

DIABETIC WOUNDS –WHY FOOT ONLY?Rashmi TM¹Sathish HS²

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ABSTRACT

Diabetic complications have become inevitable even after so much of innovation in the field of medicine. More than 15% diabetic patients during their lifetime will get macro or microvascular complications. As per contemporary science it was in the period between 1850 & 1870 both gangrene and plantar ulcers were recognized as complications of diabetes. The earliest record of foot complications in a diabetic individual was in *Sushruta*'s treatise and it also contains the reason for it. Vascular pathological phenomenon behind the highest incidence of foot complications among diabetics demonstrates the finest observation of *Sushruta*. *Durbalata* specifically refers to pathological changes in the vessel, which impairs the vascular function of nutrition and drainage. Vascular pathology being the root cause for complications in foot region is explained in just two words as “*Rasayani Dourbalya*.”

Keywords: Diabetes, wound, *Rasayani*

INTRODUCTION: Diabetes, one of the metabolic disorders is approaching epidemic proportions with a prevalence of 8.5% among adults¹ and in the era of various innovations in the field of Medicine diabetes and its complications appear inevitable². Diabetic complications have become inevitable even after so much of innovation in the field of medicine. These complications can be micro vascular or macro vascular and becomes the major cause of mortality among diabetic patients observed over the past 20 years.³ Century ago, Gangrene and plantar ulcers are considered as the complications of Diabetes. The associations between diabetes and symptoms in the limbs were said to be first recognized by John Rollo [1978]. In the period 1920-1950, arterial disease was believed to be the dominant factor in the development of foot lesions. Foot complications are considered to be the most expensive diabetes related complications accounting for upto 20% of

total healthcare resources available for diabetes in the developed countries.⁴ Diabetic foot ulcers complicate the disease in more than 15% of these people during their lifetime.⁵ Diabetic foot ulcers result from the simultaneous action of multiple contributing causes. The major underlying causes are noted to be peripheral neuropathy and ischemia from peripheral vascular disease.

Peripheral arterial disease is a contributing factor for about 50% of the cases. The chronic elevation of blood glucose level leads to damage of blood vessels [Angiopathy]. The endothelial cell lining the blood vessels takes more glucose than normal since they don't depend on insulin.⁶ They then form more surface glycoproteins than normal and cause the basement membrane to grow thicker and weaker. Because of this endothelial cell dysfunction and smooth cell abnormalities in peripheral arteries there is resultant decrease in endothelium derived

vasodilators leading to constriction. Further the hyperglycemia in diabetes is associated with an increase in thromboxane A2, a vasoconstrictor and platelet aggregation agonist which leads to increased risk for plasma hypercoagulability.^{7,8}

More than 60% of Diabetic foot ulcers are the result of underlying Neuropathy, which is resultant of vascular disease occluding the vasa nervosum.

AIM & OBJECTIVE: To assess the reason behind the relation of high incidence of Wounds in Diabetics with respect to foot region

MATERIALS & METHOD: The data related to the subject were screened from Ancient Ayurvedic treatises and research articles in Google Scholar, Pubmed, DHARA online in the month of June 2017.

Method: Hand Search & Electronic search
All the data procured were screened, classified and analysed.

OBSERVATION & DISCUSSION: The earliest reference of diabetic wounds afflicting foot region exclusively is marked in *Sushruta's Treatise, Sushruta Samhita*. Ayurvedic treatises have citations enumerating various aspects of health and disease in aphorism format. Entire pathophysiology of Diabetic Foot complications has been explained by *Sushruta* in only in one verse as follows,

Rasāyanīnām ca
daurbalyānnōrdhvamuttiṣṭhanti
pramēhiṇām dōṣāḥ,
tatō madhumēhināmadhahkāyē piḍakāḥ
prādurbhavanti ||

Su. Chi. 12/8

Durbalata of *Rasayani* in a Diabetic individual is the prime basis for Diabetic foot complications, because of this *durbalata*, the *doshas* are unable to ascend up causing their stagnation and

development of *pidakas* in lower body indicating disturbance in nutrition to tissues and proper drainage of blood from tissues.⁹ *Rasayani* refers to channels, system or network which transports material from one cell or tissue to other¹⁰. The material could be *Rasa*, *Rakta*, *Pitta*, *Kapha* etc and can be correlated to artery, vein or lymphatic vessel.¹¹ In *Prameha* patient, already there is *shithilata* of *Dhatus* & this excessive *dravadvhatu*, carried by *Apana* and *Vyana* *Vayu* downwards, being *Guru* [Heavy] is unable to ascend upwards through *rasayanis*. The term *Dravadvhatu* coined by *Dalhana*, the commentator of the text, indicates the metabolic disturbance occurred in the body of *Pramehi*.^{12,13,14}

Durbalata word denotes various vascular pathological changes which attribute for foot complications. The *Durbalata* of *Rasayani* is nothing but peripheral vascular and neural pathologies.

Durbalata attributes to decreased vasculature strength, incompetency of valves in a vein, narrowing of vascular lumen due to atherosclerosis like causes.^{15,16} This results in manifestation of complications ranging from cellulitis to osteomyelitis.¹⁷

Understanding of diabetic foot complications from Ayurvedic view point gives us valuable hints of earliest description of the pathological process involved. Entire pathological course has been attributed as *Rasayani dourbalata* or vascular manifestations in a diabetic individual.¹⁸ The events of changes incurred in vascular network is either at micro or macro level, yielding to progressive injury to foot affecting the quality of life, socio-economic status and may end up in mortality too.^{19,20} *Rasayani* could be anything that helps in

transportation nothing but a *srotas*. It could be artery/vein/lymphatic vessel. In a diabetic individual, multiple factors like chronicity, dietary indisipline, stress etc results in incompetency, insufficiency of vasculature, which in due course leads to foot ailments.²¹ Vascular insufficiency and peripheral neuropathy are the most common risk factors for developing foot ulcers. Peripheral vascular disease is two to four times more common in patients with diabetes than in those without diabetes²². All pathological occurrence for manifestation of a disease is either *sanga* [obstructive pathology], *atipravrutti* [excessive or increased secretion, accumulation, excretion], *vimargagamana* [Abnormal change in direction of normal course of *doshas*] and *sira granthi* [Formation of nodule]^{23,24,25}. Foot problems in *Madhumehi* or Diabetic patients is due to obstructive pathology which afflict the nourishment of tissues, improper drainage of cellular debris and mainly humoral movement. These pathological events results in varied skin manifestations like cellulitis, carbuncle, abscess etc which by nature have delayed healing.²⁶

Contemporary scientists believe chronic elevation of blood glucose level leads to damage of blood vessels (angiopathy). The endothelial cells lining the vessels take in more glucose than normal since they don't depend on insulin. They then form more surface glycoproteins than normal and cause the basement membrane to grow thicker and weaker nothing but *durbalata* in *rasayani*'s.

CONCLUSION: Diabetic wounds afflict the foot most; the reason is recorded centuries back in *Sushruta Samhita*. Vascular pathology being the root cause for complications in foot region is

explained in just two words as “*Rasayani Dourbalya*.”

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