



Banner Thunderbird Medical Center

Ask the Expert- Diabetic Foot Wounds

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Why diabetes?

Diabetes is the number one cause of peripheral neuropathy. Neuropathy is a disease which affects the nerves in diabetics with poorly controlled high blood sugars. Normally, this "extra sugar" would be deposited in muscle, fat, and other organs for energy and storage. Instead, it floats through the body for relatively long periods of time and attaches to other molecules in the body, altering nerve function and preventing them from doing their jobs (sending signals to the brain for pain, heat, cold, perspiration, etc.)

"Extra sugar" is "sticky" also loves to attach to white blood cells, the body's defense against bacterial, fungal, and viral invaders. This often limits the ability of the white blood cell to search and destroy those invaders.

What exactly is a diabetic foot wound?

The classic diabetic foot wound is usually found on the bottom of the foot. These wounds are the result of increased pressures to areas of skin caused by underlying bony prominences. These increased pressures typically cause a response by the skin to produce more skin to serve as a buffer between the bone and the contact surface.

How is this related to diabetes and neuropathy?

"Extra sugar" does not discriminate amongst nerves it attacks. For example, when nerves which control the muscles of the leg and foot become affected, the large muscles and longer tendons of the leg tend to overpower the smaller muscles in the foot. This can cause buckling of toes at the joints otherwise known as hammertoes and other changes in shape to the foot and the foot's function. At the same time, the extra sugar is attaching to collagen, the most abundant protein in the body. This causes increased stiffness in joints and changes to the skin. Sweat glands stop providing the usual replenishment of moisture to the skin, causing it to dry and crack.

What happens next?

The calluses caused by the bony prominences begin to dry and crack, allowing bacteria to penetrate the usual barrier healthy skin provides. As the callus becomes thicker, the underlying healthy skin typically further breaks down because a person who cannot feel that they are walking on a thick callus, will not be able to feel the usual protective warning sign of pain as the callus grows. A small amount of bleeding can occur under the skin as the callus continues to thicken, become rock hard, and split open with continued weight bearing. The wound, or break in the skin, has now begun.

Can diabetics get wounds in other ways?

Absolutely. Stepping on a sharp object such as a toothpick or needle and not feeling it penetrate the skin. Other ways include burning the skin on hot pavement or in a hot bathtub.

How are they treated?

The single most important factor in helping to heal a diabetic foot wound is to reduce the weight being applied to wound with normal walking. Keeping the wound clean under the advice of a wound care expert, and changing the wound dressing on a daily basis are also important parts of treatment. A trained practitioner will also typically debride (surgically remove) unhealthy skin and soft tissue from the wound as necessary to allow room for the good skin and tissue to take the bad stuff's place. Other factors which are often also addressed in treating a diabetic foot wound are circulation of blood to the feet and legs, nutritional status, and treatment of infection, if present.