Case Report | Journal of Orthopaedic Case Reports 2026 June:16(6):Page 334-338

Traditional Bone Setting Leading to Compartment Syndrome of Arm: A Case Report

Purushotham Lingaiah[1], M R Bhargavi[1], Rambabu Lavudi[1], A R Nataraj[1]

Learning Point of the Article:

- Traditional Bone Setting practice may have devastating consequences to limb and endangers life
- Supervised training of bone setters is the need of the hour
- Raise awareness among healthcare providers, policymakers and the community about the risks associated with unscientific fracture management

Abstract

Introduction: The traditional practice of bone setting is more prevalent in developing countries, including India. These traditional practices of fracture management lead to numerous limb-threatening complications like non-union, pressure necrosis, gas gangrene, nerve palsies, necrotizing fasciitis, and most importantly, compartment syndrome. Approximately 75% of acute compartment syndrome (ACS) occurs due to an underlying long bone fracture, most commonly fractures of the tibia, followed by forearm fractures. We report a case of rare occurrence of compartment syndrome of the arm, highlighting the challenges in its management, and also raise awareness about traditional bone setting and its complications.

Case Report: A 35-year-old male patient with a right distal one-third humerus shaft fracture and a non-displaced radial neck fracture, treated by a traditional bone setter, presented with complaints of swelling and pain in the arm, 4 days after the injury. On clinical and radiological evaluation, the patient was diagnosed with compartment syndrome of arm resulting in right radial nerve palsy and pressure necrosis of superficial muscles with skin blisters. Peripheral pulses were feeble. Debridement with external fixation and radial nerve exploration was performed. Split skin grafting was done for wound coverage. Sarmiento functional cast was applied once the wounds healed. Patient had a satisfactory functional outcome at 1 year follow-up.

Conclusion: This case highlights the potentially devastating consequences of traditional bone-setting practices, which remain prevalent in developing countries. The occurrence of ACS with subsequent radial nerve palsy following non-operative manipulation of humerus fracture underscores the urgent need for early recognition, prompt referral, and appropriate orthopedic intervention. Reporting this case is important as it not only contributes to the limited literature on upper limb compartment syndrome secondary to traditional fracture treatment but also serves to raise awareness among healthcare providers, policymakers, and the community about the risks associated with unscientific fracture management practices.

Keywords: Upper extremity fractures, traditional bone setting, compartment syndromes, pressure ulcer, ischemia, orthopedic procedures.

Introduction

Traditional bone setting (TBS) is an ancient form of healthcare practiced in many cultures around the world, especially in parts of Africa, Asia, and rural communities elsewhere. TBS is a non-

Access this article online

Website: www.jocr.co.in

DOI: https://doi.org/10.13107/jocr.2026.v16.i06.7464

Author's Photo Gallery


Dr. Purushotham Lingaiah


Dr. M R Bhargavi


Dr. Rambabu Lavudi


Dr. A R Nataraj

[1]Department of Orthopaedics, All India Institute of Medical Sciences, Mangalagiri, Andhra Pradesh, India.

Address of Correspondence:
Dr. Purushotham Lingaiah,
Department of Orthopaedics, All India Institute of Medical Sciences, Mangalagiri, Andhra Pradesh, India.
E-mail: puru@aiimsmangalagiri.edu.in

Submitted: 22/03/2026; Review: 09/04/2026; Accepted: May 2026; Published: June 2026

DOI: https://doi.org/10.13107/jocr.2026.v16.i06.7464

Figure 1: Clinical presentation showing skin necrosis and blisters on the distal arm.

formal method of managing fractures, dislocations, sprains, and joint injuries. It involves the manual manipulation, alignment, and splinting of bones and joints without formal orthopedic training. Traditional bone setters are usually community healers who inherit knowledge from older generations or learn through apprenticeship [1]. The practice of TBS is highly unregulated and lacks fundamental scientific principles of fracture management, infection prevention, and control [2]. These lead to numerous complications like malunion, non-union, pressure necrosis, gas gangrene, nerve palsies, necrotizing fasciitis, and most frequently, the compartment syndrome due to tightly placed splints. These limb-threatening conditions pose a significant challenge to the orthopedic surgeons practicing in these regions [3].

