Ask the Docs
The Ins and Outs of Minimally Invasive Total Joint Arthroplasty

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OPENING REMARKS

On behalf of all the physicians and staff at Commonwealth Orthopaedics & Rehabilitation, PC, I would like to welcome you to the premier issue of Commonwealth Orthopaedics & Rehabilitation magazine. We thank you for taking time to learn more not only about our practice but also about orthopaedics and general health-related topics.

Articles featuring innovative procedures such as artificial disc replacement exemplify Commonwealth Orthopaedics & Rehabilitation's commitment to keep up to date on the latest trends in orthopaedic health care. This commitment allows us to provide unmatched patient care and results.

This is just a sampling of what we plan to bring you with each issue. As with any project, we foresee Commonwealth Orthopaedics & Rehabilitation constantly evolving to meet the needs of our readers, including fellow physicians and their staffs as well as patients seeking a quality, orthopaedic-care provider.

With a wide range of specialists, Commonwealth Orthopaedics & Rehabilitation is a leading provider of comprehensive musculoskeletal care in northern Virginia. We look forward to covering the continued advances in orthopaedic treatment as well as future improvements in the ever-evolving arena of patient care.

We hope you find the articles in this issue of Commonwealth Orthopaedics & Rehabilitation informative and interesting. We look forward to providing many more years of excellent service.

Sincerely,

William A. Hazel, Jr., MD, President

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The information contained in this publication is not intended to replace a physician's professional consultation and assessment. Please consult your physician on matters related to your personal health.
If walking, climbing stairs, and performing simple daily activities turns into a complicated process because of pain in the hip, knee, thigh, groin, or buttocks, osteoarthritis may be the culprit. Innovative minimally invasive total joint arthroplasty techniques can return patients to their normal lives sooner and with less pain.

What Causes Osteoarthritis and Its Associated Pain?

Generally, osteoarthritis results from a lifetime of wear and tear on the joints. As the most common type of arthritis, especially among older people, this condition can also result from an injury or developmental abnormalities of the hip.

Osteoarthritis affects the cartilage, the slippery tissue that covers the ends of bones in a joint. While healthy cartilage allows bones to glide over one another and absorbs energy from the shock of physical movement, in osteoarthritis patients, the surface layer of cartilage breaks down and wears away, allowing the bones under the cartilage to grind against each other. For some, the joint may lose its normal shape. The pain can also result in a limp, which puts strain on other muscles and joints, placing them at risk for injury.

How Is Osteoarthritis Diagnosed and Treated?

Diagnosing osteoarthritis is relatively simple. A combination of methods rule out other possible conditions. The first step is to determine the patient’s clinical history. At this point, the physician and patient discuss when and how the symptoms first occurred. Through a physical exam, the physician checks the patient’s general health, including reflexes and muscle strength, and carefully examines the painful joint. Then, x-rays are taken to determine the extent of the joint damage.

Physical therapy and gentle, supervised yoga are sometimes recommended to alleviate the pain associated with osteoarthritis. These exercises help bring stability and lubrication to the hip joint as well as stretch and strengthen the surrounding muscles, which tend to tighten due to the joint’s instability. For more severe osteoarthritis, surgery is often indicated.

What New Surgical Techniques Are Available?

A confirmed osteoarthritis diagnosis may warrant hip or knee replacement surgery. In fact, osteoarthritis of the hip is the most common diagnosis that leads to hip replacement. Over the years, joint replacement surgery has earned its place as one of the most successful orthopaedic procedures, as measured by patient satisfaction.
One of the newest and least invasive techniques for joint replacement is minimally invasive hip replacement surgery. While conventional hip replacement involves making a 10-inch to 12-inch incision to repair the hip, minimally invasive total joint arthroplasty is performed through one or two smaller incisions that measure only 3 inches or 6 inches each, depending on the patient’s size and the procedure’s difficulty.

The extent of soft tissue dissection is also less than with longer incisions. Physicians have adapted to this new procedure through training and experience, developing a new mindset to incorporate innovative instruments such as lighted retractors to achieve a better view of anatomical structures through smaller incisions.

