

Conservative Management of a Displaced Left Intertrochanteric Fracture of the Femur through *Sushruta's Bhagna Chikitsa*: A Single Case Report

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Abstract

Background: Fractures of the trochanteric region of the femur form a substantial proportion of proximal femoral injuries in the elderly and are frequently accompanied by displacement, external rotation deformity, shortening of the limb and marked impairment of hip function. *Acharya Sushruta*, in the classical surgical treatise *Sushruta Samhita*, described the principles of fracture management under the heading of *Bhagna Chikitsa*, wherein *Asthi Bhagna* denotes injury to bone. His approach, comprising examination of the injured part, correction of displacement (*Sthapana*), stabilisation (*Bandhana*) and appropriate aftercare, is one of the earliest structured frameworks for fracture management recorded in medical literature.

Objective: To document the conservative management of a displaced left intertrochanteric fracture of the femur in an elderly female patient through the classical principles of *Sushruta's Bhagna Chikitsa*, and to correlate these classical principles with contemporary orthopaedic understanding of proximal femoral fracture care.

Case Presentation: An 85-year-old female sustained a fall resulting in a displaced left intertrochanteric fracture of the femur, confirmed radiologically, and presented with the classical external rotation deformity of the affected limb. The fracture was managed without internal fixation, through manual reduction (*Sthapana*) followed by immobilisation with a rigid splint and layered cloth bandage (*Bandhana*), in a manner consistent with the descriptions given in *Sushruta Samhita, Chikitsa Sthana, Adhyaya 3*. A detailed comorbidity profile and the specific documented rationale for proceeding conservatively rather than operatively were not separately recorded in the retrospective case notes available for this report.

Results: Serial clinical and radiographic follow-up over three months showed progressive callus formation on radiography at approximately ten weeks, along with graded functional recovery, from an initially bed-bound state to sitting with support, standing with a walking aid, and eventually sitting without support by the twelfth week. No pressure sores, respiratory infection, urinary tract infection or clinically evident features of venous thromboembolism were observed by the treating team over this period, although systematic screening using standardised assessment instruments was not part of routine care and cannot be confirmed retrospectively.

Conclusion: This case shows that the classical descriptions of *Sthapana* and *Bandhana* in *Sushruta's Bhagna Chikitsa* retain descriptive and conceptual relevance when read alongside modern fracture management. However, conservative management of a displaced intertrochanteric fracture in an elderly patient departs from the early surgical fixation recommended by contemporary orthopaedic guidelines, and the present observation ought to be read as a single descriptive case rather than as evidence favouring conservative treatment over surgery.

Keywords: *Bhagna Chikitsa*; *Sushruta Samhita*; Intertrochanteric fracture; *Sthapana*; *Bandhana*; *Asthi Bhagna*; *Ayurveda*; Case report

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1. INTRODUCTION

Displaced fractures of the trochanteric region of the femur occur when the proximal fragment of the femur separates from its normal anatomical alignment, either because of direct trauma or on account of the pull exerted by the surrounding musculature. The greater trochanter forms the site of attachment of the gluteal muscles and the short external rotators of the hip, while the lesser trochanter receives the insertion of the iliopsoas. Displacement at either site alters the biomechanics of the hip joint and compromises gait. Patients characteristically present with pain localised to the hip, groin or outer thigh, an inability

to bear weight on the affected limb, and a limb that appears shortened and externally rotated at the foot, a presentation often described colloquially at the bedside as a “laterally deviated foot.”

Intertrochanteric fractures occur predominantly in elderly individuals with osteoporotic bone, following a fall from standing height, and less commonly in younger individuals because of high-energy trauma or forceful muscular avulsion. With rising life expectancy and a corresponding rise in the geriatric population, the burden of osteoporotic hip fractures in India has been projected to rise substantially, and intertrochanteric fractures

account for close to half of all fractures occurring around the hip joint in elderly patients [1].

Well before the introduction of contemporary orthopaedic fixation devices, the principles governing fracture management were systematically described in the *Sushruta Samhita*, the foundational surgical treatise of *Ayurveda* attributed to *Acharya Sushruta*. Fractures are described therein under the broad heading of *Bhagna*, with the term *Asthi Bhagna* specifically denoting fracture of bone, as distinct from *Sandhi-moksha*, denoting dislocation of a joint. *Sushruta's* description of *Bhagna Chikitsa* laid emphasis on careful examination of the site and nature of the injury, correction of displacement through *Sthapana*, maintenance of the corrected position through *Bandhana*, and subsequent measures directed towards union of the fractured part and restoration of function [2,3].

