



Hughston Health Alert

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What is Arthroscopy?

In 1806, a Viennese scientist invented a method for looking inside the body without making a large incision. He inserted a metal tube through a small canal and held a candle at the end of the tube that reflected in a mirror for illumination. In 1918, a Japanese scientist modified this procedure by inserting a viewing tube into a knee joint. The new procedure, arthroscopy, revolutionized orthopaedic surgery.

Arthroscope is a term that comes from two Greek words, *arthro-*, meaning joint, and *-skopein*, meaning to examine. Arthroscopy refers to

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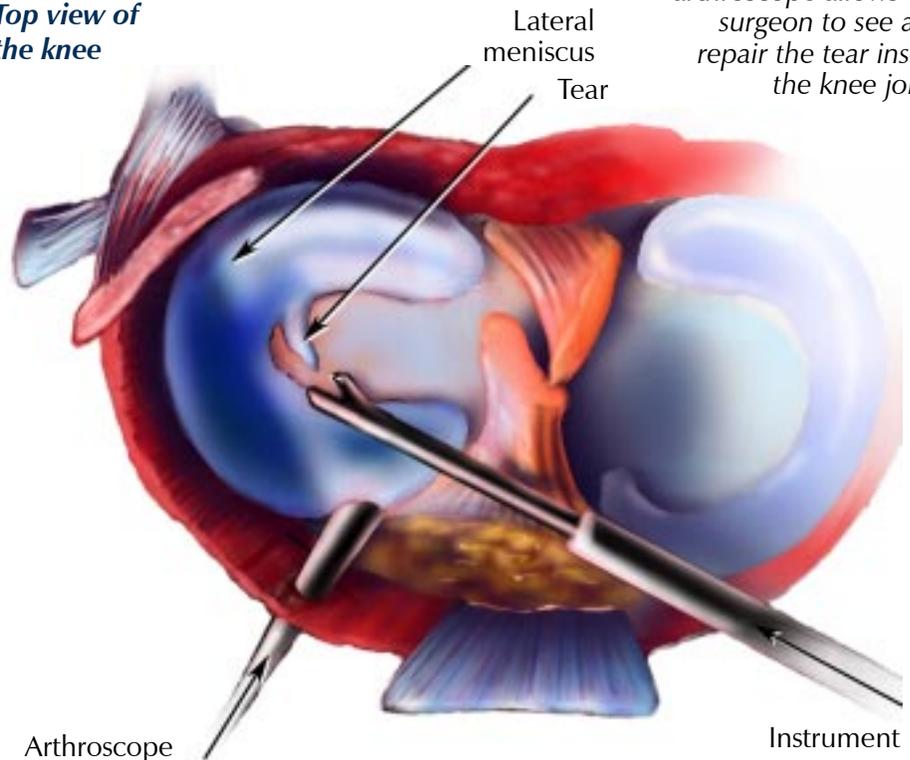
Side view of the knee



Arthroscopy of the Knee

Arthroscopy can be used to repair a tear of the lateral meniscus of the knee. The arthroscope allows the surgeon to see and repair the tear inside the knee joint.

