



EFFECTIVE AYURVEDIC MANAGEMENT OF POST AMPUTATION STUMP OF DIABETIC FOOT - A CASE STUDY

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ABSTRACT

Back ground:- Diabetic ulcers and diabetic foot are commonly encountered complication in diabetes. There is 15% risk of developing foot ulcerations in diabetics during their life time. Amputation of limb is the most common intervention in complicated diabetic foot.

Case study:- A 60 year old diabetic female farmer sustained injury to Rt. foot, while working barefooted in farm, and developed diabetic foot with gangrene of 4th and 5th toes and her three lateral toes were amputated. But the post operative wound did not heal despite all advanced possible treatment. At this stage she was referred to Ayurved department. Ayurvedic treatment not only healed the wound within 3 months of treatment but prevented likely below knee amputation, too.

Conclusion:- This case study established that such a complicated case could be successfully treated by integrated approach of Modern and Ayurvedic line of treatment.

KEYWORDS : Diabetic foot, amputation, Ayurvedic management, Dushtavran

Introduction:- India is destined to become global capital of Diabetes in 2025. It is estimated that diabetes is prevalent in 7.3% of Indian adult population as per ICMR survey report in 15 states of India. Further the most appalling news is that 47.3% of diabetics were not aware that they were suffering from diabetes and such people are highly vulnerable to complications of diabetes such as blindness, renal failure, Coronary heart disease, stroke and diabetic foot. There are 10% pre-diabetics in India and it is highly likely that prevalence of diabetes will be doubled in next decade.^[1,2] Diabetic foot remains an important complication of diabetes. It is estimated that 6% diabetics suffer from diabetic foot at any given time.^[3] Diabetic foot comprises of infection, ulcer and loss of tissues. Around 1.5% diabetics have to undergo amputation of foot - toe/s, part of foot or below/ above knee amputation as a last resort to salvage life. Diabetes amounts to 50 % of all amputations in non traumatic amputations. Once some form of amputation is carried out in diabetics, there is a high risk that further amputation is likely in future. Further the mortality in diabetics after amputation is very high but similar to non diabetics.^[4] It adversely affects quality of life.^[5]

Case study: This 60 year old known diabetic female farmer sustained injury to sole of Rt. foot while working barefooted in the farm; that injury turned in to ulcerated wound. That was followed by blackening of skin of dorsum of foot. The blackening spread over the last two toes. She was admitted in to Surgery department of B.J. Medical College, Pune on 26.9.2017.

On admission: H/o Diabetes type 2 and mild hypertension since 7 years. Pt. was taking Amlodipine 5 mg OD and Atenolol 50 mg OD along with Metformin + Glimipride daily.

Pulse-76/min; B.P. 140/90 mm of Hg.

Investigations: Blood sugar- 347 mg/dl (Random). Hb-9 gm %, WBC- 11,400/micro litre
Serum calcium-6.9 mg/dl,

Serum Creatinine-0.9 mg%, Urea- 31 mg %, Alkaline phosphatase-- 211 unit/l, SGOT-53 unit/l, SGPT-32 unit/l

Total proteins- 6.7 gm, Albumin 3 gm, Globulin-3.7 gm. Na⁺-133 mmol/dl; K⁺-3.7 mmol/dl
ECG-Normal, Chest X ray-Normal

Clinical exam:-Blackening of 4th and 5th toes was noted. Foul smelling discharge+++

Gangrene of 4th and 5th toes was diagnosed. There was pressure ulcer noted on planter surface of sole of size -3 x2 x1 cm. She was put on Inj.