Although the anatomical terminology and the instruments employed differ considerably from those used in contemporary practice, several of the underlying concepts described by *Sushruta*, namely correction of displacement, maintenance of reduction and graded restoration of function, bear a discernible resemblance to the reduction, immobilisation and rehabilitation sequence followed in modern fracture care.

This article presents a single case of a displaced left intertrochanteric fracture of the femur in an elderly woman, managed conservatively through manual reduction and traditional splinting, in keeping with the principles of *Sushruta's Bhagna Chikitsa*. The aim is to correlate the classical description with contemporary understanding of proximal femoral fracture management, while maintaining a clear distinction between historical surgical practice and current evidence-based orthopaedic care. This report has been prepared following the CARE (CAse REport) guidelines for the reporting of clinical case studies [9].

2. LITERATURE REVIEW

2.1 Classical Description in the *Sushruta Samhita*

Sushruta's descriptions of fracture management, occurring in the *Chikitsa Sthana* of the *Sushruta Samhita*, address different regions of the body separately. The following verses, pertaining to fractures of the hip (*Kati Bhagna*) and of the leg and thigh (*Jangha* and *Uru*), are of direct relevance to the region of injury in the present case [2,3]. Verse numbering here follows the Chaukhambha Sanskrit Sansthan edition with the *Ayurveda Tattva Sandipika* commentary [2], and the English rendering by Bhishagratna [3] has been consulted for cross-verification. Minor differences in verse numbering between editions of the *Chikitsa Sthana*, *Adhyaya* 3, have accordingly been reconciled by citing both sources together.

आन्धेदूर्ध्वमधो वाऽपि कटिभग्नं तु मानवम् । ततः स्थानस्थिते सन्धौ बस्तिभिः समुपाचरेत् ॥२८॥

āñchedūrdhvam adho vā'pi kaṭibhagnam tu mānavam | tataḥ sthānasthite sandhau bastibhiḥ samupācaret ||28||
(*Sushruta Samhita, Chikitsa Sthana* 3/28)

In a fracture of the hip region (*Kati Bhagna*), the affected part is to be drawn either upward or downward, according to the requirement of the situation, and restored to its normal position (*Sthapana*). Thereafter, once the joint is well seated in place, it is to be further treated with therapeutic enemata (*Vasti*) [2,3].

अभ्याज्यायामयेज्जङ्घामूर्ध्वं च सुसमाहितः । दत्त्वा वृक्षत्वचः शीता वस्त्रपट्टेन वेष्टयेत् ॥२९॥

abhyajyāyāmayej jaṅghām ūrūṁ ca susamāhitaḥ | dattvā vṛkṣatvacaḥ śītā vastrapaṭṭena veṣṭayet ||29||

(*Sushruta Samhita, Chikitsa Sthana* 3/26)

The leg (*Jangha*) and the thigh (*Uru*), when fractured, are to be gently anointed and carefully extended by the surgeon. A cooling splint prepared from tree bark is then applied and the part bound with strips of cloth [2,3].

मतिमांश्चक्रयोगेन ह्यान्धेदूर्ध्वस्थि निर्गतम् । स्फुटितं पिच्छितं चापि बध्नीयात् पूर्ववद्विषक् ॥२७॥

matimāms cakrayogena hyāñched ūrvasthi nirgatam | sphuṭitaṁ picchitaṁ cāpi badhnīyāt pūrvavad bhiṣak ||27||

(*Sushruta Samhita, Chikitsa Sthana* 3/27)

A displaced fragment of the femur (*Uru-asthi*) is to be drawn into position by an intelligent surgeon through the technique of *Chakrayoga*, a form of circular traction and splinting likened to the turning of a wheel. A cracked or crushed bone is similarly bandaged by the physician in the manner already described [2,3].

The intertrochanteric region lies at the anatomical transition between the *Kati* (hip-girdle) and *Uru* (thigh) divisions recognised in the *Sushruta Samhita*, which is why verses addressing *Kati Bhagna* and *Uru/Jangha Bhagna* have both been read together in relation to the present injury, rather than either verse alone being taken to describe the site with precision. Within *Sushruta's* broader twelve-fold classification of *Kanda-Bhagna* (fractures of long bones), a displaced fracture that is mobile on gentle manipulation would broadly correspond to the category described as *Kandabhagna* proper; a more precise classical sub-categorisation could not be attempted in the present case in the absence of a documented formal fracture morphology (Section 3.3).

