Why Bother with Prosthetics for Partial Foot Amputees?

It's time for podiatrists to step up and fill an increasing need.

BY JEANETTE SMITH

The O&P industry is growing rapidly as the aging population continues to need more and new orthotics and prosthetic care. While the relationship between podiatrists and prosthetists has not always been an amicable one, deepening the connection between these fields offers a chance to provide advanced care to toe and partial foot amputees through the use of new prosthetic technology.

The Need for Post-PFA Care

Over 1.2 million Americans are living with lower-limb loss and this number is expected to double by 2050. Of these, the prevalence of partial foot amputations (PFA) is twice that of below or above-knee amputations. Unfortunately, toe and partial foot amputations often result in wound recurrence, further complications, or additional amputation. Wound failure or re-ulceration occurs in 30% to 50% of patients, while 15-45% of PFAs result in further amputation.

"There are a number of reasons why partial foot amputations fail, and that may not be because they weren't shoed properly or didn't have a proper insert. It may have been poor technique or the selection of the level of amputation, the degree of ischemia they have… there are lots of reasons," says Paul Kim, DPM, MS, and Medical Director of the Wound Program at UT Southwestern.

In addition, much of the success lies in the hands of patients who need to provide proper self-care for their residual foot, including foot examinations and hygiene as well as management of any secondary conditions such as diabetes or vascular disease. Devices for remote physiologic monitoring (RPM) are a great example of how advancing technology is being studied and connected to more positive outcomes when preventing or handling amputations.

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But when it comes to research into the use of prosthetic devices for reducing PFA complications, "there really is none. It's almost like a state-guarded secret because people don't like to share their outcomes," Dr. Kim says. "When you look critically at the literature, there's actually very little evidence that any of the preventative footgear makes any difference in the long-term outcomes of our patients."

So why care about something that we don't know will truly make a difference? Although the research is limited and outdated, prosthetic technology has advanced greatly, as have the testing and research capabilities needed to re-evaluate the use of shoe fillers, AFOs, and other prosthetic devices in reducing PFA complications.

Prosthetics & Biomechanics

After a PFA, part of the plan for care should include helping correct those underlying biomechanical faults that led to ulceration and amputation. This can be challenging, as changes in biomechanics and gait happen again after the PFA is performed. "Typically, the body starts to say 'okay, I don't have toes anymore, so I don't need that part of my foot,' and contractures such as foot drop or equino-varus can occur creating further challenges with skin integrity and balance, increasing fall risk, or skin breakdown leading to further amputation risk," says Chris Toelle, LCO and National Orthotics Specialist with Hanger Clinic. "And if someone isn't educated fully or fit with the right device, further complications often occur."

For many patients missing toes or only a small portion of the forefoot, a shoe insert can be the best recommendation. Yet, addressing toe and

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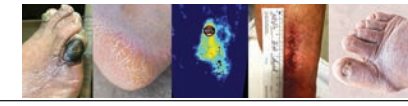

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partial foot amputations with the use of advancing orthotic, AFO, and prosthetic technology may be necessary to achieve patients' ambulatory goals.

Podiatrists and prosthetists can work together to "make sure there's a biomechanical or alignment principle that guides the goals of what we're trying to achieve with an amputee in restoring that natural gait or reducing the risk of becoming an amputee further up the leg," says Toelle.

Of course, every situation is different. "The needs of the patient are dictated largely by their functional demand and what their expectations are for ambulation. That will drive what type of prosthetic, orthotic, or brace they need," says Dr. Kim. For example, patients aiming for higher limb function in order to be more physically active may benefit from an AFO over a shoe filler.

Dr. Kesselman

Advancing PFA Prosthetics

A wooden device attached to a mummy buried 3,000 years ago is thought to be the oldest prosthetic toe ever created. Here in 2020, things have progressed quite a bit. Antiquated, generic toe fillers are now replaced by supportive shoe inserts. Clunky braces are transformed into discrete, customized AFOs.

Customization is vitally important. "The design of these things, the shape of the design, the type of material you use, even the way that you make it are all extremely important to the outcome of the user," says Toelle. For example, the rigidity of an AFO can be manipulated through the use of different materials like carbon fiber, plastic, and metal.

The O&P field has also advanced into additive manufacturing with the use of scanning applications and 3D printing technology. "With 3D and 4D materials, the striations of the material can be made in different directions or multiple directions at the same time," explains Dr. Paul Kesselman, DME specialist and CEO of Park DPM Consulting. Customizing the lattice of the device changes the way support is provided at different points along the foot. "There's actually research being done on materials that can morph on the fly, depending on the patient's activities," Dr. Kesselman adds.

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Even simple shoe inserts have been given a lift. "With partial foot amputations, fillers are largely used to keep the foot from sliding forward. But if it's not properly fit and not made of appropriate materials, then it can't breathe along that incision line," says Dr. Kim. New soft, breathable materials reduce complications and pain due to uncomfortable inserts.

