

AN AYURVEDIC APPROACH IN THE MANAGEMENT OF OSTEOMYELITIS TOES

Balendra Singh¹, Shweta Singh², Haritha A. H³, Nobal Dansena⁴, Alka Lakra⁵, Pavan Dhangar⁶

¹Professor & HOD, Department of Shalya tantra, GAC Raipur C.G. ²Lecturer, Department of Samhita Siddhant, GAC Raipur C.G. ³MS Scholar, Department of Shalya tantra, GAC Raipur C.G. ⁴MS Scholar, Department of Shalya tantra, GAC Raipur C.G. ⁵MS Scholar, Department of Shalya tantra, GAC Raipur C.G. ⁶MS Scholar, Department of Shalya tantra, GAC Raipur C.G.

Corresponding Author: drbalendrasingh@gmail.com<https://doi.org/10.46607/iamj2411122023>

(Published Online: December 2023)

Open Access

© International Ayurvedic Medical Journal, India 2023

Article Received: 13/11/2023 - Peer Reviewed: 30/11/2023 - Accepted for Publication: 13/12/2023.



ABSTRACT

Background – Osteomyelitis toe is commonly seen in patients who have peripheral neuropathy associated with diabetic mellitus. In Ayurveda, osteomyelitis can be correlated with *Asthimajja Vidradhi*¹ or *Dusta Vrana*. *Dusta vrana* (infected wound) can cause loss of physical activity and it can produce a significant impact on the quality of life. This study mainly concentrates on *Vrana Shodhan karma* (surgical debridement) of *dusta vrana* (infected wound) and followed by application of *Karanjadi Ghrta* with *Shaman Chikitsa* which is performed to restore the function of toe and achieve adequate wound healing. **Material and method-** A Fifty-eight-year-old male patient came to Shalya tantra OPD of our institute (GAC Raipur) with complaints of non-healing wounds on his great and second toe of left foot along with pain, swelling and discoloration of skin. Routine blood investigation and foot x-ray was taken and was diagnosed as osteomyelitis toe. Under all aseptic manner surgical debridement of necrotic tissue (slough) of wound was done by following classical guideline of *Sushruta Samhita*. Simultaneously, wounds cleaned by lukewarm water and alcohol then after wounds was dressed in use of *Karanjadi Ghrta* and following internal medicine were given to the patient for three months like *Triphala Guggulu*, *Kaishora Guggulu*, *Lakshadi Guggulu*, *Varunadi Kashayam*. **Result-** Significant output were observed like pain, oedema is subsided, and wound was completely healed within 3 months. **Conclusion-** Multidisciplinary Ayurvedic approach can play a

good supportive role in managing critical conditions such as diabetic osteomyelitis toe and cosmetically preserve the body part and amputation can be avoided.

Keywords: Osteomyelitis, *Dusta vrana*, *Asthimajja Vidradhi*, *Shodhan Karma*, Surgical debridement.

INTRODUCTION

Osteomyelitis toe has devastating consequences for the functional outcome but also in the cosmetic prospective. The main cause of Osteomyelitis toe is the improper medical treatment of diabetes and trauma. *Acharya Sushruta* has illustrated in detail about cause, clinical feature, prognosis of disease and management of *Asthi Majja vidradhi* and *Dusta Vrana*. According to *Acharya Sushruta*, features of the *Dusta Vrana* (infected wound) are excessively wide mouth of wound, indurated or soft ulcer, any one of these color black, red, yellow or white, terrifying looking, full of pus and sloughing muscle, ligaments etc., having an unpleasant appearance and smell with severe pain, burning sensation, redness, oedema and an excessive discharge of vitiated blood² (Su. Su. 22/7 page no 166). Wounds of people who are suffering from consumption, skin disease and diabetes mellitus are difficult to heal³(Su. Su. 23/7 page no 171). Wounds which are situated in the bone of the leg are also difficult to heal⁴ (Su. Su. 23/6 page no 171). Foot and toe are a common site of Osteomyelitis, which is generally prone in diabetic patients. In 80 percent of cases the staphylococcus aureus organism is responsible for infection and the precipitating factor is trauma. Osteomyelitis usually arises directly via skin ulceration or chronic wound of skin. Performed a wound swap culture with contact to bone for identifying the organism before starting this study. Infiltrating inflammatory leukocytes release a large number of proteolytic enzymes and lead to dissolve bone minerals. Staphylococcus aureus infection leads to increased production of inflammatory cytokines, altering the balance between osteoblastic and osteoclastic cell function thus inhibiting bone formation and enhancing bone resorption.⁵ Wound, and their management is the basic fundamental part in the practice of surgery. Early surgical debridement once a neuropathic ulcer or gangrenous toe develops osteomyelitis