Acute compartment syndrome (ACS) is a condition characterized by increased pressure within the closed osteo-fascial compartment, amounting to impaired local vascular perfusion. Approximately 75% of ACS is predisposed to an underlying long bone fracture, most commonly fractures of the tibia and forearm. It can occur with any underlying condition that restricts the intra-compartmental space or increases the fluid in the intra-compartmental space. Other causes of ACS include burns, vascular injuries, crush injuries, thrombosis, improperly placed casts or splints, tight circumferential bandages, and poor positioning during surgeries [4]. Although ACS is routinely documented, ACS involving the arm is not frequently encountered [5].

We present a rare case of ACS of the arm in a 35-year-old male with associated fractures of the right distal one-third Humerus fracture, treated by a traditional bone setter using herbal paste and compression bandage. This case highlights the potentially devastating consequence of traditional bone-setting practice, which remains prevalent in developing countries. Limb salvage was achieved by timely intervention.

Case Report

A 35-year-old male suffered a closed injury to the right elbow with associated pain, swelling, and inability to move the elbow, following a road traffic accident. The patient visited a traditional bone setter (Quack), where initial treatment was given. The treatment included twice daily application of a herbal paste (composition details not available) followed by a compressive bandage. On 4th day of the treatment, the patient developed severe pain in the distal arm, blisters on the volar aspect of the arm and elbow, and inability to move the wrist. The patient presented to our emergency department with the above complaints.

On examination, there was a diffuse swelling over the entire right upper limb with multiple blisters on the ulnar and volar aspect of the distal arm and elbow. Skin over this region was necrosed with no sensations (Fig. 1). The arm compartment was tense. There was wrist drop and sensory loss in the dorsal radial digits, suggesting radial nerve palsy. Pulse was low volume in comparison to the contralateral side. There were contusions over the elbow region with bony crepitus suggestive of an underlying fracture. He was hemodynamically stable and afebrile.

Investigations – Radiograph of the elbow revealed a fracture of the distal shaft humerus with a non-displaced fracture of the radial head (Fig. 2). In the view of feeble peripheral pulsations,

Figure 2: Plain radiograph showing fracture of the distal shaft humerus and radial neck.

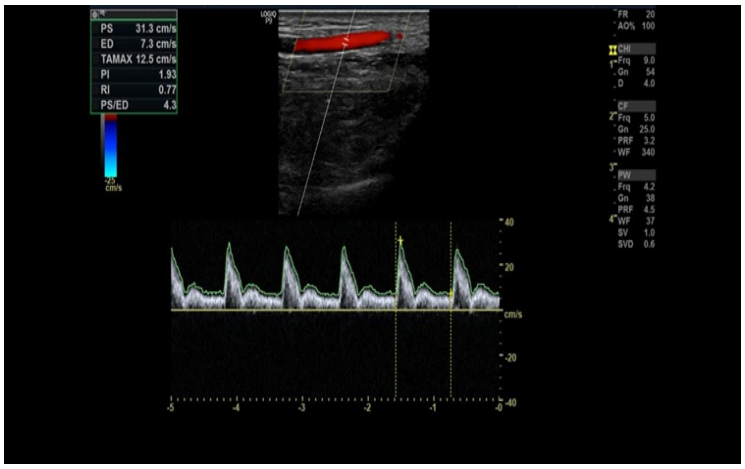

Figure 3: Color Doppler showing normal waveform and flow velocities in the radial artery.

right upper limb arterial and venous Doppler was performed which revealed normal color uptake with maintained velocities over the distal right radial and ulnar arteries (Fig. 3). Based on the clinical and radiological findings, a diagnosis of ACS of arm with radial nerve palsy resulting due to faulty fracture treatment was made.

