



## Therapeutic Approach in Ayurveda for Vertebral Compression Fracture W.S.R. to Pangu-A Case Study

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### KEYWORDS

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Panchakarma,  
Ayurveda

### ABSTRACT:

Pangu is a disease described among 80 Vatarogas. The normal role of Vata is to regulate motor and sensory systems, and its imbalance leads to a decline in these functions. Pangu originates in the Kati region, possibly involving Katyasritavata i.e Apana Vayu along with Vyana Vayu. Spastic Paraplegia is a condition characterized by progressive muscle stiffness and weakness in lower limbs typically caused by damage to the spinal cord. It often results from injury or disease and affects both legs and, in some cases, parts of the lower torso. This case study documents the clinical management and recovery of a 21-year-old male patient presenting with a D9 vertebral compressive fracture with complete motor loss (0/5 power) in the left lower limb and severe paresis (1/5 power) in the right lower limb along with catheterisation due to neurogenic bladder dysfunction. The patient underwent a comprehensive Panchakarma protocol along with Ayurvedic oral medications over a three-month period. Significant neurological and functional improvement was observed, with motor power improving to 4/5 in both lower limbs by the end of the treatment duration. This case highlights the potential role of integrative Ayurvedic interventions in the rehabilitation of spinal cord injuries. Additionally, the urinary catheter was successfully removed, and the patient achieved voluntary bladder control. This case reinforces the potential for significant motor recovery even in cases presenting with initially severe deficits.

### INTRODUCTION

Compression fractures<sup>(1)</sup>, also known as Vertebral Compression fractures (VCFs), occur when a vertebra in the spine collapses, often due to osteoporosis or trauma. Types of compression fractures include 1) Wedge fracture: A fracture that occurs in the front of the vertebra, causing it to collapse and become wedge-shaped 2) Crush fracture: A fracture that occurs when the entire vertebra collapses. 3) Burst fracture: A fracture that occurs when the vertebra breaks and fragments are scattered. A D9 vertebral compression fracture refers to a type of fracture that occurs in the ninth thoracic vertebra (D9) of the spine. Causes include osteoporosis, trauma, cancer etc. Patients present with severe back pain, limited mobility, deformities including visible curvature or hump in the upper back (kyphosis), numbness or tingling. Compression fractures at the D9 level can lead to serious neurological complications depending on the degree of vertebral collapse and spinal cord involvement. One such severe consequence is spastic paraplegia, characterized by bilateral lower limb weakness with increased muscle

tone, brisk reflexes, and often bladder/bowel involvement. This occurs due to compression or contusion of the spinal cord or conus medullaris, which may be precipitated by retropulsion of fractured bone fragments into the spinal canal.

This case study discusses a patient who sustained a traumatic D9 compression fracture leading to spastic paraplegia with a clinical focus on Ayurvedic interpretation and management. In Ayurveda, "Pangu"<sup>(2)</sup> refers to a condition characterized by weakness or paralysis of the lower limbs. In the present case study of a 21 year of male patient who suffered D9 vertebral fracture Ayurveda panchakarma therapies like *Bahiparimarjana chikitsa, Basti, Avapeedaka snehapana* helped in achieving significant results .

### CASE REPORT

A 21 year old male patient came to the OPD of JSS Ayurveda Medical College and Hospital Mysore with complaints of weakness and loss of strength in bilateral lower limbs since 1 month Patient had a history of fall



from a coconut tree resulting in severe low back pain which was gradually progressive, continuous, sharp, severe non radiating and with increased intensity associated with loss of strength, weakness and inability to walk. MRI reports revealed compression fracture of D9 Vertebrae. He underwent surgery T8- T11 decompression stabilization fusion under GA on 24/10/2024. With persistent weakness of both lower limbs, inability to walk and with catheter insitu, he approached our hospital.