is likely to achieve the best result. *Acharya Sushruta* has described sixty measures for wound management like *Chedan karma*(excision), *Bhedan karma*(incision), *Shodhan Karma* (surgical debridement of wound) and *Ropniya karma* (wound healing) etc.⁶ (Su.Chi.1/8)page no6. *Acharya Sushruta* has described *Karanjadi Ghrta* for the treatment of *Pittaja Vidradhi* in *Chikitsasthan* and also advocated to good wound healing property of this formulation. So, I have taken this formulation for local application of wound healing after *Vrana Shodhan Karma*⁷ and vitiated *dosha* are subsided by *Shaman Chikitsa*. All vitiated *dosha* subsided and healing process was increased by *Shamana chikitsa*. *Sanshamana Chikitsa* was given by classical ayurvedic medication such as *Triphala Guggulu*, *Kaishor Guggulu*, *Lakshadi Guggulu* and *Varunadi Kashaya*.

Case Report (Material and Method)-

A Fifty-eight-year-old male patient was come to Shalya tantra OPD of our institute in December 2018 with complaints of non-healing ulcers on his great and second toe of left foot along with pain, swelling and discoloration of skin. We collected a detailed medical history of the same condition of left foot. There was a history of well controlled type-2 diabetes mellitus since 2016. After fifteen days of trauma, the patient noticed swelling and discoloration of skin in his great toe and second toe of left foot that was gradually increased. A patient had taken previous treatment from AIIMS Raipur and advised to amputation of affected part. He did not get relief and the size of wound, and pain was increased.

Clinical Finding –

History of trauma and controlled DM.

On local examination, a progressive ulcer at great and second toe of left foot with irregular and inflamed margin present. Slough or dead tissue was present on the wound floor and gangrene (Black ap-

pearance which is due to disintegration of hemoglobin and formation of iron sulphide) also present at pulp of distal phalanx of second toe (Fig.). On palpation, the local temperature rose, and the affected area was tender. Although pulse palpation (circulation) was normal, Sensitivity of affected toe was mildly diminished.

Diagnostic Assessment- All necessary investigation like CBC, BT, CT, FBS, ESR, HIV, HBsAg, RFT, LFT, Plain X-ray of foot was performed before *Vrana Shodhana* (debridement of wound). Polymorph nuclear leucocytes and Erythrocyte Sedimentation Rate (ESR 60mm/h) were high and plain radiograph finding revealed cortical irregularity, demineralization of bone, lytic lesion with moth eaten appearance of the second toe of left foot (Fig.). Based upon the clinical finding and investigation; case was diagnosed as Osteomyelitis Diabetic toe (*Asthimajja vidradhi or Dusta Vrana*) and planned for *Vrana Shodhana* and *Shamana Chikitsa*.

Surgical Intervention- Detailed history and examination of the patient was collected in a specially designed proforma for easy assessment of outcomes. The entire course of *Vrana Shodhan karma* (Surgical debridement) was divided into three stages- *Purva Karma* (Pre-operative Measures), *Pradhan Karma* (Operative Procedures) and *Paschat Karma* (Post Operative Care)⁹.

Poorva Karma (Pre-operative Procedure) -

1. The patient was informed about the *Vrana Shodhana Karma* (debridement of wound) and application of *Karanjadi Ghrita*.
2. Written Consent was taken regarding the surgical procedure or *Shodhana Karma* (debridement of wound).
3. Injection Xylocaine 0.3ml I.D. sensitivity test was done one day before *Vrana Shodhana Karma* (surgical debridement of wound).
4. The all-essential materials were arranged as per requirement (e.g. alcohol, lukewarm water, *Panchwalkala kwatha*, dressing material- gauze piece (vikeshika), cotton pad (kawalika), bandage (vas-tra patta), *Karanjadi Ghrita* etc. (Su.chi.16/16-21 page no 160).

Pradhan Karma (Operative Procedure)-

Preparation of the operative field- Osteomyelitis toe and surrounding area were prepared by cleansing and painting with lukewarm water, alcohol and followed by draping of the part by sterile linens.

Method of Vrana Shodhana (Surgical debridement of wound) - After obtaining adequate local anesthetic effect, incision was made in one stroke in the direction of infection and gangrene. The dissection of the dead tissue started with carefully protecting the vulnerable areas, veins, ligaments, joints, bones and arteries then scalpel (knife) withdrawn swiftly⁸. (Su.Su. 5/7 page no 30). Necrotic tissue or slough on the floor of wound was adequately excised which helps to reduce bioburden⁹ (Su.Su.25/4 page no 182). Some amount of impure blood was also drained (*Raktavasechana*) by the surgical debridement which help to increase healing process. After surgical debridement make sure that the wound is not having any foreign material like slough, dead bone piece, then the wound was washed with decoction of *Tikta kashaya Dravyas (Panchwalkalkwath)*¹⁰ (Su.chi. 16/39-41 page no 163). The cleaned operated wound was dressed using sterilized gauze soaked with *Karanjadi Ghrita (vikeshika)* and wound was covered by sterilized cotton pad (*kawalika*) and bandaged.¹¹ (Su.Su. 5/17). Dressing was done once in the morning up to 15 days every day. If the bandage becomes wet completely in between by discharge, then re-bandaging was carried out.