*Top view of
the knee*



FOR A HEALTHIER LIFESTYLE

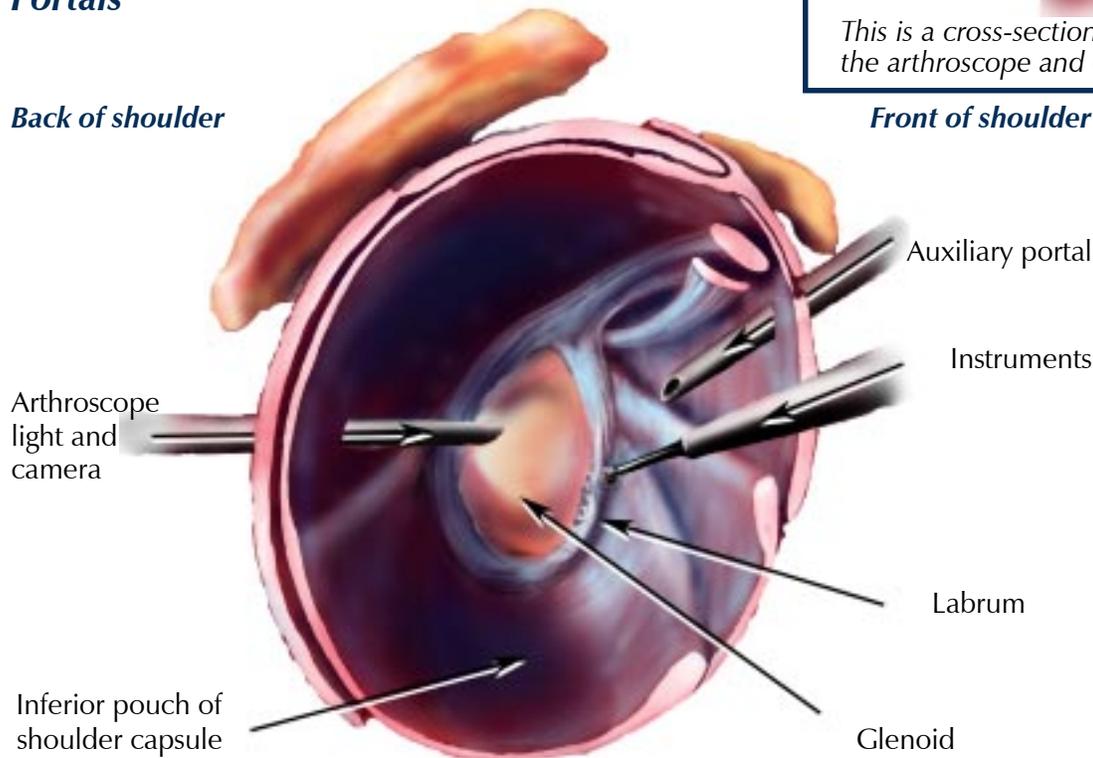
examination of the inside of a joint with an arthroscope. The doctor makes small incisions in your skin and inserts the arthroscope to illuminate the tissue and structures within the joint and display the image on a television screen. The other incisions are used to insert tiny instruments to correct the problem (see illustration, page 1).

At first, doctors could only use the procedure to look into joints and identify problems. They still had to make larger incisions in the skin and underlying tissue to treat the problems that they found. Today, digital video and fiberoptic light

The benefit of this technology is tremendous. Joint problems that only one generation ago involved large incisions and resulted in long hospitalization can be treated through **portals** (small incisions), allowing shorter hospital stays and a shorter, less painful recovery. For example, you can have torn cartilage

Placement of Shoulder Portals

Back of shoulder



Inside the shoulder joint, showing the placement of the light and camera and the instruments correcting a tear of the labrum (cartilage) from the glenoid of the shoulder blade. The glenoid is the part of the shoulder blade that contacts with the head of the humerus. The humerus (upper arm bone) has not been drawn in.

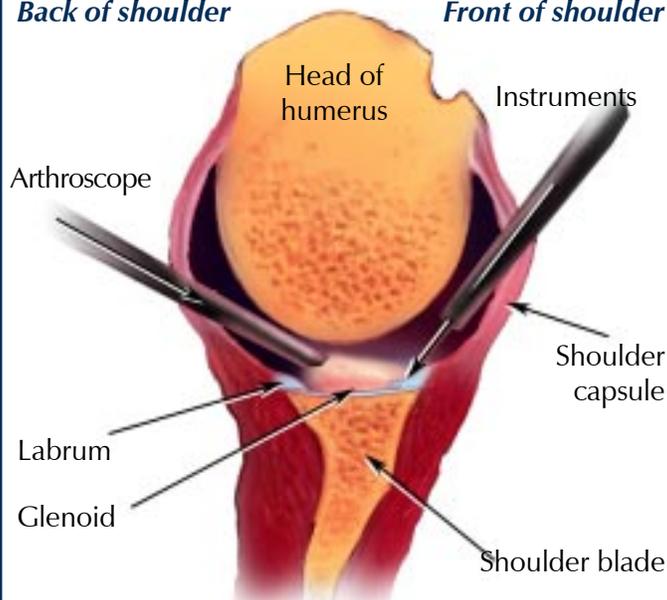
transmission produce crystal clear images that allow doctors not only to see what is wrong but frequently to treat the problem through the same incisions.

removed or repaired in your knee and go home the same day. Arthroscopic surgery currently is used to treat problems in the ankle, hip, wrist, knee, shoulder (see illustrators,

Placement of Shoulder Portals

Back of shoulder

Front of shoulder



This is a cross-sectional view of the shoulder with the arthroscope and instruments in place.

