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Case Report

## Body floss configuration, Vascular Case presentation ,wire from retrograde access crossing antegrade access to out side the body then angioplasty from antegrade access

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### Abstract

Peripheral arterial disease (PAD) is a prevalent circulatory condition characterized by the narrowing or blockage of arteries, most commonly in the legs, due to atherosclerosis. Atherosclerosis, a chronic inflammatory process, underlies the development of PAD and subsequent infra-popliteal occlusions. Chronic limb-threatening ischemia (CLTI) of the left lower limb due to infra-popliteal occlusion is a critical condition characterized by severe arterial blockage that can lead to significant morbidity, including limb loss. This record describes 50 yrs male with Chronic threatening limb ischemia of the left lower limb level infra popliteal Occlusion with unhealed wound at the left heel (FOUNTAIN GRADE 4 ).

**Keywords:** Endo vascular; limb ischemia; infra popliteal Occlusion; case record

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## Introduction:

Peripheral arterial disease (PAD) is a prevalent circulatory condition characterized by the narrowing or blockage of arteries, most commonly in the legs, due to atherosclerosis. Atherosclerosis, a chronic inflammatory process, underlies the development of PAD and subsequent infra-popliteal occlusions. It involves the accumulation of lipids, inflammatory cells, and fibrous tissue within the arterial wall, leading to plaque formation, arterial narrowing, and reduced blood flow<sup>(1)</sup>

This progressive disease ranges in severity from asymptomatic presentation to intermittent claudication, characterized by leg pain during exercise, and can advance to critical limb-threatening ischemia (CLTI). CLTI represents the most severe stage of PAD, marked by chronic ischemic rest pain, non-healing ulcers, or gangrene, significantly increasing the risk of amputation and cardiovascular events, thus requiring prompt diagnosis and intervention to improve patient outcomes and limb salvage<sup>(3)</sup>

Endovascular interventions have emerged as a preferred first-line treatment option for addressing infra-popliteal occlusions, especially for TASC C and D lesions.<sup>(2,3)</sup>

The TransAtlantic Inter-Society Consensus (TASC) classification system is a standardized tool used to categorize the complexity and severity of peripheral artery lesions, thereby guiding treatment decisions in PAD. TASC II classifies femoropopliteal and infrapopliteal lesions into types A, B, C, and D, based on lesion length, location, and degree of occlusion. TASC C and D lesions represent more complex, diffuse, or complete occlusions, often requiring advanced endovascular techniques or surgical bypass. This classification assists vascular specialists in selecting the most appropriate revascularization strategy, balancing the risks and benefits of endovascular versus open surgical approaches, and ultimately optimizing patient outcomes in CLTI<sup>(5)</sup>

Endovascular interventions have become a well-accepted treatment for critical limb ischemia (CLI) resulting from infrapopliteal disease, with balloon angioplasty being the most appropriate endovascular treatment.<sup>(6)</sup> These interventions aim to reestablish in-line flow to the foot, which is vital for tissue healing and limb salvage. Even in cases of severe disease, limb salvage rates exceeding 75% have been reported, despite primary patency rates of only around 35% at one

year. Technical success rates for infrapopliteal angioplasty are often high, approaching 90%, with clinical success around 70% in larger patient series with CLI. The goal of infrapopliteal revascularization is to establish direct flow to the angiosome of interest to increase the chances of wound healing<sup>(7)</sup>.

The less-invasive nature of percutaneous intervention relative to open surgical bypass makes it a more acceptable option for patients with lower extremity vascular disease. Endovascular interventions for TransAtlantic InterSociety (TASC) II D lesions can be safely performed with excellent hemodynamic improvement and limb salvage rates. Restenosis is not uncommon in this population, which mandates strict follow-up.<sup>(8,9)</sup>

## Case presentation:

A 50-years -old male patients ,diabetic , , smoker history of claudication of about two years then the condition worsened to rest pain of about three months and of about one month the patient developed ganreous patch on his heel BP140/80 ,RBG 213 ankle pressure 40-30,serumcreatin 1.2,arterial duplex showed marked stenosis in infra-popliteal arteries CT angiography was done, and decision was taken for angioplasty and patient was admitted to Vascular Department, sohag in which patient was positioned in supine position and utilizing ultrasound guidance to accurately locate the CFA just below the inguinal ligament. A needle was inserted at a caudal angle to access the artery, followed by the advancement of a guidewire into the CFA(Introduction of wire .035 mm). Once access is confirmed, 10000 units of unfractionated heparin was injected in femoral sheath.

A vertebral catheter is introduced over the guidewire(0,18) into the superficial femoral artery (SFA) Balloon angioplasty of the left peroneal artery was done in which Contrast dye is injected to visualize the arterial anatomy using fluoroscopy, allowing for precise identification of the lesion. A balloon catheter(2.5 f) sized appropriately for the peroneal artery, is then advanced over the guidewire to the site of stenosis. The balloon is inflated to compress the plaque against the arterial wall, typically for a duration of 2 minutes. Post-inflation, angiography is performed to assess residual stenosis and confirm successful revascularization difficult antegrade posterior tibial

canulation ,Duplex guided retrograde canulation of posterior tibial artery .Wire (0.18)introduction then entered vertebral catheter in popliteal artery, Advancement of wire and retrieval from groin sheath and balloon angioplasty of posterior tibial artery was performed from femoral access with (2.5) balloon twice for 2 minets. Trials to enter anterio tibial artery either antegrade or retrograde failed.

