

Case Report



AYURVEDIC APPROACH TO THE MANAGEMENT OF DRY GANGRENE (*VRANA KOTHA*) IN PERIPHERAL VASCULAR DISEASE: A CASE REPORT

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ABSTRACT :

Background: Peripheral vascular disease (PVD) presents a significant challenge for surgeons, often culminating in the development of dry gangrene. The prevalence of dry gangrene resulting from peripheral vascular disease is notably higher in populations under the age of 45 with a history of tobacco or smoking use. A study indicates that gangrene affects 0-5% of the Indian population, with the majority of cases occurring in individuals aged 20-40. Ayurveda addresses peripheral vascular disease and dry gangrene, drawing correlations with the concept of *Vrana Kotha*. Management of dry gangrene encompasses local and systemic approaches, including *Vrana Shodhana*, *Vrana Ropana*, and oral medications. **Method:** A 38-year-old male chronic smoker (23 years) presented to the Shalyatantra OPD with a one-month history of toe ulcer, pain, burning, discoloration, and discharge. He was non-diabetic, non-hypertensive, and had no systemic or metabolic disorders. We implemented a comprehensive Ayurvedic plan, including *Basti* and both internal and external treatments. The patient underwent a month-long treatment with *Manjishthadi Kshara Basti*, followed by a seven-day course of *Anuvasana Basti* using *Ksheerabala Taila* and *Guggulutiktaka Ghrita*. Wound care included daily cleansing with *pentabark kashaya* and dressing with *Jatyadi Taila*, along with internal medications to aid healing and overall support. **Result:** Over one month, the patient's symptoms improved significantly with reduced pain, burning, and discharge. Healthy granulation tissue developed, and the gangrenous toe autoamputated. Regular follow-up was recommended to monitor healing and prevent recurrence. **Conclusion:** Dry gangrene was completely managed with *Manjishthadi Kshara Basti*, leading to auto-amputation and proper wound healing with *Jatyadi taila* and penta bark *vrana prakshalana*. Follow-up showed stable circulation, no side effects, and no recurrence.

KEYWORDS: Case Report, Dry Gangrene, Peripheral Vascular Disease, *Vrana Kotha*, *Manjishthadi Kshara Basti*

RECEIVED ON:

21-04-2025

REVISED ON:

07-05-2025

ACCEPTED ON:

27-05-2025

Access This Article Online:

Quick Response Code:



Website Link:

<https://jahm.co.in>

DOI Link:

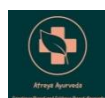
<https://doi.org/10.70066/jahm.v13i5.1805>

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CITE THIS ARTICLE AS

Sreechand S.R, Hemalatha .K, Pradeep Shindhe, Arya M.S., Aditya Anil. Ayurvedic approach to the management of Dry Gangrene (*Vrana Kotha*) In Peripheral Vascular Disease: A case report. *J of Ayurveda and Hol Med (JAHM)*. 2025;13(5):168-175.



1. INTRODUCTION

Peripheral vascular disease is the term used for partial or complete obstruction of one or more peripheral arteries. Peripheral vascular disease may cause gangrene.[1] Gangrene is a broad term that refers to a variety of conditions characterized by the death and subsequent decay of tissue in a specific region of the body. It begins with ischemia of the distal small vessels of the arms, legs, hands and feet.[2] Involvement of the large arteries is unusual and rarely occurs in the absence of occlusive disease of the small vessels.[3] Gangrene, a complication of necrosis, can develop as a result of critically insufficient blood supply.

Based on the clinical manifestations, this condition can be best matched with *Vrana Kotha*, which is associated with a poor prognosis for *Vrana*. *Vrana Kotha* exhibits similar features to gangrene, including sounds produced by wounds due to involvement of deeper tissues such as muscles, a severe burning sensation, and blackish discoloration.[4]

Surgical cases often cause both mental and physical trauma to the patient, and wound healing in vascular diseases is particularly challenging with a risk of recurrence. This treatment approach is suitable for patients of all ages, including those unwilling or unfit for surgery. Manjishtadi Kshara Basti supports auto-amputation and promotes effective wound healing.

