

## Foot ornaments — an increased risk of diabetic foot amputation in patients with diabetes



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In this article, the author presents a case report of a lady who has lived with diabetes for 25 years. She presented with foot lesions that appeared nearly 3 weeks before the consultation, which had gradually increased in dimensions. She had worn foot ornaments for over 40 years. On clinical examination, the bilateral foot lesions were rather superficial, with mild regional cellulitis. The patient had bilateral peripheral sensory neuropathy; however, peripheral vascular disease was absent. The plain x-rays were normal, showing no signs of osteomyelitis or any other significant finding. Investigations and, thereafter, management were based on her metabolic issues and foot lesions. Eventually, the lesions healed. The patient was educated about the risk of re-ulceration. It was emphasized that she must avoid wearing foot ornaments and should practice good diabetic foot care.

The population of India is projected to reach close to 1.38 billion in 2020 (United Nations, 2019). Hinduism is the largest religion in India, with approximately 80% of the population identifying themselves as Hindu. Nearly 50% of the population is female, and a majority of Hindu women wear two types of ornaments on their lower extremities for religious and social reasons: an anklet and toe ring (*Figure 1*). A 'Payal' is a chain-like ornament worn at the ankle and a 'Bichiya' is a ring worn around the toe. Often these ornaments have sharp edges, which lead to ulcerations of the skin.

There are an estimated 72.96 million cases of diabetes in the adult population of India and the prevalence of diabetes in Indian women is 11.7% (Sharma, 2019). Surveys in Indian patients have revealed a prevalence of diabetic peripheral neuropathy, ranging from 26% to 31% (Pradeepa et al, 2008; Paul et al, 2012). Neuropathic patients (with loss of protective sensation) do not feel any pain when these foot ornaments injure

the skin and cause lesions. Because these lesions seem painless, they fail to draw the patient's attention and can go unreported for a long time. Often patients continue to wear the ornaments until the lesions have significantly worsened, giving rise to a real risk of amputation.

Here, the author presents a case of a woman, aged 65 years, who has lived with diabetes for 25 years. She presented with bilateral foot lesions (*Figure 2*) that appeared nearly 3 weeks prior to the consultation, which had gradually increased in dimensions. While taking her history, she informed me that she had worn foot ornaments for over 40 years and that, on a few occasions, she had developed injuries due to the wearing of the ornaments, but that those lesions had only taken a few weeks to heal. Because these minor lesions had healed easily and, due to religious and social conventions, she continued to wear the ornaments. She also reported that over the years she had taken irregular treatment for her diabetes and often

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**Figure 1.** Anklet and toe ring — traditional ornaments worn to decorate the lower extremities



**Figure 2.** The lesions



**Figure 3.** Healed

jumped from western to alternative types of medicines, as advised by her social circle.

The clinical team advised her to undergo diabetes and foot-related investigations, but due to limited funds and absence of any health insurance, only a few tests could be carried out. The readings were as follows:

- HbA1c 9.2%
- FBG 175mg%
- PPBG 258,mg%
- Body mass index 32
- Blood pressure, ECG, basic renal and liver profile within normal range
- LDL and serum uric acid higher than normal
- Consent was not given for a wound tissue

culture to be taken (due to paucity of funds).

On clinical examination, the bilateral foot lesions were rather superficial, with mild regional cellulitis. She did have bilateral peripheral sensory neuropathy; however, peripheral vascular disease was absent. The plain x-rays were normal, showing no signs of osteomyelitis or any other significant finding.

She was taking only 1 mg of Glimepiride twice a day and applying a homemade herbal application on the lesions, as a wound dressing. Often, the patient had no dressing applied. Because the lesions didn't cause her much pain, they did not trouble her, until they worsened and increased in dimensions, with presence of some discharge and a foul smell. It was then she decided to seek medical attention.

### Treatment changes

**Diabetes** — we added Metformin 500 mg twice a day, along with the current Glimepiride 1 mg twice a day.

**Metabolic** — we added Atorvastatin 10 mg and Allopurinol 100 mg once a day.

An Amoxicillin/Clavulanic Acid combination was prescribed for two weeks.

**Dressing instruction** — the lesions were washed with normal saline. Mechanical debridement using simple sterile gauze (gradual cleaning of wound bed) was done at every dressing change, followed by the application of medical grade honey. Special attention was given to avoid mechanical stress/pressure/rubbing of footwear.

All toe ornaments were removed, and we patiently waited for healing to happen by secondary intention. The patient was trained to change the dressing at home and monitoring was carried out once a week at our diabetic foot clinic. Within 6 weeks, complete epithelialization was achieved (*Figure 3*).