Front of shoulder

this page), elbow, and even joints as small as the temporo mandibular joint (jaw).

As the instruments evolve for this minimally invasive technique, the ability of doctors to address more problems through arthroscopic surgery continues to grow. Although the procedure has not eliminated the need to treat some problems through large incisions, it has given doctors another option for dealing with certain disorders in carefully selected patients. Arthroscopy is truly one of the most useful innovations in orthopaedic surgery.

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Further Reading:
Dahms DK, Sports Medicine: The Arthroscopy Patient. Denver, CO: Association of Operating Room Nurses; 1989.

Elbow Arthroscopy

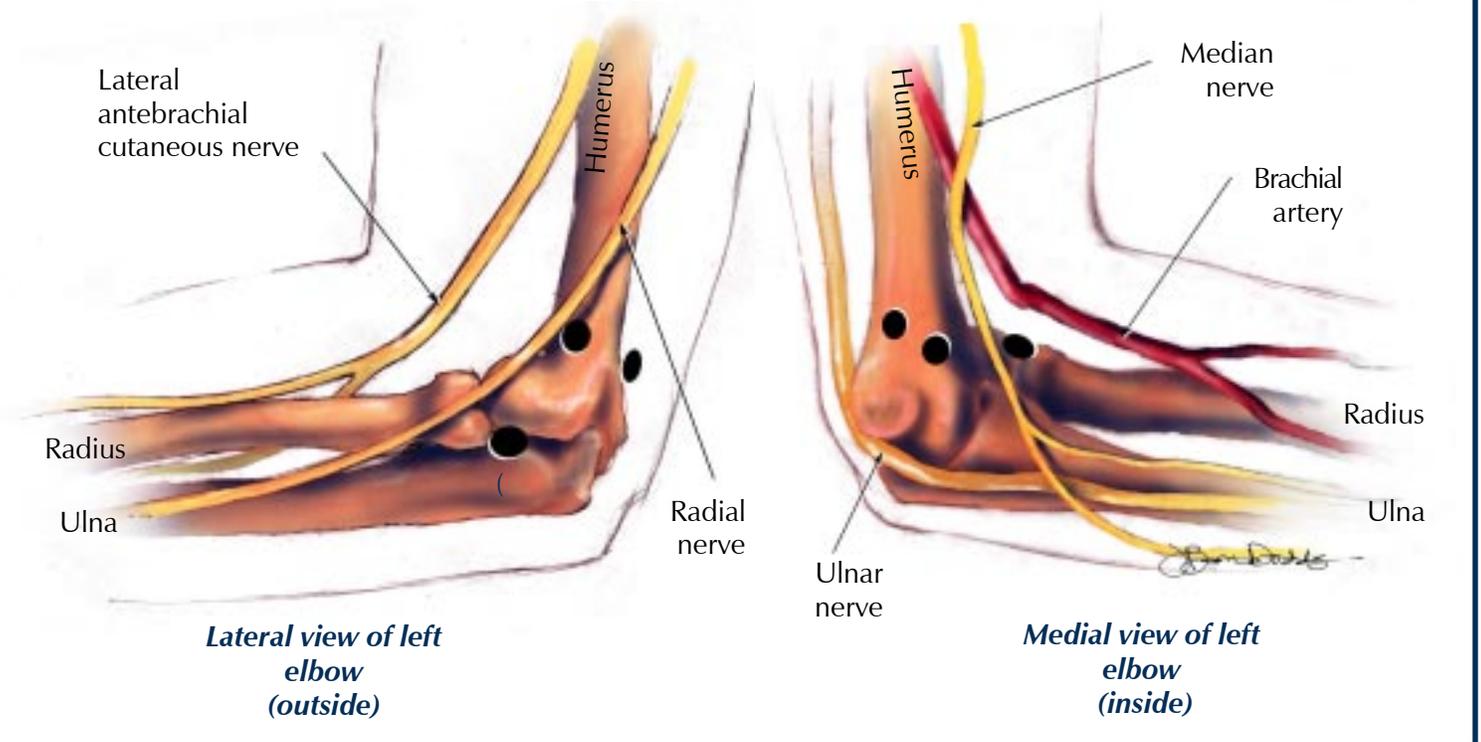
Three bones come together to form the elbow. They are the humerus (upper arm bone), the radius (lower arm bone on the thumb side), and the