Read together, these verses set out a coherent sequence: correction of displacement (*Sthapana*), followed by supportive splinting and bandaging (*Bandhana*), reinforced where necessary by circular wheel-like wrapping (*Chakrayoga*), and followed by measures to promote union and recovery. This sequence corresponds conceptually, though not in technical detail, with the modern steps of closed reduction, immobilisation and rehabilitation. The correlation drawn in this article should be understood as descriptive and conceptual, and not as an assertion of technical equivalence between the classical procedure and any specific modern manoeuvre.

2.2 Modern Classification of Intertrochanteric Fractures of the Femur

Intertrochanteric fractures of the femur have been classified in contemporary orthopaedics based on the number of fracture fragments, the degree of comminution and the stability of the fracture pattern. Among the systems in common use, the classification described by Boyd and Griffin remains widely referenced for its simplicity and its correlation with fracture stability [4]. This classification is summarised in Table 1 for background reference. A formal categorisation of the present case using this or an equivalent system was not possible from the available clinical records (Section 3.3), principally because a dedicated true lateral radiographic view of the proximal femur, needed to assess posteromedial comminution and fragment number, was not retained alongside the single available anteroposterior film, and the classification has therefore not been applied

to the patient described here. It is presented here as background reference against which the descriptive

Type	Description
Type I	Simple two-fragment fracture along the intertrochanteric line, without comminution
Type II	Comminuted fracture with a large posterior fragment involving both trochanters

Table 1. Boyd and Griffin classification of intertrochanteric fractures of the femur [4]. (Presented for

2.3 Epidemiological Considerations

Osteoporotic hip fractures represent a growing public health concern in India, where an annual incidence in the range of 0.6 million such fractures has been estimated, a figure expected to rise further with increasing longevity of the population [1]. Protocol-based, structured pathways of care for older adults with hip fractures, incorporating timely diagnosis, medical optimisation and, where appropriate, early surgery, have been shown to improve outcomes in high-income settings, and their adoption in Indian tertiary care hospitals has been explored in feasibility studies [5]. These considerations of timeliness and structured care form an important background against which the management of the present case may be viewed.

3. CASE REPORT

Data availability statement: This report was compiled retrospectively from the case sheet, radiographs and clinical photographs maintained by the treating department. The retrospective documentation available for this report did not include a structured record of the patient's pre-existing comorbidities, medication history, baseline functional or cognitive status, admission vital signs and systemic examination findings, the specific rationale for proceeding conservatively rather than operatively, the detailed schedule of bandage renewal and adjunctive analgesic measures, or standardised pain and functional outcome scores. These gaps are noted at the



Figure 1. Pre-treatment clinical photograph showing external rotation deformity of the left lower limb on the first day of presentation.

terminology used elsewhere in this report may be understood.

Type III	Fracture with a subtrochanteric component and comminution of the posteromedial cortex
Type IV	Fracture extending into the proximal femoral shaft, typically with a spiral component

background reference; not applied to the present case, see Section 3.3.)

relevant points below and discussed further as a limitation of the present report in Section 6.

3.1 Patient Information

An 85-year-old female presented with a history of an accidental fall at home, following which she was unable to bear weight on the left lower limb and complained of pain over the left hip (comorbidity and baseline functional status not available; see Data availability statement above). In keeping with standard requirements for the publication of clinical case material, all personal identifiers, including the patient's name and hospital registration number, have been withheld from this report and removed from the accompanying images, and facial identity has been masked in the clinical photographs to protect patient privacy. Written informed consent for the use of de-identified clinical images and case details for academic and publication purposes was obtained from the patient's attendant.

3.2 Clinical Findings

On examination, the left lower limb was found to be externally rotated, with the foot resting outward (Figure 1), a finding classically associated with fracture of the proximal femur. The patient was unable to actively lift or bear weight on the affected limb, and movement at the hip elicited pain. No open wound was noted over the region of injury (admission vital signs and systemic examination findings not separately retained; see Data availability statement, Section 3).

