

# SURGICAL AND PARASURGICAL INTERVENTION IN LIFESTYLE DISORDERS W.S.R. TO DIABETIC FOOT ULCER (DFU)

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## ABSTRACT

*Lifestyle diseases are defined as diseases based on day to day habits of people. The incidence of lifestyle diseases like hypertension, diabetes mellitus, dyslipidemia, and overweight/obesity associated with cardiovascular diseases in society. Type 2 diabetes mellitus is most common among all lifestyle disease and this is associated with obesity, dyslipidemia and high blood pressure (hypertension). This is more common in people who don't do enough physical activity, and who are overweight or obese. A survey 2015, an estimated 415 million people had diabetes worldwide, with type 2 DM making up about 90% of the cases overall. Diabetic foot ulcer is most common complication of diabetes mellitus. Diabetic neuropathy, structural foot deformity and peripheral arterial occlusive disease result in ulcer formation.*

*Diabetic person have complications on different systems as on eye, renal system, cardiovascular system and central nervous system but foot lesions are responsible for more hospitalizations than any other complication of diabetes. Foot complication and amputations represent the most important among all the long term problems of diabetes medically, socially and economically. In most of the cases diabetic ulcers are the result of underlying neuropathy characterized by neurogenic ulcer. The diabetic foot ulcer can be correlated to Dushtavrana in Ayurvedic. Acharya Susruta who is the father of surgery mentioned many surgical and parasurgical procedures for treatment of diabetic foot ulcer (DFU). In surgical intervention debridement (Lekhana karma), shodhana (cleaning) with Kashaya, drainage of necrotic tissue and pus are described. In parasurgical intervention, Jaloukavacarana (leech therapy), Kshara karma, Kshara Pichu and Agnikarma are described for the treatment of Diabetic foot ulcer (Dushtavrana).*

**Key words:** *Diabetic foot ulcer, Surgical procedure, Parasurgical procedure, Dushtavrana.*

## INTRODUCTION

Lifestyle diseases are defined as diseases based on day to day habits of people. This is commonly caused by alcohol, drug and smoking abuse as well as lack of physical activity and unhealthy eating. Diseases that impact on our lifestyle are heart disease, stroke, obesity and type II diabetes mellitus (NIDDM). Life style diseases are also known with non-communicable diseases (NCDs). Lack of

physical activity (sedentary lifestyle) and depression are biggest triggering factors for lifestyle disorder. A sedentary lifestyle person usually is engaged in an activity like reading, socializing, watching television, playing video games, etc. which contribute to ill health and many causes of death. A sedentary lifestyle and absence of physical activity is major risk factor for diabetes mellitus<sup>1</sup> (DM) and obesity<sup>2</sup>. The most important period for manifestation of life style disorders is in between 40 to 50 years of age but it can manifest at any age. Proper diet, life style and physical activity help in health promotion, prevention of diseases and improved quality of life.

*Madhumeha* or Diabetes mellitus is known from Vedic period. Even in Puranas and Kavyas the description of *Madhumeha* and its treatment are given. Diabetes mellitus is a group of chronic diseases and characterized by increased levels of blood glucose that resulting from defects in insulin production, insulin action, or both. Symptoms of increase blood sugar include urgency in urination, polydipsia, and polyphasia<sup>3</sup>. Blood glucose level is controlled by insulin which is secreted by beta cell of pancreas. Diabetes may occur due to either the beta cells of pancreas do not produce enough insulin, or the cells of the body not responding properly to the insulin produced<sup>4</sup>. Diabetes mellitus (DM) is mainly 2 types -

- 1) Type 1 DM occur when pancreas' fail to produce enough insulin due to loss of beta cells. This type of DM referred as "insulin-dependent diabetes mellitus" (IDDM) or "juvenile diabetes" and its etiology is unknown.
- 2) Type 2 DM occur with insulin resistance and this is condition in which cells not respond to insulin properly. This is also known as "non-insulin-dependent diabetes mellitus" (NIDDM) or "adult-diabetes". The most important cause of NIDDM is obesity or excessive body weight and absence or reduces physical activity.

Prevention and treatment of life style disorder done by –

- ❖ Maintain a healthy diet
- ❖ Regular physical exercise
- ❖ Maintain normal body weight
- ❖ Avoiding use of tobacco, smoking and alcohol.

Type 1 DM (IDDM) is managed by insulin injections and Type 2 DM (NIDDM) is managed by medications with or without insulin with proper diet control and increase physical activity<sup>5</sup>.

Diabetic person are very prone for complication on many system such as eye (diabetic retinopathy), renal system (diabetic retinopathy), cardiovascular system and central nervous system (diabetic neuropathy) and diabetic foot ulcer. Diabetic foot ulcer is responsible for more hospitalizations than any other complication of diabetes. Diabetes is the leading cause of nontraumatic lower extremity amputations in India, with approximately 5% of diabetics developing foot ulcers each year and 1% requiring amputation.

The term 'Diabetic foot' is somewhat a misnomer and this is defined as a group of syndromes that

can involve neuropathy, ischemia and infection, with the neuropathic type being the most common. Diabetic ulcers tend to occur most commonly on the plantar weight bearing surfaces of the foot underneath the pressure point<sup>6</sup>.

## DIABETIC FOOT ULCERS (DFUS)

The development of diabetic foot ulcers (DFUs) typically results from peripheral neuropathy and/or large vessel disease, but most commonly DFUs are caused by peripheral neuropathy. Diabetes is the leading cause of nontraumatic lower extremity amputations in India, with approximately 5% of diabetics developing foot ulcers each year and 1% requiring amputation.