ulna (lower arm bone on the little finger side). These bones form a hinge joint. In addition, the radius rotates so you can turn your palm to the front or to the back. Arthroscopic surgery of the elbow is challenging because of the joint's anatomy. The bones lie close together, and nerves and blood vessels are located very close to the joint (see illustration above). Therefore, the doctor must be especially careful when inserting the arthroscopic instruments into the joint.

cause bone spurs to develop. These spurs can be painful and make it hard to move the elbow. The doctor can remove the spurs by using special tools, such as a burr, inserted into the joint through the portals or small incisions. After the spurs are removed, (bones) in the elbow, causing pain. Usually, the injury improves when treated with rest, ice, and nonsteroidal anti-inflammatory drugs (e.g., aspirin, ibuprofen). However, sometimes it must be treated with surgery, which can be done during an

Elbow Anatomy and Portal Placement

The black dots indicate portals that are used to see different parts of the joint.



ulna (lower arm bone on the little finger side). These bones form a hinge joint. In addition, the radius rotates so you can turn your palm to the front or to the back. Arthroscopic surgery of the elbow is challenging because of the joint's anatomy. The bones lie close together, and nerves and blood vessels are located very close to the joint (see illustration above). Therefore, the doctor must be especially careful when inserting the arthroscopic instruments into the joint.

Although it is a difficult procedure, arthroscopic surgery is often the ideal choice for treating certain elbow conditions. An injury or arthritis can damage the ends of the bones and

the elbow moves more easily and with less pain.

An injury, such as a fall on an outstretched arm, can tear cartilage and damage bone in the elbow. A piece of loose bone or cartilage can cause the joint to lock. If the loose piece is big, the doctor might be able to put it back in the right place arthroscopically. If the doctor cannot replace the piece, he or she can remove it and smooth the site of the fracture or tear.

You can develop overuse injuries, such as tennis elbow, when you perform the same activity over and over with your wrist and elbow. Repeated activity can irritate the tendons (tissues that attach muscles to

open or arthroscopic procedure.

You usually return to your normal activities more quickly after arthroscopic treatment of an elbow injury than after traditional open surgery. If you must have surgery to treat an elbow problem, ask your doctor whether it can be done with the arthroscope.

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*Further Reading:
Baker CL, Brooks AA. Arthroscopy of the elbow. Clin Sports Med. 1996;15(2):261-281.
Morrey BF. Complications of elbow arthroscopy. Instr Course Lect. 2000;49:255-258.*

Hip Arthroscopy

Hip arthroscopy, which was first attempted in 1931, is not a widely used procedure. However, it offers some athletes and nonathletes a chance to resume and enjoy daily activities while avoiding invasive, open (large incision) surgery. Golfer Greg Norman, who had the procedure last year, has already attributed his strong return to the professional tour to hip arthroscopy.

