

RESEARCH PAPER

Displaced Colles' Fracture Managed through *Sushruta's Bhagna Chikitsa*: A Case Report

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ABSTRACT

Background: Colles' fracture, a fracture of the distal end of the radius, is among the commonest fractures of the upper limb, particularly in adults past the fourth decade of life. Its management in contemporary orthopaedic practice depends upon the degree of displacement and stability of the fragment, and ranges from closed reduction with immobilisation to operative fixation. Classical Ayurvedic surgical literature, most notably the *Sushruta Samhita*, describes a systematic approach to the management of fractures and dislocations under the heading of *Bhagna Chikitsa*, encompassing examination, reduction (*Sthapana*), stabilisation (*Bandhana*) and supportive care.

Case Presentation: We report the case of a 54-year-old woman who presented with pain, swelling and deformity of the right wrist following a fall on an outstretched hand. Clinical and radiological assessment was consistent with a fracture of the distal radius. The patient was managed with supportive *Bandhana* (bandaging), local *Taila* application, *Pata Sweda* with hot water, *Lepana* with Ayurvedic formulations, and internal medication, with periodic reassessment and re-bandaging over the course of treatment.

Conclusion: The classical principles described by Acharya *Sushruta* for the reduction and immobilisation of a fractured limb show a conceptual correspondence with the contemporary sequence of reduction and immobilisation used in the management of Colles' fracture. This case is presented to illustrate that correspondence and to encourage further systematic documentation of Ayurvedic fracture management using standardised, CARE-compliant reporting.

Keywords: Colles' fracture; distal radius fracture; *Bhagna Chikitsa*; *Sthapana*; *Bandhana*; Ayurveda; case report

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INTRODUCTION

A fracture of the distal end of the radius at its cortico-cancellous junction, approximately two centimetres proximal to the articular surface, is conventionally termed a Colles' fracture. It is the most frequently encountered fracture of the upper limb in adults beyond the fourth decade, and is particularly common among post-menopausal women because of the associated reduction in bone mineral density (1,2). The injury classically follows a fall on an outstretched hand and produces pain, swelling, tenderness and the characteristic dorsally angulated "dinner-fork" deformity of the wrist. Reported complications include joint stiffness, malunion, subluxation of the inferior

radio-ulnar joint, carpal tunnel syndrome, complex regional pain syndrome and, rarely, rupture of the extensor pollicis longus tendon.

Contemporary management of Colles' fracture is guided by the degree of displacement, articular involvement, bone quality and the functional demands of the patient. Minimally displaced and stable fractures are generally managed conservatively with closed reduction and cast immobilisation, whereas unstable, comminuted or intra-articular fractures, especially in the presence of poor bone quality, may require percutaneous fixation or open reduction with internal fixation (1,3,4). Recent literature continues to debate the comparative functional benefit of operative over non-operative treatment in the elderly,

with several randomised trials reporting broadly comparable outcomes at one year (3,5).

Long before these modern classifications were formalised, the management of fractures and joint dislocations had already been systematically described in the classical surgical literature of Ayurveda. *Acharya Sushruta*, in the *Chikitsa Sthana* of the *Sushruta Samhita*, classified traumatic injury to bone and joint under the broad heading of *Bhagna*, and devoted an entire chapter, the *Bhagna Chikitsitam*, to its management (6). The chapter opens with the declaration that the treatment of fractures and dislocations shall now be expounded as taught by Lord Dhanvantari, and proceeds to describe, in sequence, the dietary and behavioural regimen appropriate to a fracture patient, the nutritive measures required for union, the technique of reduction (*Sthapana*), and the principles governing bandaging (*Bandhana*) (6).

The present article attempts to view a case of displaced Colles' fracture through this classical framework, correlating the documented management of *Bandhana* and supportive Ayurvedic therapy with the principles of *Sthapana* and *Bandhana* described by *Sushruta*. The case is reported in accordance with the CARE (CASE REport) guidelines for the transparent and complete reporting of clinical case reports (7).

LITERATURE REVIEW

The classical description of *Bhagna Chikitsa* in the *Chikitsa Sthana* of the *Sushruta Samhita* is organised as a sequence of principles, each supported by a specific verse. The verses most directly relevant to the present case are reproduced below in the original Sanskrit, together with their English rendering and their conceptual correlation with the case.

1. General Declaration of *Bhagna Chikitsa*

अथातो भग्नानां चिकित्सितं व्याख्यास्यामः, यथोवाच भगवान् धन्वन्तरिः ॥१॥

Sushruta Samhita, Chikitsa Sthana 3/1

Meaning: Now we shall expound the treatment of fractures and dislocations, as taught by the venerable Dhanvantari. This opening declaration establishes *Bhagna Chikitsa* as a distinct and systematically taught subject of surgical management, within which the present case of Colles' fracture may be discussed.

