**Patient Name:** \_\_\_\_\_\_\_\_

**Date of Birth**: \_\_\_\_\_\_\_

**Operating Physician:** Peter H. Lin, M.D.

**Date of Service:** \_\_\_\_\_\_

**Referring physician:** \_\_\_\_\_

**Pre-operative Diagnosis:** Peripheral artery disease with rest pain / lower extremity gangrene

**Post-operative Diagnosis:** Same.

**ICD-10 Diagnosis Codes:**

I10 Essential (primary) hypertension

E11.51 Type 2 diabetes mellitus with diabetic peripheral angiopathy without gangrene

E11.52 Type 2 diabetes mellitus with diabetic peripheral angiopathy with gangrene

N18.6 End stage renal disease

I70.221 Atherosclerosis of native arteries of extremities with rest pain, right leg

**Procedures Performed:**

1. Ultrasound guidance for vascular access (CPT# 76937)
2. Abdominal aortography with bilateral iliofemoral angiography (CPT# 75630-XU)

---------< External Iliac Artery PTA > ----------------

1. Endovascular revascularization of right iliac artery using balloon angioplasty (CPT# 37220-RT)

Endovascular revascularization of right iliac artery using stent and balloon angioplasty (CPT# 37221-RT)

---------< Femoro-popliteal Intervention > ----------------

1. Endovascular revascularization of right femoral and popliteal artery using atherectomy and balloon angioplasty (CPT# 37225-RT)
2. Endovascular revascularization of right femoral and popliteal artery using balloon angioplasty (CPT# 37224-RT)
3. Endovascular revascularization of right femoral and popliteal artery using atherectomy, stenting, and balloon angioplasty (CPT# 37227-RT)

------- < Tibial Artery Atherectomy + PTA > --------------

1. Endovascular revascularization of right tibioperoneal trunk and posterior tibial artery using atherectomy and balloon angioplasty (CPT# 37229-RT, initial vessel)
2. Endovascular revascularization of right \_\_\_\_\_\_ artery using atherectomy and balloon angioplasty (CPT# 37233-XS-RT, add-on vessel)

------- < Tibial Artery PTA > --------------

1. Endovascular revascularization of right \_\_\_\_ tibial artery using balloon angioplasty (CPT# 37228-RT, initial vessel)
2. Endovascular revascularization of right \_\_\_\_ tibial artery using balloon angioplasty (CPT# 37232-RT, add-on vessel)

-----------------------------------------

1. Intravascular ultrasound of the right common femoral artery (CPT# 37252), superficial femoral artery (CPT# 37253), popliteal artery (CPT# 37253-XS), tibioperoneal trunk (CPT# 37253-XS), anterior tibial artery (CPT# 37253-XS), and posterior tibial artery (CPT# 37253-XS)

**Fluoroscopy time:** 8.1 minutes

**Contrast:** 35 cc of Optiray-240.

**Medication:** 3,000 U Heparin IV. 1% buffered lidocaine locally.

**Moderate sedation:** Under physician supervision, 1 mg Versed and 50 mcg fentanyl were administered intravenously for moderate sedation. Pulse oximetry, heart rate and BP are continuously monitored by an independent trained observer present. I was present during the entire procedure and spent 60 minutes of face to face sedation time with the patient.

**EBL:** Minimal.

**Complication**s: None immediate.

**Merit-Based Incentive Payment System (MIPS) Code**: G9500

**MIPS Measure**: #145: Radiation Exposure indices, OR Exposure Time and Number of Fluorographic Images Documented in Final Procedure Report

**Clinical History:**

===== **Right Leg Angio (Rest Pain)** =====

The patient reports worsening of right lower leg ischemic rest pain which has not improved with conservative treatment. A recent arterial duplex ultrasound demonstrated severe arterial occlusive disease of the right lower extremity. The patient is scheduled to undergo lower leg arteriography procedure with endovascular interventions. Possible endovascular interventions with atherectomy, balloon angioplasty, and/or stent placement will be considered for lower extremity arterial stenosis. I have discussed with the patient regarding potential benefits and risks of the treatment plan. Potential benefits of the planned procedure include improvement of the lower extremity arterial circulation and alleviation of leg pain symptoms. Potential risks of the procedure include contrast-induced nephropathy, renal failure requiring hemodialysis, groin bleeding, groin infection, vessel occlusion due to thrombosis, and vessel perforation. The overall risk of these complications is 2%. The patient verbalizes understanding of the benefits and risks the treatment plan.

