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FASIG

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FASIG News & Updates

Happy holidays from the FASIG!

Thank you to everyone who attended and contributed to the American Orthopaedic Foot & Ankle Society (AOFAS) annual meeting in Chicago, IL in September. The conference was an excellent opportunity for interdisciplinary discussion about foot and ankle care.

AOFAS Allied Health Symposium attendees (back row, left to right): Thomas Hearty, DPT, MD; Christopher Neville, PT, PhD; Karen Stevens, DPT, OCS; Walter Wilson, BS; Jeff Houck, PT, PhD; Rob Siegler, DPT, OCS; Stephanie Albin, DPT, PhD, OCS; Kathryn Bohnert, MS; Mary Hastings, PT, DPT, MSCI, ATC; Kalyani Rajopadhye, PT, MHS, OCS; (front row left to right) Frank DiLiberto, DPT, PhD; Megin John, DPT, OCS

We look forward to exciting programming at CSM in February. Watch the FASIG social media pages for information on foot and ankle specific programming. We look forward to seeing you in Denver, CO!

Josh Holland, student team member, represented the FASIG at APTA's National Student Conclave. He reported back: **"***It was an incredible experience being in Albuquerque, New Mexico for the National Student Conclave, October 31st – November 2nd, 2019"*. Dr. Young from Baylor University (left), Dr. Geist from Emory University (right), and I promoted the Academy of Orthopaedic Physical Therapy and all the associated special interest groups. This was my first time at NSC and I was amazed to see the excitement and passion of the next generation physical therapists. The family-like atmosphere, comradery, and willingness to teach others confirms my belief that the field of Physical Therapy is a remarkable profession!

The FASIG student team welcomes Madison Engel! Madison Engel is a Seattle native that transplanted to the Denver area last year to begin PT school at Regis University. She self-describes as a lifelong student of movement, as she has engaged in gymnastics, acrobatics, rock climbing, skiing, and now a dedicated study of physical therapy.

Member Spotlight

Featuring Dr. Stephanie Albin, PT, DPT, PhD, FAAOMPT, OCS

Where are you originally from?
Salina, Kansas. I did my undergraduate at the University of Kansas and went to Physical Therapy School at the University of Utah. I then did my fellowship training at Regis University, and then a PhD at the University of Utah.

Where do you currently work?
I currently work at Regis University.

What type of setting do you work in?
I teach musculoskeletal management courses, as well as our orthopedic manual therapy fellowship program. Starting in January, I will also be teaching in our new orthopedic residency program.

What sparked your interest in the foot and ankle?
Ironically, I used to hate touching feet in PT school. When I first started in practice I worked in a large clinic with over 20 therapists. The therapist that saw a lot of foot and ankle was leaving and that's the position that was available. I went to conferences and continuing education to learn more about the foot and ankle. There was a fellowship trained foot and ankle surgeon that started within a few months of when I started. I met with him quite a bit and spent a lot of time in clinic with him and collaborated with him on creating protocols for patients. After a few years, I absolutely loved the challenge of treating patients with foot and ankle conditions. I feel very fortunate that everything fell into place the way that it did.

What is your current research interest?
Mostly trauma. Hindfoot trauma, talus fractures, calcaneal fractures, and ankle fractures. I also have an interest in looking at cost effectiveness of different management strategies for patients as well.

How do you become involved in research / academics?
For me, I went to a conference in Grand Junction, CO, and Tom McPoil was teaching at the conference. We started talking at this conference and he asked me how much foot and ankle I saw in clinic. I was like, probably 10-15 patients with foot and ankle injuries a day. Tom expressed interest in coming out to Salt Lake and seeing some patients with me in Salt Lake City. Tom and Mark Cornwall came out and collected some data with me. I thought this was crazy, these guys are brilliant and they want to come see what types of patients I see! I felt very fortunate; we published a study together from some of the data we collected. I went to Flagstaff to meet with Tom and saw some of the runners that he managed. That is how I started getting interested in foot and ankle research. I got together a presentation I wanted to submit at CSM but couldn't analyze any of the data so a colleague helped me. I decided to take some statistics courses to have a better understanding. I know it's super nerdy, but I loved the statistics coursed I took, and I think I took almost every statistics class from almost every department from the University of Utah. After I started taking courses, I thought I might as well get my PhD.