**History of Past illness:** Nothing significant

### Personal History

Appetite: Good

Sleep: Sound

Bowel habit: Hard stools, passes once in 2- 3 days

Bladder: Catheterised

### Table no 1: Showing Ashta Stana Pareeksha

<i>Nadi</i>	<i>Vata-Pitta</i>
<i>Mutra</i>	Catheterised
<i>Mala</i>	<i>Baddha</i> , once in 2-3 days
<i>Jihwa</i>	<i>Alipta</i>
<i>Shabda</i>	<i>Prakruta</i>
<i>Sparsha</i>	<i>Anushna sheeta</i>
<i>Drik</i>	<i>Prakruta</i>
<i>Akriti</i>	<i>Madhyama</i>

### Table no 2: Showing Dashavidha Pareeksha

<i>Prakrithi</i>	<i>Vata-Pitta</i>
<i>Vikruthi</i>	<i>Vata pradhana tridosha</i>
<i>Sara</i>	<i>Madhyama</i>
<i>Samhanana</i>	<i>Avara</i>
<i>Pramana</i>	<i>Madhyama</i>
<i>Satva</i>	<i>Pravara</i>
<i>Satmya</i>	<i>Madhyama</i>
<i>Ahara shakti</i>	<i>Pravara</i>
<i>Vyayama shakti</i>	<i>Avara</i>
<i>Vaya</i>	<i>Madhyama</i>

### CNS EXAMINATION

Higher Mental Functions:

Consciousness and orientation: Conscious and oriented to time, place and person

Speech: Intact

Language: Intact

Memory: Intact

### ❖ Motor system

1. Trophic changes: Absent
2. Atrophy/Hypertrophy: Absent
3. Fasciculations/Irritability: Absent
4. Contractions and contractures: Absent
5. Involuntary movements: Absent
6. Muscle power: Upper limbs: 5/5, Lower limbs- Right : 1/5, Left: 0/5
7. Muscle Bulk: Normal
8. Muscle tone: i. Upper limbs- Normal

