

## Cartilage repair and transplantation

### What's new in the treatment of arthritis



By John J. Larkin, M.D.

The knee is the largest joint in the body, and the joint most likely to be affected by arthritis, the breakdown of articular cartilage.

Once the cartilage has been injured, it begins to peel away from the bone. There are many things that can injure cartilage and predispose it to the development of arthritis. In most cases, however, it is due to an injury.

The bulk of arthritis is osteoarthritis, affecting approximately 70 percent of adults. It is commonly referred to as "wear and tear arthritis" or degenerative arthritis. It is this form of arthritis that can now be treated early,

preventing or delaying progression. In the knee, most traumatic arthritis results from damage to the joint either by direct trauma to the articular cartilage or a ligament or meniscus injury.

In the past, once the cartilage was damaged, the main focus of treatment was to prevent symptoms such as swelling and pain. The goal here was to delay the need for surgery as long as possible.

To best repair the articular cartilage, you must regenerate hyaline cartilage. One technique for this is taking good cartilage from one part of the knee and transplanting it into the damaged area. This procedure is the osteochondral allograft transport system (OATS procedure). Here, good cartilage is taken from a less-weight bearing portion of the knee and moved into the damaged area. This procedure can be done entirely arthroscopically in an outpatient setting.

Postoperatively, patients are kept non-weight bearing for six weeks and then progressed back to normal activity with no sports for three months. The success of a typical OATS procedure is high, with 80-90 percent good results in five years. I have had patients that are now twelve years from their original procedure and are still able to teach spinning classes in local health clubs. This procedure is very cost effective and the least invasive option currently available.

*Continued. See Repair, page 3.*



### Doctor spotlight

**Nicholas T. Gates, M.D.**  
Orthopaedic Foot & Ankle Specialist



"Too many times, people don't see a specialist soon enough," says Nicholas T. Gates, M.D. "I do a better job taking care of patients if I see them before their condition has gotten too bad; their options are better." Dr. Gates is the only Foot and Ankle Specialist based in Northern Kentucky who is board certified by the American Board of Orthopaedic Surgery and one of only a few in Greater Cincinnati. He is a member of the American Academy of Orthopaedic Surgeons and the American Orthopaedic Foot and Ankle Society.

Dr. Gates' practice has been dedicated to reconstruction and sports medicine of the foot and ankle since 1998 and includes ankle arthroscopy, fractures, Achilles tendon disorders, total ankle replacement and forefoot reconstruction.

*Continued. See Doctor Spotlight, page 2.*

### In this issue

Welcome to *Ortho Connect*. The goal of this newsletter is to keep you up to date on current issues in orthopaedics. If you have suggestions, contact us at 859-301-0702.

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# Patient Comfort and State of the Art Imaging

## New 1.5T MRI Wide Bore Operational at Commonwealth Ortho

By Joshua Farber, M.D., Medical Director  
Commonwealth Orthopaedic Centers MR Imaging

Magnetic resonance imaging (MRI) is a powerful tool, especially for orthopaedic disorders. In conjunction with a patient's history and physical exam, MR imaging helps guide a patient's therapy, and helps determine when surgery is appropriate. In addition, if surgery is needed, MRI helps to guide the orthopaedic surgeon's approach, providing a map for surgical planning. To be useful, MR images need to be clear, detailed and accurate. Patient comfort is essential to produce useful images.

High field MRI systems, those that have a field strength, or power, of 1.5 tesla (T) or greater, produce the best images. Unfortunately, until recently, high field systems had long, tight bores (the tube where the patient lies). These older MRI units can be uncomfortable, frequently leading to patient movement, which degrades the images. In addition, these older systems are claustrophobic for many, forcing some patients to decline needed scanning. Lastly, these older systems are simply too small for larger patients.

Some of the issues with older scanners are addressed with "open" scanners. Unfortunately,

most open systems are low field, and the images that they produce provide less detail and information than more powerful, high field units.

The new Commonwealth Orthopaedic Centers' MRI scanner employs the latest technology and provides the accuracy of a high field unit with the comfort of an open scanner. The new magnet, operational since early September 2011, is powerful (1.5 T), and it has a short, large bore, many times the size of a traditional bore. As Figure 1 shows, the magnet can accommodate large patients comfortably. This extra roomy bore allows patients to position themselves as comfortably as possible, and it allows also for the body part being imaged to be placed in the center of the magnet. In addition, the new system has state-of-the art coils and software, allowing for shorter scan times. The overall result is more comfort, less patient motion and claustrophobia, and state-of-the art images with exquisite detail (Figure 2).

