

Case Study 2 - Mr J

A 54 year-old male was referred to the podiatrist at Coast Provincial General Hospital Diabetic Clinic, for management of active foot disease. The patient's presenting complaint was the duration and lack of successful management of the plantar wound on his left foot. He reported no pain from the relatively small ulcer on the plantar aspect of the 1st MTPJ of the left foot, however he described the ulcer history over the last year as having minimal improvement followed by relapse. The patient further described the ulcer as being a significant inconvenience in his life.

The patient reported that the foot was recommended for amputation by a surgeon based on the lack of healing and duration of the wound and he had consented. However, the foot was refused for amputation in the pre op bay by a different surgeon with the argument that the wound was too small to justify amputation. The patient advised that in the 3 months since this incident the wound had still not healed.

Medical history

On questioning the patient he advised he has had Type II diabetes for approximately 12 years and that his blood sugar was recorded once per fortnight. HbA1c was not recorded due to cost. The patient advised his latest blood sugar test was 8.5 mmol/l. He advised he does not smoke, tries to be active by walking, and controls his diabetes with diet and Metformin. The patient does not take a statin for lipid lowering or low dose Aspirin to reduce the cardiovascular risks associated with diabetes (as advised in the NICE and SIGN guidelines.)

The patient advises he has no other medical conditions. However, approximately 15 years ago he had a total knee replacement as a result of a previous sports injury. Further to this, he had surgery on the 1st ray within the past 10 years. He was unable to recall the procedure performed, but advised it was due to pain in the 1st MTPJ. The surgery, a suspected osteotomy for HAV, resulted in a short Hallux and fusion of the 1st MTPJ.

Clinical Examination

The patient wore majority enclosed prescribed leather sandals with a rear retaining strap. The modifications had been incorporated into the footwear at another institution.

On examination, the patient had an ulcer on the plantar aspect of the 1st MTPJ. The wound was 1cm x 1.5cm in size and the wound bed was sloughy. The dressing removed from the wound was particularly dirty and wet with wound exudate. The surrounding tissue was macerated and had evidence of bruising. There was no clinical sign of infection and the overall assessment of the wound was fitting with a chronic ulcer.

The patient's left foot on standing maintained a good longitudinal arch in comparison to the right foot which adopted a pronated position. On examination of the range of motion in the foot, the left foot had only 10 degrees dorsiflexion (as required for gait), 15 degrees inversion and 5 degrees eversion. All digits were clawed and fixed and the 1st ray was in a fixed plantarflexed position. On the right foot, the range of motion at the ankle joint was 15 degrees, 30 degrees inversion and 15 degrees eversion. The toes were clawed on weight bearing but mobile when in open chain.

Testing for neuropathy with a monofilament and neurotip revealed the patient met the minimum score for no neuropathy of 8/10. The patient scored 3/5 for both on the left foot and 5/5 for both on the right foot. Achilles reflex was tested for and present, and there was a negative babinski indicating no lower motor neuron conditions.

The patient's knee surgery appeared to be successful. The patient no longer suffered any pain from the joint and the range of motion was good. The patient was mobile without the use of any walking aid, however appeared to scrape his footwear along the ground.

Clinical Management

After discussing with the patient his expectations and the expectation of the clinician with respect to compliance, a management plan was agreed and implemented to accommodate the patient and clinician.

Short Term Management

With consent, the initial treatment entailed sharp debridement of the overlying plantar callus and gentle removal of the wound bed slough with a No. 15 scalpel, followed by the application of 0.25ml of Hyiodine to the wound bed. Due to the nature of chronic wounds,

in particular the increased volume of exudates (Bianchi, Gray, Timmons and McCurrie 2011), Mesorb absorbent dressing was applied to manage this and secured with a conforming bandage and strapping. In addition, a valgus pad with a cutout for the 1st MTP, bolstered with a short shaft pad, was manufactured at chair side from semi compressed felt. The patient was also advised to rest and use a walking stick.