2. Factors Affecting the Healing of *Bhagna*

अल्पाशिनोऽनात्मवतो जन्तोर्वातात्मकस्य च । उपद्रवैर्वा जुष्टस्य भग्नं कृच्छ्रेण सिध्यति ॥२॥

Sushruta Samhita, Chikitsa Sthana 3/2

Meaning: A fracture occurring in a person who is sparing in diet, of unsteady disposition, of predominantly *Vata* constitution, or afflicted by complicating illness, heals with difficulty. This verse reflects the classical recognition of nutritional and constitutional factors in fracture healing, a consideration equally relevant to the present 54-year-old patient.

3. *Pathya* and *Apathya* (Diet and Regimen) in *Bhagna*

लवणं कटुकं क्षारमल्लं मैथुनमातपम् । व्यायामं च न सेवेत भग्नो रूक्षान्नमेव च ॥३॥

Sushruta Samhita, Chikitsa Sthana 3/3

Meaning: A patient with a fracture should avoid salt, pungent and alkaline substances, sour food, sexual activity, excessive sun exposure, physical exertion and dry food. This verse demonstrates the classical emphasis on rest and dietary restriction during the healing period.

4. *Brimhana* (Nutritive Measures)

शालिर्मांसरसः क्षीरं सर्पिर्यूषः सतीनजः । बृंहणं चान्नपानं स्याद् देयं भग्नाय जानता ॥४॥

Sushruta Samhita, Chikitsa Sthana 3/4

Meaning: Rice, meat-soup, milk, ghee, pulses and other nourishing food and drink should be given, with due discretion, to a patient with a fracture. *Brimhana* (nourishment) is thus included as a supportive measure in the classical management of *Bhagna*, paralleling the modern emphasis on adequate protein and calcium intake to support fracture union.

5. *Sthapana*: Reduction of the Fractured Fragment

अवनामितमुन्नह्येदुन्नतञ्चावपीडयेत् । आञ्छेदतिक्षिप्तमधोगतञ्चोपरि वर्तयेत् ॥५॥

Sushruta Samhita, Chikitsa Sthana 3/15

Meaning: A depressed fragment should be elevated, an elevated fragment should be pressed down, and a displaced fragment should be pulled and repositioned according to the direction of displacement. This principle of *Sthapana* is directly relevant to displaced Colles' fracture, in which the distal fragment of the radius undergoes characteristic dorsal displacement and angulation requiring correction in the opposite direction.

6. Methods of *Sthapana*

पीडनैश्चैव सर्वास्तु सङ्क्षेपैर्बन्धनैस्तथा । आञ्छनेः सन्धीञ्छरीरे चलानप्यचलानपि । एतैस्तु स्थापनोपायैः स्थापयेन्मतिमान् भिषक् ॥६॥

Sushruta Samhita, Chikitsa Sthana 3/16

Meaning: An intelligent physician should restore and maintain all joints of the body, whether movable or immovable, by these means of reduction, namely *Pidana* (pressure), *Sankshepa* (approximation), *Bandhana* (bandaging) and *Anchana* (traction). This verse demonstrates that *Sushruta* considered fracture management to involve not merely repositioning but also the maintenance of the corrected position, a sequence comparable to the modern practice of reduction followed by immobilisation.

7. *Bandhana*: Immobilisation and Stabilisation

तत्रातिशिथिलं बद्धे सन्धिस्थैर्यं न जायते । गाढेनापि त्वगादीनां शोफो रुक् पाक एव च । तस्मात् साधारणं बन्धं भग्ने शंसन्ति तद्विदः ॥८॥

Sushruta Samhita, Chikitsa Sthana 3/8

Meaning: If the bandage is too loose, adequate stability of the joint is not achieved; if it is too tight, swelling, pain and suppuration of the skin and underlying tissue may occur. A moderate bandage is therefore advised by those versed in the subject. This verse is directly relevant to the present case, in which *Bandhana* was used repeatedly for support and stabilisation, with periodic reassessment and re-bandaging during follow-up.

PATIENT INFORMATION

A 54-year-old woman presented with a history of a fall on an outstretched right hand, following which she developed pain and swelling over the right wrist. She had been apparently well prior to the fall, with no reported comorbidity or prior wrist injury volunteered in the available clinical records. She was initially evaluated at a local diagnostic centre and subsequently admitted to a tertiary Ayurveda medical college hospital for definitive management. For the purposes of this report and in keeping with patient confidentiality, the patient is identified only as "the patient" and all identifying information, including her name and hospital identification number, has been removed from the accompanying images.