Dedicated musculoskeletal radiologists read all Commonwealth Orthopaedic Centers' MRIs. The combination of patient comfort,



Figure 1

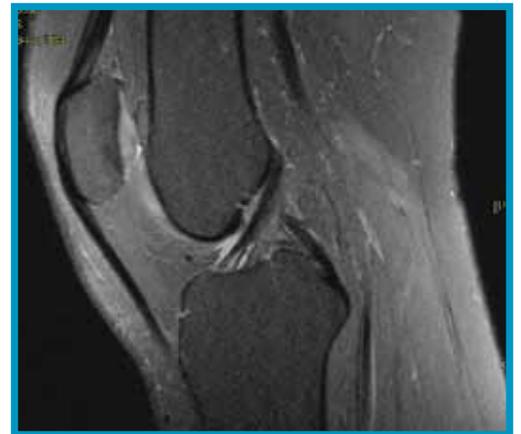


Figure 2

current technology and professional expertise provides patients with the optimal MR imaging experience and care.

### Doctor spotlight (continued)

He has particular interest in treating foot and ankle injuries in athletes, including runners.

Dr. Gates also is committed to giving back to the community, sponsoring the Happy Feet Ball in November with the Charities Guild of Northern Kentucky, which raised funds to provide nearly 1,000 pairs of shoes for Northern Kentucky children. "When children arrive at school with shoes in good condition, the children are able to focus more effectively on learning," explains Dr. Gates.

What Dr. Gates enjoys most about his practice is that he is able to practice the complete depth and breadth of orthopaedics – but focusing on the foot and ankle. "It's not limited to one type of procedure," he explains, "It's sports medicine, trauma, injuries, foot and ankle reconstruction and ankle replacement and more."

Dr. Gates' interest in orthopaedic surgery began as a high school athlete when he saw the practice of orthopaedics first hand. "That's when I decided to be a doctor, and when I decided that my specialty would be orthopaedics." He attended medical school at University of Cincinnati College

of Medicine and completed his residency in orthopaedic surgery at Mt. Carmel Medical Center in Columbus, Ohio. During his residency, a mentor interested him in foot and ankle surgery; he then completed a fellowship in foot and ankle surgery at the Cleveland Clinic.

Dr. Gates is the team physician for Highlands High School and serves as the foot and ankle consultant for several other area high schools and universities, including Thomas More College and Northern Kentucky University. Sports medicine is a favorite part of his practice, where he treats everyone from school and professional athletes to weekend warriors. "I do a significant amount of work with the ever-burgeoning world of middle age and advanced age athletes. There's no doubt that you're more prone to injuries when you're 45 than when you are 25."

He's excited by the advances in technology in the field – specifically the newer minimally invasive techniques that allow arthroscopy and Achilles tendon repair. "It's a 2-centimeter incision versus 8 centimeters. And with this technique, we can

now do ankle arthroscopy from the front as well as the back." For patients, that's good news. "It leads to less post-op pain, less risk of complications and can also mean a quicker recovery," he says. Another aspect of advances in technology is the ability to do total ankle replacements. "They weren't even possible 5-8 years ago."

If he could share one piece of advice with patients, it would be to maintain a healthy weight. "Without a doubt, everything I do is made more difficult and less likely to be successful because of obesity. It increases the risk of many types of overuse syndromes."

Dr. Gates is a Cincinnati area native. He and his wife of 19 years have four children. He likes to run for exercise and ran the 2006 Chicago Marathon. He also likes to follow his children's sports activities and helps coach some of their teams. He recently completed a 6-year term on the Ft. Thomas Education Foundation board.

### Repair (continued)

Its limitation, however, is that it cannot be used on the patella, the undersurface of the kneecap.

The two other procedures available for repair of articular cartilage involve the transplantation of articular cartilage from outside the knee into the damaged area of the joint.

The first is autogenous cartilage implantation (ACI procedure). It requires two separate surgeries. The first procedure is done arthroscopically. Cartilage cells are harvested from an area in the non-weight bearing portion of the injured knee. These harvested cells typically provide approximately 10,000 hyaline cartilage cells. Those cells are then sent to a laboratory and are grown on tissue plates, reaching approximately 10-12 million cells and are then re-implanted into the injured knee. The second procedure is technically demanding and quite tedious. It can, however, be used on the undersurface of the kneecap. The principle disadvantage to an ACI procedure is that it involves two separate surgical procedures, and growing of the cartilage cells is very expensive. The success of an ACI procedure is high, ranging from 80-85 percent good results within five to seven years from the initial treatment. The postoperative rehabilitation course is similar to the OATS procedure.