This management regime was implemented for 4 weeks as planned with slow progress. After this period, an additional alternative assistance was introduced to assist closure. Adhesive strips created from zinc oxide strapping were applied over the top and bottom of the wound. This additional management was proposed for 1 week to assess if the patient could tolerate direct skin contact with the strapping. The patient responded well and the substitute ugo strips were continued for a further 3 weeks.

At each dressing change the patient's foot hygiene was addressed by washing with a chlorhexidine sponge and drying thoroughly. Wound closure was achieved within 8 weeks.

Medium term management

After closure of the wound the patient was advised to return to the clinic every two weeks for 2 months or as required. In the interim, while bespoke footwear was being manufactured, the patient was given a supply of valgus pads and short shaft pads to be changed every 5 days. The patient was given both oral and written instruction, together with a picture and demonstration of application of the offloading padding.

Long term Management

The patient was referred to another organisation for bespoke footwear. Together with a physiotherapist and orthopaedic technician, a footwear intervention to support the medial longitudinal arch of the foot, additional padding on the medial aspect of the sandal and a 1st MTPJ cut out was agreed to be manufactured.

Further to this, the patient was given general foot care advice specifically for diabetic patients. He was advised to wash, dry and check his feet each day. The application of moisturiser was advised to be as required and caution was given about slipping. The patient was advised to always check his footwear before wearing. Taking into account the patient's history of relapse, it was agreed with the patient that he return every two weeks for 2 months, but would return immediately if the wound recurred. General foot care is not available in Kenya, and so the patient was taught how to manage his own nails and callous.

Clinical reasoning

Walking Stick

A walking stick was suggested for the patient as he would not comply with a wheelchair and crutches.

Hyiodine

Hyiodine is a Hyaluronic and iodine medicament; Hyaluronic acid is found naturally in tissue, and in wound healing assists the extracellular matrix. In addition, this product assists the inflammation stage of healing to move into the proliferation stage by promoting granulation and epithelialisation. In addition, it draws growth factors and water from the surrounding tissues to create a moist wound healing environment (Cutting, Kralove and Amlani 2011)

Valgus and Short Shaft Pad

A total contact cast, a removable walking cast or half walking shoe would have been the preferred for this patient, however it was not available to him at Coast Provincial General Hospital. As a result, applying a valgus pad to support the longitudinal arch, with the addition of a short shaft pad, significantly reduced the pressure on the 1st MTPJ and re-distributed the pressure down the supported 1st metatarsal shaft and midfoot.

The reduction or redistribution of pressure from diabetic ulcers is a recognised technique to assist healing. In the situation where gold standard interventions are not available to the clinician, alternative methods of reducing pressure on the wound will contribute to a positive outcome.

Adhesive Strips

This patient would have greatly benefited from Vacuum Assisted Closure (VAC) to assist the granulation tissue in the wound bed and help the wound contact. This was not available, so using strapping zinc oxide off label to imitate Ugo strips assisted in drawing the wound together. This reduced the tensile stress applied to the healing tissue while the patient was ambulatory.

Washing with Chlorhexidine Sponge

Due to the climate, fully enclosed shoes encourage excessive sweating. As a result, open shoes are common place and in turn feet are often very dirty. In addition, patients with

wounds are advised to keep their feet dry, and so hygiene is often compromised. Maintaining hygiene, and in so doing, managing the bacterial flora that lives on skin with chlorhexidine, in turn manages the bacterial burden. This can prevent the escalation of bacteria on the infection continuum from colonised to critically colonised and infected. It is better to manage bacterial burden than react to infection.

Conclusion

In conclusion, this case was not managed with typical western appliances, however the theory and rationale for each intervention follows western methods. A workable solution for each component was found and healing was achieved. Further to this, last contact with the patient revealed the medium term management was appropriate and the wound currently remains closed (24th January 2012).