

Kshar- Sutra Ligation in Buerger's Disease- A Case Study

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Abstract

The destruction or break or rupture or discontinuity of body tissue or a part of body, is called *Vrana*.^[1] *Dushta-vrana*, or non-healing ulcers, are a prevalent issue in the current period, often caused by trauma or pathologic factors, resulting in long term suffering for the patient. Thromboangiitis obliterans (TAO) is an occlusive vascular disease characterized by segmental nonatherosclerotic inflammatory disorder of the small and medium arteries, veins, and nerves of the upper and lower extremities. It is also known as Buerger's disease, frequently found in men who smoke.^[2] Numerous surgical and parasurgical techniques, including *Kshara Karma* (chemical cauterization), *Agnikarma* (thermal cauterization), and *Raktamokshana* (therapeutic blood letting), have been stated by *Acharya Sushruta*. *Kshar Karma* exhibits pharmacological as well as surgical therapeutic effects.

This case study mentions use of *Kshar Sutra Karma*, in a case of *Dushta-Vrana*, ensuring complete healing by virtue of its *Shodhan* and *Ropana* characteristics, along with *Chhedana Karma*.^[3]

Keywords: Buerger's disease, Ischaemia, Gangrene, *Kshar Karma*, *Guggulu Apamarg Kshar Sutra*

MATERIALS AND METHOD-CASE STUDY

A 50-year-old male patient XXXX, OPD No. 2642/10 presented on 29/01/2026 in *Shalya* OPD of Rishikul Ayurvedic College and Hospital, Haridwar (U.K.) with complaints of Non healing ulcer on middle toe of right foot associated with Pain, swelling, blackish discolouration, and foul pus discharge since 6-7 months.

Name of patient: XXXX, 50-year-old, Male

Occupation: Sweetmaker

History of present illness

According to the statement of patient, he was asymptomatic about 7 months ago. One day, patient felt weakness, pain in whole body for which he consulted at Ram Krishna Mission Hospital in Haridwar, where he was treated conservatively. But he did not get any significant relief, so he visited Bhumanand Hospital, Haridwar. In Bhumanand Hospital, he was investigated and consultant diagnosed him as a case

of Coronary Artery Disease- Double Vessels Disease and then managed by Percutaneous Transluminal Coronary Angioplasty along with some conservative management. He got significant relief.

As the days passed, he felt mild discomfort in right foot along with pain. After some time, swelling appeared in same region. Subsequently, there was discoloration of the skin, which progressed over time. Despite the progression of symptoms, the patient did not seek any medical consultation. Gradually the pain and blackish discoloration of the middle toe of right foot increased. With further progression of the condition, wound developed at the site of middle toe of right foot along with pus discharge and foul smell. The patient realized that his condition was worsening so he visited Bhumanand Hospital, Haridwar. where the consultant advised an Arterial Doppler of the right lower limb. The findings revealed peripheral arterial disease of right lower limb arteries, low velocity monophasic colour flow in Anterior Tibial Artery and Dorsalis pedis Artery and Turbulent colour flow in right lower limb arteries (figure-1) and then managed by conservative treatment along with cleaning and dressing for 15 days. However, despite the treatment, the patient did not experience any relief. So he was referred to jolly grant hospital, Dehradun for further treatment.

At jolly grant hospital, Dehradun consultant advised him for Echocardiogram which showed findings of a Moderate LV systolic dysfunction, Grade I diastolic dysfunction and Mild mitral regurgitation. After this, the patient was admitted for 2 -3 days for monitoring, with conservative management and surgery being advised. But the patient refused for surgery. Additionally, the wound was also treated during this period for about 20 days, but he did not get any relief. After few weeks he visited to AIIMS Hospital for further care as his discoloration worsened over time along with pain, swelling, and foul purulent discharges. There he was advised conservative treatment, along with cleaning and dressing of the wound for week. He got mild relief. However after a while, he continued the cleaning and dressing of wound at home, but due to inadequate care, the wound was not at all improving, and the symptoms worsened. So with these complaints, he visited to Rishikul Ayurvedic College and Hospital, Haridwar (uttarakhand) in *Shalya* O.P.D for further management.

