



COMPLEX CASE BELOW THE KNEE

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introduction

Below the knee (BTK) interventions are increasing in patients with critical limb ischemia (CLI), because the restoration of a direct blood flow to the wound is associated with better healing and higher rate of limb salvage. The role of drug coated balloons (DCB) for BTK vessels is yet to be fully proven, but clinical experience, as the one presented in this case report, proves that is a promising treatment.

patient history

The patient was a 50-year-old male with Type 1 Diabetes Mellitus diagnosed 37 years ago and hemodialysis. He was suffering rest pain and a chronic ulcer of the first toe (Figure 1). Baseline angiographic study revealed a diffuse disease of the BTK and foot vessels, with total occlusion of the tibioperoneal trunk, posterior tibial artery and distal anterior tibial artery (Figure 2).



Figure 1. Baseline foot picture

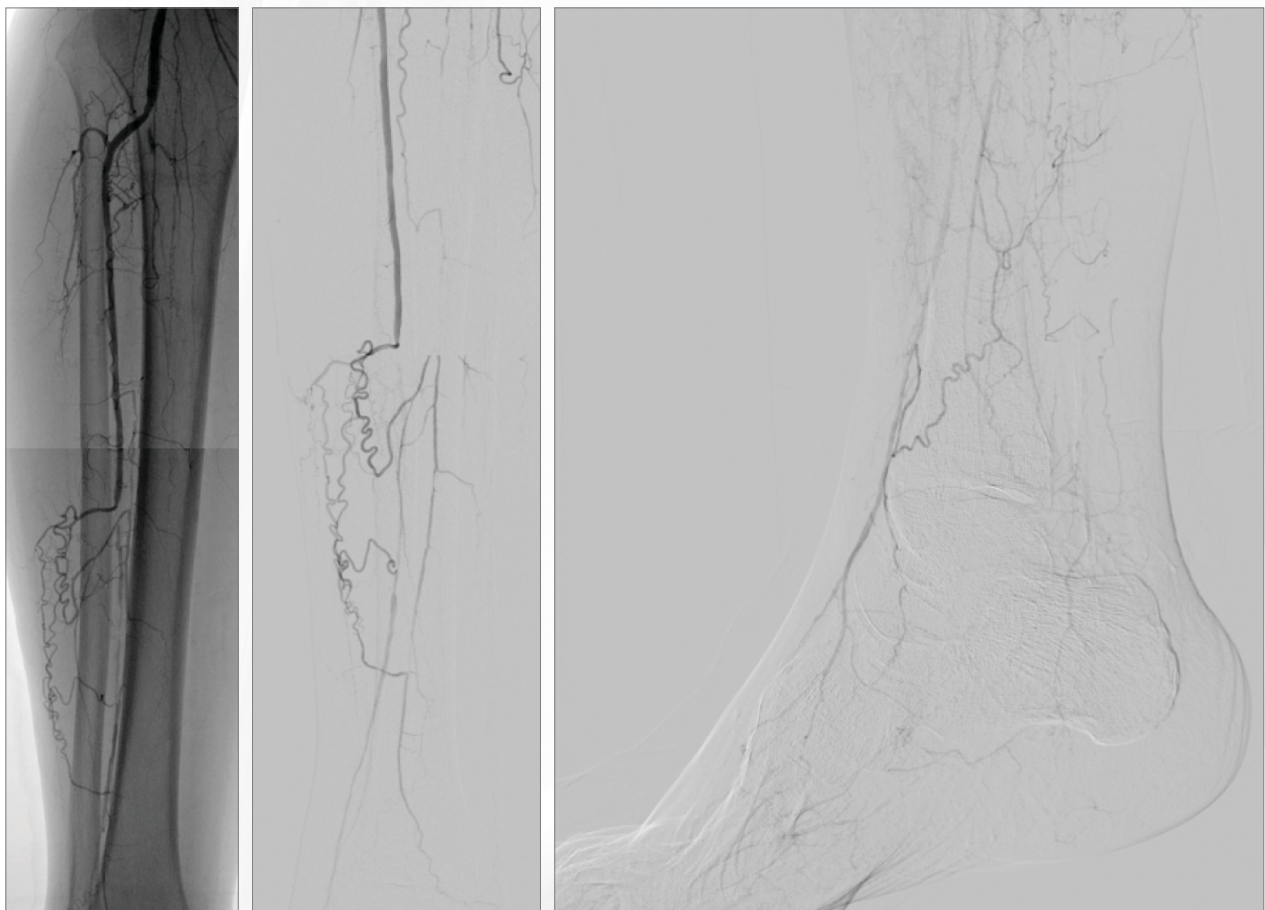


Figure 2. Baseline angiographic study





treatment

