Roundtable Discussion

Hallux Valgus

Are We Really Getting It Correct?

To say that the topic of bunions comes into play in all of our practices would be stating the obvious. Whether you deal with them often and find enjoyment in the cases, or you see them rarely and hide in your office when a patient shows up with a bunion complaint, they affect our practice. My major frustration with bunions has often been the unpredictability of the outcomes. I felt this was an area I was not happy about in my own practice. My thought was, "Come on, I'm the foot and ankle guy in my practice, I should be knocking this out of the park."

So I thought I would assemble a team of innovative, forward-thinking surgeons to educate me on how they get great results with their bunion patients. I think you will find their discussion very enlightening. They have opened my eyes to ways that can hopefully improve my own understanding of the bunion deformity and therefore outcomes for my patients. I am hoping this discussion will stimulate interest in pursuing improved answers in our understanding of the hallux valgus deformity.

Help me out with this, we have over 100+ bunion correction procedures, do we really understand the deformity?

Sorensen: Interestingly I think we are finally reaching the point where we understand that each bunion deformity is different with its own set of idiosyncrasies. I think the subsets are few and therefore enable us to make educated decisions when it comes to picking the appropriate procedure for any given bunion deformity. I would strongly submit that a "one trick pony" approach to correcting a bunion is probably not appropriate.

Cooper: Not really. When we work with the residents and try to help them get ready for the board exams, we make sure they know how to measure intermetatarsal (IM) angles and hallux valgus angles, as well as to look for congruency at the metatarsophalangeal (MTP) joint. However, it may be more important to look at the pronation deformity and what is occurring at the first tarsometatarsal (TMT) joint (these are probably related).

Dayton: Simply put, I do not think we can ever achieve mastery of hallux abducto valgus (HAV) surgery with such a wide variation in process. It has been shown by multiple industries, such as the airlines and auto manufacturing, that control of the process and strict adherence to protocols are what drive quality. The concept of every surgeon performing his or her own individualized procedure goes against all that is accepted in quality management. Some say that in medicine procedures must be individualized, and we are to some degree comforted by this idea. However, it is becoming very evident that medicine and surgery are more like the airlines than we may have thought. That is, ultimately quality follows

CONTRIBUTORS

Matthew D. Sorensen, DPM
Weil Foot and Ankle Institute
Chicago, IL

Truitt M. Cooper, MD
Assistant Professor
Department of Orthopedics
University of Virginia
Charlottesville, VA

Paul Dayton, DPM
Unity Point Clinic
Fort Dodge, IA
Assistant Professor
Des Moines University CPMS
Des Moines, IA

ROUNDTABLE MODERATOR

W. Bret Smith, DO, MS
Director of Foot and Ankle Division
Moore Center for Orthopedics
Columbia, SC

SECTION EDITORS

W. Bret Smith, DO, MS
Director of Foot and Ankle Division
Moore Center for Orthopedics
Columbia, SC

Stephen A. Brigido, DPM
Section Chief—Foot and Ankle Reconstruction
Coordinated Health
Bethlehem, PA
Professor of Surgery
The Commonwealth Medical College
Scranton, PA

DOI: 10.1177/1938640016640403.

consistency. A good example is the World Health Organization presurgical checklist. This simple but strict process has been shown to reduce countless operative complications by removing variability. Hundreds of procedures with thousands of individual variations cannot lead us to mastery and consistent outcomes.

My biggest issue with bunions is patient dissatisfaction. Why am I getting so many issues with recurrence?

Sorenson: Again, I think it comes back to treating each individual deformity as a unique entity. I think assessing things like hypermobility, intrinsic metatarsal deformity, coronal plane rotation, sesamoid malposition, hallux/phalanx deviation, other global foot deformity and how all of these affect one another plays a more significant role that we have historically thought in our capacity to predictably treat bunions with long-term success. I think missing any one of these components in procedure selection or execution of the selected procedure or both will play into a less than satisfactory outcome.

Cooper: Many (if not all) of those 100+ surgeries you mentioned above are what I would call "work-arounds," meaning that they do not necessarily address the primary issue. The ultimate example of this would be to simply shave the medial eminence, even though we know this is not an abnormal growth of bone. The same is true for most metatarsal osteotomies; the first metatarsal is not deformed; yet we cut it. In cases where the soft tissues are great and we get a powerful correction, it works. Unfortunately, that is not always the case and the margin for error is small.