Insulin and her Blood sugar was brought under control. SpO₂ was 99%. Below Knee Amputation was planned but on the operation table, only amputation of 3rd, 4th and 5th toes with respective metatarsals at mid level was carried out under Spinal anaesthesia on the same day. Probably the surgeon might have thought to salvage the limb by planning to refer the patient postoperatively to Ayurved department, keeping in view of many such cases treated successfully by Ayurved department salvaging the limb. The stump of wound was irrigated with Hydrogen peroxide and Betadine. She was referred to plastic surgeon for the opinion regarding further management on 28th Sep 2017. He noted that there was no evidence of granulation tissue. Amputated stump site had foul smelling pus discharge. Swab culture was advised for bacterial culture and sensitivity to antibiotics. It was advised to control blood sugar, Normal saline sterile dressing and when healthy granulation tissue formed, advised to refer the patient for reconstructive surgery. Antibiotic-Inj. Monocef 1 gm I/V BD started along with Inj. Metronidazole 100 cc I/V TDS.

But in view of the worsening condition of the stump wound and past experience of many such cases treated successfully by the Ayurvedic Research Department, the case was transferred to us for further management. You can note the condition of wound on admission to Ayurvedic ward in the Fig. No.1. There is blackening of the skin visible on foot and lower leg denoting ischaemia. The diabetic foot amputated stump wound healed completely on 20 Dec 2017 in less than 3 months of treatment. Please refer photographs of wound during treatment and at the end of treatment.

Figure No.1 and 2- On admission



Figure 3: On 36th day



Figure 4: On 50th day



Fig 5: Follow up after 2 months



Line of treatment

Type of treatment	Duration-from- to	Intervention
Systemic treatment	30 Sep-20 Dec 2017	Sookshma triphala 500 mg + Triphala guggul 500 mg + Gokshuradi guggul 500 mg BD with warm water (Ayurved Ras Shala, Pune)
	30 Sep-2 Nov 2017	Sitopaladi choorna + Avipatikar choorna 2 gm each before meals with warm water (Ayurved Ras Shala, Pune)
	30 Sep-18 Oct 2017	Mushta (Cyperus rotundus)+ Triphala + Vidang (Embelia ribes)+ Gokshur (Tribulus terrestris) + Guduchi (Tinospora cordifolia) choorna 1.5 gm each BD
	3 Nov-20 Dec 2017	Sitopaladi choorna 2 gm + Mrugshring bhasma 200 mg BD with warm water (Ayurved Ras Shala, Pune)
	30 Sep-20 Dec 2017	Poonarnava + Dashmool + Gokshur bharad quath 100 ml TDS (Ayurved Ras Shala, Pune)
	7 Nov-20 Dec 2017	Amalki 3 gm + Haridra 1.5 gm (Ayurved Ras Shala, Pune) BD before meals
	30 Sep-10 Oct 2017	Gandhak rasayan 1 BD (Sandu)
	20 Oct- 10 Nov 2017	Tikta ghrit 1 TSF on empty stomach everyday. (Arya Vaidya-sala)
Yog basti	3 Oct-10 Oct 2017	Niruh basti by Dashmool + Erandmool (Root of Ricinus communis) + Punarnava (Boerhaavia diffusa) quath 350 ml+ Sandhav/ Rock salt 3 gm +Madhu/ Honey 3 ml. + Bala tail 10 ml followed by Anuvasan/ Matra basti alternate-day by Narayan/ Sahchar tail 40 ml (Sandu) after meal per rectally
Local treatment	30 Sep-9 Oct 2017	Quath made of bark of Vat+ Audumber + Ashwath + Daru haridra to wash wound
	30 Sep- 20 Dec 2017	After washing the wound, Dhoopan (Fumigation) by Vacha (Acorus Calamus)

	30 Sep-9 Oct 2017	Shodhan tail locally applied, followed by sterile dressing
	10 Oct-20 Dec 2017	Quath made of bark of Vat+ Audumber + Ashwath to irrigate the wound
	16[Oct-20 Dec 2017	Jatyadi tail (Sandu) locally applied, followed by sterile dressing
Jalouka avacharan (Leech therapy)	13 Oct 2017 and 21 Oct 2017	Jaloka treatment made twice at the interval of 8 days
Diet	30 Sep-20 Dec 2017	Overnight soaked 2 dry dates to be consumed next morning, Bengalgram / Chana 15 gm daily. 2 boiled eggs at breakfast. Diabetic diet.