PAST HISTORY

- The patient is a known case of Diabetes mellitus since 8-9 years and on regular oral hypoglycaemic drug- Tab. (Glizid-m 60/500mg) 1-0-0 after food.
- Known case of Hypertension since 4-5 months and took oral Anti hypertensive drug Tab (Metoprolol-xl 25mg) 1 BD, Tab (Dytor plus10/50) OD.
- Tab (Atorvastatin 40mg) HS 4-5 months ago.
- Underwent Angioplasty 5 months ago and took tab Asprin for some weeks, but not stopped.
- No significant family history is present.

INVESTIGATIONS (17/03/2026)

Hb%- 15.9%

Total WBC count - $11.1 \times 10^9/L$

DLC -N₆₅ L₃₀ M₀₃ E₀₂ B_{0.0}

ESR - 09 mm

BT- 5:30 min

CT- 7:15 min

B.Sugar- Fasting-151.0mg/dL

Post Prandial - 85.0mg/dL

LFT- SGOT-24.0U/L

SGPT-12.0U/L

B.Urea- 45.5mg/L

S.Creatinine -1.40mg/dL

Lipid profile- Cholesterol Total- 258mg/dL, and

HBsAg, HCV and HIV are non reactive

GENERAL EXAMINATION

On examination, patient general condition was not satisfactory. His BP was 130/88mmHg, pulse rate was 90 per min, Respiratory rate was 16 per min and SPO₂ was 99%. Dorsalis pedis artery pulsations were absent.

LOCAL EXAMINATION

➤ Inspection

Number of wound– One

Site – On middle toe of right foot, involving whole circumference, all around.

Size – 1.5 cm x 1.5 cm x 2 cm

Shape – Irregular

Smell – Extremely intolerable foul smell

Colour – Greyish, Yellowish, Reddish, Blackish discoloration

Discharges –Purulent discharge, Sanguineous

Surrounding area – Blackish discolouration, wrinkling and oedematous.

Floor – Slough with pus discharge

Margin –Irregular and Indurated

State of Vrana – *Dushta Vrana*.

➤ *Vrana Pariksha*

Gandha - *Vyamishra*

Varna- *Bhasama, Kapota, Asthi, Shyava, Pita, Rakta, Krishna*

Srava – *Sarpiprakasha, Sandra, Shweta, Pichhila, Puya*

Vedna – *Todana, Bhedana, Tadana, Ausha, Chausha*

Aakriti – *Visham*

➤ **Prakriti** – *Vata-Pitta*

➤ Palpation

Tenderness- Present +++

Induration- Present ++

Edge - Irregular

Lymph nodes - Not palpable

Temperature - Not raised

MATERIAL AND METHOD

In this case study, *Guggulu Apamarg Kshar-Sutra* was ligated at the base of *Dushta Vrana*.

Preparation of *Guggulu Apamarg Kshar-Sutra*

<i>Guggulu Apamarga Kshara-Sutra</i>	Coatings
<i>Guggulu</i> solution	11
<i>Guggulu</i> solution + <i>Apamarga Kshara</i>	07
<i>Guggulu</i> solution + <i>Haridra Choorna</i>	03
Total coatings	21

CONTENTS OF GUGGULU APAMARG KSHAR-SUTRA

Guggulu Niryasa (Commiphora mukul), *Apamarg Kshar (Achyranthes aspera)*, *Haridra Kanda Powder (Curcuma longa)*.

INTERVENTION

Total duration of management was sixty days. Patient was well informed regarding the management and his written informed consent was taken. On 1st day, *Dushta-Vrana* was irrigated with sterile water, and liquid betadine solution, and proper local examination of wound site was done. Initial first thirty days, cleaning and dressing was done. As a result, the pain, swelling, discharges and foul smell from the wound all reduced. After that for the next fifteen days, *Guggulu Apamarg Kshar-Sutra* was ligated at the base of *Dushta-Vrana*. Due to this ligation, the gangrenous toe got self amputated on 15th day of ligation without any complication. There was no pain, no bleeding and a raw clean wound was present. During the last fifteen days, cleaning and dressing of raw amputated wound was continued, which then fully healed without any complications.

OBSERVATIONS AND RESULTS

- The characteristics of *Dushta Vrana*, viz., *Krishna-rakta-peet-sukkaladinam varnanam* (black, red, yellow and white colour), *Bhairava* (ugly look), *Vedanavaan* (pain), *Putipuya srava yukta* (Purulent discharge), *Gandhoattartham* (Foul smell), *Dirghakalanubandhi* (chronic) were noted in the wound of this patient. On the first day wound was irregular, with lot of slough, pus discharge with extremely foul smell and blackish discoloration.
- In the first thirty days, cleaning and dressing was done under all aseptic precautions. Pain, wound discharges, and induration all partially subsided gradually by the fifth day. Seventh day onwards foul smell also got decreased. Simultaneously slough present at the base of the wound reduced and edema also decreased.

