

A Successful Ayurvedic Management Of Kotha (Dry Gangrene Of Digital Toe) By Disarticulation Followed By Panchakarma And Jaloukavacharana - A Single Case Study

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ABSTRACT

Gangrene is a macroscopic death of tissue caused by lack of blood supply. The foot and hands are most commonly affected. Symptoms may include a change in skin colour red or black, numbness, swelling, pain, ulceration and death of local skin. This condition is caused because of an injury, infection or other health conditions, majorly diabetes. Gangrene and its associated amputations are clinically challenging, but Ayurveda offers different therapy options. In Ayurveda, Gangrene can be correlated to Kotha under Dushta Vrana due to Margavarana and Dhatu Kshaya. A 65 years old male patient came to Shalya tantra OPD, JSS Ayurvedic Medical College & Hospital presented with complaints of pain and swelling near right little toe since 15 days. He has been diagnosed with a dry gangrene. The patient was treated with Disarticulation followed by Panchakarma and Jaloukavacharana, which were found very effective and safe. The patient got recovered with complete healed wound.

KEY WORDS: Gangrene, Disarticulation, Jaloukavacharana, Panchakarma

INTRODUCTION

Gangrene is a general term used to describe a number of conditions that involve death and subsequent decay of the tissue in one regional portion of the body¹. A complication of necrosis, gangrene occurs because of critically insufficient blood supply².

Gangrene occurs when a body part loses its blood supply. The affected tissue may be the skin, muscles, internal organs. Blood provides oxygen and nutrients to feed the tissue cells and immune system components, such as antibodies to ward off infections. Without a substantially functioning blood supply, the cells struggle to survive and they ultimately die. This necrosis or cell death, can result when a portion of the body's tissues becomes infected, injured or constricted, interrupting the blood supply. In addition, tissue in a particular region of the body may have a decrease in the amount of blood supply due to a number of diseases or conditions, such as Arteriosclerosis, Diabetes mellitus, smoking or wound infections including those related to surgery.

There are several types of gangrene, but the three most common varieties are wet, dry and gas gangrene. Less common varieties include internal and Fournier's gangrene. Gangrene can involve any part of the body, but the most common sites include the toes, fingers, feet and hands³. Dry gangrene is a condition that involves tissue death and turns it dry, dark and mummified due to arterial occlusion. It occurs gradually, progresses slowly and affects the lower extremities of the body (toes and feet) due to insufficient blood supply to the tissues. In dry gangrene, due to necrosis, the tissue becomes shrunken and blackened and gets detached. In this condition, autoamputation is usually practiced due to occurrence of clear lines of demarcation. If dry gangrene is left untreated or treatment is delayed, it may progress to cause infections and complicate the condition. Dry gangrene is usually less severe than wet gangrene and may result in auto-amputation (i.e., spontaneous detachment from the body and elimination of a gangrenous part), whereas wet gangrene may lead to cellulitis, loss of the extremity, septicemia and death⁴.

In Ayurveda, gangrene can be considered as Kotha under Dushta Vrana due to Margavarana and Dhatu Kshaya. Margavarana (encapsulation) and Dhatu Kshaya (depletion of Dhatu) are the two major causative factors of Vata Vyadhi. The word Marga in general refers to any channels within the body but contextually, it refers to the vessels carrying the nutrients and Avarana means Avarodha and is termed as obstruction. Pathological probability of gangrene may be accumulation of morbid Kapha and Pitta Dosha within the channels that the momentum of the Vata Dosha circulation in the channels or impairment of momentum⁵. The influence of Margavarana is not limited proximal to the obstruction but distal to the obstruction, the circulation of the nutrients is affected and hence the body part distal to the obstruction is deprived of nutrition and hence suffers from pathology of Dhatu Kshaya⁶.

Acharya Sushruta has mentioned Aharana shastra karma (extraction or disarticulation) as a treatment of kotha followed by panchakarma therapy and vrana chikitsa. Jaloukavacharana (Leech therapy) is becoming increasingly popular among

practitioners of contemporary and alternative medicine. Many studies are currently under way to evaluate its effects, mainly in the treatment of pain and dushitha rakta.

CASE REPORT

The present case is diabetic foot gangrene which was disarticulated in JSS Ayurveda Medical College & Hospital and post-operative wound management carried under Ayurvedic wound treatment protocol.

Chief complaints: A 65 years old male patient with OP/IP No- 186196/55566 came to Shalya tantra OPD, JSS Ayurvedic Medical College & Hospital presented with complaints of pain and swelling near right little toe since 15 days.