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3.3 Diagnostic Assessment

Radiographic examination of the left hip, performed on the day of injury, revealed a fracture through the intertrochanteric region of the left femur with displacement of the fracture fragment (Figure 2), confirming the clinical impression. A formal



Figure 2. Pre-treatment radiograph showing a displaced fracture of the left proximal femur

3.4 Therapeutic Intervention

On the first day following injury, manual reduction (*Sthapana*) of the fracture was carried out (Figure 3). Following reduction, the limb was immobilised using a rigid splint reinforced with layered cloth bandaging (*Bandhana*), extending from the proximal thigh to the ankle (Figure 4). The bandage was applied and reinforced



Figure 3. Manual reduction (*Sthapana*) of the fracture being performed on the first day after injury. Patient and attendant identity have been masked to protect privacy.

categorisation of the fracture using a standard classification system, such as that described in Table 1, was not documented in the available clinical records, and the fracture has therefore been described here in descriptive terms as a displaced left intertrochanteric fracture of the femur.

circumferentially at intervals, in keeping with the classical description of *Chakrayoga* given in *Chikitsa Sthana* 3/27 [2,3]. Supportive intravenous therapy was administered during the acute period, as is evident in the accompanying photographic documentation (detailed bandage-renewal schedule and adjunctive analgesic measures not separately itemised; see Data availability statement, Section 3).



Figure 4. Close-up view of the limb after *Bandhana*, showing the rigid splint and layered cloth bandage extending from the thigh to the ankle.

3.5 Follow-up and Outcome

At approximately ten weeks following reduction, repeat radiography of the pelvis and both hip joints, performed on 26 January 2026, showed progressive callus formation at the fracture site (Figure 5). At this stage, the patient was able to sit up with support (Figure 6) and to stand with the assistance of a walking frame (Figure 7). By approximately twelve weeks after reduction, the patient was able to sit without external support (Figure 8),

indicating a satisfactory trajectory of functional recovery over the period of observation. No pressure sores, respiratory infection, urinary tract infection or clinically evident features of venous thromboembolism were noted by the treating team over this period, though this was based on routine clinical observation rather than a standardised, protocol-driven screening assessment. A summary of the clinical timeline is presented in Table 2 and Figure 9.



Figure 5. Follow-up radiograph of the pelvis and both hip joints, performed on 26 January 2026 (approximately ten weeks after reduction), showing progressive callus

formation at the fracture site. Patient identifiers have been redacted.



Figure 6. Patient sitting with support at approximately ten weeks after reduction. Patient identity has been masked to protect privacy.



Figure 7. Patient standing with the aid of a walking frame at approximately ten weeks after reduction. Patient and attendant identity have been masked to protect privacy.



Figure 8. Patient sitting without external support at approximately twelve weeks after reduction. Patient identity has been masked to protect privacy.

Time Point	Clinical / Radiological Finding	Functional Status
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Day 1 (day of injury)	Displaced left intertrochanteric fracture confirmed	Bed-bound, unable to bear weight
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	radiographically (Figure 2); external rotation deformity present (Figure 1)		~10 weeks	Follow-up radiograph (26 Jan 2026) shows progressive callus formation at the fracture site (Figure 5)	Sitting with support (Figure 6); standing with walking frame (Figure 7)
Day 1 (post-injury)	Manual reduction (<i>Sthapana</i>) performed (Figure 3); rigid splint and layered cloth bandage (<i>Bandhana</i>) applied (Figure 4)	Bed-bound, limb immobilised	~12 weeks	Continued clinical improvement; no formal repeat radiograph reported at this stage	Sitting without external support (Figure 8)

Table 2. Summary timeline of the clinical course.

3.6 Patient Perspective

A prospective, verbatim account of the patient's or attendant's experience of treatment was not collected as part of routine clinical care, and could not, therefore, be reconstructed retrospectively for this report. The family's continued engagement with follow-up visits over the twelve-week period, documented photographically (Figures 6 to 8), is noted here as an indirect indicator of their satisfaction with the course of recovery.

4. MATERIALS AND METHODS

This report has been prepared as a descriptive single-case study, compiled retrospectively from clinical photographs, radiographs and case records maintained by the Department of *Shalyatantra*, KMCT Ayurveda Medical College, Manassery, Calicut, Kerala, India. No experimental intervention was performed for the purpose of this report; the treatment described was administered as part of routine clinical care under the department's standard protocol. Correlation with classical *Ayurvedic* surgical literature was carried out by reviewing the relevant verses of the *Chikitsa Sthana* of the *Sushruta Samhita* pertaining to *Bhagna Chikitsa* [2,3], and this classical description was compared with the Boyd and Griffin classification of intertrochanteric fractures [4] and

with the published literature on the epidemiology and management of hip fractures [1,5,6,7,8]. The report has been structured in accordance with the CARE (CASE REport) guidelines for single case reports [9].