ii. Lower limbs: Hypertonia

9. Reflexes: a) Superficial reflexes- Abdominal reflex- Normal, Babinski sign- Positive

b) Deep tendon reflexes- Biceps: 1+, Triceps: 1+, Knee: 3+, Ankle: 2+

10. i. Upper limbs: Normal

ii. Lower limbs- Unable to perform due to weakness

11. Clonus: Absent

### ❖ Sensory examination

Touch- Intact

Pain- Intact

Temperature- Intact

Vibration- Intact

Proprioception: Intact

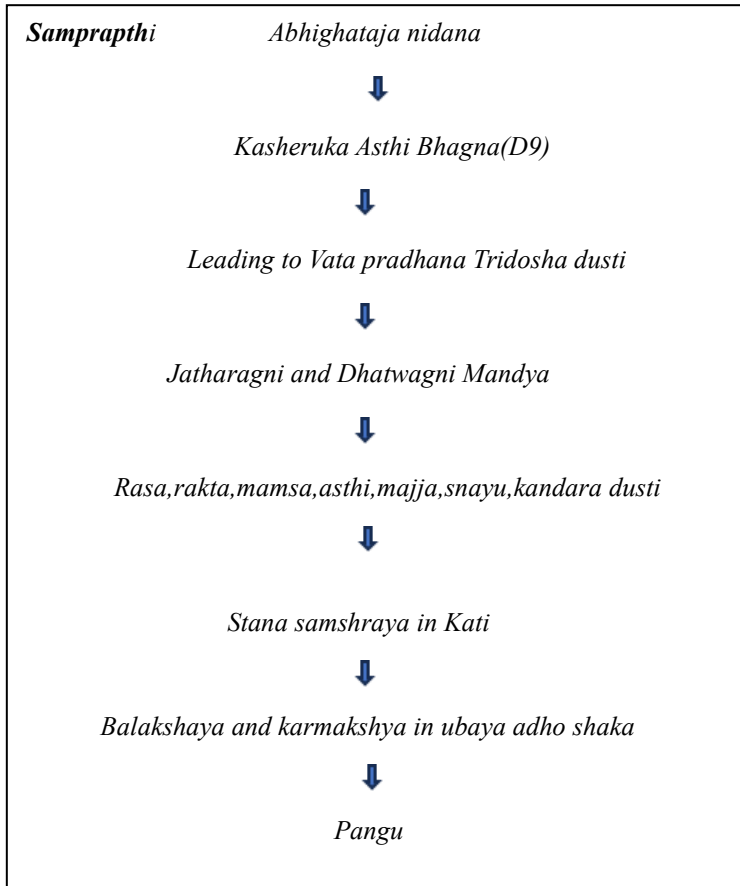
Two point discrimination: Intact

Strognosis: Intact

Graphasthesia: Intact

### Table no 3: Showing Nidana Panchaka

<i>Nidana</i>	<i>Injury (Abhighata)</i>
<i>Poorvarupa</i>	<i>Avyakta</i>
<i>Rupa</i>	Weakness in bilateral lower limbs associated with stiffness, inability to walk
<i>Upashaya</i>	Nothing Significant
<i>Anupashaya</i>	Nothing Significant



**Table no 4: Showing Samprapthi Ghataka**

<i>Dosha</i>	<i>Vata pradhana tridosha</i>
<i>Dushya</i>	<i>Rasa,rakta,mamsa,asthi,majja,snayu,kandara</i>
<i>Srotas</i>	<i>Rasa,rakta,mamsa,asthi,majjavaha srotas</i>
<i>Srotodusti</i>	<i>Sanga</i>
<i>Udhhava stana</i>	<i>Pakwashaya</i>
<i>Sanchara stana</i>	<i>Sarva shareera</i>
<i>Vyakta stana</i>	<i>Ubaya adho shaka</i>
<i>Rogamarga</i>	<i>Madhyama</i>
<i>Sadya-asadyata</i>	<i>Kricchra sadhya</i>
<i>Swabhava</i>	<i>Chirakari</i>

**Previous Investigations:**

MRI-DORSO LUMBAR SPINE: Compression fracture of D9 vertebral body with mild marrow edema and mild reduction in vertebral height,paravertebral soft tissue edema and hematoma.

Mild diffuse disc bulge at D8-D9 level.

Cord contusion/Edema at D8-D9 level.

Postero-Central and right paracentral disc protrusion at L4-L5 level.

Mild diffuse disc bulge at L5-S1 level.

**THERAPEUTIC INTERVENTION**

Aim of the treatment:

- The primary aim is treating the ama and kapha samsrusta vata, followed by vatahara and bruhmana chikitsa.

Duration of Treatment-3 months.

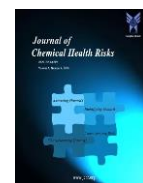


Table no 5: Showing Therapeutic interventions from 27/11/2024 to 21/2/2025

1.Sarvanga dhanyamla seka <sup>(3)</sup>	From 27/11/2024-2/12/2024	6 Days
2.Sarvanga churna pinda sweda with kolakulatta+triphala churna	From 3/12/2024-5/12/2024	3 days
3.Ekanga agnichikitsa lepa from lowback to lower limbs	From 06/12/2024-18/12/2024	13 days
Eranda taila prayoga orally 10-30 ml with ksheera as anupana was administered during the first 22 days of treatment from 27/11/2024-18/12/2024		
4.Sarvanga abhyanga nadi sweda with masha saindhava taila	From 19/12/2024-30/12/2024	12 days
5.Sarvanga shastika shali pinda sweda alternate to agnichikitsa lepa	From 31/12/2024-17/1/2025	18 days
6.Ekanga taila seka with dhanwantara taila and ksheerabala taila	From 18/1/2025-25/1/2025	8 days
7. Sarvanga shastika shali pinda sweda alternative with Avagaha sweda <sup>(4)</sup>	From 1/2/2025 -23/2/2025	23 days
8.Avapeedaka snehapana with vastyamayantaka grita	From 26/1/2025-30/1/2025 Day 1:25 ml before food,40 ml after food Day 2:30 ml before food,60ml after food Day 3:40 ml before food,80 ml after food Day 4:60 ml before food,120 ml after food Day 5:60 ml before food ,120 ml after food(pinch of saindhava lavana added)	5 days
9.Ekanga marma lepa f/b pichu <sup>(5)</sup> with dhanwantara taila to lower abdomen	From 6/2/2025-21/2/2025	16 days

Additionally Basti therapy was adopted during the course of treatment in Karma basti pattern (30 bastis).First 6 niruha bastis were Ardamatraika basti,Next 6 niruha bastis were Mustadi yapana basti.