===== **Right Leg Angio (Tissue Loss)** =====

The patient reports worsening of right lower leg ischemic rest pain with non-healing ulcers. A recent arterial duplex ultrasound demonstrated severe arterial occlusive disease of the right lower extremity. The patient is therefore scheduled to undergo right lower leg arteriography procedure with endovascular interventions. Possible endovascular interventions with atherectomy, balloon angioplasty, and/or stent placement will be considered for lower extremity arterial stenosis. I have discussed with the patient regarding potential benefits and risks of the treatment plan. Potential benefits of the planned procedure include improvement of the lower extremity arterial circulation and alleviation of leg pain symptoms. Potential risks of the procedure include contrast-induced nephropathy, renal failure requiring hemodialysis, groin bleeding, groin infection, vessel occlusion due to thrombosis, and vessel perforation. The overall risk of these complications is 2%. The patient verbalizes understanding of the benefits and risks the treatment plan.

**Technique:** The risks, benefits, and alternatives of the procedure were discussed with the patient. Written informed consent was obtained. The patient's medication records were evaluated and reviewed within the patient’s chart. The patient's laboratory values were carefully reviewed within the patient’s chart. The patient was placed in the supine position on the angiographic suite and the left groin was prepped and draped in the standard usual sterile fashion. 1% lidocaine was used to anesthetize the groin. Next under real-time ultrasound guidance, a 21-gauge micropuncture needle was used to access the right common femoral artery. An ultrasound image was permanently saved. A microcatheter-introducer sheath was inserted. A 0.035 guidewire was inserted through the sheath into the abdominal aorta and exchanged for a 5 French vascular sheath. Ipsilateral common femoral artery angiogram was performed to evaluate the access site for suitability of a closure device.

Next selective catheterization of the abdominal aorta was performed with a RIM catheter, which was advanced into the abdominal aorta over the Glidewire. An angiogram was performed. Next the catheter was used to select the right common iliac artery origin and an angiogram was performed in the anteroposterior projection. The catheter was then used to select the right common femoral artery and multiple digital subtraction angiograms of the lower extremity were performed in the anteroposterior projection.

Exchange was made with a 6 French 55 cm Flexor sheath over a guidewire. A 120 cm angled tip catheter was used to selectively catheterize the superficial femoral artery and an angiogram was performed.

Selective catheterization of the popliteal artery and tibioperoneal trunk were then performed followed by angiograms. Lateral angiogram of the foot was also performed.

An angled tip catheter and 0.014” microwire combination was used to selectively catheterize the posterior tibial artery and an angiogram was performed. Intravascular ultrasound of the right lower extremity was performed throughout the posterior tibial artery, popliteal artery, superficial femoral artery, common femoral artery, and external iliac artery using a pullback technique. The intravascular ultrasound images were saved on a local workstation and used for interpretation and to guide treatment.

These angiographic evaluations including intravascular ultrasound revealed the followings: 1. patent abdominal with patent bilateral common iliac arteries and internal iliac arteries. 1. External iliac artery with < patent flow without stenosis > vs. < \_\_\_ % luminal stenosis >. 2. common femoral artery with \_\_\_% luminal stenosis. 3. patent profunda femoral artery with \_\_\_ % luminal stenosis. 4. superficial femoral artery with < diffuse \_\_\_% luminal stenosis > vs. < complete occlusion> . 5. popliteal artery with < diffuse \_\_\_% luminal stenosis > vs. < complete occlusion> . 6. tibioperoneal trunk with <\_\_\_% luminal stenosis > vs. < complete occlusion> . 7. anterior tibial artery with <\_\_\_% luminal stenosis > vs. < complete occlusion> . 8. posterior tibial artery with <\_\_\_% luminal stenosis > vs. < complete occlusion>. and 9. peroneal artery with <\_\_\_% luminal stenosis > vs. < complete occlusion>.

====== < EXTERNAL ILIAC ARTERY = PTA > ======

Based on these findings, we proceeded with balloon angioplasty of the external iliac artery using a \_\_\_ mm x \_\_\_ mm angioplasty catheter. The balloon catheter was positioned across the stenotic external iliac artery and insufflated to 10 atmospheric pressure for a total of 30 seconds. Completion angiogram revealed successful radiographic result with residual stenosis of less than \_\_\_%.

====== < FEMORO-POPLITEAL ARTERY = ATHERECTOMY + PTA > ======

Based on these findings, we proceeded with atherectomy and balloon angioplasty of the superficial femoral artery and popliteal artery. We placed a Glidewire and traversed the wire across the occluded/stenotic superficial femoral artery. We placed a Philip laser atherectomy device over the wire and initiated atherectomy in the diseased segment of the superficial femoral artery as well as the popliteal artery. Next the atherectomy device was removed and we placed a \_\_\_ mm x \_\_\_ mm balloon for balloon angioplasty of the superficial femoral artery and popliteal artery. The balloon was insufflated to 10 atmospheric pressure for a total of one minute. Completion angiogram revealed successful radiographic result with residual stenosis of less than \_\_\_%.