We treated the tibioperoneal trunk, the proximal peroneal artery and the distal anterior tibial artery. The final treatment was the use of Luminor 14m DCB (Diameter: 3mm/ Length: 200mm, inflated at 14 atm) concluded with good results (Figure 3). We decided not to treat the foot vessel, hoping that the vascular distribution system of the forefoot, although diseased, was sufficient to promote healing.

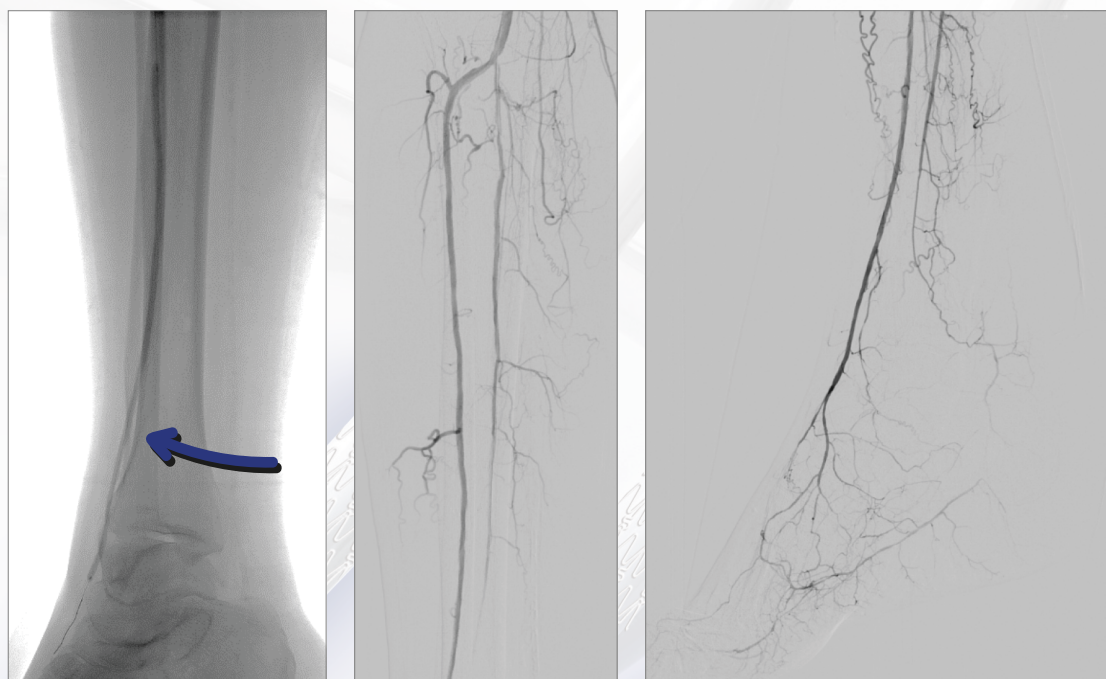


Figure 3. Luminor DCB in anterior tibial artery; final result

Despite such revascularization, the patient did not heal, and after 5 months came back to our center for a new evaluation. The new angiographic study revealed a good patency of the treated segment, with positive remodeling of tibioperoneal trunk and anterior tibial artery (Figure 4). The reason for not healing was not restenosis, because the DCB treatment was able to maintain patency till now, but the absence of a direct blood flow to the wound. The dorsalis pedis artery was totally occluded and calcified, and the metatarsal artery feeding the 1° and 2° toe received only very thin collaterals (Figure 5). In our previous procedure we have not considered the wound related artery concept.

