DIABETIC FOOT AMPUTATIONS

The two major vessels that supply blood to the foot are the dorsal pedal artery in the front portion of the foot and the posterior tibial artery just behind the ankle on the inside of the foot. If either one of these two vessels become blocked with atherosclerotic buildup of fats and cholesterol, the foot tissues will still get some supply of blood from the remaining artery but the foot may be pale or have a bluish discoloration (cyanotic) and if injured the foot will heal more slowly. When diabetic peripheral neuropathy occurs, sensation is diminished or absent over the foot. This loss of sensation means that minor injuries are overlooked and typically develop into more significant ulcers or bruises or infections before they become noticed. The combination of progressive loss of blood supply and diabetic peripheral neuropathy create an environment ripe for disaster.

Amputation is one of the most feared complications of poorly controlled diabetes. The typical scenario actually involves a series of diabetic-related problems. The first is blockage of one of the two major blood vessels supplying blood to the diabetic foot. Typically by the time one of these two major vessels is completely blocked, the remaining vessel is partially blocked as well. When diabetic peripheral neuropathy is also present, the diabetic foot is susceptible to major injury. It can begin as a minor injury such as a pebble in the shoe, or in ingrown toenail, or walking barefoot on the floor and stepping on something or stubbing a toe. That minor injury goes unnoticed. Over the course of one or several days more injury occurs, the foot continues to be walked on, and the area of damaged tissue enlarges. An infection of the damaged tissue may or may not begin. Finally, because of bleeding, or swelling, or marked discoloration the problem is discovered. By this time major tissue injury has occurred. If infection is present, it may extend from the skin down through the soft tissues and even into the underlying bone.

Treating this kind of problem is difficult. Because of the poor blood supply to the affected area, antibiotics don’t get to the area very well. Poor blood supply also means delayed and prolonged healing. If bone is infected, typically it will never heal without removing the abnormal bone. Doing any surgery locally at the injury site is very risky because that will create a larger wound, and chances of healing this with the limited blood supply is even less. If a localized amputation is done of the site or part of the foot, with poor blood supply chances of healing are poor, infection is likely and a subsequent more radical amputation may well be necessary.

The solution in this situation is to first try to revascularize the leg and increase the available blood supply to the wound area. If one or both major blood vessels can be repaired or bypassed this will significantly increase blood flow to the wound. Next, intravenous antibiotics will need to be used in large concentration to maximize delivery to the wound site. They will need to be continued typically for weeks. Diabetic foot wounds are typically infected with multiple organisms, and several antibiotics might be needed. Thirdly, the foot and extremity should be kept elevated. This will help to

improve venous return to the heart and improve blood supply to the extremity. Finally, the wound itself must be kept clean and dressed, so that we can maximize the chances of prompt healing. Any dead tissue around the wound site should be promptly removed to reduce the chances of more infection and impaired healing. If all these things are done and the circumstances remain favorable, the wound may slowly heal. If it does not heal progressive tissue death (gangrene) may occur. The wound area becomes black. Amputation will then be required.

The basics of good foot care are listed elsewhere in this web site (See Patient Information – Diabetic Foot Care). Good foot care starts off with a careful examination of your feet every day. This is even more important if you have established vascular disease or diabetic peripheral neuropathy. You should also examine your shoes daily, too. Look to make sure nothing is in your shoes, like a tack, paper clip or pebble. Wearing white cotton socks makes it easy to spot blood or see if dirt got in your shoe. If you see a problem developing with your foot, don't hesitate to contact your doctor and have it examined.

Foot orthotics are shoe inserts that are meant to more evenly distribute weight over the entire foot. Normally, most people bear weight on their heels and the balls of their feet, and shift weight to the first 2 or 3 toes when walking. A properly made orthotic will distribute all of the weight more evenly across the foot and relieve pressure over the heel, ball and toe areas of the foot. This will lessen the chances of tissue damage, callus formation and ultimately breakdown in these areas. The best orthotics are custom molded to your foot. If purchased through a podiatrist's office they can be several hundred dollars. Custom orthotics are available over the Internet for a much lower price, as little as $100.00. (See Other Links of Interest in the Other Links Section of this website).

Diabetic shoes are specially made shoes with thick soft soles and deeper and wider toe boxes than normal shoes. They are made to accommodate orthotic inserts if needed. A standard diabetic shoe can fit a number of foot deformities. Custom-made diabetic shoes are also available. One of the common deformities of the diabetic foot is "hammer toes." The toes are cocked up at the first joint attached to the foot and then claw downwards at the next joint. This is due to a contracture occurring in the extensor tendon(s) of the toe(s). Hammer toes will frequently rub against the top of a standard-sized shoe box and can ulcerate the skin where the rubbing occurs. In diabetic shoes the toe boxes are deep enough that this won't happen. Medicare will pay for 1 pair of diabetic shoes per year for people with diabetes who have callus formation over their feet, peripheral neuropathy, prior foot ulcerations or foot deformities that predispose to ulcer formation. Ask your doctor for a shoe prescription for diabetic shoes.

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