



# Introduce Percutaneous Procedures into Your Practice

They're an important part  
of your comprehensive care model.

BY JERRY ROBERTS, DPM

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In the current residency training environment, podiatrists are exploring more invasive and elaborate reconstructive foot and ankle surgeries than ever before. Many residency programs now expose tomorrow's surgeons to complex forefoot and rearfoot reconstructions, subtalar and ankle fusions with external fixators and intramedullary rods, total ankle replacement, and cutting edge procedures that the last generation of podiatrists couldn't have dreamed of performing in a hospital setting. Unfortunately, there are numerous trends that make these types of procedures less attractive, less accessible, less lucrative, and more exposed to litigation.

As our patient demographic becomes older and more dependent on therapies and medications that turn cardiac issues and diabetes into extended chronic disease, these patients will look to us to keep them ambulatory and pain-free despite their increasing surgical risk. As reimbursement for procedures contin-

ues to decrease and penalties are imposed for re-admission to hospital for post-operative and medical complications, the cohort of ideal surgical patients grows even smaller.

Decades ago, the last generation of podiatrists performed many procedures in their office out of necessity. Tracking patient satisfaction or infection rates among an increasingly di-

## Myrtle

Myrtle has been a patient at your practice since it opened. She brings cookies and cards and sends every geriatric patient in her church to get their toenails cut by you. She has been asking for years to have her painful hammertoes fixed despite not actually wanting to have surgery. Initially, she received accommodative shoes with

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verse patient population in different eras of medicine is unlikely to provide any useful data, but it is probable that their pain scores, patient satisfaction, and infection rates were not profoundly worse than today. Procedures and protocols discussed below will decrease your time tied up in the operating room and increase the opportunities for generating revenue by strategic use of your staff. As fee-for-service reimbursement decreases, successful practices will look for opportunities to offer more of these comprehensive services. These will improve your patient outcomes, increase the perceived value for their treatment dollar, and ultimately grow your collections.

a Lycra toe box and Silipos gel tubes. These limited her discomfort, but she still requests a corrective procedure. On exam, you note that her pulses are weakly palpable, and she notes she occasionally has cramping in her feet during ambulation. An arterial brachial index and pulse volume recording is performed, and she is noted to have biphasic signals to the level of the digits. After discussion of surgical options, you perform flexor tenotomies of toes 2,3,4,5 in the office.

She returns to the office a few days later for a dressing change. She has moderate serous, bloody drainage from the surgical sites, and you dispense Polymem foam dressings

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for her to perform at home. She returns for routine post-operative visits. Two weeks after her procedure, her toes no longer rub the top of her shoes and she sings your praises as she dances out of your office. A few weeks later, she returns for the same procedure on the other foot and states she told everyone she knows about this procedure and has a few people coming in to request that you fix their toes (Figures 1-4).

### **Jim**

Jim is a type 2 diabetic with claw toe deformity to several toes on both feet. He has been suffering from recur-



oral antibiotics. Due to the hammertoe deformity that is causing this ulceration, you dispense a short cast boot with off-loading insole. He returns to the office after the MRI and the cellulitis has improved. The scan was negative for bone infection. A flexor tenotomy of affected digits is performed. Following a two-week post-operative period, he heals without incident and after post-operative edema resolves, he has rectus toes.

### **Lucy**

Lucy is diabetic and presents to your office with complaint of a bleeding callus to her forefoot. On exam, you note that she has a significant equinus to bilateral lower extremities that causes her to ambulate principally on the forefoot. You obtain an x-ray to examine



Figures 1 and 2: Pre-operative exam reveals semi-rigid hammertoe deformity of toes 2,3,4,5. This patient was adamant at time of consultation that he did not want bunion surgery.

rent calluses at the tips of several toes for years. He comes into the office every other month with a callus and underlying ulceration, usually with localized cellulitis. He desires correction of this problem but continues to have problems controlling his hemoglobin A1c. He returns for routine monthly follow-up, and you note the callus is deeper and there is possible exposed bone after the nail is debrided free of the nail bed. You start him on antibiotics and obtain non-invasive vascular studies due to his open wound and his smoking history. You also order an MRI of the affected foot to rule out osteomyelitis and place him on