The incision is usually placed over the outside of the thigh. Specially designed instruments prepare the socket and femur and place the implants properly. Using this technique, muscles and tendons are split or detached to a lesser extent than in traditional hip replacement surgery. They are routinely repaired after the implants are placed to promote healing and prevent hip dislocation.

A no-wear hip replacement (which is metal on metal instead of metal on plastic) uses a new surface that shows no evidence of wear after more than 30 million steps, or the equivalent of 30 years’ use. This replacement is perhaps more expensive and potentially as long lasting as the traditional method, so it is generally geared more toward the younger patient. Often, older patients are best suited for the traditional replacement.

Minimally invasive knee replacement also produces smaller scars and a faster recovery than traditional total knee replacement. For some patients whose arthritis only affects one compartment of the knee, a partial knee replacement is often indicated. This procedure results in a smaller incision and leaves the healthy parts of the natural knee intact.

What about Rehabilitation?

Recovering from minimally invasive hip replacement is a shorter process than with traditional surgery. Hospital stays average four to five days for traditional hip replacement, with many patients requiring extensive rehabilitation afterward.

With minimally invasive procedures, the hospital stay is often as short as two days, and many patients are able to bear full weight on the affected leg within 24 hours. Crutches and other walking aids are usually used during the first few weeks.

Reston Hospital Center, Virginia Hospital Center, and Alexandria Hospital — all Commonwealth Orthopaedics & Rehabilitation locations — have implemented a comprehensive Total Joint Program that includes the involvement of preoperative education coordinators. Coordinators meet with patients and discuss what to expect during the course of their stays at the hospitals and their rehabilitations.

An experienced anesthesia team reduces the hospital stay and provides pain management for a more comfortable recovery period. The Clinical Pathways Program helps patients get out of bed and dressed for rehabilitation early in the day to facilitate the recovery process.

What Innovations Does the Future Hold?

In the future, fluoroscopic (x-ray) and computer guidance for implant insertion is expected to make this operation, as well as patient recovery, even easier by allowing the physician to watch as the implant is guided to the proper spot on an x-ray screen. This technique splits the muscles but does not detach them.

The decision to have minimally invasive hip replacement surgery requires a thorough evaluation and discussion with the operating surgeon about the associated risks and benefits.

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ORTHOFAX FACT

Over the past 50 years, there have been many advances in total joint arthroplasty. Orthopaedic surgeons can replace painful, stiff hips with durable prostheses made of metal alloys, high-grade plastics, and polymeric materials. All materials used in total hip replacements have four characteristics in common:

1. They are biocompatible, meaning they won’t create a local or a systemic rejection response.
2. They are durable, meaning they are resistant to corrosion, degradation, and wear and will retain their strength and shape for a long time.
3. They are functional, meaning they have mechanical properties that duplicate the replaced structures, such as the strength to handle weight-bearing loads, the flexibility to bear stress, and the ability to glide against each other.
4. They are high quality, meaning they meet the highest fabrication standards at a reasonable cost.

Source: American Academy of Orthopaedic Surgeons

ORTHOFAX FACT

According to the National Institute of Arthritis and Musculoskeletal and Skin Diseases, more than 20 million people in the United States have osteoarthritis. And by 2030, 20% of Americans — approximately 70 million people — will have passed their 65th birthdays, increasing their risk for the disease.

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Mark C. Hartley, MD, graduated from Georgetown Medical School and received his orthopaedic surgery training, orthopaedic residency, and surgical internship at Georgetown University Hospital. He completed additional hip and knee replacement training at Union Memorial Hospital in Baltimore. Dr. Hartley is a Fellow in the American Academy of Orthopaedic Surgeons and the American College of Surgeons. He is also a member of the American Association of Hip and Knee Surgeons.

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LET’S GET PHYSICAL
The Truth about Exercise’s Benefits for Arthritis
By David W. Romness, MD

When you’re tired, achy, and your arthritis is acting up, going for a bike ride or walking on the treadmill is often the last thing you want to do. But exercise is often the best thing you can do to make those aches and pains subside.

Rest and relaxation, while perhaps beneficial for mental stress, is not particularly helpful to arthritic joints. Inflammation sets in when the joint is not in motion. Lack of exercise weakens muscles around the joint and makes bones softer and more prone to breaking.

Physical activity, on the other hand, lubricates the joints and promotes circulation to afflicted areas. Joints actually become less stiff as they are gently coaxed through their full ranges of motion.