Patients are evaluated for their specific device needs through a total assessment of their gait, including ankle stability, leg strength, and general mobility. Other considerations for AFO versus a shoe filler include accounting for underlying conditions such as neuropathy, vascular disease, or diabetes. But getting podiatrists to even consider prescribing these customized solutions can be difficult.

Insurance & Medicare Coverage

Dr. Kim

"At least a third of therapeutic shoe providers have left the Medicare program in the past six or seven years. This means patients are having an even more difficult time finding the right care," says Dr. Kesselman. With fewer device providers and an increasing number of podiatrists spooked by complicated documenting procedures and merciless Medicare audits, access to therapeutic and preventative devices has remained limited despite all their advances.

"On the one hand, Medicare is doing these audits because they want to prevent fraud and abuse. And I applaud that," says Dr. Kesselman. "But at the same time, there needs to be an amicable solution for everyone involved. In the end, it's about the patients who need care." Again, here Medicare and health insurance companies fail to deliver.

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Under Medicare rules, therapeutic shoes and inserts are only covered when dispensed to diabetic patients. "That leaves out a whole subset of patients who are equally at risk," Dr. Kesselman explains. As orthopedic technology advances and doctors look for increasingly better ways to provide care, medical devices need to become affordable and easily covered by health insurance providers and

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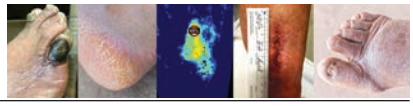

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Medicare. Yet, it's unlikely without supporting research that these companies will subsidize the use of such devices for a wider array of patients.

Referrals are a two-way street with many device makers and patient clinics referring amputees to podiatrists for continuing care.

"We need to have the carriers better understand that there's a direct correlation between them spending money and podiatrists being able to provide the type of care these patients need," says Dr. Kesselman. But change comes from the top down. Dr. Kesselman urges providers to engage in grassroots work, to contact their congresspersons and communicate the limitations and burdens of the current reimbursement system.

Patient Education

Without concrete evidence that an orthotic or prosthetic device can increase the chances of a successful PFA and reduce further risk, patients are hesitant to spring for a seemingly less convenient and potentially more expensive solution. "At the end of the day, it's the decision of the user on what they're going to use," says Toelle. "But along with that decision comes the consequences of the biomechanics, which they may need to be educated on in order to fully understand."

Podiatrists can play a key role in post-PFA patient education. PFA patients may have come across devices in their own research, but have little understanding on which device they would benefit from or how to go about qualifying for or acquiring that device. Therefore, it can be up to a podiatrist to guide patients through the available options and the process for qualifying for and receiving the device.

Toelle encourages reaching out to your O&P partners before writing orders or filing claims. These clinicians are well-versed in Medicare and health insurance requirements and can work with podiatrists and patients to ensure devices get covered.

"There's a lot of opportunity for us to be able to provide a better insight into [the patient's] care," says Toelle. "It's better education but that had to follow with some better design for the available products that were out there." With these advancements in technology occurring, now is the time to educate patients on all available options for potentially increasing the success of their PFA outcomes.

A Team Approach

At its core, the true answer to reducing PFA complications is to enhance our team approach to patient care. "When it comes to amputation, the missing component was that we had gotten away from the team concept," says Toelle. "Now we're starting to see it come back in the medical field with telehealth making it easier to connect."

A solid referral relationship between the surgeon, therapist, prosthetist, podiatrist, and any other physicians can only provide a broader, more comprehensive view of a patient's true healthcare needs. Dr. Kim's advice is to find resources in your community that you trust and can form a long-term relationship with. These should be partners who provide good service and good communication between the patient and all other providers.

Of course, referrals are a two-way street with many device makers and patient clinics referring amputees to podiatrists for continuing care. "Hanger Clinic is not only a provider. We're a big part of the referral community," says Toelle."I have lists of podiatrists, vascular doctors, orthopedists, physical therapists, occupational therapists, and other specialists who I can refer to for that particular patient's needs."

Beyond telemedicine and referrals, providers can bring comprehensive care to patients in a single visit, as Dr. Kim arranged between the O&P and wound care departments at UT Southwestern. "I met with [them] and said, 'I want to partner with you; how do we do that?' And now they're represented in our clinic two days a week so patients can get an immediate assessment, a fitting, or even an evaluation of their existing inserts to make sure they're appropriate," says Dr. Kim.

Conclusion

Proper device fitting, customized shoe inserts or AFOs, and the more widespread use of prosthetics could be a factor in reducing PFA difficulties and failures. Yet, physicians and clinicians will not be able to have a full picture of what can reduce complications until integrative care is combined with statistical comparisons, research, and analysis. "It certainly would improve things if there were more studies on partial foot amputations and the use of devices. And I think that's quietly happening," Dr. Kesselman explains. "It's just going to take time." Until then, the podiatry and O&P communities must work together closely for continued device education and use. **PM**

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