5. RESULTS

The patient, who presented with a displaced left intertrochanteric fracture of the femur and the characteristic external rotation deformity of the limb, underwent manual reduction and traditional splinting on the first day after injury. Serial follow-up over a period of approximately three months showed a consistent and progressive improvement. Radiographic evidence of callus formation at approximately ten weeks was accompanied by a corresponding gain in functional independence, the patient progressing from a bed-bound, non-weight-bearing state, to sitting with support and standing with a walking aid at ten weeks, and finally to sitting without support at twelve weeks (Figure 9). No formal pain or functional outcome scores, such as the Harris Hip Score or the Visual Analogue Scale, were recorded in the case documentation, and the results presented here are accordingly limited to the clinical and radiological observations available.

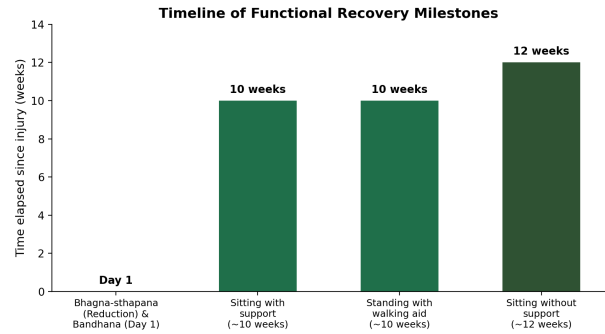


Figure 9. Timeline of functional recovery milestones following *Sthapana* and *Bandhana*, plotted against time elapsed since the day of injury.

6. DISCUSSION

Sushruta laid emphasis on identifying the nature and degree of displacement of a fracture before undertaking reduction and stabilisation, an approach that anticipates the modern principle of careful clinical and radiological assessment preceding treatment. In the present case, the sequence followed, that is, clinical suspicion, radiographic confirmation, manual reduction and immobilisation with a reinforced bandage, mirrors this classical framework of *Sthapana* followed by *Bandhana*. The circumferential reinforcement of the bandage observed in the clinical photographs is consistent with the technique of *Chakrayoga* described in the *Chikitsa Sthana*

[2,3]. This correlation is offered at a conceptual level only. The precise mechanics of the classical *Chakrayoga* manoeuvre cannot be verified from textual description alone, and the resemblance to the bandaging technique used in this case should be read as descriptive rather than as a claim of procedural identity.

Conservative management of hip fractures by means of splintage, traction and bed rest was, in fact, the prevailing approach in general medical practice before the introduction of internal fixation implants in the mid-twentieth century [6]. Viewed thus, the classical *Ayurvedic* technique of *Bandhana* and the historical conservative approach in mainstream orthopaedics share

a common foundation, namely the maintenance of a reduced fracture in a stable position until union occurs. However, the standard of care for displaced intertrochanteric fractures in elderly patients has since evolved substantially. Current evidence indicates that operative fixation is generally associated with better anatomical restoration, earlier mobilisation and a shorter duration of hospital stay as compared with conservative treatment [6]. A large meta-analysis of more than 190,000 patients has further shown that surgery performed within 48 hours of injury is associated with a significantly lower risk of death and of pressure sores than delayed surgery [7], and contemporary national guidelines accordingly recommend that surgical fixation be undertaken within 36 to 48 hours of admission wherever the patient's medical condition permits [8]. More recent evidence specific to the oldest old is in keeping with this position. A prospective cohort study of nonagenarian and centenarian patients with hip fracture found that surgical intervention was associated with fewer unfavourable outcomes than conservative treatment, particularly in patients with a higher burden of comorbidity [10]. Similarly, the FRAIL-HIP study, a multicentre trial in frail institutionalised patients with proximal femoral fractures, found that operative treatment was generally associated with better quality of life than non-operative management, even in this most vulnerable subgroup, though non-operative treatment remained a reasonable option for patients with a very limited life expectancy or a clear preference against surgery [11]. Prolonged immobilisation and delayed mobilisation in elderly patients carry a recognised risk of pressure sores, pneumonia, urinary tract infection and venous thromboembolism, and these risks must be weighed carefully whenever conservative management is considered in this age group.