Discussion: Diabetics are prone to develop foot ulcers mostly by neuropathy that is further complicated by the accompanied ischaemia. The patient had a pressure sore on planter surface of foot of size 3 x2 x1 cm; that was the evidence of neuropathic etiology existing in this patient for quite some time. Patient sustained injury while working barefooted in field. Jaisinghe S et al reported that barefoot walking in diabetics is a strong risk factor to develop diabetic foot disease.^[5] The case had developed pressure sore on planter surface of Rt. foot. due to neuropathy. Due to loss of sensation ulcers are liable to occur on pressure points. This case study reinforces that walking barefooted was the risk factor for causing diabetic foot in the present case.

Patient was admitted with gangrene of 4th and 5th toes. As per modified Wagner grading of Diabetic ulcer foot the severity of grade of the present case fitted in to grade 4- gangrene of portion of forefoot.^[6]

In this case after amputation of 3rd, 4th, 5th toes, the operated stump was washed with Hydrogen peroxide and Betadine. **It is highlighted here that Hydrogen peroxide and Betadine have been proved to be cytotoxic that inhibit the proliferation of fibroblasts.**^[6] It was unfortunate to find such age-old techniques, inhibiting wound healing still being followed in modern surgical practice.

Diabetes has been mentioned as Madhumeha in Sushrut Sanhita and 20 types of Madhumeha were described. 'Prameh-pitika' is mentioned to be one of the complications of Madhumeha.

Shanmulo Astaparagrahi Panchlakshan lakshit: I
Shashtya vidhanai nirdishtai Chaturbhi: Sadhyate Vran: II
Sushrut Sanhita Chikitsa sthan 1/134

Six aetiological factors, Eight sites/ Adhistan, Five clinical features/Lakshnas, **60 types of treatment procedures** in Vran/ Wound management.^[7] Sushruta mentioned 4 crucial factors that is important in prognostic point of view: Vaidya, Aatur/Patient, Paricharak/ Assistant and Aushadhi/Medicines.

Sushrutacharya mentioned that *Madhumehjanya pitika*/ diabetic ulcer is to be treated as Dushtavrana. In Sushruta sanhita, treatment of Dushtavran is advocated as follows:-

Dushtavraneshu kartavyam urdhvam cha-adashcha shodhanam..... II Su.Chi. 2/86-87

Vaman-Shirovirechan is prescribed for *Urdhva shodhan* and *Virechana-Asthapan* is advised for *Adha: Shodhana* that is followed by *Langhan*/ fasting along with *Katu-Tikta-Kashayadi aahar*. Dushtavrana is to be treated by *Shonit mokshan* (Blood letting).^[8] The dushtavrana in diabetes is the result of vitiation of Vata that restricts functioning of nervous and circulatory system. In modern medicine we explain it as neuropathy and microangiopathy. Basti is the best chikitsa for treating vitiated Vata. Therefore we administered *Yog-basti* as a measure of *Shodhana Chikitsa*. We avoided *Langhan* keeping in view of diabetes and old age of the patient. But achieved it differently by combination of Mushta (Cyperus rotundus)+ Triphala + Vidang (Embelia ribes)+ Gokshur (Tribulus terrestris) + Guduchi (Tinospora cordifolia) choorna that caused *Deepan-Pachan* and *Rasayan* effect. We carried out *Shonit mokshan* by *Jalouka avacharan*/ Leech therapy. We achieved *Ras-Rakta gat pachan* by Sitopaladi choorna and Avipatikar choorna. Granthkaras have mentioned description of