Therapeutic intervention- All vitiated *dosha* subsided and healing process was increased by *Shaman chikitsa*. *Sanshaman Chikitsa* was given classical ayurvedic medication such as *Triphala Guggulu* 250 mg twice a day with lukewarm water, *Kaishora Guggulu* 250 mg twice a day with lukewarm water, *Lakshadi*.

I recommend Guggulu 250 mg twice a day with lukewarm water and *Varunadi Kashaya* 20 ml, after meal twice a day with lukewarm water orally advised. All medicine was from Nagarjuna Company and that was provided by our institute. *Karanjadi Ghrita* was used as a local application for wound healing and manufactured by our institutional phar-

macy. The patient was advised to have all medicine regularly for three months as advised.

Paschat karma (post operative care) *Vednashamaka* (pain relieving) and *rakshoghna* (antibacterial) drug was advised for seven days.¹² (su.su.5/17). Patient was suggested to avoid rubbing or physical trauma (exertion) in the operated site.¹³ (su.su.16/16 page no 116). Regular monitoring was done to avoid any complication like infection or recurrence.

Follow-up - The patient was monitored daily up to one month and at regular intervals for 3 months, 6 months, one year and two years. The patient was advised to limit his movement and foot was protected from traumatic injury. At follow up of first week, the patient reported pain relief and we observed mild brown color and slough present on the floor of wound at second toe and wound size of the great toe de-

creased. **(Fig-3)**. At third week follow up, no indurations, tenderness and swelling were presented around the great toe of wound. The wounds size was decreased of both great and second toes. **(Fig-4)**. At one month, follow up slough was absent, granulation tissue was seeing, bone and tendon slightly exposed. **(Fig-5)**. At two months, follow up there was no bone contact and tendon which exposed became covered with granulation tissue. The wound was remnant at second toe and wound was completely healed on great toe and patient was started to walk normally without pain and limping **(Fig-6)**. At third month follow up, no indurations, no tenderness and no swelling presented, and wound was healed completely on second toe of left foot. The patient reported complete recovery of both toes **(Fig- 7,8)** . At two years, follow up the patient reported bending of second toe and on clinical examination seeing.



Fig1- Before treatment- Osteomyelitis (dusta vrana) second toe of left foot.



Fig2- Before treatment- Osteomyelitis (dusta vrana) at great toe of left foot.



Fig3- After 7th post of day of Vrana Shodhan(surgical debridement) karma



Fig 4- After 21st post of day of Vrana Shodhan



fig 5- After 30th post of day of Vrana Shodhan



Fig 6- After 60th post of day of Vrana Shodhan



Fig 7- After 45th post operative day



Fig 8- After 90th post op day



Fig 9- After 02 years post op day

X Ray Report – Lytic areas seen in left sided 1st and 2nd metatarsal heal and phalanges of the great toe and 2nd toe with sclerotic areas with surrounding soft tissue prominence occurred.



Fig 10- X ray left foot before treatment



Fig 11- X ray left foot- after 90th of treatment



Fig 12- X ray left foot- after two years of treatment

DISCUSSION

Fundamental of wound healing and tissue regeneration is achieved by the presence of adequate vascularisation.

The patient was fulfilling all clinical (Ayurvedic and modern medical science) and radiographic criteria of osteomyelitis (*Asthimajja vidradhi* or *dusta vrana*). A wound swap for culture with contact to exposed bone surface done to find the organisms that lead to an infection. We treated osteomyelitis wounds through ayurvedic approach of *Vrana Shodhan Karma* (Surgical debridement) and *Shaman Chikitsa* (Therapeutic treatment). *Karanjadi Ghrita* was used as a topical application after *vrana shodhan karma*. Healing of *vrana* is a natural process, but for good healing the drug must have *vrana shodhan* (wound cleaning) and *vrana ropan* (wound healing) properties, *Karanjadi Ghrita* one of them. Main ingredients of *Karanjadi Ghrita* are *Karanja* (*Pongamia pinnata*),