====== < FEMORO-POPLITEAL ARTERY = ATHERECTOMY + STENTING + PTA > ======

Based on these findings, we proceeded with atherectomy, stenting, and balloon angioplasty of the superficial femoral artery and popliteal artery. We placed a Glidewire and traversed the wire across the occluded/stenotic superficial femoral artery. We placed a Philip laser atherectomy device over the wire and initiated atherectomy in the diseased segment of the superficial femoral artery as well as the popliteal artery. Next the atherectomy device was removed and we placed a \_\_\_ mm x \_\_\_ mm self-expanding Abbot nitinol stent balloon across the disease vessel. Once the stent was deployed, we proceed with balloon angioplasty of the stented segment using an angioplasty balloon catheter. The balloon was insufflated to 10 atmospheric pressure for a total of 20 seconds. Completion angiogram revealed successful radiographic result with residual stenosis of less than \_\_\_%.

====== < TIBIAL ARTERY = ATHERECTOMY + PTA > ======

Next we turned our attention to the stenotic tibioperoneal trunk and anterior tibial artery. We performed percutaneous atherectomy using a Philip laser atherectomy device. We placed a laser atherectomy device over the wire and initiated atherectomy in the diseased segment of the tibioperoneal trunk and anterior tibial artery. Next the atherectomy device was removed and we placed a \_\_\_ mm balloon for balloon angioplasty of the tibioperoneal trunk and anterior tibial artery. The balloon was insufflated to 10 atmospheric pressure for a total of one minute. Completion angiogram revealed successful radiographic result with residual stenosis of less than \_\_\_%.

Next we turned our attention to the posterior tibial artery disease. We performed percutaneous atherectomy using a Philip laser atherectomy device. We placed a laser atherectomy device in the diseased posterior tibial artery and initiated laser atherectomy over the diseased segment. Next the atherectomy device was removed and we placed a \_\_\_ mm balloon for balloon angioplasty of the posterior tibial artery. The balloon was insufflated to 10 atmospheric pressure for a total of one minute. Completion angiogram revealed successful radiographic result with residual stenosis of less than \_\_\_%.

====== < TIBIAL ARTERY = PTA > ======

Next we turned our attention to the \_\_\_\_ tibial artery disease. We performed percutaneous balloon angioplasty by placing a \_\_\_ mm balloon across the stenotic segment of this artery. The balloon was insufflated to 10 atmospheric pressure for a total of one minute. Completion angiogram revealed successful radiographic result with residual stenosis of less than \_\_\_%.

==================================

Following these interventions, the catheter and sheath were removed from the femoral artery. A closure device using Angioseal was used in the femoral artery to achieve adequate hemostasis. Standard dressings were applied. The patient tolerated the procedure well with no immediate complications and returned to the recovery area in stable condition.

**Findings of Right Lower Extremity Arterial Circulation:**

Common iliac artery: Patent.

External iliac artery: Patent.

Internal iliac artery: Patent vs. \_\_\_ % luminal stenosis.

Common femoral artery: Patent.

Superficial femoral artery: Moderate multifocal \_\_\_ % luminal stenosis in the mid-distal portion of this artery vs. \_\_\_ cm of total occlusion.

Profunda femoral artery: Patent.

Popliteal artery: Moderate multifocal \_\_\_ % luminal stenosis at the level of the knee vs. \_\_\_ cm of luminal occlusion.

Tibioperoneal trunk: \_\_\_% luminal stenosis vs. distal/total occlusion.

Anterior tibial artery: \_\_\_% luminal stenosis vs. distal/total occlusion.

Posterior tibial artery: \_\_\_% luminal stenosis vs. distal/total occlusion.

Peroneal artery: \_\_\_% luminal stenosis vs. distal/total occlusion.

**Treatment Outcomes:**

1. Successful interventions of superficial femoral artery and popliteal artery using atherectomy and balloon angioplasty with satisfactory angiographic result.

2. Successful interventions of tibioperoneal trunk and peroneal artery using atherectomy and balloon angioplasty with satisfactory angiographic result.

**Plan:**

The patient is instructed to return to clinic for follow up evaluation in four weeks. I have also discussed with the patient regarding medical therapy for the peripheral arterial occlusive disease. These treatment strategies include lipid control with goal LDL less than 70 mg/dL, goal blood pressure < 130/90, goal hemoglobin A1c < 7%, and exercise therapy (20 minutes a day for 3 days a week). Discharge instructions were reviewed with the patient and a follow up visit was scheduled.

**Thank you for the opportunity to participate in the care of your patient.**

**Regards,**



**Peter H. Lin, M.D.**

**Vascular Surgery**