 0.0001.

**Observation**

In the present study 150 patients in the age group of 1–70 years are included out of which 103 (69%) are male and 47 (31%) are females. Maximum number of patients i.e. 49 patients (33%) belonged to the age group of 30–45 years. Interestingly 43 cases (29%) are of having fair socioeconomic status and 69 cases (46%) are literate with some level of primary education. Table 1 & Graph 1 indicates the Socio-demographic characteristics of the study population.

In the present study out of 150 cases 102 (68%) cases were simple fracture followed by 15 (10%) cases as compound fracture and 33 (22%) cases were having soft tissue injury and dislocation. Table 2 & Graph 2 indicates type of injury in the study group.

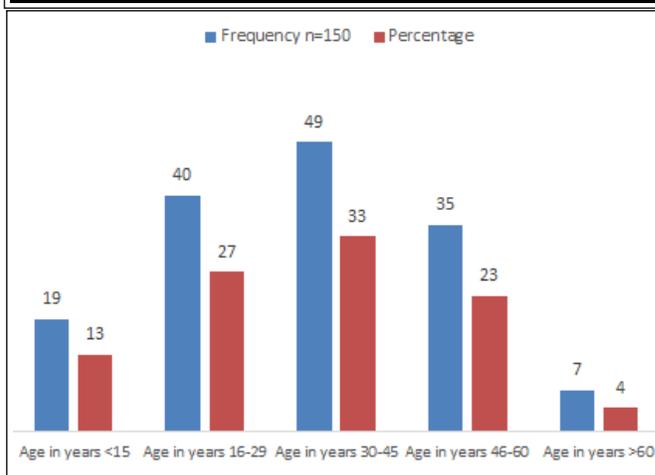
Modern basic Orthopedic services like X-ray, Oral antibiotics, Antitetanus and anti-inflammatory drugs were availed by only 30 cases (20%). There were only 6 cases (4%) offered referral services in case of complication.

Malunion was the predominant form of presentation with 54 cases (46%) followed by non union in 24 (20%) cases, 33 cases (28%) presented with impending ischemia at initial stages of treatment, 8 cases (6%) presented with chronic O.M. and infected non union. About 33 (28%) cases were with features of impending ischemia.

Treatment cost was the major factor for apathetic approach of 48

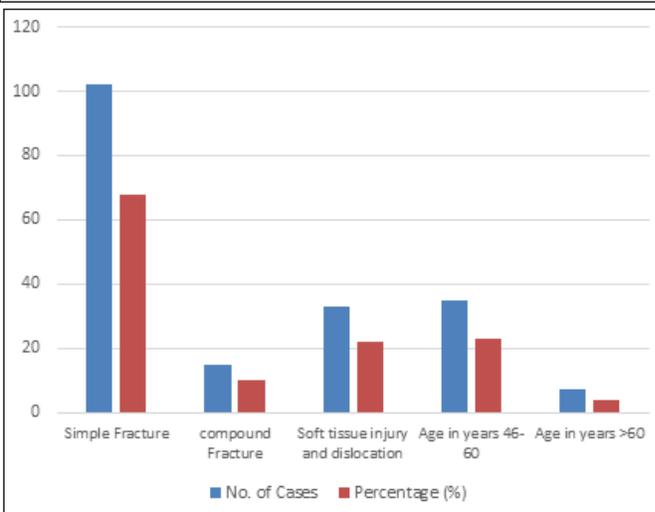
**Table 1: Socio-demographic characteristics of the study population**

Variables	Levels	Frequency n=150	Percentage
Age in years	< 15	19	13%
	16 – 29	40	27%
	30 – 45	49	33%
	46 – 60	35	23%
	> 60	7	4%
Sex	Male	103	69%
	Female	47	31%
Socioeconomic status	APL	43	29%
	BPL	107	71%
Educational status	Illiterate	81	54%
	Literate	69	46%