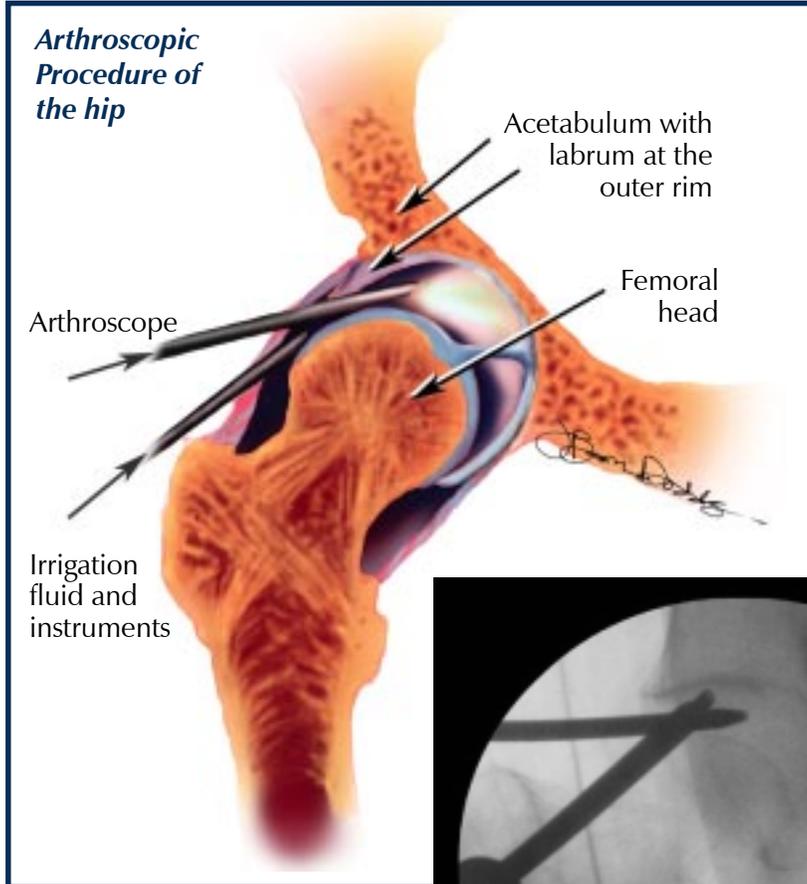
The hip joint comprises the femoral head (ball) and the acetabulum (socket) (see illustration at right). Some of the biggest muscles in the body surround the joint. Because of this anatomy, traditional open surgery is a major procedure that can be quite painful and can require a long recovery. In some cases, you are not allowed to put weight on the operated leg for several weeks while the tissues heal. You most likely will stay in the hospital for two or more days. Therefore, hip arthroscopy offers many benefits. Doctors can use the arthroscope to view the entire hip joint through tiny incisions (see figures). After the procedure, you usually use crutches for several days but can bear some weight on the treated leg right away. In addition, you usually go home the same day that you have surgery.

What are the most common conditions treated arthroscopically?

Arthroscopy is used to diagnose and treat certain hip problems. If the source of your symptoms cannot be discovered from a physical examination and diagnostic studies,

“catching.” This was the condition for which Greg Norman was treated.

Hip arthroscopy can also be used to perform a biopsy, to treat osteoarthritis, and to treat synovitis (the inflamed lining of the joint) such as in a person with rheumatoid arthritis.



Who should not have this procedure?

Arthroscopic surgery cannot be used to treat all problems of the hip joint. For example, arthroscopy will not help you if you have severe osteoarthritis or a hip that is stiff due to a condition such as arthrofibrosis. Your doctor will not treat you arthroscopically if you have already had several open hip surgeries.

Today, arthroscopy is used to diagnose and treat fewer



conditions of the hip than other joints such as the shoulder and knee. However, most people have successful results from arthroscopic treatment.

such as x-rays and magnetic resonance imaging (MRI), arthroscopy may be used. If nonsurgical treatment fails to bring improvement in your symptoms, your doctor may treat the condition arthroscopically. With arthroscopy, the doctor can remove bits of cartilage or bone that are loose in the joint. Arthroscopic surgery can also be used to repair or remove a tear in the hip cartilage (called the labrum) that is causing pain with “clicking” and

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Further reading: McCarthy JC, Day B, Busconi B. Hip arthroscopy: applications and technique. J Am Acad Orthop Surg. 1995;3(3):115-122. Kim SJ, Choi NH, Kim HJ. Operative hip arthroscopy. Clin Orthop. 1998;353:156-165.

Wrist Arthroscopy

Arthroscopic surgery is the standard method for evaluating and treating certain types of wrist problems. The procedure can be used in two ways. Doctors can use it to evaluate the wrist joint to determine whether a problem exists (called diagnostic arthroscopy). In addition, they can use the procedure to correct or eliminate a specific problem.