An Effective Pain-Management Tool
Simply going for a short walk or swim can have an immediate effect in terms of pain relief. And the long-term benefits of exercise are even more profound. The right kinds of exercise strengthen the muscles surrounding joints, so they don’t have to bear as much of the load. Exercise reduces fatigue, elevates mood, and can enable weight loss, which can have a profound effect on pain and mobility, even in small increments.

A regular exercise program has proven so effective in day-to-day pain management that many patients consider it an alternative to more invasive forms of treatment. In fact, patients who have experienced such an acute level of suffering that they are on the verge of undergoing joint replacement surgery have reversed their symptoms with dedicated exercise programs. Exercise enables them to delay the need for surgery for years or, in some cases, avoid it altogether.

Low-Impact Exercises Are Best
The most beneficial forms of exercise are those that encourage motion without load and strengthen the muscles around the joint. Swimming, cycling, and elliptical training are all excellent choices. Walking has some load but is low impact enough to be safe.

Properly performed weight lifting is also beneficial. It is often advantageous to work with a trainer at first until you become familiar with the equipment. However, high-impact exercises such as running, tennis, and basketball, all of which put extreme stress on joints and tendons, are much more prone to causing injury and should be undertaken with a physician’s guidance.

For arthritic patients, care and common sense are essential. So-called weekend warrior syndrome — being inactive all week and then engaging in a burst of activity on the weekend — is one of the most common causes of sports-related injuries and is an especially dangerous pitfall for those with arthritis.

Ease into your workout slowly. Start out walking five to 10 minutes and then work up to half an hour. Just a brief, brisk stroll will pay dividends in terms of pain relief and will save you the risk of straining your muscles.

Beat Arthritis, Not Yourself
It is important to stretch your muscles before and after exercise and warm up arthritic joints by flexing them gently. If you are experiencing pain in your joints, try applying heat to the affected area before beginning your workout. And icing the joints for 15 minutes after working out can prevent swelling.

While exercising, pay attention to your body. Forget the “no pain, no gain” philosophy. If what you are doing starts to hurt, ease up or take a break. If you experience acute pain, swelling, or any mechanical symptoms such as catching, locking, and buckling, call your physician right away.

Arthritis doesn’t have to slow you down. While exercise doesn’t require you to visit your physician, obtain a prescription, or even spend much money, it is one of the most effective methods to beat arthritis pain — and one of the healthiest, too.

David W. Romness, MD, received his medical degree from Eastern Virginia Medical School in 1984, and completed surgical and orthopaedic training at the Mayo Clinic in 1990. He is certified by the American Board of Orthopaedic Surgery and is a Fellow in the American Academy of Orthopaedic Surgeons. Dr. Romness is past President of the Virginia Orthopaedic Society and the Washington Orthopaedic Society. He is a member of the Eastern Orthopaedic Association, American Association of Hip and Knee Surgeons, Arlington County Medical Society, and Medical Society of Virginia.
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Although still in its infancy, artificial disc replacement is a promising new treatment for people with painful lumbar degenerative disc disease (DDD). Compared with spinal fusion surgery, disc replacement does not restrict movement. Restricted movement can cause adjacent segment disease, which can result from additional stress placed on adjacent discs after spinal fusion.

As the joints of the spinal column, the intervertebral discs have a primarily mechanical role of transmitting loads through the spine and providing flexibility to the spinal column. This permits bending, torsion, and flexion through a range of motions. The spinal disc has relatively few cells embedded in an extracellular matrix. The cells maintain and repair the matrix to keep a balance between tissue breakdown and replacement.

**The Source of Pain**

Degradation of the matrix occurs when there is an imbalance between matrix synthesis and matrix breakdown, which leads to DDD. The degraded matrix cannot carry loads effectively, and some cells become necrotic. The endplate of the disc calcifies and disc degeneration begins.

As disc degeneration progresses, blood vessels and nerves penetrate the previously adneural and avascular disc, creating discogenic pain. This process causes further disc degeneration that changes spinal mechanics and causes painful, debilitating conditions. Degenerative changes in the disc can cause herniation, which produces sciatica and low back pain.