Dayton: I realized a decade ago that I was not delivering on my patient's expectations for deformity correction. I performed a variety of osteotomies according to accepted protocols and always using soft tissue balancing to get that final correction of the hallux and sesamoids. Unfortunately, in far too many cases the hallux began to drift weeks to months after the procedure and I found myself having to explain how this was "normal" to the patient and using the typical rationalizations to make myself feel better. Worse yet, from time to time hallux varus showed up. Complications are normal, a little drift is acceptable, and the patient caused the problem come to mind as comforting rationalizations. With fractures I could nearly always succeed. I just put it back where it was supposed to be. That is when I realized that with bunions I was not putting it back where it was supposed to be, I was cutting a normal metatarsal and making a new deformity, which was completely unpredictable. My quest for better outcomes has now turned to understanding the anatomic basis of the deformity in an attempt to find the "one" reliable HAV procedure and reduce the variation in my approach.

Let me get inside your brain. What tips/pearls can you give us about how you approach your bunions?

Sorenson: The biggest 2 components that have made an impact on outcome for me over the past couple of years is addressing the hypermobile state and, even more compelling but strongly connected, addressing coronal plane rotational deformity of the first ray on the cuneiform. The hypermobility component is really most effectively assessed during the clinical exam. The coronal plane deviation of the first ray is assessed clinically, but also importantly through plain film radiographic exam including an AP film and sesamoid axial view. These assessments then direct procedure selection and execution of the chosen procedure.

Cooper: I am very wary about males with hallux valgus. Although Nery, Coughlin et al[1] have shown similar results in males treated with osteotomies, I have a lower threshold to move to a first MTP arthrodesis in males, especially if there is any loss of motion at the joint preoperatively.

Dayton: A deformity always has a CORA (center of rotation of angulation) or an anatomic basis. In HAV the CORA is not in the metatarsal or in other words the metatarsal is deviated and not deformed. I think we have put so much reliance on transverse plane radiographic angles to decide on which procedure to pursue for bunion correction that we have overlooked the basic anatomy of the deformity. The fact is in a bunion deformity both the hallux and metatarsal components are deviated in 3 dimensions. A 3-dimensional problem cannot be solved with a 2-dimensional solution.

The simple answer is that I do not cut the metatarsal and create a new and unpredictable deformity. I strive to put the metatarsal back where it is supposed to be. The deformity can be completely corrected with angulation in the transverse and sagittal planes, and varus rotation in the coronal plane. This puts the metatarsal and first MTP joint back to normal alignment without having to rely on capsular balancing.

I have seen a great deal of new information on the coronal plane aspect as it relates to bunions; does this influence your approach when selecting a technique to fix the bunion?

Sorenson: As alluded to previously, this component strongly influences procedure selection in my current practice. When I see a rotated first ray in the coronal plane, which is not every case, based largely on the sesamoid axial view I think it is difficult to argue for any procedure that does not actively reduce the rotational deviation in addition to correcting for any transverse plane or sagittal plane deformity.

Cooper: It does. It makes me lean more toward a first TMT fusion procedure. In the past we have used Akin proximal phalanx osteotomies to try and correct this, which may help with the callus on the medial side of the toe, but again, this does not really address the root of that deformity.

Dayton: The new data on the coronal position is exciting because it explains so many of our previous questions and complications. For the last 3 years I have

been getting pre- and postoperative sesamoid axial views on all HAV patients. This has led to an infinitely better understanding of what we are seeing on X-ray and what is really present in 3D. These axial views definitely help me be prepared during the procedure. The knowledge that the sesamoids can be in normal position medial and lateral to the crista yet look dislocated on the AP X-ray because of pronation completely changes our mind set about the need for capsular balancing. We can see that in those cases supination corrects the deformity. Weight bearing computed tomography scans are now beginning to take our understanding to the next level. Once you see the connection between coronal rotation and what we have traditionally evaluated on AP radiographs, it opens up a whole new understanding of the deformity.

Give me your elevator pitch when you explain your bunion surgery to your patient?

Sorenson: Again, this is deformity specific, but I generally do my best to make recommendations based on giving them the best long-term outcome that will be predictable. I educate them on the intrinsic pathology at a layman level and then illustrate how the correction will directly address their bunion pathology.

Cooper: There is no pitch, I make them beg for surgery and then try to talk them out of it. I spend a lot of time trying to make sure that patients really understand their problem, as well as what they can expect. The perceptions are all over the place. Some patients are shocked that I cannot "just shave it off." On the other hand, a lot of patients are in terrible pain but are horrified because they know someone who had a bad experience. Last, although we all want them to look great when we are done, I really try to make sure that they are doing it because it hurts, not simply for aesthetic purposes.