Figures 3 and 4: 2 weeks s/p flexor tenotomy of toes 2,3,4,5. Some swelling remains, but improved position of digits is noted. On weight-bearing exam, toes are generally rectus.

for any obvious bone infection and to evaluate for plantarflexed metatarsals. Debridement of pre-ulcerative tissue is performed. You place her in a pneumatic boot with accommodation for the plantarflexed metatarsal and order an arterial brachial index and pulse volume recording. Vascular evaluation demonstrates only mild impairment of flow to the digits.

Following a few weeks in the pneumatic boot, the pre-ulcerative tissue has resolved. Further examination reveals dorsiflexion of 0 degrees bilateral. Physical therapy is ordered and the patient returns six weeks later with dorsiflexion to <5 degrees bilateral feet. You elect to perform percutaneous lengthening of the Achilles tendon. Following this procedure, the patient gains 12 degrees of dorsiflexion on the operative foot. Two weeks later, the procedure is repeated on the opposite limb with similar results. The patient is then cast for diabetic insoles and added-depth shoes. Three months later, she has a normal gait and no further recurrences of plantar foot ulceration (Figure 5).

### **Tom**

Tom is an uncontrolled diabetic with a history of multiple hospitalizations for hyperglycemia and pedal infections. He presents

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Figure 5: Medial forefoot is visible in this picture. Circle indicates the Achilles tendon insertion. Horizontal lines demarcate the approximate level for the Achilles tendon hemi-section. The distance between incisions will vary slightly depending on the length of the palpable tendon and the height of the patient.

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to your office after having missed several appointments. He noted that he has developed a plantar hallux callus again but thinks it is worse than usual. There is a small pre-ulcerative callus due to significant hallux limitus but with no significant depth. There is swelling and some redness to the forefoot. He is placed in a pneumatic boot to stabilize the hallux limitus deformity. He is given a prescription for oral antibiotics and an MRI is ordered. The MRI reveals osteomyelitis of the distal 1st, 2nd, and 3rd metatarsals. Tom undergoes a transmetatarsal amputation that heals without complication. Following some reduction in post-operative edema, he is cast for a toe filler and custom insoles on the contralateral foot, and added-depth shoes.

### **Jenny**

Jenny, who presents with her daughter, is non-diabetic and with a singular complaint of difficulty with fitting shoes. She sustained a right-sided injury related to a car accident many years ago and has had reducible dor-

sal hallux contracture since that time. She also has hammertoes 2,3,4,5 of the same foot. Though she came in today in a wheelchair, her daughter states that she does ambulate some at home with difficulty. On further exam, you note a reducible contracture of the right ankle and non-spastic contracture

of the right foot. She has no significant dorsiflexion strength on this foot.

You perform percutaneous flexor tenotomies of toes 2,3,4,5 as well as an extensor tenotomy of the EHL tendon and percutaneous Achilles tenotomy. Following tenotomy, there

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is immediate improvement in the position of the ankle but only to-2 degrees dorsiflexion. She is placed in a pneumatic boot with no heel lift. Following reduction of post-operative edema, she is dispensed a night splint to improve ankle joint contracture. She is also cast for an Arizona-style AFO and ordered a neoprene toe box-style shoe. Two months later, she walks out of your office with minimal assistance.

None of these patients are ideal candidates for open surgical correction. With the exception of the transmetatarsal amputation, all of the above procedures can be performed in the office setting. While both traditional open surgical procedures and arthroscopic or minimally invasive procedures will hopefully be present in our profession for many years to come, we must continue to evolve with the current trends in medicine. As fee-for-service continues to wane, we must maximize our utilization of time and resources in the treatment of any podiatric pathology. Procedures that can be done in the treatment room without exposing the patient to unnecessary infection or bleeding risks can be done without the loss of valuable physician time traveling to a surgical facility, and waiting for OR turnover, etc. A cancelled procedure is also less of a financial loss if you are able to continue seeing other patients in the clinic as opposed to losing several working hours at your surgical facility.