Panchvalkal namely Vata (*Ficus bengalensis*), Udumbar (*Ficus racemosa*), Ashwatth (*Ficus religiosa*), Pluksh (*Ficus virance*), Pippalbh (*Hibinuxvs (Thepasia populnea)*). These trees are *Kshiri vriksha*, have *Deerghjeevi* (long life). Their properties are *Grahi, Sheetal, Vran, Shoth, Visarp nashak*. Out of these Panchvalkal, first 3 are easily available. The author had successfully used Quath made from the bark of Vat (*Ficus indicus/ bengalensis*), Udumbar (*Ficus racemosa*), Ashwatth (*Ficus religiosa*) for treating non healing/trophic ulcers in Leprosy patients.^[9] On admission wound was highly infected. Therefore Daru Haridra (*Berberis aristata*) was used along with decoction of 3 Valkalas to wash the wound. Daru Haridra is known to be *Rakta prasadak, Rakta sthambhak*, anti purulent dravya. After washing the wound, Dhoopan (Fumigation) by Vacha (*Acorus calamus*) was carried out.

The wound was dressed with Vran shodhan oil which contained Haridra (*Curcuma longa*), Manjista (*Rubia cordifolia*), Nimba (*Azadirachta indica*), Madhuyasto (*Glycyrrhiza glabra*), Darvi (*Berberis aristata*), Trivarta (*Merremia turpethum*), seed of Tila (*Sesamum orientale*) & Saindhav (Rock salt). All of these dravyas have anti-bacterial, anti-slough properties & the combined effect of all of them facilitated wound healing. Gandhak Rasayan is broad spectrum Ayurvedic antibiotic, anti viral, anti microbial, anti inflammatory & is blood purifier. It purifies *Uttarottar Mauns, Meda, Asthi, Majja Shukra dhatu* & nourishes body. Sookshma triphala is specially used post operatively routinely to prevent infection. Along with Gandhak rasayan it acts as best antibacterial dravya. Gandhak rasayan has known hepatotoxicity, therefore it cannot be given for longer period. Hence we used it for less than a fortnight till healthy granulation tissue was formed. We used *Tikta ghrut* because it has special role in healing of infected wound; further it helps to balance the *Pitta*. Triphala guggul is *Jantughna/* anti bacterial, anti inflammatory, *Vatshamak* having *Shool-har* (analgesic) properties. *Mrug-Shring Bhasma* was used as it contains calcium, zinc, magnesium and some heat stable amino acids having antibacterial and bacteriostatic properties. *Amalaki and Haridra choorna* have antidiabetic action, therefore it was used to help in controlling blood sugar. Further *Haridra* has anti-slough, anti-bacterial and anti-inflammatory property that was useful in controlling infection.

Poonarnava + Dashmool + Gokshur quath was given as a *Rasayana-rejuvenating* therapy.

On appearance of healthy granulation tissue, the wound was dressed with *Jatyadi oil* because it had specific action on healing of *Dushta vrana*.

Jalouka avacharan (Leech therapy): Sushruta had advocated use of *Rakta-mokshan* for treating *Dushtavran*, therefore we used *Jalouka therapy* for removing obstruction & improving the blood circulation.

The Insulin therapy in the immediate post operative period was continued followed by antidiabetic agents as per the advice of the Physician. Antibiotics were continued for 10 days after surgery and there after discontinued. No more swab culture needed and the wound healed completely with Ayurvedic line of treatment. The healing of this *Dushtavran* was the result of appropriate *Shastik upakramas* like *Shodhana, Bruhana, Jalouka avacharan* as advised by Sushrutacharya. This case study is the example of integrated approach in treating Gangrene of foot. The Modern science carried out partial amputation of fore-foot, controlled blood sugar by Insulin/ antidiabetic drugs ; Ayurved completed the task of complete healing and prevented the likely below knee amputation.

Conclusion:- This case study established that such a complicated case of diabetic gangrene could be successfully treated by integrated approach of Modern and Ayurvedic line of treatment.

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