MADHU AND GHRUTA DRESSING IN MANAGEMENT OF DIABETIC WOUND - A CASE STUDY.

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ABSTRACT
Diabetes is leading disease now-a-days in India. An increase in prevalence of diabetes is accompanied by an increase in its complications such as non-healing foot ulcer, neuropathy and sometimes need amputation of lower limb. Patient has lifetime risk of developing foot ulcer always higher with diabetes. Diabetic wounds are mainly concerned with non-healing property with long-term dressing part. Various treatments are available for diabetic wound. Modern science has described treatment protocol for diabetic wound such as control of blood sugar level with several dressing techniques. Also in ayurveda many local treatment options are available, among them we have chosen two natural sources i.e. Madhu and Ghruta for this case study. Ghruta being vranaropan (wound healing) and Madhu being vranashodhan and ropan property (wound cleansing and healing) help in early healing of diabetic wound. This case study shows that Madhu and Ghruta dressing in diabetic wound allows fast wound healing with easily available and very cost effective constituents.

Keywords: Diabetic wound, diabetic foot ulcer, Madhu, Ghruta, vranashodhan, vranaropan, natural resources.

1. INTRODUCTION
According to WHO (World Health Organization), India had 69.2 million people living with diabetes in 2015. Nearly 98 million people in India may have developed type 2 diabetes by 2030.¹ The rise in prevalence of diabetes is accompanied by rise in its complications such as foot ulcer, diabetic retinopathy, diabetic neuropathy etc. There is lifetime risk of getting foot ulcer for a diabetic patient. Diabetic wounds are usually difficult to heal. In modern practice, surgical aspect of diabetic wound is debridement for necrotic tissues with several dressing techniques. It includes hydro gels, hydrocolloids, silver impregnated dressing, foams, iodine preparation etc., but they are either time consuming or too expensive.

Hence, we were looking for cost effective and efficient treatment part for curing diabetic wound. Very vast and detailed treatment of wound has been explained by our acharyas in Ayurveda like Shasthiupakrama by Sushruta.² Among them we have chosen Madhu and Ghruta for our case study. Acharya Sushruta has explained use of Madhu and Ghruta for dressing purpose in wound treatment.³ We chose these constituents for our study due to their easy availability and cost effectiveness. Also, Madhu is having wound cleansing property and Ghruta is having healing property. They help in faster and good quality healing of diabetic wound. So, taking this reference a preparation of Madhu and Ghruta in diabetic wound and healing process is observed.

2. METHODS
2.1. Case Report

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Patient name-XYZ, Age- 48years, sex-male, Patient came in hospital with complaints of post operated infected wound over left lower limb just above ankle joint on lateral aspect.

2.1.1. Past History
Patient is known case of type 2 Diabetes mellitus for 5 years back on irregular hypoglycemic medication.

2.1.2. Surgical History
Patient underwent surgery of same foot 15 days before for necrotizing fasciitis in private hospital and got discharged on 7th post-operative day.

2.1.3. Chief complaints
Infected wound over left lower limb with discharge and foul smelling.

2.1.4. Local examination
Patient had no pain (may be due to diabetic neuropathy), indurations with gangrenous black patch as shown in fig a with tenderness, purulent discharged and foul smelling.

2.1.5. Laboratory investigation
Complete blood count, ESR, Serum creatinine and urea within normal limit but blood sugar level was 285mg/dl.

2.1.6. Treatment Given
- Debridement with removal of black patch surgery is done under L.A. Oral hypoglycemic drugs are given to control blood sugar level, antibiotics (Amoxicillin with potassium clavulanic acid), anti-inflammatory+ analgesic (Diclofenac +Paracetamol and Serratopeptidase) are given for 5 Days.
- Before debridement i.e. Lekhan the above-mentioned wound showed properties of Dushtavrana⁴ but after that properties of sadyovrana² and shudhhavrana⁶ are seen. That’s why from day 2, dressing with Madhu and Ghruta was done daily once. Wound size was 10*10*2.5cm after debridement.