Ardhamatrika basti from 19/12/2024-30/12/2024 for 12 days

Anuvasana basti: Dhanwantara taila+Ksheerabala taila-100 ml

Niruha basti: Honey:100ml

Saindhava lavana:6g

Mustadi yapana kalka:25 gm

Ashwagandha grita+Ksheerabala taila- 140 ml

Mustadi yapana ksheera kashaya-350 ml

Mustadi Yapana basti from 31/12/2024 to 17/1/2025 for 18 days

Anuvasana basti:Sukumara grita+Masha saindhava taila-100 ml

Niruha basti: Honey-100 ml

Saindhava lavana -12gm

Shatapushpa kalka-25gms

Ksheerabala taila-100 ml

Dashamoola +1 Madanaphala kashaya:350 ml

Apart from these, patient was under physiotherapy training throughout the course of treatment.

1.Stimulation exercises to activate muscles and promote recovery

2.Stretching and strengthening exercises to improve joint flexibility,promoting functional mobility

3.Pelvic exercises to improve pelvic control and core strength.

4.Gait and balance training.



Internal medications during the course of Treatment:

1. *Tab Rasa Raja Ras*<sup>(6)</sup> 1-0-1 A/F
2. *Tab Brihat Vata Chintamani with Gold*<sup>(7)</sup> 1-0-1 A/F
3. *Astavarga Kashaya along with Dhanadhanayanadi Kashaya* 20 ml-0-20 ml A/F
4. *Cap. Maharaja Prasarini*<sup>(8)</sup> 1-0-1 A/F
5. *Tab Vatarakshasa Ras*<sup>(9)</sup> 2-0-2 A/F
6. *Mashatmaguptadi Kashaya* 0-50ml-0 A/F

**OBSERVATIONS :**The assessment was done based on ASIA Scale ,Functional assessment using FIM scale.The before and after treatment results are tabulated below.

**ASIA :INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF**

**SPINAL CORD INJURY (ISNCSCI)**

**ASIA SCALE**

**MUSCLE FUNCTION GRADING**

- 0 =Total paralysis
- 1= palpable or visible contraction
- 2=active movement ,full range of motion(ROM) with gravity eliminated
- 3=active movement, full ROM against gravity
- 4= active movement, full ROM against gravity and moderate resistance in a muscle specific position
- 5= active movement, full ROM against gravity and full resistance in a functional muscle position expected from an otherwise unimpaired person.
- 5\*=(normal)active movement, full ROM against gravity and sufficient resistance to be considered normal if identified inhibiting factors (i.e pain, disuse)were not present.

NT= not testable (i.e due to immobilization ,severe pain such that the patient can not be graded ,amputation of limb, or contracture of >50% of the normal ROM)

**SENSORY GRADING**

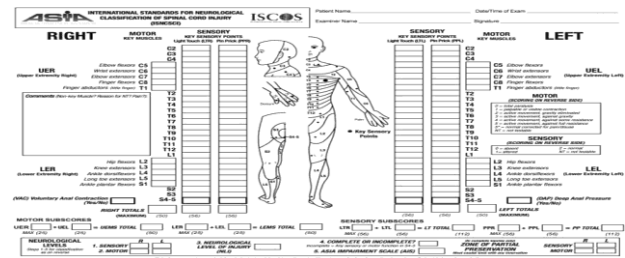
0= Absent

1=altered,either decreased / impaired sensation or hypersensitivity

2=normal

NT= not testable

**ASIA :INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY (ISNCSCI) (10)**



**1.SENSORY AND MOTOR SUBSCORES (ASIA)**

**1.1 Sensory subscores:**

ASIA Assessment-	Before treatment		After treatment	
	R	L		
<b>SENSORY SUBSCORES</b>	(max.56)	(max.56)		
<b>UPPER EXTREMITY</b>				
LIGHT TOUCH(LT)	56	56	56	56
TOTAL LT UE (max.112)	112		112	
PIN PRICK (PP)	56	56	56	56
Total PPUE(max.112)	112		112	