What is your biggest piece of advice for rehabilitating a patient post foot / ankle surgery?
Two things. One of the surgeons I worked with at Intermountain told me one time that just because you haven't seen it doesn't mean that it hasn't seen you. That has really stuck with me throughout my clinical practice. He really encouraged me to "make the full circle". So, if you have a patient sitting in front of you and the examination isn't matching what the patient is telling you subjectively, go back, ask more questions, really delve into what is going on with the patient. The other thing this surgeon would say all the time is "stability over mobility". I think as Physical Therapists, if something is stiff or tight our tendencies is to focus on mobility. With the foot and ankle, I am finding there is a fine balance between having mobility but respecting the stability of the foot as well. That was a valuable lesson for me early on in my career.

What other activities / hobbies do you enjoy outside of physical therapy?

Everything outdoors. Running, skiing, mountain biking, road biking, climbing. Pretty much anything in the mountains. And of course, hanging out with my pup!

PT Considerations for Ankle Arthrodesis versus Total Ankle Arthroplasty for Ankle Osteoarthritis

A hot topic in the foot and ankle world is ankle arthrodesis versus total ankle arthroplasty for the treatment of end-stage osteoarthritis of the tibiotalar joint. Both approaches are utilized, but arthrodesis has traditionally been the gold standard. With advances in technology, ankle arthroplasty has been performed increasingly more often as an alternative to arthrodesis and has fueled the debate as to which approach has better functional outcomes.[2] The debate over which approach is optimal tends to revolve around concerns about postoperative complications, maintenance of joint mobility, and durability of the intervention.

Postoperative complications. A meta-analysis by Kim, et al. in 2016 looked at 10 studies comparing arthrodesis and arthroplasty and determined that there was no significant difference between self-reported outcome measures, visual analog scale for pain, and patient satisfaction. However, the incidence of re-operation and major surgical complications was significantly increased in the arthroplasty group.[1]

Considerations for joint mobility and walking mechanics. A recent study by Segal, et al. (2018) compared gait at one and three years post-operatively between patients who underwent arthroplasty and arthrodesis. Both groups had improvements in pain, self-reported functional scores, and walking speed at one year that was generally maintained at three years. Patients who underwent arthrodesis were found to have decreased sagittal ankle range of motion (ROM), increased sagittal hip ROM, increased step length, and increased transient force at heel strike relative to patients who underwent arthroplasty. Patients who underwent arthroplasty were found to have improved sagittal ankle ROM and cadence with no changes in hip ROM, step length, and transient heel strike force. Neither procedure was able to fully restore gait to contralateral non-operative limb biomechanics.[3]

While both arthrodesis and arthroplasty have been shown to improve gait post-operatively, a study Jastifer, et al. (2015) looked at the effects of the two approaches in performance on uneven surfaces. Both groups had similar patient satisfaction as well as significant improvement in walking on uneven surfaces post-operatively; however, the arthroplasty group had significantly better outcomes in ankle dorsiflexion, ankle plantar flexion, walking upstairs, walking downstairs, and walking uphill.[4] This is important to keep in mind, as patients are equally satisfied with their mobility and pain post-operatively, but the biomechanics for task performance and other joints may be affected differently.