Long-term DDD can cause spinal stenosis (narrowing of the spinal canal), a major cause of pain and disability in the aged. With a gradually increasing lifespan, there is a corresponding rise in the incidence of spinal stenosis. Only approximately 10% of teenagers have DDD, but more than 70% of those aged 50 years and older develop this painful condition.

**Etiology of DDD**

What are the causes of DDD? Epidemiologic studies conducted in the last 30 years have pointed to heavy physical labor, truck-driving careers, and smoking as significant risk factors. However, these studies are based on an assumption that DDD largely results from overloading of the spine and do not account for the ability of the musculoskeletal system to adapt to external stresses.

Other population studies conducted in the last decade have identified genetic predisposition as key in DDD and pointed to a possible combination of...
 Positive Results

Since the Food and Drug Administration (FDA) approved the CHARITÉ™ disc in October 2004, more than 350 have been implanted at 15 spine centers in the United States. The disc manufacturer says more than 5,000 devices have been implanted worldwide since first appearing in the 1980s. The device was hailed as “the best disc replacement compromise” in a research paper that covered outcomes of 105 patients.

The artificial disc was found to be superior to the spinal fusion procedure as measured by a 25% or greater improvement in Oswestry improvement criteria. Patients with the disc showed statistically significant differences at six weeks, three months, six months, and 12 months after surgery.

Patients who received the artificial disc also reported greater satisfaction, with 69% responding they would “definitely choose the same treatment again” and 13% responding they would “probably” choose the disc. Corresponding numbers among patients who received fusion were 52% and 13%, respectively.

Promising New Technology

At present, the full longevity of disc replacement devices is not known, but they are expected to endure for 20 to 40 years, depending on the integrity of the polyethylene insert that fits between two metal plates implanted into vertebral above and below the implant. In some other discs, there is no plastic insert and the metal plates articulate directly on each other.

Although there is only one artificial disc on the market in the United States now, there are other devices awaiting FDA approval. One of these is PRODISC®, which has demonstrated good to excellent results in 90% of patients in Europe. Approval of this device could come from the FDA in 2005. Other artificial discs include MAYERICK™ and Flexcore™.

Artificial disc replacement is an exciting new addition to the armamentarium of orthopaedic surgeons who offer treatment for DDD. As with other new technologies and therapies, general acceptance will come as the procedure continues to improve with better implants to alleviate pain and suffering.

Ronald C. Childs, MD, received his Bachelor of Arts degree in psychobiology from Boston University and his medical degree from Howard University in Washington, D.C. He completed a spine surgery fellowship program at Rush-Presbyterian, St. Luke’s Medical Center in Chicago, and he completed a residency program at Howard University in orthopaedic surgery.

Dr. Childs is board certified by the American Board of Orthopaedic Surgery and is a Diplomat of the National Board of Medical Examiners. He is a Fellow in the American College of Surgeons and the American Academy of Orthopaedic Surgeons. He is Chief of the Division of Spine Surgery of INOVA Fairfax Hospital. He has been with Commonwealth Orthopaedics & Rehabilitation, PC, since 1994.
The idea that talented physicians working together can provide a higher level of service for patients and a better working environment for themselves than they can achieve by working alone is the premise on which Commonwealth Orthopaedics & Rehabilitation was founded.

In the 11 years since its launch by eight physicians from two practices (OASIS and Franklin Orthopaedic & Physical Medicine), Commonwealth has become the largest provider of orthopaedic care in northern Virginia, with 34 physicians covering the full spectrum of musculoskeletal care. As the practice continues to expand, adding services and achieving extraordinary patient satisfaction ratings, Commonwealth is proving that there is, indeed, strength in numbers.

No matter where one might live in northern Virginia, “You don’t have to drive far to access one of our offices,” says Bill Harvey, Commonwealth’s Chief Executive Officer. Primary care providers can refer patients to Commonwealth and feel confident that their patients will receive quality care that is conveniently located to where they live and work.

“One of the advantages of a large practice is that while every physician brings his or her own specialty, skill, and medical knowledge to the group, each physician has the entire breadth of the group’s knowledge at hand at all times,” says Harvey. “If a physician has an unusual or special case, there are several other physician opinions available. It’s like a built-in consultation service that doesn’t cost the patient a cent.”