CLINICAL FINDINGS

On examination, the patient had visible swelling and deformity over the distal right forearm and wrist, with tenderness on palpation of the distal radius. Wrist movements were restricted because of pain. The general condition of the patient was otherwise stable. Figure 1 shows the clinical appearance of the affected wrist at presentation.

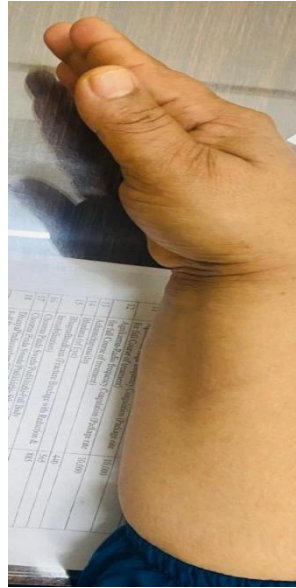


Figure 1. Clinical photograph of the right wrist and forearm at presentation, showing swelling and loss of the normal contour of the distal forearm. Background material has been cropped to protect patient privacy.

TIMELINE

Date	Event
24 October 2025	Initial radiographic evaluation of the right wrist at an outside diagnostic centre.
27 October 2025	Repeat wrist radiograph at the same centre for interval assessment.
13 November 2025	Further follow-up wrist radiograph.
03 December 2025	Admission to the Ayurveda medical college hospital; forearm radiograph repeated; initiation of <i>Bandhana</i> and supportive Ayurvedic management.
Subsequent days	Continuation of <i>Taila</i> application, <i>Pata Sweda</i> , <i>Lepana</i> and internal medication, with periodic reassessment and re-bandaging.
Follow-up visits	General condition stable; no significant fresh complaints documented on repeated review.

DIAGNOSTIC ASSESSMENT

The diagnosis of a fracture of the distal end of the right radius was made on the basis of the history of a fall on an outstretched hand, the clinical findings of pain, swelling and deformity of the wrist, and serial radiographic examination of the wrist and forearm performed between October and December 2025 (Figure 2). The radiographs demonstrated a fracture

involving the distal radius with alteration of the normal alignment of the distal fragment, consistent with a Colles' pattern of injury. A radiographically confirmed diagnosis of Colles' fracture was accordingly assigned, and the case was managed on this basis. No further imaging, such as computed tomography, was documented in the available records, and a formal AO/OTA fracture classification was not recorded in the source documents; this is acknowledged as a limitation of the available data (see Discussion).



Figure 2. Radiograph of the hand and wrist demonstrating a fracture of the distal radius.



Figure 3 (a–d). Serial radiographs of the right wrist and forearm dated 24 October, 27 October, 13 November and 03 December 2025, showing the fracture through its documented course. Patient name and hospital identification number have been redacted to preserve confidentiality.

THERAPEUTIC INTERVENTION

Following admission, the patient was managed with an integrated protocol of external Ayurvedic procedures and internal medication, individualised to the site of injury, the degree of swelling and pain, and the patient's general condition. The documented treatment modalities were as follows:

- *Bandhana* (therapeutic bandaging) of the affected wrist and forearm, applied for stabilisation and support, with periodic reassessment and re-bandaging during the course of treatment.
- *Taila* (medicated-oil) application to the affected region as a local anti-inflammatory and lubricant measure.
- *Pata Sweda* with hot water, a local sudation procedure intended to relieve pain and stiffness.
- *Lepana*, the local application of an Ayurvedic paste formulation, to the affected wrist.
- Internal medication, administered as part of the overall treatment protocol; the specific formulations and dosage schedule were not itemised in the available case records.

Figures 4 and 5 show the clinical procedure of reduction and bandaging, and the appearance of the bandaged limb, respectively. In accordance with patient-confidentiality requirements, the faces of the patient and of attending staff visible in the original photographic records have been obscured in the reproduced images.



Figure 4 (a–d). Clinical photographs of the reduction and bandaging procedure being performed on the affected wrist. Faces of attending personnel have been obscured to preserve confidentiality; no identifiable facial features of any individual are shown.



Figure 5 (a, b). Appearance of the bandaged right wrist and forearm following Bandhana. The patient's facial features have been obscured to preserve confidentiality.

A supplementary video record of the reduction, bandaging and feedback session was maintained by the treating institution and is retrievable through a quick-

response (QR) code (Figure 6); this is referenced here for completeness and was not independently reviewed for the purpose of this report.



Figure 6. Quick-response (QR) code linking to supplementary video documentation retained by the treating institution.

