



REVIEW ARTICLE

Case study on management of non healing venous Ulcer with unripe fruits of carica papaya

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Abstract

Carica papaya is one among the exotic plants in India which were introduced to the Indian subcontinent by the Portuguese in the 16th century. Thus, it is not mentioned in the Ayurvedic classical treatises. But the probable medicinal potential can't be ignored. A 43 year old male approached the OPD with a non healing ulcer over the medial malleolus of the right lower limb with a complex and relapsing history of 5 years. As the wound showed delayed signs of healing, unripe fruits of carica papaya were used for the dressing. This was found to be effective in reducing slough formation, inducing healthy granulation tissue and thereby promoting the healing rate.

Introduction

Various exotic plants were introduced from the south American continent to the Indian subcontinent during the second India Armada of the Portuguese. These include tomato, red chili, pineapple, papaya, guava, tapioca, sweet potato, cashew nut, musambi, custard apple etc. accounting for almost up to 300 species of plants.¹ Even Though these are very common now and even part of our cultural cuisine, they were brought to India in the 1500s. Thus, the major classical treatises of Ayurveda have obviously not mentioned any of these plants. But their probable medicinal potential can't be ignored. Carica papaya is one among those exotic plants which were introduced to India.

The commonest cause of ulcers of the lower limb is attributed to the venous ulcers.² Venous insufficiency leading to edema is frequently associated with Chronic relapsing ulcerative wounds affecting the lower extremities.³ And these non-healing ulcers are a compelling concern as it significantly affects the quality of life as well as the cost for healthcare.⁴

This is a case study of a non-healing venous ulcer where unripe fruits of carica papaya were used for the dressing of the wound to promote healing.

Case history

A 43 year old male patient, with an occupation demanding long hours of standing for the past two decades,-- presented with an ulcer over the medial aspect of the right leg. Five years ago he developed a blister over the medial malleolus of right foot. Soon it burst and a deep wound developed. Despite consulting a doctor and consuming medications he got no relief and the

wound gradually widened in size associated with bleeding which was blackish red in color. He was diagnosed as having varicose ulcer and referred to the surgeon at the nearest government hospital. Allegedly he underwent skin grafting in 2018. Even though he got complete relief of symptoms, 6 months after the surgery the area started to bleed and again, he consulted the hospital. 4 years ago he was diagnosed with diabetes mellitus and he is consuming Tab-Metformin HCL IP 500mg 1bd after food since then.

In January 2020 he underwent Trendelenburg surgery with multiple ligations. In 2022 he had a RTA and injured the same site. Consequently, the wound increased depth and size, as he took medications, he got relief. Later when he restarted his job which demanded long duration of standing, he developed swelling in right foot and wound on the same site.

Clinical findings

The patient of vata pitta prakriti on assessment using the prakrit assessment tool⁵, presented with a wound which had bright red coloured floor, slopping edges, moderate amount of slough formation, showed no signs of healing. There was mucosanguineous discharge, mild purulent smell and the surrounding tissue was having tenderness. Patient frequently felt pricking type of pain in the wound and surrounding area. The wound possessed irregular shape and approximate dimensions of 9.8 cm length, 6.2 cm width, 0.7 cm depth and a total surface area of 45 cm square. The patient having irregular and mixed diet habits, bowel of moderate consistency and passes regularly once or twice in the morning and micturition and sleep within the normal range and had a habit of occasional alcohol consumption and cigarettes smoking. The pulse, heart rate, blood pressure and respiratory rate were found to be in normal ranges. He is having 175cm height and weight 76 kg with a BMI of 24.8 kg/m². Peripheral Arterial disease was ruled out, as on clinical examination, palpable pulse was noted in the affected lower limb and, doppler study of the right lower limb done on 3rd April 2023 found no evidence of deep vein thrombosis but noted presence of few dilated superficial veins and perforators in the lower limb.