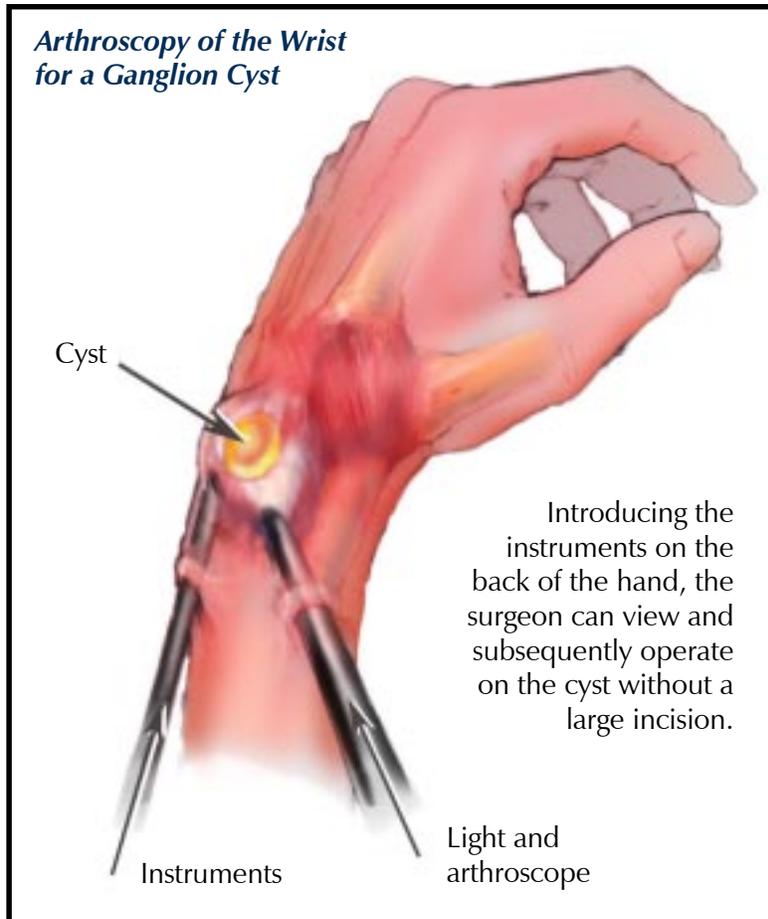
Diagnostic arthroscopy

Diagnostic arthroscopy should be used when you have had wrist pain for at least three months and the cause is unknown or when you still have wrist pain after three months of nonsurgical treatment. It is as accurate as, if not more accurate than, many of the commonly used nonsurgical studies, such as magnetic resonance imaging (MRI). In addition, after identifying a problem with this procedure, doctors are often able to treat it immediately. However, diagnostic arthroscopy is an operation for which you must be anesthetized. Consequently, doctors often use nonsurgical studies to examine the wrist before recommending this procedure.

The arthroscope provides a three-dimensional view of the wrist joint. Other studies produce only two-dimensional or computer-generated three-dimensional pictures. Using the arthroscope, doctors can see each component of the wrist joint including the articular cartilage (covering on the ends of bones), ligaments (tissues connecting two bones), and the

triangular fibrocartilage complex (shock-absorbing cartilage), and they can see how these structures work together. Therefore, this procedure provides a more accurate picture of

incision into the joint to directly view its contents), people undergoing arthroscopic surgery generally experience fewer problems during and after the operation and recover more rapidly.



Introducing the instruments on the back of the hand, the surgeon can view and subsequently operate on the cyst without a large incision.

abnormalities within the joint, and it enables doctors to more accurately analyze the abnormalities.

Treatment using the arthroscope

Many conditions can be treated arthroscopically. Doctors can perform a synovial biopsy (obtain a small sample of joint tissue for laboratory analysis), perform a synovectomy (remove inflamed tissue that is causing pain and joint damage), treat lesions of the triangular fibrocartilage complex, treat fractures, remove ganglion cysts (see illustration above), and treat instability (ligament injury between wrist bones). Because arthroscopic surgery is less invasive than arthrotomy (making a larger

How is wrist arthroscopy done?

Arthroscopic surgery of the wrist is usually an outpatient procedure, which means that you can go home the day of surgery. If arthroscopic surgery is combined with an open or more involved procedure, you may need to stay overnight in the hospital. Often, you will have regional anesthesia, which means that only your upper extremity (shoulder, arm, and hand) is anesthetized, and you remain awake. However, you can be sedated throughout the procedure if necessary. The doctor typically makes two or more small incisions on the back of your wrist and inserts the tiny instruments (see illustration left). The

exact number of these portals (incisions) depends on the type of problem and on whether the procedure is being used for diagnosis or treatment, or both. Each portal is closed with a small stitch. You must wear a dressing and splint for three to 14 days after surgery.