Dayton: Two X-rays in view, a normal X-ray and the patient's X-ray: "This is a normal foot, this is your foot. My goal is to put your metatarsal and big toe back into its normal position." You can't do this with a metatarsal osteotomy procedure because when you show the postoperative X-ray it does not look normal.

So you happen to see a bunion recurrence in your office (of course not yours!), the MTP joint is still healthy, walk me through your thoughts?

Sorenson: First I ask if the patient is in pain. If he or she is not in pain, then I do not necessarily recommend consideration for further surgery, but do try to educate them on the potential risk factors in their current state in the short term and long term if they choose to leave it alone. My thought immediately is to try to understand why the bunion came back, which is usually fairly clear, and then make surgical recommendations based on that assertion.

Cooper: This is tough and depends on why it recurred, what was done prior, and what the patient's goals are. The idea of a "healthy" joint in this situation is relative, as it has already been violated. Even it is "healthy," I offer MTP fusion in a lot of cases. The really challenging cases are those in which some type of mid-shaft or distal osteotomy has been done, but the IM angle is still really high, the Distal metatarsal articular angle (DMAA) is really off, and they are short. Often in these I am thinking about first TMT fusion, some sort of distal closing wedge to correct the DMAA and then shortening the second and third metatarsals, as they often have transfer metatarsalgia.

Dayton: First thing is a sesamoid axial radiograph. In many cases the metatarsal is severely pronated and driving the recurrence. In these cases revision is relatively straightforward using derotation to realign the first MTP joint.

Of course I need to ask, what is your go to bunion procedure, we all have one?

Sorenson: More and more, unless the bunion is fairly mild with no coronal plane deviation at all and no hypermobility component, I am going to the Lapidus.

Cooper: My favorite is first MTP arthrodesis, although I do a fair number of scarf osteotomies. Personally, I do very few traditional chevron osteotomies, more likely I will extend it to a "mini scarf."

Dayton: This will strike many surgeons as much too simplistic because we live in a world of 130 bunionectomies, but here it is. If the MTP joint is healthy I do a tri-correctional TMT joint fusion correcting all 3 planes simultaneously, rarely doing any significant MTP joint soft tissue work. If the MTP joint is arthritic, I do a fusion at that joint, also correcting all 3 planes, including very high intermetatarsal angles. That is it, 2 procedures addressing the anatomic basis of the deformity and striving for consistency of the basic process.

Tell me about your postoperative regime, this is one of the most often asked questions by my bunion patients?

Sorenson: My patients can put weight on the heel of their splint with crutch assist as soon as they are comfortable. They transition to full weight bearing in a long boot at 2 weeks postoperative and begin significant range of motion exercises. At 6 weeks they transition out of the boot into a regular shoe and gradually return to all activities as tolerated.

Cooper: For most, it is 2 weeks heel weight bearing in a postoperative shoe or short fixed ankle walker using crutches for support. They then can begin weight bearing as tolerated with a goal of getting back to a shoe at 6 weeks. For first TMT fusions, I make them non–weight bearing for 2 weeks, then touch down heel weight bearing for 2 weeks, then full in a boot at 4 weeks postoperative.

Dayton: With first MTP joint fusion I walk the patients in a postoperative shoe or cast boot from days 2 to 3 or when they are comfortable. Average time to tennis shoes is 5.5 weeks. Full sports around 10 weeks.

With tri-plane TMT joint fusion I let them walk at 2 weeks in cast boot and they are usually in tennis shoes by 8 weeks.

All patients have bandages removed and start showering at 4 days. This is not common but strongly supported by the published literature. We find that splinting of the toe is not needed with tri-plane correction so bandages after the first few days are not necessary.

If you could wish for one thing when it comes to bunions in your practice, what would it be?

Sorenson: That every patient responded perfectly to my surgery without fail every time.

Cooper: That everyone would come in and ask for a first MTP fusion. In all seriousness, part of me wishes that there was one answer for all bunions, but at the same time, the fact that there exists such variation in the pathology makes it a really interesting topic.

Dayton: Less options.

References

1. Nery C, Coughlin MJ, Baumfeld D, Ballerini FJ, Kobata S. Hallux valgus in males–part 2: radiographic assessment of surgical treatment. *Foot Ankle Int.* 2013;34(5):636-644.