CASE REPORT

Mission 'Possible': Saving A Limb

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Abstract: A pressure injury is a localized damage to the skin and/or underlying soft tissue, usually over a bony prominence. A pressure injury has a significant impact on the patient's quality life, especially the associated complications, such as infection, compromised local circulation, etc. This case report details attempts to prevent amputation of the right limb in a mid-50s male patient who had previously undergone an above-knee amputation initiated by a pressure injury on his left plantar heel.

Key words: *amputation prevention, pressure injury, vascular status, offloading*

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Patient Characteristics

A male patient in this mid-50s presented to the office for a pressure injury on right 1st apex. The patient did not have previous experience with foot care. Based on the assessment, other than the pressure injury, the patient presented skin (fungal infection), nail (ingrown, fungal infection) and biomechanical conditions which required chronic professional foot care treatment. Unfortunately, in 2023, the patient had an above-the-knee amputation on left side resulting from a diabetic foot ulcer.

Part of the reason for this current pressure injury was the use of inappropriate footwear. The toe-box of the footwear was too shallow and there was not enough space between the sidewall and the big toe (1.5 cm is suggested). Another reason was that because of the left above-knee-amputation, the patient is unable to maintain a good balance. As a result, excessive body weight goes to the plantar hallux.

The lesion started as a fluid-filled blister. The blister burst after three days. The patient had recently recovered from pressure injuries on right 5th plantar MPTJ, 2nd, 3rd and 4th apices. The patient was under tremendous stress, as he had already undergone an above-knee amputation initiated by a pressure injury on his left plantar heel in 2023.

Social History

The patient is in late 50s. Height is 170 cm, weight is 80 kg and BMI is 27.7.

The patient is single and currently unemployed. He lives in an urban setting; is a non-smoker and reports rare alcohol consumption. Due to the current situation, his life quality has gone down; however, the patient has very supportive family members who are taking care of his everyday needs and providing emotional support.

Medical History

The patient's history included multiple conditions/factors, including: type II diabetes (HbA1c: 9.6%), neuropathy (monofilament 5/10), peripheral vascular disease, hypertension, hypercholesterolemia, anticoagulation, anemia and above-knee amputation on the left side.

There are recovered pressure injuries on the right 5th plantar MPTJ, 2nd, 3rd and 4th apices. There was no significant change in nutritional status and no known allergies.

See Table 1 for Lab/test results and Table 2 for medication history.

Table 1: Lab and Test Results

Hb	133(LO)	135 - 175 g/L
RBS	15.9 (HI)	3.6 - 7.7 mmol/L
Hb A1C	93.6 (HI)	<6.0
Cr	60 (LO)	67 - 117 umol/L
Microalbumin/Creatinine Ratio	40.6 (HI)	3.0 mg/mmol
B12	206 (LO)	>220 pmol/L

Pedal Pulses: Monophasic waves on Audible Hand-held Doppler
ABPI: 7

Table 2: Medication History

- Acetaminophen 500 mg 1-2 tablets 3 times daily, PRN for 90 days
- Norvasc 10 mg 1 tablet 1 time daily
- Januvia 100 mg 1 tablet 1 time daily All meds to go in biweekly pill pack to help with compliance
- Crestor 40 mg 1 tablet 1 time daily
- Freestyle Libre as directed to help manage Blood sugar for 1 year
- Koffex DM Sucrose Free 5 ml 3 times daily, PRN
- Lyrica 50 mg 2 capsules 3 times daily for 90 days
- Apixaban 2.5 mg 2 times daily for 90 days
- Ferrous fumarate 90 tablets 1 time daily for 90 days
- Tresiba FlexTouch 100 unit/mL (3 mL) 16 units every morning for 3 months of 28 days
- Metformin 500 mg Various
- Trurapi SoloSTAR as directed 10 U ac meals
- Vitamin B-12 1 ml 1 time monthly for 30 days

Wound History

The current lesion started in early March 2024 as a blister lesion. The lesion was broken after three days, maceration presented in the wound bed. The size of the wound is approximately 2.6x2.4 cm. (See Figure 1.)

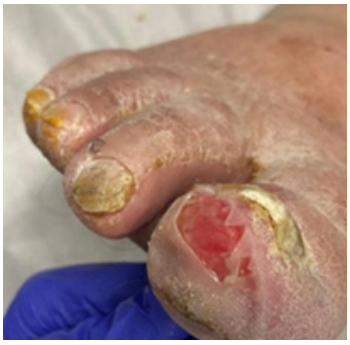

Figure 1:

Treatment Approaches And Timeline

A layer of eschar formed in late March. Due to the rigidity of the eschar, sharp debridement could not be performed. Intrasite (2x /week) application was initiated. (See Figure 2.)