2. CASE REPORT

A 38 years old, male non diabetic, non-hypertensive patient visited the outpatient department of *Shalya Tantra* with complaints of a wound on the 2nd and 3rd toes of his left foot, and right great toe associated with

pain, burning sensation, blackish-brown discoloration, purulent discharge from 1 month. Patient was a chronic cigarette smoker (20 cigarettes/day since past 23 years) and not a known case of any metabolic or systemic disorders. The patient was apparently healthy before 1 month, while doing work in sugar industry accidentally sulphuric acid fell over bilateral foot. Gradually over a period , the discoloration increased along with the additional symptom of pain, burning sensation in the right and left feet. He consulted an allopathic hospital; confirmatory diagnostics suggested that of peripheral vascular disease of lower limb. After this, skin lesions developed associated with ulceration, patient also had severe pain at the already amputated site of right foot which was persistent throughout the day. Following this, disarticulation of 3rd right toe was done. The patient was initially managed with antibiotics, anti-inflammatory drugs, and intravenous fluid to control the infection. It was diagnosed as Thrombo- angiitis Obliterans in colour doppler.

The wound exhibited blackish discoloration and swelling up to both ankle joints. There was also a non-healing ulcer on the greater toe of the right foot, along with lesions noted between the fourth and fifth phalanges of the left foot. The patient sought treatment from a local practitioner using modern medicine but did not experience any relief. As a result, the patient consulted our hospital for Ayurvedic management of these conditions on August 20, 2022.

Clinical Findings-

Vascularity of Left Foot

*Skin – discolouration present – brownish

*Signs of ischaemia – present, pre-gangrenous state.

*Pulse - Dorsalis pedis – feeble, Tibialis posterior- feeble

Ulcer Examination Inspection

1. Number: two
2. Site: left 2nd and 3rd toe, right 3rd toe post-amputation non-healing ulcer
3. Shape: Round
4. Colour: Pale whitish-pink
5. Smell: Mildly present
6. Discharge: Present, purulent
7. Margin: inflamed,
8. Edge: Sloping
9. Floor: Smooth, soft, covered with diffuse adhered slough; mild unhealthy granulation tissue present
10. Surrounding area: Ischemic changes noted.

Palpation

1. Size of ulcer: 3.5 x 4.5 x 1.0cm
2. Base: Smooth
3. Bleeding on touch: Absent
4. Tenderness: Present
5. Indurations: Absent

Diagnostic assessment

Considering the past history, location, signs, symptoms, habits with all symptoms like a wound on the 2nd and 3rd toes of the left foot and the right great toe associated with pain, burning sensation, blackish-brown discolouration, purulent discharge form 1 month, etc., so, our provisional diagnosis was Peripheral vascular disease with Gangrene.

According to *Ayurveda*, the signs and symptoms are best matched with *Vrana Kotha*.

THERAPEUTIC INTERVENTION

The treatment of ischemic gangrene is centered on the important goal of restoring blood flow, which can significantly alleviate rest pain and aid in the healing of ischemic wounds. While complete tissue recovery is often not possible once ulcers have progressed to dry gangrene, effective medical and surgical management strategies are available to help minimize tissue loss. [5][6] In *Ayurveda*, ischemic gangrene is understood in the context of conditions such as *Vatarakta* and *Varna Kotha*. Notably, *Acharya Chakradatta* and *Acharya Sharangadhara* have outlined the use of *Manjisthadi kshara basti* and *Manjisthadi kashaya basti* as effective treatments for these conditions.[7][8]

To facilitate healing, the intervention of *Manjisthadi kshara basti* (Table No. 1) was introduced alongside *Anuvasana basti* in *Kala Basti* pattern, *Bahya* and *Abhyantara Shamana chikitsa* (Table No.2), complemented by *Vrana Prakshalana* and other supportive treatment modalities. Furthermore, the patient was strongly encouraged to cease smoking entirely during and after the treatment period. This important lifestyle change is vital for reducing the risk of disease progression and improving overall health outcomes.