**Developing a Sound Structure**

In the early 1990s, Commonwealth’s founding physicians believed that cultivating a large, reputable practice with a wide geographic reach would provide them with a stronger position in the medical marketplace as well as enable them to provide a more comprehensive range of musculoskeletal services for their patients.

Today, Commonwealth encompasses a sophisticated staff of orthopaedic and radiology technicians, nurses, three anesthesiologists, physician assistants, and physical therapists, as well as 31 orthopaedic surgeons representing virtually every subspecialty, including general orthopaedics, sports medicine, total joint replacement, hand and upper extremity surgery, spine surgery, and pediatric orthopaedics.

The practice has eight physician offices, all but one of which have their own physical therapy facilities. In addition, the practice operates two ambulatory surgery centers for outpatient surgery. Commonwealth’s services include care of musculoskeletal ailments, orthopaedic surgery, fracture care, and rehabilitation care.

Commonwealth’s size and scope offers patients a host of advantages beyond simple location
Regarding the issue of quality, Commonwealth completed their postoperative recoveries. It is a very hands-on service that scores exceptionally well with our patients and results in improved patient care.

**Improving Outpatient Care**

Patients who require outpatient surgery for orthopaedic conditions can undergo treatment at one of Commonwealth's two ambulatory surgical centers, which are located in Herndon and Fairfax. The centers offer a more intimate, patient-centered environment than a busy hospital. Furthermore, all the nursing personnel in the ambulatory surgery centers are trained specifically in orthopaedics, providing a level of expertise that is difficult to attain in a general hospital or multispecialty surgery center setting, where support staff are frequently shared across a variety of medical disciplines. “Everyone there, from the nurses to the scrub techs, are specialized in orthopaedics,” says Harvey. “They work for us. They know our staff. The surgeries go much smoother because of the familiarity between the staff and surgeons.”

The processes are so efficient that patients are able to check in before surgery in about half the time it would take at a hospital. They are also discharged much more quickly once they have completed their postoperative recoveries.

Regarding the issue of quality, Commonwealth opens its entire organization for review by the same outside review organization that accredits hospitals. Commonwealth is fully accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), the “gold standard” for accreditation status in health care service delivery.

**A Part of the Community**

Commonwealth physicians are active outside their private practices, working in the community at large, as part of the leadership at local hospitals, and in medical organizations at the local, state, and national levels. They are active in the local medical societies, the Medical Society of Virginia, the Virginia Orthopaedic Society, and the American Academy of Orthopaedic Surgeons. One physician is currently serving on the Board of Directors of the American Medical Association.

On the local sports scene, the group serves as Team Physicians for professional soccer team D.C. United of Major League Soccer, and one of the physicians attends to athletes at George Mason University, supporting its Division I sports teams. The physicians also work with a number of area high school athletic teams, assisting the athletic training staffs and teaching players how to avoid injuries in addition to treating them during games.

As long as northern Virginia continues to grow and prosper, Commonwealth expects to remain a part of it and grow along with it. “We want to maintain our presence in new communities as they grow,” says Harvey, who notes that the group’s infrastructure is geared to support such expansion.

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*One of the advantages of a large practice is that while every physician brings his or her own specialty, skill, and medical knowledge to the group, each physician has the entire breadth of the group’s knowledge at hand at all times.”*

— Bill Harvey,
Chief Executive Officer,
Commonwealth Orthopaedics & Rehabilitation

**AT THE FOREFRONT**

**The Physicians of Commonwealth Orthopaedics & Rehabilitation**

The physicians of Commonwealth Orthopaedics & Rehabilitation have expert knowledge of general orthopaedics with additional specialized training in sports medicine, total joint replacement, hand and upper extremity surgery, spine surgery, and pediatric orthopaedics.

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GETTING BACK IN THE GAME

Treatment Options for Athletes with Knee Injuries

By Christopher C. Annunziata, MD

The knee, which gives us stability as we stand and flexibility as we move, is the largest joint in the body and one of the most easily injured. It is made up of the lower end of the thighbone (the femur), which rotates on the upper end of the shinbone (the tibia), and the kneecap (the patella), which slides in a groove on the end of the femur. It also contains large ligaments that connect the bones and brace the joint against abnormal movements. Of the four major ligaments found in the knee, the ACL and MCL (medial collateral ligament) are often injured in sports. Problems with the PCL (posterior cruciate ligament) and LCL (lateral collateral ligament) are less common.