Management / methodology

Conventional treatments including triphala kashaya dhara, paranthyadi taila dhara and jathyadi grutha dressing of the wound were given along with internal administration of medicine including guggulu thikthakam kashaya and triphala guggulu. On showing delayed signs of healing carica papaya was added to the dressing of the ulcer. Pulp made from the unripe fruits of carica papaya was used and

minimal amount of jathyadi gritha was added to the kalka (pulp) to prevent it from turning into too much dry consistency and keeping it ideal for wound dressing.⁶

| Sl no | Internal medicine | Dose and time |
|-------|----------------------------|-----------------------------------------------------|
| 1 | Gugguluthikthakam kashayam | 90ml kashayam twice daily in empty stomach 6am, 6pm |
| 2 | Triphala guggulu | 1 tab twice daily after food |

External procedures :-

- Triphala kashayadhara
- Parantyadi taila dhara
- Jathyadi grutha dressing
- Papaya kalka dressing



Image 1: pulp of unripe fruit of Pappaya



Image 2,3 : dressing the ulcer with carica Pappaya

| | Before treatment | After 3 months of treatment |
|--------------|--------------------|-----------------------------|
| Length | 9.8 cm | 5.7 cm |
| Width | 6.2 cm | 5.6 cm |
| Depth | 0.7 cm | 0.2 cm |
| Surface area | 45 cm ² | 20 cm ² |

Results

Introduction of kalka of carica papaya to the treatment brought about changes like reduction in slough, healthy granulation and better healing rate. The tenderness as well as the pricking type of pain was also reduced. Even though the ulcer is not completely healed, Within three months the dimensions were reduced to 5.7 cm length, 5.6 cm width, 0.2 cm depth and a total surface area of 20 cm square, attributing to a total healing rate of 44.45 % with reference to area healed.



Image 4 : before treatment



Image 5: after 3 months of treatment

Discussions

Unripe fruits of carica papaya were found to be effective in the management of this non healing venous ulcer. This chronic non healing ulcer having a complex history of 5 years started to show promising results within the relatively minor period of 3 months. The normal healing of wounds is hindered by various local factors like the presence of slough and infections.⁷ And non healing wounds can be viewed in the ayurvedic perspective as Dushta vrana. The features of dushta vrana like Deerkha kaala anubandhi (long duration), dushta shonita sravi (oozing of vitiated blood), vedana van (painful), amanonja darshan and bhairava (unpleasant and fear evoking sight) were exhibited in this case.⁸

The only found reference of carica papaya mentioning it as Eranda-chirbhida also known as madhu-karkadi was in Shaligrama nighantu which belongs to the 19th century. Even in which, only a morphological description is provided.⁹

In the swayamkriti sloka present in the Indian Medicinal Plants attribute Twak dosha hara (pacifying ailments of skin) and krimihrit (anti-microbial) properties to papaya.⁹ The unripe fruits of carica papaya possess caustic properties as present in its ksheera which when applied on a non healing ulcer produces shodhana and shoshan actions.

Animal studies in excision wounds in diabetic rats have demonstrated the efficacy of papaya extracts in inducing healthy granulation tissue.¹⁰ Enzymatic debridement for wound healing is an emerging concept.¹¹ Papain and chromopapain are enzymes present in papaya which act as a debridement agent and promote development of healthy granulation tissue.¹² Staphylococcus aureus and pseudomonas are some common microorganisms involved in wound infections and papaya fruits have been found to be active against them.¹³ The constituents of papaya fruits bring about their antibacterial effect by breaking the biofilm of the bacteria.¹⁰

Conclusion

The dressing of ulcer with unripe fruits of Carica papaya was found to be effective in reducing slough, promoting healthy granulation and healing rate in this case. There could be even more unknown medicinal benefits to Carica papaya. All the exotic plants could have some significant yet unexplored benefits. These exotic plants accounting for almost 300 species could have various astonishing medicinal properties. They should be explored through the Ayurvedic as well as contemporary scientific methodologies and brought to the limelight of the field of medicine.

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