Arthroscopic surgery is an accurate, minimally invasive method of diagnosing and treating wrist problems. As doctors gain more experience with the procedure, they will use it to correct more wrist conditions.

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Thermal Capsulorrhaphy of the Shoulder

The term shoulder instability describes a spectrum of disorders. With mild instability, the shoulder can be painful and slightly loose. Severe instability describes a shoulder that

repairing any bony injuries, and tightening the capsule with sutures (or stitches). Thermal capsulorrhaphy (kap"su-lor'ah-fe) is a technique that enables the surgeon to treat the capsule arthroscopically.

To perform thermal capsulorrhaphy, the doctor places a thermal probe into the shoulder joint through small portal incisions. The probe, which uses radiofrequency energy, is pressed against the tissue of the joint capsule, causing the tissue to heat up. The increase in temperature causes the capsule to change its structure at the microscopic level. The capsule shrinks, resulting in a tighter shoulder joint (see illustration left).

This procedure offers many potential benefits. When having open surgery, you frequently must stay overnight in

the hospital. However, thermal capsulorrhaphy is most commonly done as an outpatient procedure, which means you can go home the day that you have surgery. In addition, this procedure is less painful than open surgery, and the small portal incisions usually leave smaller, less noticeable scars.

Although thermal capsulorrhaphy cannot be used to treat all cases of shoulder instability, it is beneficial for certain types of instability. As the technology continues to improve, we can expect further advances in the way shoulder disorders are treated.

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Rehabilitation After Arthroscopic Surgery

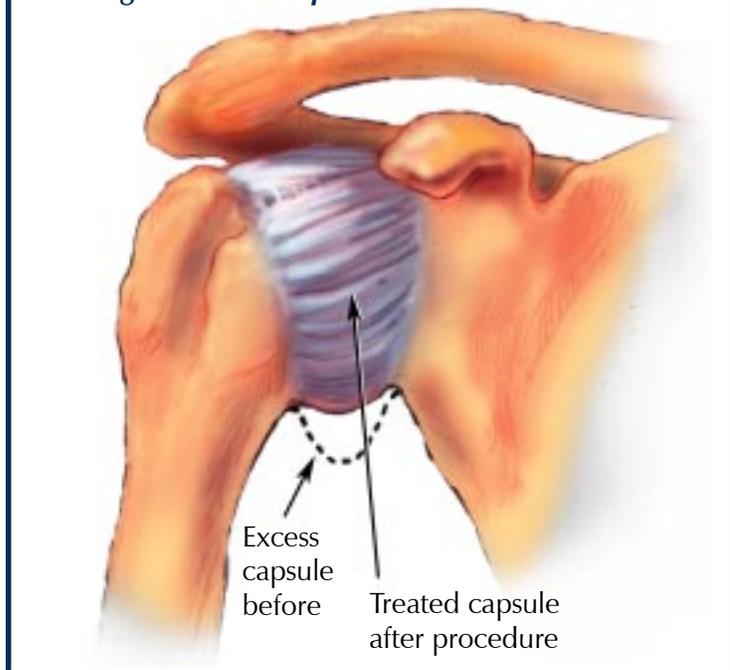
If you have a bone or joint problem, your orthopaedist may recommend surgery. Arthroscopic surgery may be an option. What can you expect after arthroscopic surgery? Compared with an open surgical procedure, you can anticipate a shorter rehabilitation time, with earlier return to your daily activities and sports.

Your scars will be small (less than one-inch long) and less noticeable than the scars from the longer incisions typical of open surgeries. Usually, you will not have stitches, and you may be able to shower within a couple of days to a week.

After arthroscopic surgery for a problem in the the shoulder, elbow, or wrist, you normally do not wear a sling as long as you would after open surgery. In addition, you can start using your arm sooner for activities, such as eating, bathing, and grooming. After arthroscopic surgery for the hip, knee, or ankle, you usually are allowed to bear weight earlier than after open surgery, and you spend less time on crutches. In addition, you should be walking normally soon after surgery.