During the 2003 Fiesta Bowl, a running back planted his foot on the turf and then took a direct blow to the knee, resulting in a catastrophic injury. Even the untrained eye could see that his leg should not have bent the way it did.

News reports following medical examinations and diagnostic tests noted an ACL (anterior cruciate ligament) tear and meniscal injury. Some thought the player was through with football at that point, but a year later, he was playing in the NFL. What happened? He was fortunate enough to take advantage of the latest techniques in knee reconstruction and rehabilitation.

Of all the injuries bringing patients in to see me, ACL tears are among the most common. Merely twisting in an awkward position can sometimes damage the ligament. Those who participate in contact sports such as soccer, basketball, and football are particularly prone to this kind of knee injury. Running and then making a sudden change in direction is often the cause of damage.

The knee, which gives us stability as we stand and flexibility as we move, is the largest joint in the body and one of the most easily injured. It is made up of the lower end of the thighbone (the femur), which rotates on the upper end of the shinbone (the tibia), and the kneecap (the patella), which slides in a groove on the end of the femur. It also contains large ligaments that connect the bones and brace the joint against abnormal movements. Of the four major ligaments found in the knee, the ACL and MCL (medial collateral ligament) are often injured in sports. Problems with the PCL (posterior cruciate ligament) and LCL (lateral collateral ligament) are less common.

Athletes may also suffer meniscus tears, which usually occur when they are twisting, cutting, pivoting, decelerating, or tackled. The knee’s medial meniscus and lateral meniscus are crescent-shaped pieces of cartilage attached to the ligaments that act as shock absorbers between the femur and tibia. Football players can even tear their ACLs, MCLs, and meniscuses in one fell swoop. This condition, known as the Terrible Triad, happens when a player receives a blow toward the lateral side of the knee.

Arthroscopic Reconstruction

Commonwealth Orthopaedics & Rehabilitation’s sports medicine specialists are proficient in treating these types of injuries with surgical and nonsurgical options. Nonsurgical approaches generally incorporate rest, icing, compression with elastic bandages, and elevation (what physicians often refer to as R-I-C-E). Physical therapy may also aid in the recovery and usually begins when the patient can tolerate the pain of this activity. A brace is also sometimes necessary.

Surgeons make reconstruction decisions based on the degree of the tear and the patient’s age. Surgery is generally recommended for younger patients or patients with active lifestyles. For younger patients in particular, leaving knee instability and possible cartilage injury untreated may contribute to the early onset of arthritis. >>
For younger patients in particular, leaving knee instability and possible cartilage injury untreated may contribute to the early onset of arthritis. Fortunately, arthroscopic surgery is now a common treatment for knee injuries and has proven effective over the last 10 years.

Meniscal injuries are also treated during this operation. After surgery, exercises to promote early recovery of range of motion, along with rehabilitative physical therapy, are needed to return athletes to their sports.

Reaping The Benefits

When it comes to knee surgery and recovery, much has changed in the last several years. Before minimally invasive techniques like arthroscopic surgery became commonplace, a larger incision was required to repair knee injuries, and the procedure usually involved a hospital stay of several days.

Today, the incisions are smaller, and we send the patients home the same day. As the Fiesta Bowl running back’s experience shows, advances in knee surgery and rehabilitation have done wonders for athletes. Following simple arthroscopic procedures, they can sometimes return to play in as little as two to four weeks.

Complex ligament repairs require only four to six months for a comeback, depending on the sport. Even a patient who sustains a complex injury like the Terrible Triad may return to competition within six months. That’s something to cheer about. COR

Christopher C. Annunziata, MD, is a team physician for D.C. United of Major League Soccer and James Madison High School in Vienna. He received a Bachelor of Science degree from Boston College and a medical degree from Georgetown University. He completed an orthopaedic surgery residency at Georgetown University Medical Center and a sports medicine fellowship at the Center for Sports Medicine at the University of Pittsburgh Medical Center. He is certified by the American Board of Orthopaedic Surgery and serves as Clinical Assistant Professor within the Department of Orthopaedic Surgery at Georgetown Medical Center.