### Risk of re-ulceration

The strongest predictors of ulceration are presence of peripheral neuropathy and a history of ulceration, with an annual recurrence of up to 40% (Pound, 2005). Ulcer recurrence significantly increases the long-term costs for diabetic foot care (Apelqvist et al, 1995) and further increases risk of amputation, as well as deterioration of patient's health and wellbeing (Singh et al, 2005). The patient was educated regarding risk of re-ulceration and it was emphasized that she must look after her feet long-term. She was advised to avoid wearing foot ornaments and to practice the routine dos and don'ts of diabetic foot care (*Table 1*).

**Table 1. Dos and Don'ts for proper diabetic foot care (Homes, 2012)**

What should I be doing?	What should I avoid doing?
<ul style="list-style-type: none"> <li>■ Wash feet daily with a non-medicated soap gentle enough for a baby's skin</li> <li>■ Pat feet dry with soft absorbent cloth</li> <li>■ Dry carefully between toes with cotton</li> <li>■ Cut your toenails very carefully straight across, avoiding cutting them too short or cutting into corners. If you cannot trim them safely see your podiatrist</li> <li>■ Wear only proper fitting shoes</li> <li>■ Inspect or have someone check your feet daily to see if there are discolorations of any kind</li> <li>■ Wear microfiber sock(s) that wick away moisture and do not have seams that can irritate the skin</li> <li>■ If your feet or toes have blisters, cracks, a sore, discoloration or any unusual mark, contact your podiatrist immediately, even if it does not hurt or itch. If you have no podiatrist, ask the doctor taking care of your diabetes to recommend one for you</li> <li>■ If you accidentally cut your foot or toes, or injure them in any way, contact your podiatrist immediately – even if you do not think that it is serious and have no bleeding, pain or discomfort</li> <li>■ Visit your podiatrist as soon as you find out that you are a diabetic. They will examine your feet and tell you how often you should visit to prevent foot problems.</li> </ul>	<ul style="list-style-type: none"> <li>■ Do not use any medication, drug, antiseptic or plaster on your feet that have not been prescribed</li> <li>■ Do not apply hot water bags, heating pads or other heating devices to your feet</li> <li>■ Do not cut any hard skin, corns or calluses that you may have on your feet</li> <li>■ Do not wear shoes or socks that are too tight or too loose</li> <li>■ Do not attempt injuries involving feet</li> <li>■ Do not smoke cigarettes — they can rob your feet of the circulation of blood they need</li> <li>■ Do not cut your toenails if you cannot see well.</li> </ul>

### Conclusion

The World Health Organization and the International Diabetes Federation have stated that up to 85% of diabetic lower extremity amputations are preventable (Rogers, 2008). Every effort should be made to prevent foot lesions and to detect and manage the small lesions early. This case demonstrates that foot ornaments may be an additional risk factor in people with diabetes, by causing foot lesions, which in turn can raise the possibility of a foot amputation. Often patients continue to wear the foot ornaments, even in the presence of foot lesions, due to social or religious reasons. In patients with diabetic neuropathic foot lesions, who don't feel any pain, wearing sharp-edged ornaments worsens the prognosis. By increasing awareness and concern, education about this issue could help to prevent many diabetic foot complications, especially in developing world countries.

### REFERENCES

Apelqvist J, Ragnarson-Tennvall G, Larsson J, Persson U (1995) Long-term costs for foot ulcers in diabetic patients in a multidisciplinary setting. *Foot Ankle Int* 16(7): 388–94

- Homes CM (2012) Proper Diabetic Foot Care Do's and Don'ts. *Metabolism, Endocrinology, Diabetes & Podiatry* 2012
- Paul UK, Sinharay K, Bhattacharyya AK, Pal SK (2012) Update in diabetic neuropathy with special reference to Indian scenario. *J Indian Med Assoc* 110: 616–22
- Pound N, Chipchase S, Treece K et al (2005) Ulcer-free survival following management of foot ulcers in diabetes. *Diabet Med* 22(10): 1306–9
- Pradeepa R, Rema M, Vignesh J et al (2008) Prevalence and risk factors for diabetic neuropathy in an urban south Indian population: The Chennai Urban Rural Epidemiology Study (CURES-55). *Diabet Med* 25(4): 407–2
- Rogers LC (2008) Preventing Amputation In Patients With Diabetes. *Podiatry Today* 21(3): 44–50
- Sharma NC (2019) *Double Burden of Malnutrition: Issue of Undernutrition and Overnutrition in India*. Available at: <https://www.livemint.com/science/health/government-survey-found-11-8-prevalence-of-diabetes-in-india-11570702665713.html> (accessed 11.05.2020)
- Singh N, Armstrong DG, Lipsky BA (2005) Preventing foot ulcers in patients with diabetes. *JAMA* 293(2): 217–28
- United Nations (2019) *Population of India*. Available at: <http://statisticstimes.com/demographics/population-of-india.php> (accessed 11.05.2020)