Mobility or durability? A recent study by Wasik, et al. (2019) had similar findings in regards to patient satisfaction and function despite biomechanical differences. They compared quality of life, functional scores, and post-operative pain between arthrodesis and arthroplasty. After surgery, improvements were seen in all aspects with no significant differences between groups. Total ankle arthroplasty retains mobility at the ankle joint while arthrodesis is more durable. This durability may come at the expense of other joints given alterations in foot biomechanics and compensatory strategies. Both procedures significantly reduced pain to similar levels and equal patient satisfaction.[2]

The debate between mobility, durability, and longevity of total ankle arthroplasty versus arthrodesis continues. More quality research is needed to inform surgical decision-making and optimize and evaluate the effects of rehabilitation. For now, the take home message is to know that patients will improve in pain and satisfaction despite the approach, but each procedure comes with limitations when considering complications, range of motion with functional tasks, and joint durability.

References:

1. Kim, H.J., Suh, D.H., Yang, J.H. et al. (2017)Total ankle arthroplasty versus ankle arthrodesis for the treatment of end-stage ankle arthritis: a meta-analysis of comparative studies. *Int Orthop*, 41: 101.
2. Wąsik, J., Stołtny, T., Pasek, J., et al. (2019). Effect of total ankle arthroplasty and ankle arthrodesis for ankle osteoarthritis: A comparative study. *Med Science Monitor*, *25*: 6797–6804.
3. Segal A., Cyr K., Stender C., et al. (2018). A three-year prospective comparative gait study between patients with ankle arthrodesis and arthroplasty. *Clin Biomech*, 54: 42-53,
4. Jastifer, J., Coughlin, M. J., & Hirose, C. (2015). Performance of total ankle arthroplasty and ankle arthrodesis on uneven surfaces, stairs, and inclines: A prospective study. *Foot Ankle Int*, 36(1): 11–17.

"For now, the take home message is to know that patients will improve in pain and satisfaction despite the approach, but each procedure comes with limitations when considering complications, range of motion with functional tasks, and joint durability"

Citation Blast – Total Ankle Arthroplasty

Total Ankle Arthoplasty (TAA) surgeries are becoming more common among patients with end stage arthritis involving the ankle and hindfoot. TAA can improve function through increased sagittal range of motion and pain levels of patients, but are costly and associated with post-operative complications. Included in this review are different perspectives on post-operative rehabilitation strategies, economic value, and clinical references for evaluation of the foot.

1. *Saltzman, C.L., Mclff, T.E., Buckwalter, J.A., Brown, T.D. (2000) Total ankle replacement revisited. J Orthop Sports Phys Ther, 30(2): 56-67.*

Slatzman, et al., (2000) presented a review of total ankle arthroplasties (TAA) and arthrodesis procedures, surgical strategies, clinical outcomes, rehabilitative goals. The goal of TAA is to regain 10° of dorsiflexion and 30° of plantar flexion. Patients qualifying for a triple arthrodesis were especially appropriate for a TAA. Patients with neuroarthropathic degenerative joint disease, active or recent infections, or avascular necrosis of the talus were considered contraindicated for a TAA and were not included in this review. The authors suggest 6 weeks of non-weightbearing, progressing to a restrictive brace or cast and then to full weightbearing status. Initial post-operative goals include proper wound and bone healing prioritized over mobility and ROM. Post-operative therapeutic considerations include dislocation prevention, surgically involved strains, and development of subtalar and midtarsal joint degeneration.

2. *Jastifer, J.R., Coughlin, M.J. (2015) Long-term follow-up of mobile bearing total ankle arthroplasty in the United States. Foot Ankle Int, 36(2): 143–150.*

This is a longitudinal, prospective cohort study in the United States of 18 patients with end stage ankle degeneration, post-TAA by the same surgeon. At a 10 year follow up the surgical implant survival rate was 94%, but 39% required additional surgical intervention, the most of which were 9 years post TAA. Patients reported a decrease on the VAS pain scale from an average initial score of 8.1 to follow up score of 2.1 out of 10 possible. Patients also showed improvements on the Buechel–Pappas Scale from 32.8 to 82.1. This study reported high functional improvements and a large decrease in pain, but also a high percentage of additional procedures required.