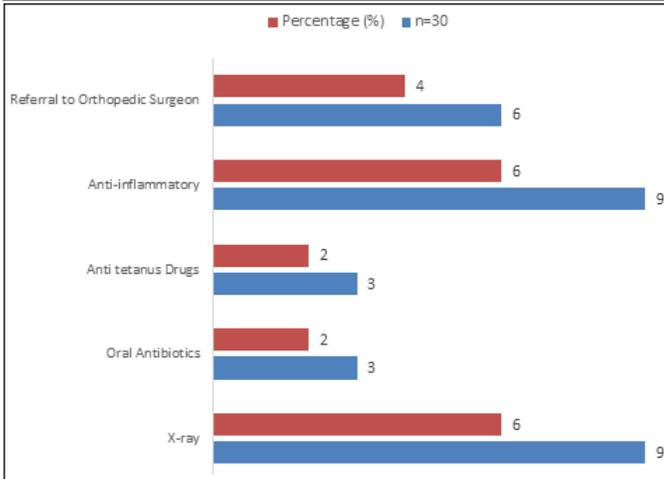


**Table 2: Type of injury in the studygroup**

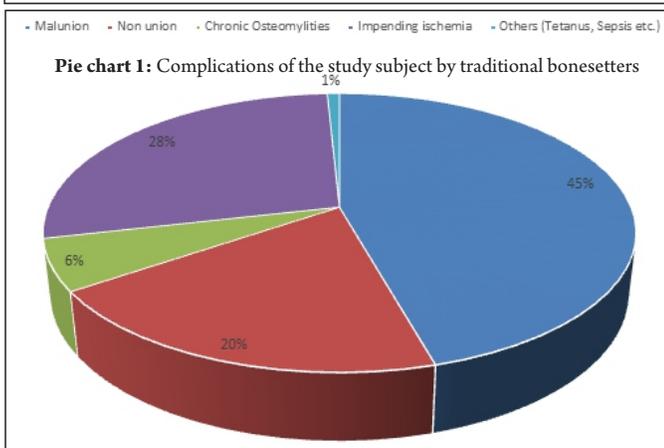
Type of Injury	No. of Cases	Percentage (%)
Simple Fracture	102	68%
Compound Fracture	15	10%
Soft tissue injury and dislocation	33	22%
Total	150	100%



Type of Modern Basic Service	n =30	Percentage (%)
X-ray	9	6%
Oral Antibiotics	3	2%
Anti tetanus Drugs	3	2%
Anti-inflammatory	9	6%
Referral to Orthopedic Surgeon	6	4%
<b>TOTAL</b>	<b>30</b>	<b>20%</b>

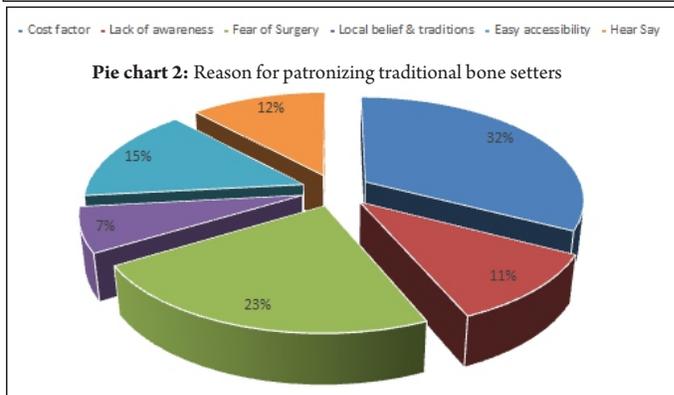


Complication	No. of Cases	Percentage (%)
Malunion	69	46%
Non union	30	20%
Chronic Osteomyelitis	9	6%
Impending ischemia	41	28%
Others (Tetanus, Sepsis etc.)	1	0.80%
<b>TOTAL</b>	<b>150</b>	<b>100%</b>



cases (33 %) towards modern orthopedic services. About 18 % of cases were still ignorant about the advancement of modern orthopedic surgery, the various complications of traditional bone setting etc. In our study 23 % of total cases had fear for surgery. Poor transport facility was responsible for the inclination of 22 (15%) of

Reason	No. Of Cases	Percentage (%)
Cost factor	48	33%
Lack of awareness	17	11%
Fear of Surgery	34	23%
Local belief & traditions	11	7%
Easy accessibility	22	15%
Hear Say	18	12%
<b>TOTAL</b>	<b>150</b>	<b>100%</b>



patients towards TBS. At the end 18 (12%) patients were found to be biased by fellow villagers and friend's opinions about TBS. Table 3 & Graph 3 illustrate Modern Basic Service followed by traditional bone setters, Table 4 & Pie chart 1 illustrate Complications of the study subject by traditional bone setters, while Table 5 and pie chart 2 illustrate the reasons for patronizing traditional bone setters.

**Discussion**

In this study the bulk of the patients were young people below 45 years (73%) with children < 15 years contributing a significant proportion (13%). Any kind of functional impairment in this group directly affects the productive and valuable group in a society. Distribution of sex in the present series showed a male preponderance with M:F ratio about 2:1 [4]. The involvement of more young males is not surprising as they are more adventurous in the active years of life and engage themselves in injury prone activities in the day to day life. Quite a good number of people in this study are having an affordable life style. Forty three cases (29%) are above poverty line. (The standard taken for socioeconomic status in this study is possession of BPL card). 20% of the APL (Above poverty line) cases are having even good reputation and business in their villages. Also, 69 literate cases (46%) had attended the TBS instead of availing the modern health avenues. These results are definitely a set back to the aim of the WHO i.e. health for all". In spite of awareness, education, affordable financial status, still people are inclined towards these TBSs. So, other causes such as psychosocial factors need to be evaluated. This study also rejects the misconception that poverty and illiteracy are the important causes that patronise the traditional bone setters in the common mass [5]. In this study, as compared to simple fracture and soft tissue injuries, the number of cases with compound