Associated complaints: C/O blackish discoloration of right little toe, tingling sensation around little toes for 5 days

History of present illness: As per the statement of patient, he was apparently healthy 15 days back, on a sudden onset he was pierced by a sharp object which formed a wound on right little toe. Earlier it was neglected as the wound was not healing so later he consulted a nearby physician for wound management, where he didn't find any relief later gradually foul smell with discharge started and the skin around the right little toe turned to black colour along with tingling sensation and pain in the right little toe since 5 days, so he approached our hospital for further management

Past history: H/O post traumatic cellulitis, K/C/O HTN since 6 months & DM for 6 months under medications.

Personal history: Appetite - Reduced, Bowel - 1 time per day, Micturition - 4 to 5 times per day, Sleep - Disturbed due to pain Habits-tea twice daily, non-alcoholic non smoker

Local Examination:

Site - 5th Right toe

Size - Length: 4cm*3cm*2cm,

Number - 1 entire Right little toe

Edge and margin - Inflamed with irregular border

Floor - Covered with slough and granulation tissue

Base - Indurated

Discharge - blood stained pus

Odour - foul smelling

Surroundings - Blackish in colour

Bleeding - Absent

Tenderness - Present

Regional Lymph node - Not palpable

Examination of Gangrene: Symptoms such as claudication and rest pain are present.

Inspection:

Change in colour - Blackish in colour around right little toe

Extension - Up to 5th metatarsal

Signs of ischemia - Complete necrosis, Thinning of skin noted Loss of subcutaneous fat, completely blackish discoloured.

Palpation:

Skin temperature - Cold

Capillary filling test - Slow

Venous refilling time - 12sec

Fuching test - negative,

Dorsalis pedis pulse- Feeble

Normal popliteal artery pulsation felt with oscillatory movements of foot.

Investigations- CBC, ESR, CRP, BLOOD UREA, S. CREATININE, URIC ACID, BT-CT, HIV, HBSAG, BLOOD GROUPING, FBS, PPBS, URINE ROUTINE - All parameters were within limits TC & ESR were minimally raised.

X RAY RIGHT FOOT- Osteomyelitis changes seen in right little toe.

COLOUR DOPPLER ARTERIAL AND VENOUS SYSTEM RIGHT LOWER LIMB WAS DONE- DORSALIS PEDIS BIPHASIC FLOW APART FROM THAT ALL OTHER ARTERIES OF LOWER LIMB SHOWED TRIPHASIC FLOW.

Differential diagnosis: Dry Gangrene, Burger's disease, Peripheral vascular disease, Diabetic wound, Accidental injury.

Diagnosis: Dry Gangrene

TREATMENT: After careful examination and clinical findings diagnosed as Gangrene of right little toe. After taking consent of patient, disarticulation of toe was performed. The post amputated wound was treated according to Sushruta's Dushta Vrana management protocol.

1. **Pre-Operative measures-** Patient under aseptic condition was shifted to operative theatre. Then local anaesthesia test dose given, Antibiotics test dose given, Inj. T.T 0.5 ml stat dose given. Operative part was painted & draped.
2. **Disarticulation of right little toe** - Inj. Lignocaine 0.1 % with adrenalin is used to give round block to the operating site, V shaped incision taken at the base of right little toe and the incision extended till the base of the affected hallux, all the devitalised part was taken off and the distal phalanx was slowly separated from the proximal phalanx and the surround adhesions were cleared and the careful dissection of vessels and tendons done, after proper approximation

the Right distal and proximal Phalanx are disarticulated at the 5th meta phalangeal joint, wound wash was given and complete haemostasis was achieved.

3. **Post- Operative measures-** Appropriate Antibiotics, Analgesics and Anti-inflammatory drugs were administered for 5 days.

Anti-hypertensive and anti-diabetic drugs also continued along with Ayurveda medicines

Cap. Grab 1-0-1 after food

T. Kaishora guggulu 1-0-1 after food

Syrup. Manjistadi Kashaya 10ml-1-1 with equal quantity of water after food.

Panchavalka Kashaya Seka to right foot followed by Jaloukavacharana for Alternative 5days.

Daily dressing with Jatyadi taila for 2 months.

RESULTS: Healthy granulation tissue was formed within one week. Kashaya seka was done with Panchavalka Kashaya. The wound started to contract by filling of tissue from the base of wound day by day. The Jatyadi Taila dressing was continued till complete healing. The wound was completely healed within 45 days of disarticulation with minimal scar.