3. *Massobrio, M., Pellicanò, G., Santilli, V., Tognolo,V. (2018) Total ankle replacement: Indications, rehabilitation and results. Int J Foot Ankle, 2(2). DOI: 10.23937/IJFA-2017/1710019*

In a retrospective study of 21 patients, changes in ankle range of motion were investigated post TAA. Range of motion data was collected at 3, 6, and 12 months. Patients were allowed to perform sagittal plane isometric exercises during the first 2 weeks post-operation for DVT prophylaxis, with non-weightbearing restrictions. At 3 weeks, patients were progressed to partial-weightbearing with crutches and bike with no resistance. At 5-6 weeks, patients were able to entirely remove any restrictive bracing or casting and participate in open chain therapeutic exercises. Patients were cleared to return to low impact sports at 6 months. AOFAS scores improved from a mean of 41.6 ± 8.6 preoperatively to 84.8 ± 5.6 as reported at the 1-year follow-up. Range of motion was assessed using radiographic analysis, and reported improvement from a mean of 21° ± 7.5° pre-operatively to a mean of 31.7° ± 9.88° at the 1-year follow-up. Follow-up procedures were only conducted in less than half of patients.

7. *Hsu, A.R., Haddad, S.L., Myerson, M.S. (2015) Evaluation and management of the painful total ankle arthroplasty. J Am Acad Orthop Surg, 23(5): 272-282.*

This study reviews the evaluation and management of TAA that become painful post-operatively. As patients present clinically with pain this study will present as a guide and reference indicating possible attributions to pain. Clinically, it is important to identify the location of irritation, quality, and the onset. TAA intervention that do not improve may the pre-operative pain may indicative indolent deep pain, whereas pain that increases overtime may indicate implant loosening and subsidence of osteological surfaces. Mechanical or "start-up" pain and swelling are common post-operatively limiting range of motion are common. Topics addressed in this article include risks analysis of failure rate, aseptic loosening, osteolysis, cyst formation, impingement, arthofibrosis, and infections.

8. *Jones, M., Carolina, C., Shannon, R., Gregory C., Berlet, OH Jeremy Regina, Penner, M. (2015) Understanding the postoperative course and rehabilitation protocol for total ankle arthroplasty. Foot Ankle Spec, 8(3): 203-208.*

This article is an open round table discussion between orthopedic surgeons, a podiatrist, and a physical therapist answering questions on their total ankle arthroplasty strategies, particularly in recovery. Included topics include incision healing, weightbearing progression, collaboration with physical therapists, exercise protocols, exercise restrictions, prophylactic antibiotics, and return to sports clearance. It demonstrates the on-going debate surrounding TAA.

9. *Gonzalez, T., Fisk, E., Chiodo, C., Smith, J., Bluman, E.M. (2017) Economic analysis and patient satisfaction associated with outpatient total ankle arthroplasty. J Am Acad Orthop Surg, 38(5): 507–513.*

This study reports the economic factors of TAA surgeries in outpatients compared to inpatients relative to perioperative complications, postoperative emergency department visits, readmissions, patient satisfaction, and cost analysis. The study included 36 patients that all underwent TAA procedures (21 patients as out-patients and 15 as in-patients). The study reported the overall cost differential between the groups as 13.4%, favoring out-patient group being less costly; a cost

saving of about $2500 per patient case. Both groups maintained high patient satisfaction.

10. *Hendy, B.A., McDonald, E.L., Nicholson, K.R., Rogero, R., Shakked, R., Pedowitz, D.I., Raikin, S.M. (2018) Improvement of outcomes during the first two years following total ankle arthroplasty. J Bone Joint Surg, 100 (17): 1473-1481.*

This study retrospectively investigated 134 patients post-TAA. Outcome measures included ankle range of motion, SF-12, and VAS pain scale. Patients improved sagittal range of motion from 20.7° to 34.3° at 6 months, and these gains were retained at 2 year follow-up. Increased range of motion was reported to correlate with improved VAS scores and FAAM ADL scores.