fractures is substantially low i.e. 10%. This suggests that either the TBS tactically avoid dealing compound injuries or the people in apprehension of bleeding and infection seek the hospital services. Whatever may be the reason, but this trend is definitely a blessing in disguise. Or else the mortality & morbidity would have been very high in terms of limb amputation, septicemia etc, in their study on complication of TBS, in Nigeria, found bones of axial skeleton were fractured more frequently than other and the most frequently fractured bone was femur and then Tibia, humerus and fibula in order of incidence [6]. Most of the TBS use of bamboo stick or barks of trees as splints, and wrap them around the injured part with help of cloth. Ninety (90%) TBS use some form of paste made up of herbal roots and leaves prior to the splintage and apply hot compression frequently [7, 8, 9]. This study also revealed the extent of splintage in 94% of the fractures confined to the injured site of the limb letting the adjacent joints be free to move. The traditional bonesetters are giving various logical answers to justify their approach. According to them, liberation of joints prevents stiffness and favours early return of functional status of the limb. Movement of the fractured limb enhances the rate of union and callus formation. This concept justifies to some extent the modern Sarminto's concept of functional cast bracing, Khan AA (Journal of Bangladesh Ortho. Society 1981 [10]. The most common complication observed in this series is malunion in 54 cases (46%) followed by impending ischemia (28%) contrary to observations made by Omololu, B et al [11], where nonunion is the most common complication (36.6%). The observations by Chowdury M [12] support results of this series where malunion is the predominant type of presentations. Non union (25%) has been observed as the second most common complication of traditional bone setting in their series. TBS hardly respect the soft tissue overlying the fractured bones. The lepa, heat applied irritate and scarify the skin badly. Enthusiastic application of tight splintage with intent to achieve rigid immobilization impairs vascularity. Early movements, inadequate extension of splints make the fractures unstable and impart repeated stress on the uniting bone. This delays the progress of union (which is observed in this series to be on average 9 months in lower limbs and 6 months in upper limbs) and also leads to union in various deformed positions Nwadiaro H et al [13, 14]. In the present study significantly 23% cases have apprehensions for surgery at hospitals. Ironically people harbour a false assumption that a visit to a hospital automatically means surgical treatment. The

complications following surgery is pointed out every where even if the percentage is negligible. This very phobic psychology encourages many limb injury cases to approach TBS for non surgical managements [15]. It is apparent in this study that along with financial constraints, psychosocial beliefs, local traditions and cultures even do influence the common mass to a large extent for availing traditional methods of fracture treatment [17]. Among various reasons cited by patients, Cost factor was the major reason (33%) followed by fear for surgery (23%). But at the same time, in the face of poverty, lack of infrastructure, illiteracy, this age old art becomes an easily accessible and affordable alternative for the common people at the door step as far as musculoskeletal injuries concerned. In countries like India, traditional bone setters are the largest specialist group practicing traditional medicine [18]. Due to scanty knowledge and prejudices ideas, TBS are unaware of wound toileting, use of anti tetanus and antibiotics. The hardly ever refer the cases to hospitals in case of emergency may be because of self ego. In our study only 2% received antibiotics and 4% cases offered referral advice.

## Conclusion

Educational and social awareness are the key tools to impregnate the mind of common people with disastrous outcome of traditional bone setting. This indigenous art should not be criticized out right; rather the TBS may be educated and encouraged to follow the basic principles of fracture managements. Traditional bone setting may be integrated into primary health care. The medical regulatory bodies should design programs that can give basic training to TBS for safe application of splints and early identification of signs of ischemia so to say at the door step of injured. They may be urged to adopt the referral services in cases of complications. They should be permitted and encouraged to attend as orthopedic assistants in primary trauma departments as a part of rural health scheme. Taking the noble approach of converting traditional birth attendants (TBA) to trained birth attendants (TBA) as reference, efforts may be made to convert these traditional bone setters to trained bone setters which seems to be a feasible option. Finally, progressive improvement in the economy and general public awareness is rather mandatory to complement these actions to reduce the number of traditional bone setters and increase utilization of modern orthopedic services is the ultimate aim to be achieved.

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**Declaration of patient consent:** The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his/her consent for his/her images and other clinical information to be reported in the Journal. The patient understands that his/her name and initials will not be published, and due efforts will be made to conceal his/her identity, but anonymity cannot be guaranteed.

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