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SURGICAL TECHNIQUES AND INNOVATIONS

The economical way to off-load diabetic foot ulcers [Mandakini off-loading device]

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Abstract We all know that increased plantar foot pressure is a leading cause of ulceration in the diabetic population. Healing of these ulcers requires adequate blood supply, control of infection, excellent wound care and 'offloading' or pressure redistribution of the ulcerative area [1, 2]. Out of all these factors, 'offloading' is a unique challenge in treating chronic wounds. As diabetic foot care has evolved over the years, podiatrists have used numerous approaches including complete bed rest, cutout felt pads, crutches, wheelchairs, zimmer frame, temporary shoes, ortho wedge shoes like rocker-bottom wedge design shoes and total contact casting to offload these wounds [3, 4, 5].

Keywords Offloading · Diabetic plantar ulcers · Mandakini offloading device

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Purpose Diabetic foot is a complex pathology with narrow window of opportunity to work. If not delt with right approach endsup with amputation. It needs special care. A non-healing ulcer on plantar aspect can lead to severe infection. Eighty percent of diabetic foots are neuropathic in India. This leads to loss of sensation in foot and off-loading is the major solution for healing of plantar lesions. Application of antimicrobial solutions or ointments is not the answer to heal the ulcer. Off-loading devices are expensive. Indian economy does not allow wide usage. So, we planned for economical device which doesnot cost more than Rs. 50.

Off-loading techniques

1. Total contact cast (TCC)
2. Walker
3. Aircast shoe
4. Complete bed rest.

Above all procedures have many disadvantages towards patient compliance and cost factor.

Objective The ideal off-loading device should be

1. Patient compliant
2. Easy to apply
3. Cost effective
4. Does not require special training
5. Effective in healing the wound
6. Ambulation with device should be comfortable.
7. Should be accommodated in diabetic foot wear with ease.
8. Should be practiced at all levels of rural healthcare system like PHC, PHSC, by paramedical staff.

We could achieve above requirements with our Mandakini off-loading device.

- *Materials used* (Fig. 1) 1. Used pair of gloves. 2. Dynaplast adhesive plaster
- *Method of preparation and application* Paired used gloves are rolled as we do for autoclaving. It is

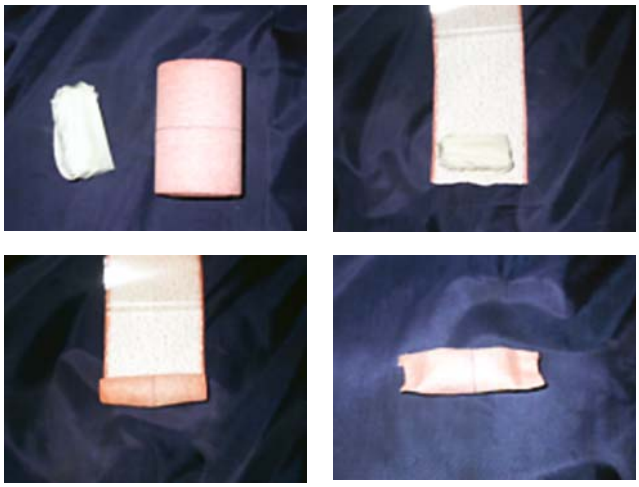

Fig. 1 Mandakini off-loading device; material and method of preparation of device;

placed on adhesive surface of dynaplast and covered circumferentially with dynaplast. Edges of dynaplast are approximated by sharp pressure. Thus the Mandakini off-loading device is ready to place. It acts like a soft air-cushion, off-loads body weight.

Fore foot lesions are attended by applying the device proximal to lesion (Fig 2). Hind foot lesions are attended by applying device distal to lesion (Fig 3).

- No of gloves to be used will be decided on weight of patient.

Fig. 2 Mandakini off-loading device; application of device; forefoot DFU

Fig. 3 Mandakini ff-loading device application of device; hind foot DFU

- *Frequency of application* Every week.
- *Result* Complete healing in 4–6 weeks.
- We have been using this device regularly since 2 years. No complaints from patients.

Conclusion Large bony prominences, gross peripheral edema, previous amputation, wound location and wound care all play important parts in the decision making process for offloading. The hospital wastes such as used gloves, can help us to off-load the body weight at ulcersite. It is economical and most effective and easy to apply.

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