FOLLOW-UP AND OUTCOMES

The patient was reviewed regularly during the course of treatment. The available nursing and clinical records documented continuation of *Taila* application, *Pata Sweda*, *Lepana* and bandaging, with re-bandaging performed as clinically indicated. On repeated review, the patient's general condition was reported as stable, and no significant fresh complaints were recorded in the available follow-up notes. Objective outcome measures such as wrist range of motion in degrees, grip strength, a validated functional score (for example, the Patient-Rated Wrist Evaluation), or a formal radiological assessment of union were not documented in the source

records available for this report, and their absence is acknowledged as a limitation.

DISCUSSION

The verses reproduced in the Literature Review above, taken together, describe a coherent classical sequence for the management of *Bhagna*: assessment of the patient's constitution and dietary state (*Chikitsa Sthana* 3/2) (6), a defined regimen of restriction and nourishment (3/3-4) (6), correction of the displaced fragment by *Sthapana* (3/15-16) (6), and its maintenance by a carefully calibrated *Bandhana* (3/8) (6). Correlated with the present case, this sequence maps broadly onto

the modern approach to a displaced Colles' fracture, in which closed reduction followed by immobilisation in a below-elbow cast remains the standard of care for a stable or minimally displaced fracture, and is increasingly supported as an acceptable option even for many displaced fractures in older patients, in whom operative fixation has not consistently demonstrated superior functional outcomes at one year (3,5).

The specific direction that a bandage be neither too loose, which fails to secure the joint, nor too tight, which produces swelling and suppuration (*Chikitsa Sthana* 3/8) (6), is of particular relevance to the present case, in which *Bandhana* was applied repeatedly, with periodic reassessment and re-bandaging over the course of treatment. This mirrors the modern clinical practice of monitoring a cast or splint for excessive tightness or looseness during the period of fracture healing, and suggests that the classical author had already recognised the same practical hazard that contemporary fracture care continues to guard against. Similarly, the adjunctive local measures documented in the case, namely *Taila* application, *Pata Sweda* and *Lepana*, appear intended to control local pain and swelling and to support soft-tissue healing during the period of immobilisation, in a manner conceptually analogous to the elevation, analgesia and physiotherapy that accompany modern conservative management (1,4).

This case report has several limitations that should be acknowledged. First, no computed tomography or formal AO/OTA fracture classification was documented in the source records, so the radiological description in this report is limited to what serial plain radiographs demonstrated. Second, the documentation available for review was retrospective and incomplete in places, so that the specific formulation and dosage of the internal medication administered could not be reported. Third, no validated functional outcome score, radiological union score, or objective measurement of wrist range of motion was available, limiting the ability to draw firm conclusions regarding the efficacy of the intervention. Fourth, being a single case, no causal or comparative inference regarding the effectiveness of Ayurvedic management relative to conventional cast immobilisation can be drawn; the value of the report lies chiefly in its illustration of a conceptual correlation between classical and contemporary principles of fracture care, rather than in any claim of comparative efficacy.

PATIENT PERSPECTIVE

A first-person account of the patient's experience of her injury and treatment was not recorded in the clinical documentation available for this report, and none is

included here in order to avoid attributing views to the patient that she did not express in the source records. Future prospective documentation of similar cases would benefit from the systematic recording of the patient's own account of pain, function and satisfaction with treatment, in keeping with the CARE guideline recommendation that a case report should, where possible, include the patient's perspective on the experience of illness and treatment (7).

INFORMED CONSENT

Written informed consent for the publication of this case report and the accompanying clinical images was obtained from the patient. The authors confirm that all identifying information, including the patient's name and hospital identification number, has been removed or obscured from the text and images reproduced in this article, and that the faces of the patient and of attending personnel visible in the original photographic records have been rendered unidentifiable.

CONCLUSION

The management of a displaced Colles' fracture in this patient, comprising *Bandhana*, local *Taila* application, *Pata Sweda*, *Lepana* and internal medication, illustrates a practical application of the classical principles of *Sushruta's Bhagna Chikitsa* to a common contemporary orthopaedic injury. The correspondence between the classical description of *Sthapana* and *Bandhana* and the modern sequence of reduction and immobilisation suggests that a rational, evidence-based integration of classical Ayurvedic surgical principles with contemporary radiological and rehabilitative practice merits further systematic study. Prospective case series employing standardised outcome measures and CARE-compliant reporting are needed to evaluate the practical applicability of *Sushruta*-based approaches in modern fracture care.

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AUTHOR CONTRIBUTIONS

Dr. Saifudheen P (HOD & Associate Professor) conceived the case report, supervised the clinical management, and reviewed the classical Ayurvedic literature and the manuscript for intellectual content. Dr. Arjun N (Associate Professor) contributed to the review of literature, drafting of the manuscript and critical revision. Dr. Simrin P, Dr. Aiswarya A and Dr. Harsha Muhammed MR (Interns) contributed to clinical data collection, compilation of case records, and preparation of the manuscript. All authors read and approved the final version for submission.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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