Dr. Annunziata is an active member of the American Orthopaedic Society for Sports Medicine, Arthroscopy Association of North America, American Academy of Orthopaedic Surgeons, Georgetown and Virginia Orthopedic Societies, Georgetown Clinical Society, Medical Society of Virginia, and the Arlington County Medical Society.
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TREATING ROTATOR CUFF TEARS

Arthroscopic Approach Offers Less Pain, Speeds Recovery

By David J. Novak, MD

It’s a common occurrence. An elderly patient complains of shoulder pain that keeps her awake at night. A tennis player can’t move his arm without experiencing pain from the shoulder down the arm.

Rotator cuff disease represents a continuum of pathology affecting the shoulder’s four tendons that envelope the humeral head and provide most of the stability and motion for the shoulder joint — the supraspinatus superiorly, the infraspinatus and teres minor posteriorly, and the subscapularis anteriorly. Injuries and diagnoses can range from impingement syndrome to full-thickness rotator cuff tears. These injuries most commonly affect the elderly, but younger and more active patients, such as heavy laborers or athletes, are also susceptible.

Most rotator cuff pathology involves the supraspinatus. The supraspinatus is subject to not only intratendinous stresses with repetitive motion but also to abrasive forces as it travels under the bursa and the coracoacromial arch.

Rotator Cuff Injuries

Impingement syndrome is an inflammation of the subacromial bursa and the rotator cuff — bursitis and tendonitis, respectively. There is a component of tendon overload to impingement syndrome, causing tendonitis and a component of subacromial abrasion of the tendon with repetitive trauma. While impingement syndrome is most often caused by repetitive lifting at shoulder level or above, a single traumatic injury can also inflame the rotator cuff tendon and cause inflammation of the bursa.

If the inflammation in the bursa and rotator cuff continues with repetitive loads, the bursa may thicken, making even less room for the rotator cuff and causing even more mechanical abrasion to the rotator cuff. Repetitive overload of rotator cuff tissue and incidents of trauma can also cause the rotator cuff to tear. Age-related tendon degeneration also plays a common role in rotator cuff tears.

Rotator cuff tears are classified as partial-thickness tears or full-thickness tears. With a partial-thickness tear, the rotator cuff is still attached to bone, and only a part of the tendon is torn. Often, these tears have strong healing potential. With a full-thickness tear, the rotator cuff is detached from the bone, usually at the supraspinatus. These do not have healing potential because the rotator cuff cannot re-attach itself to bone without surgical fixation. However, surgical treatment is not always required. Some patients find they can live with rotator cuff tears and maintain good function with minimal pain.

Evaluating the Patient

To evaluate a patient for a rotator cuff tear, physicians should conduct a thorough history on the mechanism of any trauma and the nature of the pain. Most often, a rotator cuff tear causes pain down the lateral aspect of the arm, sometimes radiating down to the elbow. These patients usually complain of arm pain rather than shoulder pain. Reaching out or above shoulder level will often exacerbate the pain.

Patients may also complain of occasional night pain. Night pain is often the reason these patients come into the office, blaming poor sleep patterns. On physical examination, certain maneuvers called impingement signs are used to elicit pain in the rotator cuff area.

Pain with active elevation of the arm at about 90 degrees is consistent with rotator cuff tears. These patients typically have some stiffness, but in general, the arm is still easily elevated above shoulder level. Severe stiffness with less than 90 degrees elevation or abduction is more consistent with frozen-shoulder syndrome than with rotator cuff injury.

Radiologic evaluation of a painful shoulder includes anteroposterior axillary lateral and scapular Y-view x-rays to assess whether arthritis is present in the glenohumeral joint. A magnetic resonance imaging scan is another excellent tool for diagnosing rotator cuff tears.

Conservative Treatment

If the patient is diagnosed with impingement syndrome without a significant rotator cuff tear, treatment begins with a trial of conservative care for approximately two to three months. Nonsteroidal, anti-inflammatory medications are often prescribed to control inflammation. Cortisone injections can also play an important role in reducing inflammation, controlling pain, and allowing for a more aggressive physical therapy plan.

