

## CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

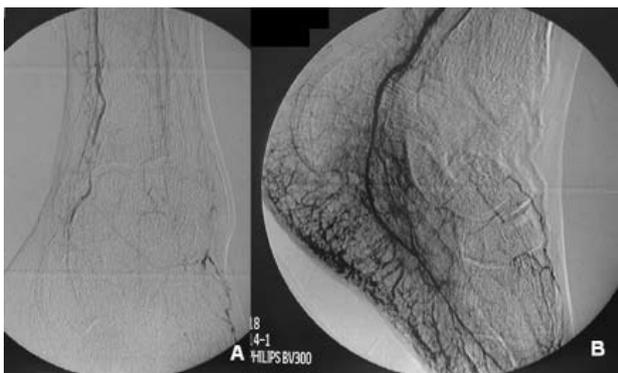
### Vascular Diseases Quiz – Case 10

A 68 year-old female with superficial ulcerations due to diabetic foot gangrene at her left lower extremity was referred to our Department for evaluation and management. The patient reported having the first signs of gangrene two months before current admission to our Department. Her medical history was notable for smoking, hypertension and diabetes mellitus. Physical examination revealed palpable pulses at the femoral and popliteal artery, but no pulses at the pedal arteries of the left lower extremity. Subsequent workup with digital subtraction angiogram (DSA) demonstrated total occlusion of the distal portion of the dorsalis pedis artery and stenosis of the distal posterior tibial artery (fig. 1A). The latter was treated successfully with balloon angioplasty (fig. 1B).

#### Comment

Problems related to the foot remain the most common cause for hospitalization for patients with diabetes mellitus; it is estimated that up to 20% of individuals with diabetes mellitus will be hospitalized for a foot problem at least once during their lifetime. The pathologic combination of neuropathy and ischemia sets the stage for foot ulcers, pressure necrosis and non-healing wounds. The resultant loss of continuity of the "skin envelope" often leads to destructive multimicrobial infection and further tissue loss. A vicious circle is frequently created, leading eventually to gangrene and amputation.

The most important principle in treating foot ischemia in diabetic patients is to recognize that the cause of ischemia is macrovascular occlusion of the leg arteries due to atherosclerosis. Until recently, many clinicians incorrectly assumed that gangrene, non-healing ulcers, and poor healing of minor amputations were due to micro-vascular occlusion of arterioles, the so-called "small vessel disease".



**Figure 1.** A: Preoperative angiogram demonstrating stenosis of the distal portion of the posterior tibial artery and occlusion of the dorsalis pedis artery. B: Successful recanalization of the posterior tibial artery after balloon angioplasty.

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ΑΡΧΕΙΑ ΕΛΛΗΝΙΚΗΣ ΙΑΤΡΙΚΗΣ 2009, 26(1):132

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*Histologically, atherosclerosis in the diabetic patient is similar to that in non-diabetic individuals, although there are clinical relevant differences; generalized atherosclerosis is more prevalent and progresses more rapidly in diabetic patients. Additionally, diabetics are more likely to present with gangrene and tissue loss than any other ischemic symptoms compared with non-diabetics. But from the vascular surgeon's perspective, the most important difference in lower extremity atherosclerosis in the diabetic patient is the location and distribution of the atherosclerotic lesions in the artery supplying the foot. More specifically, in individuals with diabetes, the most significant occlusive lesions are typically found in crural arteries, distal to the knee joint.*

*Extreme distal arterial reconstruction when feasible, results in improved foot perfusion. A bypass to the dorsalis pedis artery is the preferred option when adequate saphenous vein is available, and has proven to be effective and durable. It provides maximum possible perfusion to the forefoot and results in healing of even severe forefoot infections. Alternatively a bypass to the peroneal or the posterior tibial artery can be performed.*

*Nevertheless, distal arterial reconstruction presents many technical challenges to the vascular surgeon; the distal target arteries are small (1–2 mm in diameter) and often calcified. Moreover, harvesting of an adequate venous conduit may be difficult or impossible. Endovascular techniques represent an alternative treatment method and offer a valuable weapon in vascular surgeon's armamentarium to overcome limitations of conventional surgery in distal arterial reconstructions. Indeed, in our patient blood flow was effectively restored to the foot by balloon dilation of the posterior tibial artery; major surgery was avoided, which is of significant importance, given the higher risk of perioperative myocardial infarction and or death in diabetic patients.*

*In conclusion, the diabetic foot is nowadays a clinical problem that can be solved with a high degree of success. Distal revascularization is associated with high clinical success rates and should be offered to this group of patients, provided that it is technically feasible. Endovascular angioplasty represents a viable alternative for distal blood flow restoration especially in cases that surgical reconstruction is problematic due to technical difficulties or expected high mortality and morbidity of the patients.*

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*Diagnosis: Total occlusion of the dorsalis pedis and distal posterior tibial artery stenosis*