- Thereafter, for the *Guggulu Apamarg Kshar Sutra* was ligated at the base of *Dushta- Vrana*. As the days passed, the middle toe gradually became ischemic and underwent self amputation on 15th day of ligation. Wound started contracting indicating the initiation of healing process. Healthy granulation tissue started appearing, purulent discharge and foul smell were completely absent at the site of *Dushta- Vrana*.
- At the end of these sixty days, during the final fifteen daily days, sterile dressing was done continuously on the raw amputated wound. As a result, the pain, tenderness, swelling and discharges completely disappeared, as well as the size of the wound also started reducing, with subsequent complete healing, and no complications were seen.
- Now dressing was stopped, Smoking is considered to be the most important risk factor of Thromboangitis obliterans. So patient was advised to stop smoking completely, before starting the treatment, (both active as well as passive smoking), wear proper footwear and take of his foot to avoid any trauma. Patient was followed up for a period of 4 weeks. No signs of recurrence were noted during this whole period, and no complications were observed.

DISCUSSION

Probable mode of action of local application of *Guggulu Apamarg Kshar Sutra*, in this case can be explained as follows:-

1. Effect on *Vrana Gandha* ^[4]

All content of *Guggulu Apamarg Kshar-Sutra* has *Katu and Tikta Rasa*. *Laghu, Ruksha, Ushna, Sara* and *Tikshna Guna*. *Ushna Virya* exhibits *Shodhana, Lekhana* and *Ropana Karma*, and due to this property, it helped to reduce the *vrana* size by promoting healing and the rate of contraction. *Tikta Rasa* has *Kandughana, Krimighana, Kledaghana, Puyashoshana* action, while *Katu Ras* destroys microbes and slough; together they eliminate the causes of *Gandha* in *dushta-vrana*.

2. Effect on *Varna* ^[5]

Guggulu has *Katu, Tikta* and *Kashaya Ras* with *Varnakar* property. *Haridra* has *Varnya* properties, which provides natural *Varna* (colour) to *Vrana*.

3. Effect on *Vrana Srava* ^[6]

Guggulu and *Haridra* both consist of *Kshaya Ras*. Due to this, *Guggulu Apamarg Kshar-Sutra* possess *Vrana Ropak, Lekhana* and *Kleda Shoshak* property, and balancing *doshas* at the local site, which helped in reducing *Vrana Aakriti, Vrana Gandha* and *Vrana Srava*.

4. Effect on *Vrana Vedna* ^[7]

All content of *Apamarg Kshar Sutra* has *Ushna Virya*, which pacify *Vata Dosha*. Due to this property, it reduced *Vrana Vedna*.

5. Effect on *Vrana Aakriti* ^[8]

Due to *Katu Rasa* of *Apamarg* and *Guggulu*, the *Kshar Sutra* possess *Vrana nashak, Krimighna* and *Dushit mans lekhana* property. Because of this characteristic, it promoted healing and the rate of contraction, which helped to reduce the size of the wound.