Table 1: The *Manjistadi Kshara Basti* Ingredients with measurements

Ingredients	Quantity
<i>Madhu</i>	80 ml
<i>Saindhava Lavana</i>	10gm from 6th day reduced for 5gm
<i>Sneha - Ksheerabala Taila and Guggulu tiktaka Ghrita</i>	40ml+40ml

<i>Manjistadi Kashaya</i>	250ml	<i>Anuvasana Basti - Ksheerabala</i>	40ml+40ml
<i>Gomutra</i>	40ml from 6th day reduced for 20ml only	<i>Taila and Guggulu tiktaka</i>	
<i>Kalka- Shatapushpa+Guduchi</i>	5gm+5gm	<i>Ghritha</i>	

Table 2: Intervention of External and oral therapies (*Shamana chikitsa*)

Plan of Care	Procedure	Duration [Days]							
		1	5	10	15	20	25	30	35
<i>Vrana Shodhana</i>	<i>Prakshalana with Pentabark Kashaya</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Vrana Vimlapana, Roopana, Bandana</i>	<i>Jatyadi Taila</i>	✓	✓	✓	✓	✓	✓	✓	✓
<i>Manjistadi Kashaya</i>	20ml-0-20ml	For a month							
<i>Nimbadi Guggulu</i>	2 -0-2	For a month							
<i>Guggulu Tiktaka Ghritha</i>	2tsp with Kashaya empty stomach	For a month							

3. Timeline (Date, Information Of Features, Management)(Table-3)

Date	Complaints	Intervention
20/08/2022-	Swelling and blackish discolouration of 2 nd ,3 rd toe of left foot with severe pain	Advised admission <i>Manjishtadi kashaya</i> 15 ml bd with luke warm water before food <i>Nimbadi guggulu</i> 2-0-2 after food <i>Pentabark kashaya</i> wash Dressing with <i>jatyadi taila</i>
25 /08/2022	Swelling reduced pain in the left lower limb persisted ,line of demarcation started	<i>Manjishtadi kashaya</i> 15 ml bd with luke warm water before food <i>Nimbadi guggulu</i> 2-0-2 after food <i>Pentabark kashaya</i> wash Dressing with <i>jatyadi taila</i> Gugulutikthaka ghritha 2 tsp with kashaya empty stomach morning for one month <i>Manjishtadi kshara basthi</i> with <i>manjishtadi kashaya niruhabasthi</i> and <i>anuvasana basthi</i> with <i>ksheerabala taila</i> and <i>guggulu tikthaka ghritha</i> for 7 days
03/09/2022	Auto amputation of 2nd and 3 rd toe with moderate pain in the wound	<i>Matrabasthi</i> started with <i>ksheerabalataila</i> 30ml and <i>gugulutikthaka ghritha</i> 30 ml for 7 days

11 /09/2022	Pain reduced patient is able to walk without support	Patient discharged <i>Manjishtadi kashaya</i> 15 ml bd with luke warm water before food <i>Nimbadi guggulu</i> 2-0-2 after food <i>Pentabark kashaya</i> wash Dressing with <i>jatyadi taila</i>
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Follow Up And Outcome (Figure A) (Figure B)



Figure A: Before Treatment



Figure B: After treatment

Table:4:Assessment

Wound parameters	Assessment of parameters in days						
No.of.Days	1	10	15	30	40	50	60
Size	5X4X 1cm	5X4X1 cm	5X4X0.8	5X4X0.5	3X2X0.5	Granulated	Healed
Shape	Irregular			Oval			Healed
Depth	1cm		0.8cm	0.5cm			-
Discharge	Purulent Discharge			Serous Discharge			
Edge	Sloping						
Floor	Smooth, Unhealthy granulation tissue			Smooth, Red granulation tissue			
Odour	Foul			-	-	-	-
Pain	9/10	8/10	5/10	5/10	4/10	3/10	2/10
Burning Sensation	Severe	Severe	Moderate	Moderate	Mild	-	-

3. DISCUSSION

Vrana Kotha, is classified under *Dusta Vrana* and is caused primarily by two comorbidities: *Margavarana* (encapsulation) and *Dhatu Kshaya* (depletion of *dhatu*),

both of which are significant factors in *vata vyadhi* (disorders associated with *vata dosha*). *Margavarana* refers to *Avarodha* (obstruction) of the *Marga* (vessels, specifically *Rasa-Raktavaha Srotas*). This phenomenon

further leads to *Kshaya* of the *Dhatu*. The pathological cause of gangrene may start from the accumulation of morbid *kapha* and *pitta dosha* within the channels, leading to impaired circulation of *vata dosha*.