Adopting a comprehensive, protocol-driven method of treating your patients will position you to offer more ancillary services to your patient. Non-invasive vascular testing units are reasonably priced, and when care is given to identifying patients in need of this service, they can be extensively used in most podiatry practices. MRI units may be reserved for larger podiatry practices or you may be able to find MRI leasing or MRI sharing opportunities near you. Fully utilizing DME is a rewarding opportunity for you and your patients.

From wound care supplies to shoes, insoles, and braces, there are

numerous opportunities for offering these services to your patients. Physical therapy is a great ancillary service to bring to your practice. It can be scaled to fit your needs, from a simple dedicated room and few pieces of equipment to a full physical therapy suite employing full-time therapists and physical therapy assistants.

### **Author's Preferred Technique: Flexor Tenotomy**

Following informed consent, 3-5cc of 0.5% Marcaine plain is injected as a digital block. Following a chlorhexidine prep to all toes and foot, an 18 gauge needle is inserted to the plantar toe at the midline of the digit at the skin fold of the PIPJ. The digit is straightened, giving tension to the long and short flexor digitorum tendons. This may also be performed on flexor hallucis tendons, though special thought should be given regarding ambulatory status and gait in this instance. The 18 gauge needle is then used to saw through the tendons, moving medially and laterally.

After the toe is reduced to rectus, have the patient actively plantarflex the toe. Tell the patient to simulate picking up a marble. If the tendons have been completely released, no significant flexion should be noted. You should perform flexor tenotomies on digits 2,3,4,5 as a functional group. If only part of these are released, the mechanical advantage given to the remaining toes will likely cause worsening of the contracture deformity. A mallet toe deformity can be addressed in a similar manner with an incision at the DIPJ.

Occasionally, if the toes are severely contracted prior to the procedure, the plantar skin will tear and will require a simple suture to close the wound. The CPT code recommended is CPT 28010 (flexor tenotomy of single tendon, single toe) or 28011 (flexor tenotomy of multiple tendons, single toe). The average Medicare reimbursement is \$264 and \$365, respectively. In the event the tenotomy is ineffective at relieving the contracted digit, a 15 or 64 blade can be used to deepen the existing incision to the level of the PIPJ and

you can perform a capsulotomy at the plantar aspect of the PIPJ.

The recommended code for this is CPT 28272 (IPJ capsulotomy). Medicare average reimbursement for this procedure is \$458. (Codes 28010/28011 should not be billed with CPT 28272). Dress the wound with Betadine ointment and a dry sterile dressing, and have the patient keep the dressing intact and return to the clinic a few days later. If the wounds are not healed at 3-5 days post-operatively, the patient may be prescribed and/or dispensed appropriate wound care dressings.

If drainage is significant (moderate to severe), consider dispensing a foam dressing such as Polymem for the patient to change at home. Rarely do these wounds remain open more than two weeks, even with moderate peripheral arterial disease or type 2 diabetes mellitus. The results of a flexor tenotomy can be impressive and are frequently cosmetically equivalent to open hammertoe repair.

### **Author's Preferred Technique: Achilles Lengthening**

Using an 11 blade, employ a medial-lateral-medial triple hemi-section technique. Performing this procedure in the outpatient clinic setting is possible with a local anesthetic block in a sensate patient. Reserve this for patients who are significantly or completely insensate. Using the 11 blade usually necessitates a single suture at each incision, giving care to close only the skin and not the tendon sheath or re-approximate the actual tendon. Typically, you will order/dispense a night splint for this patient in order to increase the efficacy of the procedure and prevent limitation of dorsiflexion from co-existing joint contracture or fresh tendon edges healing back together. **PM**



**Dr. Roberts** is in private practice at Cumberland Foot and Ankle in Somerset, Kentucky. He is currently the Young Physician Liaison to the Council of Teaching Hospitals.