Completion angiography showed good flow in posterior tibial artery till the arch of foot and good flow in peroneal artery the technique success occurred in which patent posterior tibial artery with no flow limiting dissection or procedure related complications and Intact posterior tibial pulse was restored ,removal of sheath from femoral and posterior tibial and manwal compression with no haematomas or other complications

Patients instructed to be followed up smoothly with no procedure related complications as Patient was advised to rest and lie flat for several hours post-procedure to minimize the risk of bleeding from the insertion site. Mild soreness or bruising around the catheter insertion area is common, and pain management can be achieved with prescribed medications.patients returned home the same day. Light activities like walking are encouraged within a few hours after the procedure, while strenuous activities should be avoided for several days. Regular follow-up appointments are essential to monitor recovery and assess the success of the procedure, as well as to adjust any antithrombotic medications prescribed to prevent complications such as restenosis or re-occlusion. Patient should remain vigilant for any signs of complications, such as increased pain or swelling at the site, and contact their healthcare provider if any concerning symptoms arises.

## Discussion:

Peripheral arterial occlusive disease (PAOD) is a major disease that limits active aging in elderly people. Complications of PAOD are the leading cause of hospitalization and amputation for people with lower limb ischemia, and account for billion-dollar expenditures annually in the United States (12).

Critical limb ischemia (CLI) resulting from occluded or stenotic crural vesselsremains a challenge for vascular surgeons.Most of these patients have extended diffuse three-vessel disease

only 20-30%present with a simple focal lesion andgood runs off. Patients are usually elderly people, with severe co-morbidity, at highrisk for surgery, and with a limited lifeexpectancy . Twenty-five percent will diduring the first year of follow up fromvascular or nonvascular event. (14)

Elderly persons with PAD are at increased risk for all-cause mortality, cardiovascular mortality, and mortality from coronary artery disease. PAD is a manifestation of generalized atherosclerosis, and life expectancy in patients with PAD is reduced compared with subjects without PAD. Management of PAOD in the elderly includes addressing modifiable risk factors such as smoking, hypertension, dyslipidemia, and diabetes . (16)

Statins, antiplatelet drugs (aspirin or clopidogrel), angiotensin-converting enzyme inhibitors, and beta-blockers (if coronary artery disease is present) may be prescribed. Additionally, exercise rehabilitation programs and cilostazol can improve exercise capacity. In cases of incapacitating claudication or limb-threatening ischemia, lower extremity angioplasty (preferably with stenting) or bypass surgery may be considered. (17)

Endovascular treatment of infrapopliteal vessels is a low risk, minimally invasive procedure whichrarely compromises later distal bypass surgery and can be performed under local anesthesia. It shortens the operation and hospitalization time and has an acceptable complication rate (6).

The endovascular approach typically involves percutaneous transluminal angioplasty (PTA), which is less invasive than traditional surgical revascularization and carries a lower risk of complications. Given the challenging nature of infra-popliteal lesions, which are often chronic total occlusions (CTOs) with extensive calcification, operators must be skilled in various techniques and devices to optimize outcomes.(7)

The management of CLTI requires careful patient selection, with a focus on those who present with rest pain or tissue loss, while avoiding patients with poor distal runoff or significant comorbidities that may limit surgical options. Ongoing follow-up and monitoring are essential to assess the effectiveness of the intervention and to manage potential complications such as restenosis.(8)

In the current study, several factors likely contributed to the successful outcome. First, the patient was a relatively young male (50 years old) without mention of significant comorbidities

beyond the CLTI itself, which may have favored healing and a positive response to intervention.

In the current study , The decision to utilize both an antegrade approach via the common femoral artery and a duplex-guided retrograde cannulation of the posterior tibial artery demonstrates a commitment to overcoming technical challenges and achieving complete revascularization.

In the current study, the meticulous technique described, including ultrasound guidance and careful balloon angioplasty, minimized complications and optimized immediate post-procedural flow. Furthermore, the restoration of a palpable posterior tibial pulse suggests a significant improvement in perfusion to the affected foot. Despite the immediate success, endovascular interventions for infra-popliteal disease are not without limitations.

## Conclusion:

The case presentation underscores the effectiveness of endovascular interventions in managing critical limb-threatening ischemia (CLTI) resulting from infra-popliteal occlusions. The successful revascularization of the peroneal and posterior tibial arteries in the described patient led to significant clinical improvement, including wound healing and symptom resolution. This outcome highlights the potential of endovascular approaches to restore perfusion to ischemic tissues, even in cases of complex, multi-vessel disease. These findings support the broader application of endovascular techniques in similar clinical scenarios, offering a less invasive alternative to traditional surgical bypass.

Endovascular interventions play a crucial role in the treatment algorithm for CLTI due to infra-popliteal occlusions

To further optimize outcomes, careful patient selection, meticulous technique, and ongoing follow-up are paramount. Identifying appropriate candidates based on clinical presentation, angiographic findings, and overall health status is essential for maximizing the likelihood of success.

The use of advanced techniques, such as retrograde access and specialized devices, can improve technical outcomes. Furthermore, regular follow-up with non-invasive vascular studies and clinical assessment allows for early detection of restenosis or re-occlusion, enabling timely intervention to maintain limb viability.

Future research should focus on randomized controlled trials comparing different endovascular strategies, such as drug-eluting balloons versus plain balloon angioplasty, to determine the most effective approach for long-term patency and limb salvage in patients with CLTI due to infra-popliteal occlusions.

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