Manjisthadi Kshara Basti possesses antagonistic qualities towards *kapha* due to the presence of *Gomutra*, and it also balances *pitta* and *rakta* due to its content of *Manjistha*. *Kshara Basti's Sroto Shodaka* property helps clear obstructions in the lumen, improving circulation to the affected areas, further reducing inflammation and clot formation while enhancing blood circulation to the impacted body parts. *Nimbadi Guggulu* is a beneficial formulation known for its analgesic, antimicrobial, and anti-inflammatory properties. The combination of bitter (*tikta*) and astringent (*kashaya*) tastes in this formulation effectively balances the *kapha* and *vata dosha*,[10] promoting overall wellness. *Nimba*, a key ingredient, is well-known for its impressive antibacterial, anti-inflammatory, and antifungal activities. *Guggulu* (*Commiphora mukul* Engl.) is particularly prominent in Ayurvedic medicine for its powerful anti-inflammatory effects.[10]

During the treatment process, significant improvements were observed in the wound's size, depth, and discharge, which were addressed through *Vrana Prakshalana*. This procedure utilized a unique pentabark *kashaya* made from several effective components, including *Vata* (*Ficus benghalensis* Linn), *Udumbara* (*Ficus racemosa* Linn), *Ashwatha* (*Ficus religiosa* Linn), *Parisha* (*Thespesia populnea* Soland.), *Plaksha* (*Ficus infectoria* Roxb), along with *Kasisa*

(ferrous sulfate), *Tuttha* (copper sulfate), and *Sphatika* (potash alum). The active phytochemicals present, such as tannins, alkaloids, and saponins, enhance its anti-inflammatory and antimicrobial benefits, supporting faster healing.[11]

Guggulu tiktaka ghrita was administered, taking into account its *shodhana* and *ropana karma* as the main factors. The key ingredient of *guggulu tiktaka ghrita*, *guggulu*, can pacify *Vata* and *Kapha dosha*, which makes it an excellent choice for wound healing. Additionally, the *Tikta dravya*, like *nimba*, *amruta*, *patola*, *kantakari*, act as *shodhaka* as well as *pitta shamaka*. *Guggulu Tiktaka Ghrita*, with its *Ropana karma*, is considered effective in promoting tissue repair and regeneration.

Additionally, *Jatyadi Taila* is another effective formulation that combines astringent (*kashaya*) and bitter (*tikta*) tastes, along with attributes such as lightness (*laghu*) and non-unctuousness (*ruksha guna*). It has a rich profile of active phytochemicals, including flavonoids, essential oils (terpenoids), tannins (phenolics), glycosides, steroids, and alkaloids, all of which work synergistically to promote wound healing (*ropana*).[12]

4. CONCLUSION

The patient, diagnosed with dry gangrene associated with peripheral vascular disease, was successfully treated using a comprehensive internal and external Ayurvedic treatment protocol without any recurrence. The regimen included a one-month course of *Manjishtadi Kshara Basti*, followed by seven days of *Anuvasana Basti* with *Ksheerabala Taila* and *Guggulutiktaka Ghrita*, along with daily wound care

using Pentabark Kashaya and Jatyadi Taila, supported by internal medications. Smoking cessation was advised throughout the treatment and follow-up periods, and at the one-month follow-up, the patient showed stabilized circulation, complete wound healing, no adverse drug reactions, and no signs of recurrence, demonstrating the potential of this approach in managing challenging vascular wounds. Wound healing in vascular diseases is particularly challenging due to the high risk of recurrence. However, Manjishtadi Kshara Basti offers a promising non-surgical approach that supports auto-amputation and promotes effective healing, making it suitable for patients of all ages, including those who are unwilling or unfit for surgery.

Declaration of Patient Consent – The authors confirm that they have acquired a patient consent form, in which the patient or caregiver has granted permission for the publication of the case, including accompanying images and other clinical details, in the journal. The patient or caregiver acknowledges that their name and initials will not be disclosed, and sincere attempts will be undertaken to safeguard their identity. However, complete anonymity cannot be assured.

Patient perspective

"I am happy with the treatment that I have received and results from it. After, seeing the results, I have recommended many of my relatives and friends"

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Conflict Of Interest - None

Source of Support – None

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