2.2. Methodology
Thin layer of Madhu and Ghruta was applied over wound in 1:2 proportions. The quantity of Madhu and Ghruta varies with size of wound. Closed dressing was done. Wound was observed for its healing process under following criteria -
- Quantity of slough
- Edema
- Discharge
- Color of base of wound

3. OBSERVATIONS
Daily dressing was done but some observations are presented here:
- On day 3rd: Wound was devoid of slough with mild purulent discharge was present, tenderness and swelling were decreased and foul-smelling wound lost its mal-odor.
- On day 7th: Wound was healthy; no slough with serous discharge and margins of wound appeared pink
- On day 15th: Depth of wound was decreased and base was filled with healthy granulation tissue with almost no soakage over gauze.
- On day 20th: The wound size was decreased to 7*7*0.5cm i.e. wound was almost covered with healthy granulation tissues.
- On day 35th: Images show absolutely healed wound with some scarred skin.

In this period the blood sugar level was within normal limit.

4. RESULTS & DISCUSSION
Diabetic wounds are usually found in lower limbs due to diabetic neuropathy. In modern science, vast research has been done for dressing of diabetic wound which is expensive and not easily available in rural areas. Dressing technique involves hydro gels, hydrocolloids; silver impregnated dressing, foams, iodine preparation etc but natural source i.e. Madhu and Ghruta which is easily available and cheaper than other modern dressing preparations. In Ayurved Samhitas, we found that Madhu and
Ghruta preparation is useful in wound healing as follows:

According to Sushrutacharya for treatment of wound Madhu and Ghruta is preferred in Shash Kitupakrama also in treatment of Sadyovrana. Properties of Ghruta mentioned by Sushruta are Soumya, mrudu(soft), shit virya, alpa-abhishayandi(less oozing), snehan, vata-pitta shamak, agnidipak, Shoolaghna (relieve pain), Kantivardhak (increases skin texture). Also it has vishahar and rakshoghna property i.e. anti-infective and Antibacterial used to prevent bacterial infection.\(^7\) Properties of Madhu are Madhur kashay ras, shit virya, rukshya(dry), laghu and agnidipak, varnya (Improving skin color), Sandhan(Binding property), Lekhan(Cleansing), Ropan(Healing), Vissha-Krumihar(antibacterial, anti-infective, anti-septic) used for early healing of wound. Madhu is tridoshaprashaman due to properties like laghu it is kaphaghna and picchil guna & due to Madhur kashay ras it is vatapittaghna.\(^8\)

According to Vagbhata-Acharya, properties of Ghruta are kantivardhak, vishahar and vranashodhan & ropan which promote healthy granulation tissue.\(^9\) Madhu has properties Lekhan, vishahar, krumihar, vranashodhan, sandhan and ropan which promotes early healing of wound.\(^10\) Acharya Vagbhata have also suggested Madhu-Ghruta combination for wound treatment.\(^11\) Acharya Kashayap also mentioned Madhu and Ghruta for vranashodhan and vranaropan.\(^12\) Charakacharya also mentioned the same i.e. Madhu-Sarpi for vranasandhan karma (wound healing).\(^13\) According to him, Ghruta is vata-pitta and vishahar,\(^14\) Madhu has sandhan\(^15\) and yogvahi property.\(^16\) Yogvahi i.e. when used with other content it acts with it and also enhances its ability. We should use Madhu and Ghruta in unequal proportion because with equal proportion it’s like poison.\(^17\)

According to pharmacognosy of Madhu, it is aqueous solution of glucose is 35%, fructose; 45%, and sucrose 02%. Other constituents of Madhu are maltose, gum, traces of succinic acid, acetic acid, dextrin, formic acid, enzymes and vitamins. Madhu is antiseptic as applied to wound.\(^18\) Madhu is antiseptic which makes wound sterile in less duration and has better outcome.

4.1 Probable mode of action

Ghruta lubricates surface of wound. Its oily consistency helps adhesions for dressing wound. Ghruta is having vranaropan (healing) and kantivardhan (improving luster) property so it helps in early healing with good pigmentation. Madhu is having antibacterial activity so it prevents infection. Madhu because of its high viscosity forms physical barrier and the presence of enzyme catalase gives it antioxidant property. Lekhan property helps in removing dead, necrotic tissue from wound and fascinates formation of healthy granulation tissue.

5. CONCLUSION

This case study reveals that Madhu and Ghruta dressing in diabetic wound is very effective. It causes faster wound healing with healthy granulation tissue without any signs of secondary infection. Also, this procedure is very cost effective and preparation is easily available. Hence, we can use this in our routine OPD dressing procedures. There is scope for more research for the effect of this preparation along with internal ayurvedic medicines suggested by Acharyas.

6. REFERENCES


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7. FIGURES

Day 1

Day 3

Day 7

Day 15

Day 20

Day 35