Jati (*Jasminum grandiflorum*), *Haridra* (*Curcuma longa*), *Daruharidra* (*Berberis asiatica*) etc. have an antibacterial, insecticidal, antipyretic, anti-inflammatory and wound healing properties. Ingredients of *Karanjadi Ghrita* have *tikta-kashaya* properties which help to increase the healing process and reduce the bioburden and exudates of the wound (Su.Chi.16/16-21). Patient was taken allopathic drugs for diabetic mellitus (*Prameha*) and that time her sugar level was Glucose (F) -120 mg/dl and Glucose (PP) -210 mg/dl and Hb1ac level 8.04. *Varunadi Kashayam* was used to treat osteomyelitis. *Asthimajja vidradhi* (Osteomyelitis) also known as *Abhyantar vidradhi*. Acharya Sushrut has specifically mentioned *Varunadi kwath* for the management of *Abhyantar Vidradhi*¹⁴ (Su.Chi.16/28 page no 161). *Laksha guggulu* described in *Yogratnakar* for management of *bhagna*.¹⁵ Main ingredients of *Lakshadi guggulu* are *Laksha* (*Laccifer lacca*)¹⁶, *Asthi Shrinkhala* (*Cissus Quadrangularis*)¹⁷ and, *Arjuna* (*Arjuna indica*) etc¹⁸.

These drugs have Kapha pitta shamaka, subsides wounds and Bhagna sandhan (healing of fracture bone) properties. Experimental and histological studies also show that *laksha* and *Asthishrinkhala* enhance bone healing¹⁹.

Result- After using these various modes of management, significant output was observed like pain, oedema is subsided, and wound was completely healed within 3 months. The patient got a functionally useful great toe and second toe of left foot to carry out activities of daily routine work.

CONCLUSION

Multidisciplinary *Ayurvedic* approach can play a good supportive role in managing critical conditions such as diabetic osteomyelitis toe. This case study offers a novel approach of accelerating the adequate healing of wound, with no recurrence and cosmetically preserves the great and second toe of left foot also helps to avoid amputation. These herbal medicines are easy to get, and the treatment method was so simple that it could provide a new way of treating osteomyelitis toe.

REFERENCES

1. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Nidan Sthan 9/34-38, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 526.
2. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Sutra Sthan 22/7, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 166.
3. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Sutra Sthan 23/7, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 171.
4. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Sutra Sthan 22/6, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 171.
5. Marriott I, Apoptosis-associated uncoupling of bone formation and resorption in osteomyelitis. *Front Cell Infect Microbiol* 2013;3:10.
6. Murthy K.R. Srikantha, Sushrut Samhita, Part II, Chikitsasthana 1/8, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 6.
7. Murthy K.R. Srikantha, Sushrut Samhita, Part II, Chikitsa Sthan 16/16-21, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 160.
8. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Sutra Sthan 5/7, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 30.
9. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Sutra Sthan 25/4, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 182.
10. Murthy K.R. Srikantha, Sushrut Samhita, Part II, Chikitsa Sthan 16/39-41, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 163.
11. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Sutra Sthan 5/17, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 31.
12. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Sutra Sthan 5/17, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 31.
13. Murthy K.R. Srikantha, Sushrut Samhita, Part 1, Sutra Sthan 16/16, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 116.
14. Murthy K.R. Srikantha, Sushrut Samhita, Part II, Chikitsasthana 16/28, published by Chaukhamba Orientalia, Varanasi, U.P., Reprint edition 2012, page no 161.
15. Laxmipati Shastri, Yogratnakar, Uttarardha, *laksha guggulu* 11/1 reprint edition, Chaukhamba prakashan, Varanasi, vi. s. 2067, page no 191
16. Bulusu Sitaram, Bhavaprakasha of Bhavamishra, Part I, chapter 6(II)/193-195, published by Chaukhamba Orientalia, Varanasi, reprint edition 2015, page no 175.
17. Bulusu Sitaram, Bhavaprakasha of Bhavamishra, Part I, chapter 6(IV)/226-228, published by Chaukhamba Orientalia, Varanasi, reprint edition 2015, page no 289.
18. Bulusu Sitaram, Bhavaprakasha of Bhavamishra, Part I, chapter 6(VI)/26-27, published by Chaukhamba Orientalia, Varanasi, reprint edition 2015, page no 343.
19. Garima Mishra, Saurabh Srivastav, B.P. Nagori, Pharmacological and therapeutic activity of *cissus Quandrangularis*: an overview international journal of pharmatech research, April- June 2010, 2(2): P 1298-1310

Source of Support: Nil

Conflict of Interest: None Declared

How to cite this URL: Balendra Singh et al: An Ayurvedic approach in the Management of Osteomyelitis Toes. *International Ayurvedic Medical Journal* {online} 2023 {cited December 2023} Available from: http://www.iamj.in/posts/images/upload/3116_3121.pdf