Management – Fasciotomy of the arm, debridement of wound, radial nerve exploration and stabilization with external fixation was performed (Fig. 4). Radial nerve was contused with no discontinuity. Post-operative regular dressings resulted in healthy granulation tissue. Skin grafting was done after 2 weeks. Follow-up at 2 months showed healed skin lesions and a well-formed callus at the fracture site, and the wrist extension recovered. External fixation was removed, and Sarmiento functional cast till fracture healing was applied (Fig. 5).

Outcome – At 1 year follow-up, the fracture was consolidated (Fig. 6). The patient regained a full range of movement at the shoulder and elbow. Radial nerve had completely recovered.

Discussion

In an era of advanced orthopedic care, TBS is still commonly followed in many communities worldwide, especially in developing countries in Asia, South America, and Africa. In India, with abundant medical institutions and the best advanced medical care, about 60% of the traumas are treated by TBS [6]. This practice involves using wooden straps and casts to immobilize and stretch the injured limb, often resulting in complications such as non-union, mal-union, infections, and, most importantly, compartment syndromes. It often involves realigning bones by hand, followed by immobilization using a herbal medicated splints/sticks [7].

Despite limitations in traditional practices, various social and peer factors contribute to the support of traditional medicine.

- Cost is usually much lower than modern orthopedic care.
- Accessibility in rural areas where hospitals are far.
- Cultural trust and family traditions.

ACS is a frequent complication seen after unscientific means of fracture management. It is an acute limb-threatening condition and if untreated, can be life-threatening, by causing tissue necrosis, permanent functional impairment, possible renal failure, and death due to acute rhabdomyolysis. They are predominantly seen in the lower-limb; while most literature focuses on lower-extremity compartment syndrome, involvement of the upper extremity – particularly the arm and forearm – represents a significant clinical challenge due to its relative rarity and potential for delayed diagnosis [8]. Compartment syndrome of the arm requires prompt recognition and intervention to prevent permanent functional impairment. There are classically five P's associated with compartment syndrome: pain, paresthesia, pallor, paralysis, and pulselessness [9]. Due to a low index of suspicion and non-classical presentation, ACS of the arm is likely to be missed. Our case did not show all the classical symptoms. However, he had exponential pain over the site of fracture, pressure necrosis of skin, and radial nerve palsy.

ACS of the arm is extremely rare and not been frequently reported. The probable reason could be the pliability of compartments of arm [10]. Hence, the presence of an additional factor, such as external compression, vascular injury, and crush injury, could be found in these cases. Our case had a

Figure 4: External fixation of the arm.

Figure 5: Well-healed wound.

road traffic accident, sustaining injuries to his right upper limb. The compressive bandage treatment by a traditional bone setter, along with wooden straps to stabilize and immobilize the injured limb, led to ACS. Clinically and radiologically, the case was diagnosed as multiple upper limb fractures (right distal one-third Humerus shaft fracture and a non-displaced radial neck fracture) with Radial nerve palsy, pressure necrosis, and ACS. This underscores the need for early evaluation and management of the fractures under a proper orthopedic setting rather than TBS, since bone healing and the subsequent events are dependent on the duration of presentation and the targeted management. There are multiple causes of compartment syndrome, but this case report describes a unique scenario where an external TBS caused compartment syndrome. Untreated or delayed compartment syndrome can result in severe complications, including muscle necrosis, nerve injury, infection, and Volkmann ischemic contracture. Systemic complications such as rhabdomyolysis and renal failure have also been reported in severe cases. Timely fasciotomy and decompression can prevent these complications of ACS [11]. Our patient underwent fasciotomy, debridement, bony stabilization with external fixation, and radial nerve exploration. Postoperatively, the patient improved symptomatically and was discharged in a hemodynamically stable condition. This case illuminates the extremes of outcomes an ill-managed fracture can present with, and the indispensable need to create awareness among the patients and the orthopedic surgeons for effective handling of the patient and improve patient care.