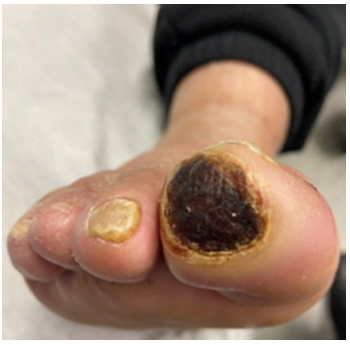

Figure 2: This picture was taken on March 25, 2024.

After two weeks of intrasite application, the eschar was removed. Biofilm and mild maceration presented in the wound bed. The lesion was dressed with Inadine™ (3x/week).(See Figure 3.)

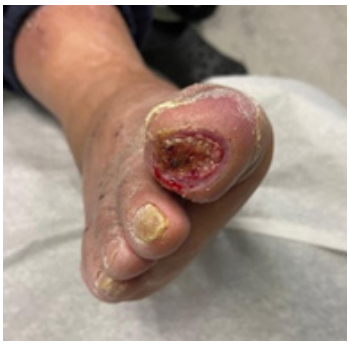

Figure 3: This picture was taken on April 11, 2024.

The lesion was fully recovered in late July. (See Figures 4, 5, 6 and 7.)

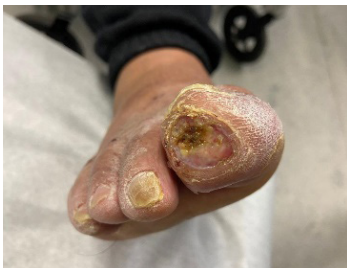

Figure 4: This picture was taken on April 15, 2024.

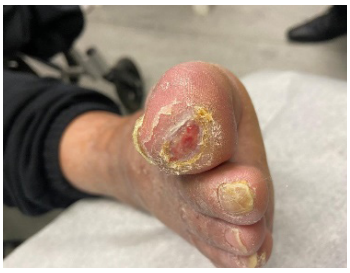

Figure 5: This picture was taken on May 14, 2024.

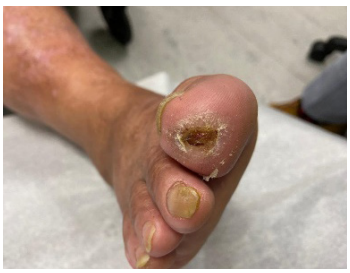

Figure 6: This picture was taken on June 17, 2024.

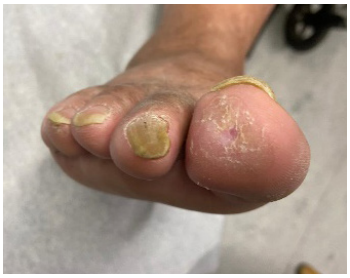

Figure 7: This picture was taken on August 1, 2024.

During the treatment course, patient was provided with post-op shoes to offload the pressure in the lesion area. Modification such as a Plantar Metatarsal Pad (PMP) with wing to the 1st (made by semi-compression felt) was provided to promote the range of motion on 1st metatarsophalangeal joint to reduce the pressure on the plantar 1st toe area. (See Figures 8 and 9.)

Figure 8:

Figure 9:

Management Team

The management team consisted of the following:

- Patient
- Family physician
- Vascular specialist
- Primary care nurse
- DM nurse
- Dietitian
- WoundPedia/ECHO Ontario Skin and Wound faculty team
- Chiropodist
- Supportive family members.

Conclusion

Saving a limb is a 'possible mission'. As clinicians, we should always treat the whole patient instead of 'the hole in the patient'. We should focus on the treatment of etiology and adopt a treatment approach based on patient-centred concerns.

The goal is to increase oxygen level to the lesion, decrease/eliminate infection and maintain the blood glucose level to create a favourable wound healing environment. As such the coordination of interprofessional care is crucial.[2,3]

Vascular status is crucial in wound care, as it involves the wound healing process directly. The comprised blood supply would impact the wound healing significantly. It is important for clinicians to have patients' vascular status before initiating the treatment. An audible handheld Doppler test can be performed on bedside if the history of vascular status is available.[2]

Pressure offloading is an essential component for pressure injury treatment. Even with the application of the best practice techniques, wound healing might stall without appropriate off-loading application.[3] Pressure off-loading not only prevents further tissue damage but also promotes the healing process. The Total Contact Cast is the 'golden' choice which provides the maximum pressure offloading.[4] The post-op shoes, custom orthotic devices and custom-made footwear are easy to wear which are more convenient to patients.

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