SENSORY SCORE of UE (max.224)	224		224	
(PERCENTAGE)	100		100	
ASIA ASSESSMENT	Before Treatment		After treatment	
<b>LOWER EXTREMITY(LE)</b>	<b>RT</b> (max.56)	<b>LFT</b> (max.56)	<b>R</b>	<b>L</b>
LIGHT TOUCH (LT)	56	56	56	56
TOTAL LT LE(max.112)	112		112	
PIN PRICK (PP)	56	56	56	56
TOTAL PP LE (max.112)	112		112	
<b>SENSORY SCORE (max.224)</b>	224		224	

### 1.2 Motor

subscores:

ASIA Assessment-MOTOR SUBSCORE	Before treatment		After Treatment	
	UE R (max.25)	UE L (max.25)		
<b>UPPER EXTREMITY(UE)</b>	25	25	25	25
<b>TOTAL UPPER EXTREMITY MOTOR SCORE(UEMS) (max.50)</b>	50		50	
<b>LOWER EXTREMITY (LE)</b>	5	0	20	20
<b>TOTAL LOWER EXTREMITY MOTOR SCORE (LEMS) (max.50)</b>	5		40	

### 2.FUNCTIONAL INDEPENDENCE MEASURE (FIM) ASSESSMENT

- 1 – Total contact assistance with helper
- 2 – Maximal contact assistance with helper
- 3 – Moderate contact assistance with helper
- 4 – Minimal contact assistance with helper
- 5 – Supervision or setup with helper
- 6 – Modified independence with helper
- 7 – Complete independence

FIM Assessment	Before Treatment	After treatment
Eating	7	7
Grooming	7	7
Bathing	2	6
Dressing Upper Body	5	6
Dressing Lower Body	2	6
Toileting	2	6
Bladder Management	1	6
Bowel Management	1	6
Transfer bed/chair/wheelchair	2	6
Transfer toilet	2	6
Transfer bath/shower	2	6
Locomotion	1	6
Stairs	1	6
<b>Motor Subtotal Score (max. score 91)</b>	<b>35</b>	<b>80</b>
Comprehension	7	7
Expression	7	7
Social interaction	7	7
Problem solving	7	7
Memory	7	7



Cognition Subtotal Score (max. score 35)	35	35
TOTAL FIM SCORE (max. score 126)	70	115

**RESULTS:** Significant improvement in motor scores from 5/50 before treatment to 40/50 after treatment observed. ASIA total lower extremity motor score improved from 5 to 40 and total FIM score which was 70 before treatment was improved to 115 after treatment where in motor subscore was improved from 35 to 80. The patient also attained bladder control following which the catheter was removed.

## DISCUSSION

Patient was initially treated with *ama* and *kaphasamsrusta vata* treatment modality with *ruksha* therapies initially followed by *vatahara* and *bruhmana* line of management. Therapies also concentrated on attaining good bladder control with the help of *avapeedaka snehapana*, *avagaha sweda* and *ekanga pichu*.

Eranda taila<sup>(11)</sup> is said to be *vata-kaphahara*, *basti shuddhikara*, *koshta shodhaka*. Administration of Eranda taila during *rukshana* therapy ensures control over vata because of its *Anuloma gati* also as there is threat of its aggravation due to initial *rukshana* therapies. Also this prepares the patients by *kostha shodhana* prior to *basti chikitsa*

*Sarvanga dhanyamla seka*, *churna pinda sweda*, *agnichikitsa lepa* are considered to be *ruksha* and *ushna* therapies which help in reducing initial spasticity which is associated with involvement of *kapha* and *ama* in the present study. *Agnichikitsa lepa* has ingredients like *Lashuna*, *Maricha*, *Sarshapa*, *Agnimantha*, *Nirgudi*, *Tulasi* etc. This combination is *ushna*, *teekshna* in nature thus helps in breaking out *kapha* association further aiding in reducing stiffness and spasticity of muscles.