In Ayurveda “*Vrana*” is an entity of tissue destruction and discoloration, in which a permanent scar tissue is left behind on the body on its healing and remains till the body survives. The diabetic foot ulcer can be considered as *Madhumehaja vrana* or *Dushtavrana* in Ayurveda. It can be managed through Ayurveda. Acharya Susruta who is the father of surgery mentioned many surgical and parasurgical procedures for treatment of diabetic foot ulcer (DFU).

### Incidence of Diabetic foot ulcers:-

Diabetic foot ulcers are most common cause of diabetic patient to get admit in hospital. Among all cases of diabetes 15% of people develop foot ulceration<sup>7</sup> and 3% cases have a lower limb amputation<sup>8</sup>.

### Diagnosis of Diabetic foot ulcers:-

Diagnosis and assessment of foot ulcers requires regular foot examinations and that include protective sensation assessment, biomechanics, foot structure, vascular status, and skin integrity. An International Working Group of the Diabetic Foot (IWGDF) developed a classification system for diagnosis of diabetic foot ulcer and according to this system, diabetic foot ulcers are categorized by the extent of perfusion, size, depth/tissue loss, infection and sensation.

### Surgical and Para- surgical intervention for Diabetic foot ulcer:-

Patients with severe infections or complicated by critical limb ischemia should consider for urgent hospitalization. Some patients with apparently mild infections and moderate infections also need hospitalization for observation and diagnostic work up. Acharya Sushruta has stated that “*Madhumehaja vrana*” (diabetic foot ulcer) are *Kashtsadhya* (difficult to manage). Further, Acharya Sushruta specified that the wounds over the lower limbs have delays in its healing.

Acharya Sushruta mentioned many surgical and parasurgical procedures for treatment of diabetic foot ulcer (DFU) which is due to complication of life style disorders. In surgical intervention *Lekhana karma* (debridement), *Shodhanakarma* (cleaning with *Kashaya*), *Ropanakarma* (wound healing) and in parasurgical intervention, *Jaloukavacarana* (leech therapy), *Kshara karma*, *Kshara Pichu*, *Agnikarma* etc. are described for the treatment of Diabetic foot ulcer.

**Shodhana Karma:-**

- ❖ Systemic and local both cleaning require for diabetic foot ulcer. Systemic cleaning (*Shodhana*) should be done by *Vamana* and *Virechan*. After systemic cleaning food should be light and aimed at drying up of the wound. For local cleaning wound should be washed with decoction of drugs of either *Rajavriksadigana* or *Surasadigana*.
- ❖ Oil medicated with the same drugs is good for *Shodhan* of wound and *Kshara* (alkalies) or oil prepared with *Ksharamay* be used for this purpose<sup>9</sup>. For *Shodhan* of the *dushtavrana* apart from the *kashaya*, *verti*, *kalka*, *sarpi*, *taila*, and *churna* can also be used.

**Visravan Karma: -**

- ❖ Sushruta specially mentioned bloodletting by means of leeches in *dushtamadhumehajanyavrana*.
- ❖ Leech therapy (*Jalauka avacharan*) is a type of bloodletting (*Raktavsechan*). It is an effective, safer and non-surgical way of bloodletting and safe in children, pregnant females, and elderly patients' also<sup>10</sup>.
- ❖ Acharya Sushruta advised that bloodletting by Leech can be practiced in all inflammatory, suppurative and painful conditions to relieve pain and inhibit suppuration including *dushtamadhumehajanyavrana* also.<sup>11</sup>
- ❖ If *Sanshodhankarma* is not done in diabetes patients then the *doshas* get aggravated and vitiate blood and muscles that produce swelling. The treatment described for swelling is vene-puncture and if vene-puncture are not done, then swelling increases significantly.
- ❖ After that swelling should be treated by sharp instruments followed by treatment of wound<sup>12</sup>.
- ❖ Acharya Charaka advised that the physician observe swelling and in the beginning apply leech therapy to prevent the manifestation of wound.

**Ropana Karma: -** A wound subjected to *Ropana* treatment after cleaned. Other Para-surgical measures like *Dhoopan*, *Kshara – karma* etc. can apply on *Madhumeha janyavrana*.

**SUMMARY AND CONCLUSION**

Lifestyle means personal behavioral and pattern of individual practices that are related to elevated or reduced health risk. Diseases such as diabetes, depression, obesity and heart diseases are outcomes of poor lifestyle habits in India. Diabetic foot ulcer is a common chronic complication of diabetes mellitus. A classical triad of diabetic foot ulcer is neuropathy, ischemia and infection. The risk of lower extremity amputation is 15 to 46 times higher in diabetics than in healthy persons. Acharya Sushruta mentioned many surgical and parasurgical procedures for treatment of diabetic foot ulcer (DFU) which is due to complication of life style disorders. In surgical intervention *Lekhana karma* (debridement), *Shodhanakarma* (cleaning with *Kashaya*), *Ropana karma* (wound healing) and in parasurgical intervention, *Jaloukavacarana* (leech therapy), *Kshara karma*, *Kshara Pichu* *Agnikarma*

etc. Leech therapy is an effective, economical and safer way to improve the healing in infected, chronic wounds/ulcers. This therapy can save a large number of patients from limb amputation and help in healing of diabetic foot ulcer. *Shodhana Karma, Visravan Karma* and application of *Kshara Karma, Kshara Pichu, Agnikarma* all are effective in treatment of diabetic foot ulcer (DFU) which is due to complication of life style disorders.

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