The most recent and exciting procedure to become available is the “DeNovo” procedure. In this procedure, juvenile articular cartilage cells, harvested from donors 12 years of age or under, are transplanted into the injured knee. The donor cells



*The knee joint*

come from children who die from illness or trauma and donate their articular cartilage for transplantation. Because of this, cartilage supplies are limited. This operation has to be done openly. It does have the advantage of being done as a one time only procedure and can be done in an outpatient setting. The operation can be used for the patella or kneecap. Although it is more expensive than the OATS procedure, it has tremendous potential, especially in treating arthritis of the kneecap.

This procedure is on the cutting edge of development and has only been available for approximately one year. Our results have been excellent in the first year of use. Postoperative treatment course for these patients is somewhat more restricted, with them being placed in a



## Athletes' Corner: Ankle Sprains: Myth vs. Fact

by Matthew T. DesJardins, M.D.

Ankle sprains are one of the most common injuries among athletes. It is estimated that 23,000 sprains occur daily in the United States alone. Despite the frequency of this type of injury, there are misconceptions about optimal management, return to sport and prevention of future injuries. Below are clarifications of three common myths regarding ankle sprains.

**Myth:** All athletes should wear ankle braces to prevent sprains.

**Fact:** Braces help prevent sprains in athletes with previous sprains, but not necessarily in those without prior ankle injury.

There is no convincing evidence that bracing or taping a previously uninjured ankle will prevent a sprain. However, in athletes with a previous sprain, bracing during high risk activity can help decrease the risk of recurrent sprain. In fact, bracing in combination with a rehabilitative exercise program is the best prevention technique in these athletes. I recommend a lace-up style brace for athletes with history of a previous sprain who participate in high risk sports including basketball, volleyball, soccer and football.

**Myth:** Ankle sprains should be treated with ACE wrapping and crutches for several days.

**Fact:** Early motion and rehabilitative exercises improve early function and return to sport.

Traditional immobilization in a splint and use of crutches likely slow recovery and

return to sport. Icing and elevation in the first 3-4 days can help control swelling and pain. Walking boots may even be used in more severe injuries for pain control, protection and early weight-bearing. However, beginning an early rehabilitative exercise program is key to an early recovery. This program should include range of motion, strengthening with resistance bands, balance/coordination activities and plyometric training. Balance/coordination training typically involves challenging the athlete's ability to maintain balance while in a single-leg stance. Plyometrics includes jumping and landing tasks. These programs improve both short- and long-term function.

**Myth:** Sprains are minor injuries with no long-term problems.

**Fact:** Repeated sprains are associated with chronic ankle instability and the development of ankle arthritis.

It's easy to think of these injuries as harmless, especially when in most cases the short-term recovery is routine and predictable. The fact is, however, that bad or recurrent sprains can result in long term dysfunction and arthritis. Therefore, emphasizing appropriate bracing and rehabilitation after an initial injury can pay dividends for years. If your patient has developed chronic ankle problems, evaluation by a specialist is warranted.

*Matthew T. DesJardins, M.D., specializes in non-surgical sports medicine and orthopaedics.*

knee immobilizer for the initial 10 days after surgery. Motion is begun at 10 days, and patients are kept protected from weight bearing for a full six weeks with ROM exercises during that interval. Weight bearing is begun at six weeks on a progressive basis with no return to sports for three months.

The use of cartilage repair and transplantation is changing the current state of the art and treatment of arthritis. Early diagnosis and treatment of arthritis is the key to success. With new diagnostic procedures using MRI and arthroscopy, repairable lesions can be identified early and the cartilage repaired to prevent arthritis progression. In the future the use of total joint replacements should

become less and less frequent as we intervene early to prevent the long term development of progressive degenerative osteoarthritis.

*John J. Larkin, M.D., is a board certified orthopaedic surgeon specializing in shoulders & knees, sports medicine, arthritis & joint replacement surgery and Workers Compensation injuries.*

## After Hours Injury Clinic

560 South Loop Road, Edgewood, KY 41017

Monday-Friday 5:30 p.m. to 9:30 p.m.

Saturday 9:00 a.m. to 1:00 p.m.