*Abhyanga* is known to be *snigdha*, *vatahara*, providing nourishment to the muscles and joints. *Ksheerabala taila* is *vatahara*, *bruhmana* in nature with ingredients like *Bala*, *Ksheera* and *Tila taila*. *Shastika shali pinda sweda* is *bruhmana* in nature. *Shastika* is a variety of rice grown in 60 days with qualities of *snigdha*, *guru* helps in strengthening and nourishing muscles and nerves

Acharya Vagbhata specifies *avagaha sweda* in *mutravaha sroto vikaras*. It helps in correction of *apana vata vaigunya*, improves local blood circulation thus attaining normal *gati* and functions of vata resulting in

normal *mutra nishkramana pravrutti*. *Vastyamayantaka grita* contains *Pashana bheda*, *Darvi*, *Sariva*, *Ikshu*, *Varuna*, *Draksha*, *Yasti* etc potent ingredients and is indicated in *sarva basti vikara* and *mutrakruccha*. *Avapeedaka snehapana* with this *grita* helped in attaining bladder control with correction of vitiated *apana vata*. *Pichu* followed by *lepa* helped in attaining strength in lower abdomen muscles further strengthening bladder control with improved nourishment and circulation.

*Ardhamatrika basti*<sup>(12)</sup> is beneficial in treatment of *kapha samsrusta vata*, *vatarakta*, relieves stiffness in the lower limbs. *Yapana basti* is *bruhmana* in nature was administered to strengthen the lower limb muscles.

*Rasa Raja Rasa* mentioned in *Bhaishaya Ratnavali Vatavyadhi chikitsa* contains ingredients like *Swarna bhasma*, *Rajata bhasma*, *Abraka bhasma*, *Loha*, *Rasasindhoora* etc which helps in *vatashamana*, rejuvenation of the nerves and adds strength supporting recovery in spinal cord injuries and neurodegenerative conditions. *Brihat Vata Chintamani Rasa* mentioned in *Rasa Tarangini* contains *Swarna bhasma*, *Abraka bhasma*, *Rasasindhoora* etc which enhance nerve function and strengthens muscles. These drugs also possess anti inflammatory effects and also promotes neurological regeneration. *Vatarakshasarasa* contains *Rasa*, *Gandhaka*, *Abraka Bhasma*, *Tamra Bhasma*, *Shuddha Vatsanabha* etc is useful in paraplegia due to its *vatashamana*, *rasayana* and *balya* properties specially in neurological conditions presenting with stiffness.

*Astavarga Kashaya*<sup>(13)</sup> mentioned in *Sahasra yoga kashaya prakarana* contains *Bala*, *Sahachara*, *Eranda*, *Rasna*, *Devadaru* etc is widely used in treatment of disorders of vata *kaphaja* neurological deficits. *Dhanadhanayanadi Kashaya*<sup>(14)</sup> mentioned in *Sahasra yoga kashaya prakarana* contains ingredients like *Dhanadhanayana*, *Shunti*, *Shigru*, *Lashuna*, *Rasna*, *Varuna*, *Chitraka*, *Pathya* etc is used in treatment of paraplegia, hemiplegia and other neurological disorders with spasticity and contractions. *Maharaja Prasarini taila* mentioned in *Bhaishajya Ratnavali Vatavyadhi chikitsa* contains *Kashmari*, *Ketaki*, *Lodhra*, *Gokshura*, *Bala*, *Ashwagandha* etc which aids in disorders of vata, enhancing bladder functions. *Mashatmaguptadi kashaya* contains *Masha*, *Atmagupta*, *Erandaoola*, *Balamoola* with *hingu* and *saindhava* as *prakshepaka dravyas* which is commonly used in treatment of *Pakshagata*, it is *vata shamaka* and *balya* in nature used in neurological weakness specially in *Pakshaghata*.



Exercises like strengthening, stretching, gait training in Physiotherapy helped in improving mobility, reducing muscle stiffness and enhancing functional independence

## CONCLUSION

Compression fractures of thoracic spine are most commonly seen variety with patients presenting with paraplegia. It is correlated to Pangu in ayurveda and is challenging to manage. Treatments were planned according to *vyadhi avastha*, involvement of doshas and rogi bala. Significant improvement is observed in terms of reduction in muscle tone and increased muscle power enabling patient to walk with minimal support and improved QOL. The patient even attained bladder control. Such improvement underscores the importance of integrative rehabilitation and individualized therapeutic strategies in facilitating neurological recovery.

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