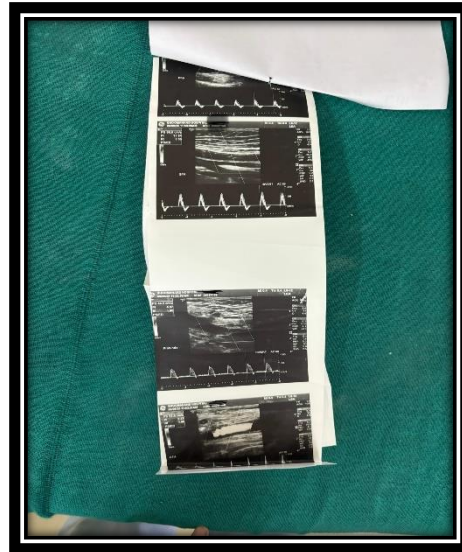
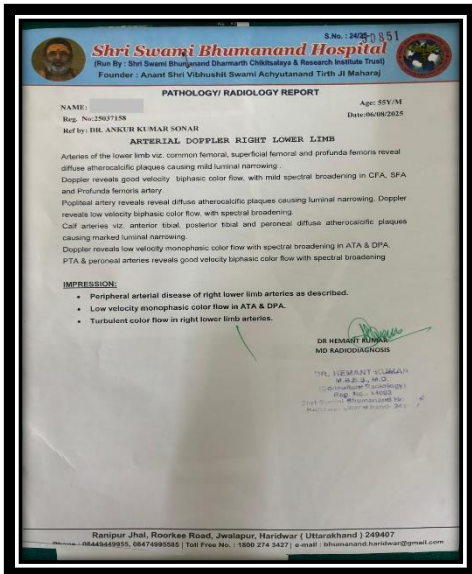
- *Apamarg* has various chemical constituents, viz. Oleanolic Acid, Saponins, Dihydroxy ketones, etc. They play a significant role in the management of *Vrana* (wound) by virtue of its *Shodhana* (cleansing) and *Ropana* (healing) property. ^[9]
- The chemical constituents of *Guggulu* include flavonoids, tannins, steroids, alkaloids, α -camphorene, cembrene-A, cembrene, and mukulol terpenoidal elements that are present in the oleo-gum resin for its antibacterial and wound-healing properties. It acts as anti-oxidant, antimicrobial, and anti-inflammatory which helps to reduce profuse unpleasant *Vrana Gandha*, *Vrana Srava* and relieving *Vrana Vedana*.^[10]
- The primary active substance of *Haridra* is curcumin, which exhibits antibacterial and anti-inflammatory properties as well as Terpenoids, phenols, and Gallic acid, ellagic acid, belleric acid, chebulegic acid assist in regulating inflammation and promoting tissue growth. ^[11]
- These phytoconstituents collectively promote wound healing by reducing inflammation, preventing infection, enhancing collagen synthesis, facilitating faster epithelialization along with tissue regeneration.
- Drugs contain *Katu* and *Tikta Rasa*, which are more useful for *Shodhana* and *Ropana*. Properties, viz *Laghu*, *Ruksha*, *Ushna*, *Sara* and *Tikshna guna*, *Ushna Veerya* and *Vatahara* are present. Combining all these properties, it purifies the *dushta-Vrana* (*Vranashodana*) and promotes healing in *Dushta- Vrana*. (*Vrana-Ropana*)

CONCLUSION

- In those places where surgical procedures can not be applied, either directly or indirectly, *Kshar* is employed, and for this reason, it is considered the best among all surgical instruments, being superior and primary.
- In this case study, *Chhedana Karma* along with proper *Vranashodhana* were required to initiate healing process. Among surgical instruments, *Kshara* (caustic alkali) is considered superior most because it performs the surgical procedure of excision (*Chhedana*), incision (*Bhedana*) and scraping (*Lekhana*), as well as alleviates the *Tridosha*.
- *Guggulu Apamarga Kshar Sutra* was planned and ligated at the base of Toe in *Dushta-Vrana*. The assessment was made based on the changes observed in the signs & symptoms of the *Vrana*. The parameters of pain, discharges, odour, along with the condition of floor, margin, granulation tissue and size of the wound were recorded.
- *Kshar- Sutra* ligation is a minimally invasive therapy that causes controlled chemical cauterization and debridement of unhealthy tissue. It has antimicrobial properties, reduces infection, ensures minimal bleeding, and promotes healthy granulation tissue formation.
- It comprises numerous active chemical constituents, including flavonoids, phenols, glycosides, and tannins, which facilitate its efficacy in addressing diverse skin problems and non-healing ulcers.
- It is cost-effective, suitable for OPD-level treatment that usually requires no anaesthetic, almost painless, and has a very low recurrence rate. It works on chemical cauterization along with simultaneous cutting and healing. Therefore, it can be inferred from this case study that ligation of *Apamarg Kshar Sutra* can be successfully used for management of patients with *Dushta Vrana* in

Toe. Patient was followed regularly for four weeks, at 15 days interval, and no signs and symptoms of reoccurrence were observed. No complications were observed during the study.

INVESTIGATIONS



1Figure- Arterial doppler right lower limb

➤ **On the First visit**



Buerger’s disease (middle toe of right foot)

➤ (Next 15 days)



(After 15 days)



Guggulu Apamarg Kshar-Sutra was ligated at the base of *Dushta-Vrana*

(last 15 days)

(on 60th day)



The middle gangrenous toe gradually underwent self amputation

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