VOLUME - 14, ISSUE - 06, JUNE - 2025 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

General Surgery

ROLE OF SUGAR DRESSING IN THE MANAGEMENT OF LEG ULCERS: A PROSPECTIVE CLINICAL STUDY

Dr. Pothula Akshitha — Post Graduate In General Surgery, Department Of General Surgery, Konaseema Institute Of Medical Sciences And Research Foundation, India.

Dr. Mattaparti Shruthi — Assistant Professor, Department Of General Surgery, Konaseema Institute Of Medical Sciences And Research Foundation, India.

ABSTRACT

Background: Chronic leg ulcers, particularly in diabetic patients, are notoriously difficult to manage due to impaired wound healing. This study investigates the role of sugar dressing—a traditional yet effective method—in enhancing wound healing and reducing complications. **Methods:** A prospective observational study was conducted involving 50 patients with chronic leg ulcers, primarily of diabetic origin. Sugar paste composed of caster sugar, icing sugar, polyethylene glycol, and hydrogen peroxide was applied every 3 days. Clinical outcomes assessed included slough reduction, granulation tissue formation, wound surface area, and need for skin grafting. **Results:** Over the course of 6 weeks, statistically significant reductions in wound slough and surface area were observed. Granulation tissue formation increased significantly, and 30% of the patients underwent successful split-thickness skin grafting. No adverse effects were recorded with sugar dressing. **Conclusion:** Sugar dressing is a safe, cost-effective, and efficient alternative for managing chronic leg ulcers, especially in resource-limited settings.

KEYWORDS : Leg ulcers, Sugar dressing, Chronic wound healing, Granulation tissue, Diabetic foot

INTRODUCTION

Chronic wounds, particularly in patients with diabetes mellitus, continue to pose a major clinical challenge. These wounds often exhibit delayed healing, prolonged inflammation, and an increased risk of infection. Conventional wound care techniques—though effective—may be inaccessible in low-resource settings due to cost and availability.

Sugar dressing has resurfaced as a viable method for wound management. Historically used due to its antibacterial properties, sugar works osmotically to reduce bacterial colonization, facilitates autolytic debridement, and enhances granulation tissue formation. Moreover, it is readily available and inexpensive, making it an ideal option in under-resourced areas.

This study evaluates the effectiveness of sugar dressings in managing leg ulcers, particularly in diabetic patients, and documents its role in wound bed preparation, infection control, and overall healing progression.

MATERIALS AND METHODS

Study Design And Setting:

A prospective, observational clinical study was carried out at the Department of General Surgery, konaseema institute of medical sciences, Amalapuram, Andhra Pradesh, over a period of two years (2022-2024).

Study Population:

Fifty patients aged 21–80 years with chronic leg ulcers, particularly diabetic foot ulcers (DFUs), were included.

Inclusion Criteria:

- Chronic ulcers with slough and infection over leg and foot
- Patients with or newly diagnosed with diabetes mellitus

Exclusion Criteria:

- Acute wounds (burns, lacerations, clean ulcers)
- Peripheral vascular disease
- Previously granulated ulcers

Composition Of Sugar Paste:

- **Caster Sugar:** 1200 gm
- **Icing Sugar:** 1800 gm
- **Polyethylene Glycol:** 1416 ml (thin) / 686 ml (thick)
- Hydrogen Peroxide 30%: 23.1 ml (thin) / 19.0 ml (thick)

Procedure:

Patients underwent dressing every three days. Wound cultures were done weekly; contaminated paste was discarded and fresh preparation applied. Healing was monitored weekly using:

- **Slough Visual Score** (1 = >75% slough to 6 = no slough)
- **Granulation Score** (1 = no tissue to 4 = >75% tissue)
- **Wound Surface Area** in cm^2
- **Skin Grafting Requirement**

Statistical Analysis:

SPSS v16 was used. Chi-square test or Fisher's exact test applied. A p-value < 0.05 was considered significant.

RESULTS

Demographics:

- Mean age: 41–70 years
- Male: 76%, Female: 24%
- 62% known diabetics; 38% newly diagnosed
- Most ulcers were unilateral (68%)

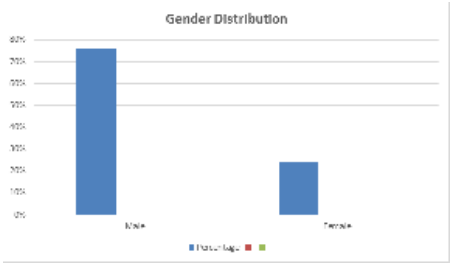

Chart-1

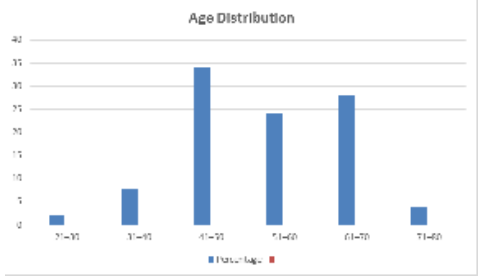

Chart-2

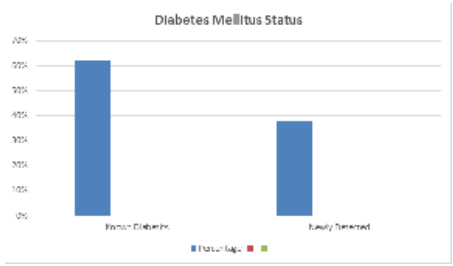

Chart-3

Ulcer Characteristics:

- **Ulcer Size:**
- <5 cm: 4%
- 6–10 cm: 52%
- 11–20 cm: 42%
- 20 cm: 2%

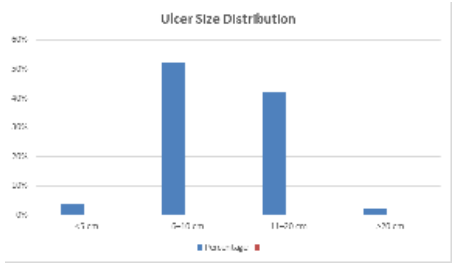

Chart-4

- **Grades:**
- Grade II: 44%
- Grade III: 24%
- Grade IV: 32%

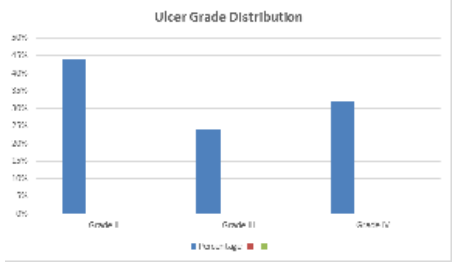

Chart-5

Wound Healing Outcomes:

- **Slough Reduction:**

Week 1: majority showed >50% slough
Week 4: 66% had <25% slough; $p < 0.0001$

- **Granulation Tissue:**

By week 4: 86% had >50% granulation; $p < 0.0001$

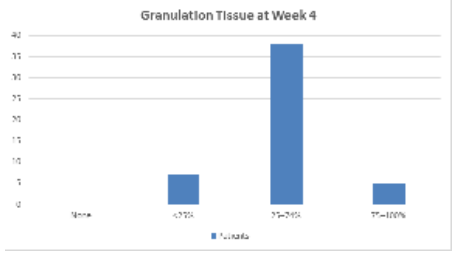

Chart-6

- **Wound Area:**

Reduction in mean surface area by >50% by week 4

- **Split Skin Grafting:**
- Week 3: 6%
- Week 4: 14%
- Week 5: 22%
- Week 6: 30%

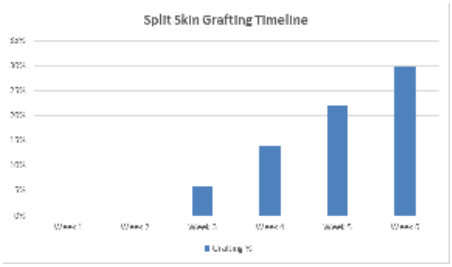

Chart-7

No adverse effects such as allergy, irritation, or secondary infection were reported.

DISCUSSION

Chronic ulcers result from a complex interplay of neuropathy, ischemia, and infection, particularly in diabetic patients. A moist, antimicrobial environment is essential for optimal healing. Sugar dressing meets these criteria effectively.

Mechanisms Of Sugar Dressing:

- **Osmotic Action:** Dehydrates bacteria and reduces slough
- **Angiogenesis Promotion:** Enhances capillary growth
- **Autolytic Debridement:** Aids removal of necrotic tissue
- **Anti-inflammatory & Anti-scarring:** Prevents overgranulation and contracture

Studies by Chirife et al., Knutson, and Archer support these findings. Sugar paste has been shown to be non-toxic, sterile, and promote granulation without the side effects seen with synthetic agents.

Compared to advanced dressings, sugar has several advantages:

- Cost-effectiveness
- No cytotoxicity
- Readily available
- Effective against MRSA and other pathogens

The present study demonstrates similar healing trajectories seen in global literature, especially in high-grade ulcers that would otherwise require aggressive surgical management.

CONCLUSION

Sugar dressing is a reliable, economical, and effective treatment for chronic leg ulcers. It significantly reduces slough, enhances granulation, and facilitates healing. Its ease of preparation and application make it especially suitable for rural or low-resource settings.

With increasing prevalence of diabetic foot ulcers, sugar dressing offers a compelling alternative to costly modern wound care technologies. Large-scale randomized studies are recommended to validate these findings and encourage adoption into routine clinical practice.

Healed Ulcers Post Grafting

Fig-1

Diabetic Ulcers Post Sugar Dressings

Fig-2

REFERENCES

1. Singer AJ, Clark RA. Cutaneous wound healing. NEJM. 1999;341(10):738–746.
2. Mustoe T. Understanding chronic wounds: a unifying hypothesis. Am J Surg. 2004;187(5):S65–70.
3. Schultz GS et al. Wound bed preparation. Wound Repair Regen. 2003;11(S1): S1–28.
4. Chirife J et al. Microbios. 1983;37(149):71–77.
5. Archer HG et al. Sugar paste and healing. Burns. 1990;16(4):302–305.
6. Knutson RA et al. Use of sugar in wound care. South Med J. 1981.
7. Topham J. Sugar-based wound dressings: experience in Zanzibar. Trop Doct. 2003.