► **No appointment necessary**

### Our locations

- 560 South Loop Road  
Edgewood, KY 41017
- 2845 Chancellor Drive  
Crestview Hills, KY 41071
- 525 Alexandria Pike  
Southgate, KY 41071
- 7388 Turfway Road  
Suite 101  
Florence, KY 41042
- 238 Barnes Road  
Williamstown, KY 41097

### Our Ancillary Services

- **MRI**  
560 South Loop Road  
Edgewood, KY 41017  
859-301-0775
- **Physical Therapy**  
560 South Loop Road  
Edgewood, KY 41017  
859-301-0790
- 2845 Chancellor Drive  
Crestview Hills, KY 41017  
859-426-5888
- 525 Alexandria Pike  
Southgate, KY 41071  
859-441-0534

*Ortho Connect* is published throughout the year by Commonwealth Orthopaedic Centers for physicians, referral sources and the community.

*Editor:* Matthew T. DesJardins, M.D.

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## Our physicians



### James D. Baker, M.D.

Hand, Wrist and Elbow Surgery  
*Board Certified, Orthopaedic Surgery*



### Nicholas T. Gates, M.D.

Orthopaedic Surgery and Sports Medicine  
of the Foot & Ankle  
*Interests: Sports injuries, ankle arthroscopy,  
Achilles tendon reconstruction and total ankle  
replacement*  
*Board Certified, Orthopaedic Surgery*



### Richard M. Hoblitzell, M.D.

General Orthopaedics  
*Board Certified, Orthopaedic Surgery*



### John D. Bever, M.D.

Adult Reconstructive Surgery, including  
Joint Replacements, General Orthopaedics  
and Fracture Management  
*Board Certified, Orthopaedic Surgery*



### Michael A. Grefer, M.D.

General Orthopaedics  
*Interests: Treatment of neck & spinal  
disorders*  
*Board Certified, Orthopaedic Surgery*



### Bruce R. Holladay, M.D.

Sports Medicine, Knee, Shoulder & Elbow  
Arthroscopy and Reconstructive Procedures  
*Board Certified, Orthopaedic Surgery*



### James T. Bilbo, M.D.

Sports Medicine and Orthopaedic Surgery  
*Interests: Advanced arthroscopic surgery of  
the knee & shoulder, sports injuries, and  
injury prevention & rehabilitation.*  
*Head Team Physician at Northern  
Kentucky University*  
*Board Certified, Orthopaedic Surgery*



### R. Michael Greiwe, M.D.

Shoulder Replacement, Sports Injuries,  
Rotator Cuff Pathology and ACL Injuries  
*Interests: Tommy John surgery, advanced  
arthroscopic surgical techniques and shoulder  
reconstruction*  
*Board Eligible, Orthopaedic Surgery*



### Matthew T. Hummel, M.D.

Adult Reconstructive Surgery, including  
Joint Replacements  
*Interests: Total hip replacements, total knee  
replacements and sports medicine*  
*Board Certified, Orthopaedic Surgery*



### Matthew J. Connolly, D.P.M.

Non-Surgical Foot Care  
*Interests: Diabetic foot care and sport-specific  
orthotics.*  
*Board Certified, Podiatric Orthopaedic and  
Primary Podiatric Medicine.*



### Matthew S. Grunkemeyer, M.D.

General Orthopaedics  
*Interests: Fractures, sports injuries, joint  
replacement, carpal tunnel and hand  
disorders*  
*Board Certified, Orthopaedic Surgery*



### Raj V. Kakarlapudi, M.D.

Spine Surgery  
*Interests: Minimally invasive spine surgery,  
image-guided spine surgery*  
*Board Eligible, Orthopaedic Surgery*



### Matthew T. DesJardins, M.D.

Non-Surgical Sports Medicine and Spine  
*Interests: Pediatrics, ultrasound  
applications, platelet-rich plasma and  
spinal injections*  
*Board Certified, Family Practice, Certificate  
of Added Qualification in Sports Medicine*



### Forest T. Heis, M.D.

Advanced Arthroscopy of Knee &  
Shoulder, General & Complex Sports  
Medicine and Hip Fractures  
*Board Certified, Orthopaedic Surgery*



### John J. Larkin, M.D.

Shoulder and Knee Injuries, Arthritis and  
Reconstructive Total Knee Replacement  
and Work Related Injuries, Cartilage  
Repair and Transplantation  
*Board Certified, Orthopaedic Surgery*



### Thomas M. Due, M.D.

Treatment of Hand & Wrist Injuries  
and Disorders  
*Board Certified, Orthopaedic Surgery  
and Hand Surgery*



### Michael D. O'Brien, M.D.

General Orthopaedics  
*Interests: Sports medicine, treatment of  
fractures & knee injuries, adult reconstructive  
surgery, total hip replacement, total knee  
replacement, arthroscopic knee surgery*  
*Board Certified, Orthopaedic Surgery*