Wound management following fasciotomy often requires delayed closure or skin grafting. Prognosis depends largely on the timing of diagnosis and intervention. Patients treated early typically recover good limb function, whereas delays beyond several hours significantly increase the risk of long-term impairment.

Conclusion

Traditional bone-setting practices can have potentially devastating consequences, as seen in this case of humeral shaft fracture complicated by ACS, radial nerve palsy, and pressure necrosis. Swift surgical intervention ensured limb salvage, but the case serves as a stark reminder that unscientific fracture management endangers lives and demands urgent awareness, early referral, and decisive orthopedic care. Reporting this case is important as it not only contributes to the limited literature on upper limb compartment syndrome secondary to traditional fracture treatment but also serves to raise awareness among healthcare providers, policymakers, and the community about the risks associated with unscientific fracture management practices.

Clinical Message

The treatment by quacks can be detrimental to the limb and life of a patient. Early referral, prompt recognition, and treatment of compartment syndrome with a guarded prognosis may serve as an optimal approach in such cases.

Figure 6: Radiologically healed fracture with no signs of infection at 1 year follow-up.

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

Conflict of interest: Nil **Source of support:** None

References

1. Hamad H, Omer D, Abdelnabi R, Abdelgaleel A. Motives and consequences of musculoskeletal injuries management at traditional bone setting centers rather than hospital orthopedic departments in Khartoum, Sudan 2020. Afr Health Sci 2024;24:384-94.

2. Nandeesh S, Sharma A, Madhuchandra P, Koushik, Raju KP, Kumar AV, et al. A study on complications seen in musculoskeletal injuries treated by traditional bone setters. J Popul Ther Clin Pharmacol 2025;32:e10250.

3. ouré L, Bah A, Djiré I, Sidiki SA, Sékou S, Diarra Y, et al. Is traditional bone setting a risk factor for postoperative complications in limb fractures? A prospective case-control study from Mali. Int J Orthop Sci 2025;11:184-6.

4. Machaku D, Lodhia J, Nangole A, Chilonga K, Massawe H. Loss of a limb: A consequence of traditional bone setting. Int J Surg Case Rep 2025;130:111237.

5. Via AG, Oliva F, Spoliti M, Maffulli N. Acute compartment syndrome. Br Med Bull 2015;115:25-36.

6. Girish P, Varman JM, Gopinath G, Khader FA. Mismanagement by native bone setters and its complications - An observational and retrospective study. Indian J Orthp Surg 2020;6:316-21.

7. Palo N, Chandel S, Malik C, Shukla A, Choudhary GN, Govind N, et al. Traditional bonesetters clinics: Prospective trends and work assessment on 915 bonesetters operating in parts of Uttar Pradesh and Haryana, India. J Orthop Dis Traumatol 2023;6:194-19.

8. Maeckelbergh L, Colen S, Anné L. Upper arm compartment syndrome: A case report and review of the literature. Orthop Surg 2013;5:229-32.

9. Hanandeh A, Mani VR, Bauer P, Ramcharan A, Donaldson B. Identification and surgical management of upper arm and forearm compartment syndrome. Cureus 2019;11:e5862.

10. Balogun MJ, Morhason-Bello JO, Olusola IK. Peadiatric amputation from traditional bone setters' gangrene in Ibadan: A malady. Int J Res Orthop 2024;10:1137-41.

11. Venkatesh Kumar N, Aravind Kumar SM, Ganapathi V, Sairamakrishnan S. Issues in management of fractures complicated by compartment syndrome. Int J Orthop Sci 2017;3:326-9.

Conflict of Interest: Nil
Source of Support: Nil

Consent: The authors confirm that informed consent was obtained from the patient for publication of this article

How to Cite this Article

Lingaiah P, Bhargavi MR, Lavudi R, Nataraj AR. Traditional Bone Setting Leading to Compartment Syndrome of Arm: A Case Report. Journal of Orthopaedic Case Reports 2026 June;16(06): 334-338.