

# Cast Equals Surgery for Tarsal Navicular Fracture

BY BRUCE JANCIN

KEYSTONE, COLO — For patients with tarsal navicular stress fractures, healing rates and return-to-activity times are similar, regardless of whether they are managed with non-weight-bearing cast immobilization or surgery, according to a meta-analysis.

This finding undercuts the basis for the growing trend of surgical management of these challenging foot injuries. The assumption—now shown to be baseless—has been that operating on tarsal navicular stress fractures facilitates early return to activity, said Dr. Barry P. Boden, an orthopedic surgeon at the Uniformed Services University of the Health Sciences in Bethesda, Md.

He presented a systematic review and meta-analysis of 31 articles, mostly case series, which included 253 partial or complete tarsal navicular stress fractures, at the annual meeting of the American Orthopaedic Society for Sports Medicine.

His conclusion: “Non-weight bearing is indicated as initial therapy and following failed weight-bearing management of both partial and complete fractures.”

“With increased awareness and today’s improved imaging techniques, it’s rare for a tarsal navicular stress fracture to

present as a nonunion or displaced fracture,” he added. “Thus, surgery in the form of open reduction and internal fixation plus or minus bone grafting is rarely if ever indicated.”

Six weeks of immobilization in a non-weight-bearing cast showed a strong trend for a higher rate of fracture healing and freedom from pain than did surgery, but the difference didn’t reach



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statistical significance. (See chart.) Time to return to activity was approximately 5 months with either therapy.

“Return to play takes a long time. You’re talking 6-8 weeks in a cast, then gradually advancing to weight bearing, and then to full activity,” Dr. Boden said.

Non-weight-bearing cast immobilization and surgery both had significantly higher successful outcome rates than did weight-bearing casting and/or rest.

“Again, non-weight bearing is an ab-

solute in the management of these injuries. Clinical and imaging findings should determine return to activity,” Dr. Boden continued.

Dr. Thomas O. Clanton, the session moderator, said “this is a great meta-analysis” but added that he doesn’t consider it to be the final word because the available literature is all level 4 evidence. “Even the paper by Saxena purported to be level 1 is not a level 1 study,” he said (J. Foot Ankle Surg. 2000;39:96-103).

“Almost all the papers rely on x-ray diagnosis and follow-up of patients, and nowadays we use CT scans. So I don’t think you can say all those fractures in the literature that are said to be healed really did heal. We’ve found a number of pa-

tients we’ve treated nonoperatively who, when you look at them again at 6 or 8 weeks, may be asymptomatic, but they still have obvious fracture lines on CT scans,” said Dr. Clanton of the University of Texas, Houston.

It’s also very difficult to convince someone who weighs more than 250 pounds to be non-weight bearing for 6 weeks, with the possibility that they might be non-weight bearing even longer if that were to fail, he added.

Dr. Boden’s coinvestigator in the meta-analysis, Dr. Joseph S. Torg of Temple University, Philadelphia, is credited with developing the non-weight-bearing cast immobilization regimen for navicular tarsal stress fractures a quarter century ago. That method entails 6 weeks of cast immobilization. Dr. Boden said recent data suggest successful outcomes are achievable with less than 6 weeks of immobilization, although this issue requires further study. ■

## Stress Fracture Healing Rates Vary by Approach

Intervention	Success Rate
Non-weight-bearing cast for 6 weeks	70/73 (96%)
Non-weight-bearing cast for less than 6 weeks	17/22 (77%)
Weight-bearing cast and/or rest	41/92 (45%)
Surgery with open reduction and internal fixation	54/66 (82%)

Source: Dr. Boden

## Concussion Guidelines Address Young Athletes

No athlete under 18 years who experiences a concussion should be allowed to return to play on the same day, according to recent consensus recommendations arising from the Third International Conference on Concussion in Sport.

This position is solidly based on evidence that the still-developing brains of adolescents and children are slower to heal, Michael W. Collins, Ph.D., said at the annual meeting of the American Orthopaedic Society for Sports Medicine.

“The younger you are, the longer it takes to recover from the injury. The data [are] unquestionable that kids are different,” explained Dr. Collins, assistant director of the University of Pittsburgh sports concussion program.

The guidelines state that athletes under age 18 years must be carefully monitored with their activities restricted until they have fully recovered. That means no exertion—physical or mental. Neurocognitive testing while

the young athlete still is symptomatic is recommended as useful in assisting physicians in planning regarding school and home management (J. Clin. Neurosci. 2009;16:755-63).

The concussion conference, hosted by FIFA (the Federation Internationale de Football Associations, sponsor of soccer’s World Cup), took place in Zurich late last year. The consensus guidelines urge moving away from concussion severity grading scales.

“We know the grading scales are not effective,” he said. “You will never hear a grade of concussion come out of my mouth. It doesn’t predict anything in terms of prognostic outcomes.”

The consensus report states there is little role for neuroimaging except when a structural lesion is suspected, a view shared by Dr. Collins. “Concussion is not a structural brain injury; it’s a metabolic crisis. You can’t see it on CT or MRI,” he stressed.

—Bruce Jancin

## ‘Fogginess’ Is Predictive

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baseline preinjury formal neurocognitive testing and a follow-up neurocognitive evaluation an average of 2.2 days after sustaining a concussion. All athletes were followed until they were clinically recovered and their neurocognitive test results returned to baseline.

Of the 108 patients, 47 (44%) were categorized as having a quick recovery: They returned to normal in less than 10 days (mean 5.7 days). In contrast, the protracted-recovery group, which constituted most of the injured athletes, required more than 10 days (mean of 29.2 days) to recover.

The neurocognitive test used in this study was the Immediate Postconcussion Assessment and Cognitive Testing (ImPACT) battery, a validated, computer-based, 22-item test that takes 20-30 minutes to complete. ImPACT assesses 21 concussion symptoms as well as the domains of attention, memory, working and visual memory, reaction time, and processing speed.

The symptom that was by far the strongest predictor of protracted recovery was fogginess, with a z score of 4.3—nearly twice that of the next most potent predictive symptom, which

was “difficulty concentrating.” Rounding out the top 12 most predictive early symptoms, in descending order, were vomiting, dizziness, nausea, headache, slowness, balance difficulties,



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DR. COLLINS

light sensitivity, noise sensitivity, numbness, and trouble sleeping.

It’s noteworthy that athletes who reported early problems in the cognitive domain—fogginess, concentration, attention—had the hardest time recovering and were more likely to be in the complex concussion group.

Psychiatric issues—which everyone thinks predicts poor outcome—were less predictive.

“A lot of people think that those who go on to have post-concussion problems may have some preexisting psychiatric issues. Well, that’s certainly the case in some instances, but it’s not what we see in our acute

data,” Dr. Collins observed.

A key take-away point from the study is that it’s no longer sufficient to evaluate the concussed athlete simply in terms of headache, as has been commonplace. “Some of these other symptoms may be more important,” he said.

For athletes identified as being at increased risk for a complex postconcussion syndrome, the key management strategy is rest, both physical and mental: no going to the weight room, no studying for exams, perhaps not even going to the classroom.

If these kids go back to exertional activity, it results in more protracted recovery, Dr. Collins said.

With no clinician input, the ImPACT test has been shown to have 82% sensitivity and 89% specificity for the presence of concussion (Arch. Clin. Neuropsychol. 2006;21:91-9). Dr. Collins disclosed that he is a developer and co-owner of ImPACT Applications (www.impacttest.com).

Other computer-based neurocognitive tests available for the evaluation of mild traumatic brain injury include Headminders, CogSport, and the Automated Neuropsychological Assessment Metrics. ■