The conservative approach followed in the present case therefore represents a departure from the currently recommended standard of early surgical fixation. Such an approach would ordinarily be reserved for patients who are unfit for anaesthesia and surgery on account of comorbidity, or for situations in which operative facilities, patient preference or family circumstances preclude surgical intervention. The functional recovery observed in the present patient, from a bed-bound state to independent sitting by the twelfth week, suggests that carefully supervised conservative management, incorporating attentive positioning, splintage and graded mobilisation along the lines described in *Sushruta's Bhagna Chikitsa*, may still have a role in carefully selected elderly patients in whom surgery is not a feasible option. This observation, however, is drawn from a single case managed without a comparator group and without standardised outcome measures, such as the Harris Hip Score, and cannot be generalised to support conservative management as a preferred alternative to surgical fixation. A small but growing body of recent *Ayurvedic* case literature has likewise attempted to correlate *Bhagna Chikitsa* with the management of specific fracture patterns, including paediatric and forearm fractures managed with *Sthapana*, *Bandhana* and adjunctive local applications [12,13]. These reports, like the present one, are single-case descriptions without comparator groups, and the cumulative weight of such observations remains descriptive rather than confirmatory. Nonetheless, they

point to a continuing academic interest in systematically documenting the classical approach alongside modern diagnostic correlation, an effort to which the present case aims to contribute.

Limitations: This report carries several limitations that are inherent to its retrospective, single-case design. A structured record of the patient's pre-existing comorbidities, medication history and baseline functional status was not available, and the specific documented rationale for choosing conservative over operative management could not be reconstructed from the case notes. No standardised pain or functional outcome instrument, such as the Harris Hip Score or the Visual Analogue Scale, was administered at any stage, and monitoring for immobilisation-related complications relied on routine clinical observation rather than a protocol-driven screening schedule; although no such complications were noted by the treating team, this cannot be equated with a systematic negative screen. A prospective account of the patient's or family's subjective experience of treatment was similarly not collected. These gaps limit the strength of the conclusions that can be drawn and are disclosed here in the interest of transparent reporting, in keeping with the CARE guidelines [9].

The principal value of this case, therefore, lies not in demonstrating equivalence between conservative and operative treatment, but in showing that the classical descriptions of *Sthapana* and *Bandhana* continue to correspond, at a conceptual level, with the sequence of reduction, immobilisation and rehabilitation that underlies modern fracture management, even as the technical means of achieving these goals have been transformed by advances in orthopaedic surgery.

7. CONCLUSION

Sushruta's classical description of *Bhagna Chikitsa*, comprising *Sthapana* and *Bandhana*, offers a systematic historical framework for fracture management that finds a discernible conceptual echo in the modern principles of reduction, immobilisation and rehabilitation. The present case illustrates the practical application of these classical principles in the conservative management of a displaced intertrochanteric fracture of the femur in an elderly woman, with satisfactory functional recovery observed over a period of three months. Nonetheless, current evidence continues to favour early surgical fixation of such fractures in elderly patients wherever this is feasible, and the classical approach described here is best regarded as a historically informed conservative option for patients in whom surgery is not feasible, rather than as an alternative to be preferred over contemporary operative care.

Declarations

Ethical Approval:

As a retrospective descriptive report of a single case managed under routine departmental clinical care, with no experimental intervention undertaken for the purpose of this report, formal review by the Institutional Ethics Committee was not required, in accordance with institutional policy for the reporting of single case studies.

Consent for Publication:

Written informed consent was obtained from the patient's attendant for the publication of this case report and the accompanying clinical images. All identifying information, including the patient's name and hospital

registration number, has been removed from the images reproduced in this article, and facial identity has been masked to protect patient privacy.

Conflict of Interest:

The authors declare no conflict of interest.

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Author Contributions:

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Dr. Arjun N: Correlation of classical concepts with contemporary physiological and orthopaedic understanding; Writing – Review & Editing.

Dr. Anushree M S: Interpretation of classical Sanskrit verses from the Sushruta Samhita; Writing – Review & Editing.

Dr. Rasha Zehra Abdul Gafoor: Data Curation; Investigation; Compilation of Clinical Photographs and Radiographs; Writing – Original Draft.

Dr. Jenika Cherussery: Data Curation; Investigation; Compilation of Clinical Photographs and Radiographs; Writing – Original Draft.

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