Before Disarticulation



3rd day after Disarticulation



20days After Disarticulation- healthy wound



35 days -Healed wound

completely healed after 45 days

DISCUSSION: Disarticulation is the option for gangrene wounds⁷. Foot gangrene is a frequent complication in diabetes mellitus. It results from various factors such as Atherosclerosis, Diabetic neuropathy & Angiopathy, Infection and trauma⁸. Gangrene happens when there is lack of oxygenated blood to the tissue in some parts of body, often the hand or feet. In these cases, patients who have an injury may not notice the dead tissue infection due to Diabetic neuropathy. It is a serious condition results in amputation of limb⁹. As with any surgery, a disarticulation carries a risk of complications, such as Wounds infection, Haemorrhage, Damage of vascular cascades and gangrene of adjacent hallux, Pain, Muscle weakness, contractures and Autonomic dysfunction. The frequent symptom is Oedema. Foot amputation in Diabetes have challenging problem of Normal phases of healing.

In Ayurvedic science, the comprehensive management of all Vrana(wounds/ulcer) were exclusively described by Acharya Sushruta under Shashti Upakrama (sixty procedures)¹⁰. In the present study, we used Aharana Karma to do amputation of 5th right toe. Shodana with Panchavalkala Kashaya and Ropana with Jatyadi Taila carried till the end of healing.

ROLE OF PANCHAVALKALA KASHAYA: Panchavalkala is one of the ideal combinations for a vast range of therapeutics focused in Ayurveda like Vranaropana, Shothahara, Graahi, Visarpahara etc. It was prepared with barks of five trees viz. Vata (Ficus bengalensis Linn), Udumbara (Ficus glomerat Roxb.), Ashwatha (Ficus religiosa Linn.), Parish (Thespesia populenea Soland ex corea.) and Plaksha (Ficus lacor Buch-Ham.). Researchers in recent and past evaluated that the barks of these plants contain anti-inflammatory, anti-bacterial and healing properties due to the presence of Tannin, Silica and Phosphorus¹¹. Extraction of barks of these plants reduced blood sugar in normal as well as induced diabetic rabbits and hypoglycemic activity seen in albino rats¹².

ROLE OF JATYADI TAILA: The wound dressing was done with Jatyadi Taila formulation, which has good Shodhana (cleansing) and Ropana (healing) properties as per ayurvedic classics. This Traditional oil-based antiseptic, fungicidal and a good healer used in boils, cuts, wounds, burns, piles & fistula. **Jatyadi Taila ingredients:** Jati - Myristica fragrans; Nimba - Neem - Azadirachta indica; Patola - Stereospermum suaveolens; Naktamala - leaves of Pongamia pinnata; Sikta - Honey bee wax; Madhuka - Licorice - Glycyrrhiza glabra; Kushta - Saussurea lappa; Haridra - Turmeric - Curcuma longa; Daruharidra - Berberis aristata; Manjishta - Rubia cordifolia; Katurhini - Picrorhiza kurroa; Padmaka - Prunus pudum; Lodhra - Symplocos racemosa; Abhaya - Terminalia chebula; Nilotpala - Nymphaea stellata; Tutthaka - Copper sulphate; Sariva - Hemidesmus indicus; Naktamala beeja - seeds of Pongamia pinnata; Taila & Water¹³. All of these dravyas (drugs) have anti- bacterial, anti - slough properties and the combined effect of all of them facilitated wound healing by improving granulation tissue. Nimba bark extract produced significant anti-inflammatory activity, aqueous extract of leaves decreased blood sugar in dogs¹⁴. Haridra has antibacterial activity against gram-positive and gram-negative organism and anti-inflammatory activity¹⁵. The leaf juice of Jati plant showed antibacterial activity against Staphylococcus Aureus¹⁶.

CONCLUSION:

The present case diagnosed as diabetic foot gangrene and after amputation of toe post-operative wound management carried under Ayurveda treatment. Shodhana and Ropana Karma carried with Panchavalkala Kashaya and Jathyadi taila

showed significant improvement in wound healing. Leech application was found very effective and safe in the management of case of post-operative disarticulated toe. The observed benefits may be attributed due to antiallergic, antibacterial and blood-purifying properties, detoxifying and anti-inflammatory action of Leech. Everyday dressing with Jatyadi taila attributed to early healing of wound. The proper assessment and on time approach play a very important role in management of dustavranas, the skillfull intervention saves the limb, the shasti upakramas as quoted by acharyas according to avasta of vrana is a best formula to adopt always, when the wound was having infective signs the line of treatment was apatarpana, virechana- shodana , Raktamokshan after the disarticulation the line of treatment was Ropana and snehana. The understanding of state and stage of a disease is half of the treatment which helps in breaking the pathology with good diabetic management ultimately gave the good results.

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