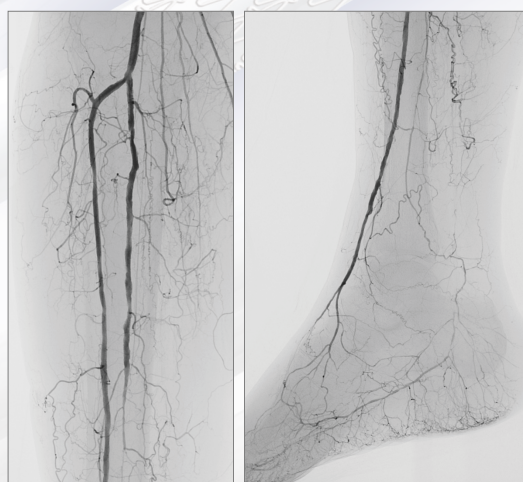


Figure 4. 5 months later: new angiographic study



Figure 5. Plain foot X-ray and angiography



Treatment strategy in CLI patient must be always comprehensive of every clinical and instrumental detail: the wound, the type of artery disease (calcification), and the obstructive pattern (Figure 6). We decided to try to open the dorsalis pedis artery, we crossed it with an 0.014" wire, pre-dilated with a 1.5 mm balloon and made a final DCB treatment with a 2.0 mm x 120 mm Luminor 14m DCB at 14 atm (Figure 7). The final result was good, with a direct blood flow to the wound related artery (Figure 8). Within few weeks, the patient healed (Figure 9).

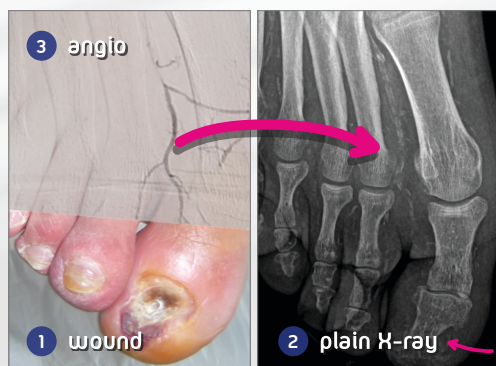


Figure 6. 3 key points strategy in CLI patients

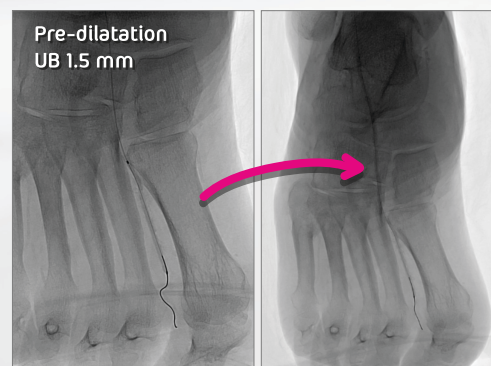


Figure 7. Treatment of dorsalis pedis artery

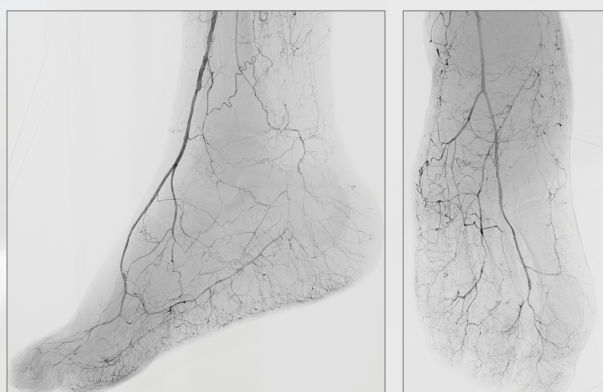


Figure 8. Final results



Figure 9. The healed foot 5 weeks later

conclusions

Such extreme case demonstrates the importance of pursuing an angiosome-oriented revascularization in CLI patients with diffuse disease of the foot vessels.

It also underlines how the Luminor DCB was able to cross small calcified foot vessels and demonstrated to ensure a perfect patency of the treated arteries 5 months later.