One goal of physical therapy is to improve the patient’s range of motion. Injured shoulders are usually tight in elevation and internal rotation. Strengthening the rotator cuff is important, and it can take several months to see results. Chronic pain often leads to weak rotator cuff muscles and, consequently, poor shoulder mechanics.
As part of their treatments, patients should also receive education on the proper mechanics of shoulder movement. This can include lifting mechanics for the laborer or proper throwing mechanics for the athlete. Strengthening the core muscles as well as the lower extremities is important in taking pressure off the shoulder when lifting or throwing.

Surgical Treatment Options

Surgery is indicated for treatment of impingement syndrome when, after two to three months of conservative care, the patient has pain and loss of function that interferes with sleep and the activities of work and daily living.

When a rotator cuff tear fails to heal with conservative care, the next step is surgical treatment consisting of diagnostic arthroscopy and subacromial decompression, followed by repair of the rotator cuff. While the traditional method for repairing a rotator cuff is the open approach consisting of diagnostic arthroscopy and subacromial decompression through an arthroscopic approach and then repair the rotator cuff in a mini-open approach with a small deltoid split requiring no deltoid detachment. Many surgeons are also choosing to perform the entire surgery with arthroscopic methods, including repair of the rotator cuff arthroscopically. In the short term, mini-open arthroscopic techniques reduce postoperative pain and facilitate a prompt recovery of motion.

Recovery and Results

The results of impingement surgery and rotator cuff repairs are excellent. More than 90 percent of patients experience pain relief, excellent function, and a return to their daily activities.

However, a heavy laborer may not be able to return to the same line of work if it requires extensive and repetitive lifting above shoulder level, and an athlete may have restored function in daily activities yet find it difficult to return to sports activities that involve throwing. The severity of rotator cuff trauma directly relates to the severity of shoulder trauma and the patient’s age.

No matter which method is employed to repair the rotator cuff, the limiting factor in returning the patient to full activity is the healing of the rotator cuff tendon to bone. On average, a patient can expect approximately three months of healing time for the rotator cuff to attach solidly to bone and should limit active strengthening in elevation and abduction until that time. Total recovery time for rotator cuff repair is around five to six months. At this point, patients are most often back to full activity. COR

Promoting the Healing Process

Orthobiologic Tissue Implants

Rotator cuff tears have been recognized as a common cause of pain and disability for almost a century. Over the past two decades, treatment of rotator cuff disease has transitioned from open repair to mini-open repair to arthroscopic repair. Continuing advances include newer arthroscopic and mini-open surgical techniques, as well as those using dissolvable anchors. Dissolvable suture anchors hold stitches in place or down to bone until the repair has healed and then are absorbed by the body.

Research is also underway on “orthobiologic” tissue implants. These promote growth of new tissue in the body and help with the healing process. In fact, the RESTORE® Orthobiologic Soft Tissue Implant, a product of DePuy Orthopaedics, Inc., has regulatory approval from the U.S. Food and Drug Administration for use on rotator cuff injuries to assist the postoperative healing process. The RESTORE implant reinforces the repaired rotator cuff and provides a framework for new tissue growth. As new soft tissue grows in rotator cuff area, the primarily collagenous implant slowly dissolves and is replaced by the host tissue.

Derived from the submucosa lining of a pigs’ small intestines, the biologically engineered implant aims to prevent retearing, which can occur in up to 40% of people who undergo rotator cuff surgery. But it is not indicated for every patient, and results vary.

David J. Novak, MD, received his Bachelor of Arts degree in economics from the University of Pennsylvania. He received his medical degree from Georgetown University. He remained at Georgetown University Medical Center to complete a residency in orthopaedic surgery. He then completed advanced fellowship training in sports medicine and arthroscopy at the Southern California Orthopaedic Institute. Dr. Novak has extensive experience with the arthroscopic treatment of shoulder problems. Over the last four years, he has repaired rotator cuff tears of all sizes using an arthroscopic technique. He remains academically involved, serving as a lab instructor at national meetings teaching advanced arthroscopic shoulder techniques to other orthopaedic surgeons. Dr. Novak is board certified by the American Board of Orthopaedic Surgery. He is an active member of the American Orthopaedic Society for Sports Medicine, the Arthroscopy Association of North America, the American Academy of Orthopaedic Surgeons, and the Virginia Orthopaedic Society.
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