In most cases, you can start range-of-motion exercises right after surgery. Before you leave the hospital, a physical or occupational therapist shows you how to move your injured joint and the joints above and below it. Your flexibility should come back more quickly with this procedure than with an open procedure. Gentle strengthening exercises are usually safe to begin in the first week after surgery. Sometimes, you begin these exercises before you leave the hospital or on your first visit to the therapist. You gradually increase the intensity of the strengthening exercises, progressing to functional

Shrinkage of Excess Capsule



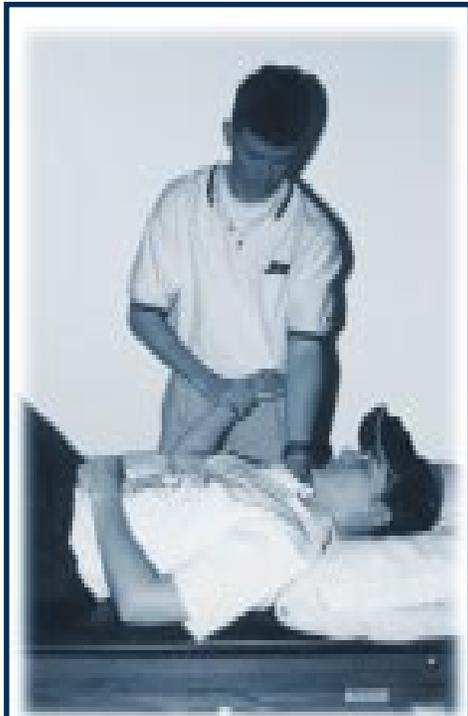
repeatedly comes out of joint (or dislocates), leaving the ball no longer in contact with the socket. In an unstable shoulder, the joint capsule (soft tissue surrounding the joint and holding it in place) usually is stretched out. Many treatments are available to address this condition. A patient often improves by participating in a structured physical therapy program. However, surgery is a reliable treatment option when the instability is too great, when physical therapy does not work, or when the symptoms are severe.

The traditional open surgical treatment for this problem involves making incisions around the shoulder joint, pushing the tissue back,

and sport activities as you can tolerate them.

Arthroscopic surgery has benefits, but keep your expectations realistic. Every operation, whether open or arthroscopic, is performed to correct an anatomic or mechanical problem. Some cases are more complicated than others, and return to function takes time, even after arthroscopic surgery. For a good result after any operation, you need to follow the instructions of your doctor and therapist.

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Gentle stretching exercises are usually safe to begin in the first week after arthroscopic surgery. Your doctor or therapist may start the exercises while you are in the hospital.

ATC CORNER

Spleen Injuries in Athletes

A high school football player is hit in the stomach while running the football. The collision is hard and “knocks the breath out” of the player. He lies on the field gasping for air while the coach and certified athletic trainer (ATC) check on him. The athlete calms down, takes a few deep breaths, then jumps up. He rests on the sideline for a few minutes, and the coach puts him back in the game on the next play. He comes off the field a few plays later and tells the ATC that his stomach hurts where he got hit. He begins to feel nauseated, so the ATC asks him to lie down on the bench. The player reports that his left shoulder hurts. The ATC suspects that the athlete has an injured spleen and tells the coach that the player needs to go to the emergency room as soon as possible. In the emergency room, the athlete is examined and tested. Later that night, he has surgery to repair his ruptured spleen.

Why is the spleen important?

The spleen is one of the body’s largest organs and serves the blood production and filtering system. It is located under the left side of the rib cage and can be injured with direct contact to that area. The spleen acts as a reservoir of red blood cells and a producer of white blood cells; therefore, an injury to it sometimes results in blood spilling into the abdomen. However, the organ is encased in a tough, fibrous capsule that helps hold it in place. If the capsule is not torn, it can limit the

amount of blood that seeps into the abdominal space after injury.

This organ also is very active in producing antibodies for the immune system. When an athlete has mononucleosis (commonly called “mono” or “kissing disease”), the spleen enlarges to produce more antibodies and more white blood cells and to continue acting as a blood

filter. These functions are vital for the athlete with mononucleosis.

However, if the sick athlete participates in contact and collision sports, he or she has a higher risk of injury to the spleen.

Often, the enlarged spleen protrudes from its normal position under the protection of the rib cage. Therefore, the spleen can be ruptured

easily with a direct blow to the left side of the upper abdomen. As a result, athletes with mononucleosis are restricted from contact and collision sports. Once the athlete has recovered from mononucleosis and a doctor has confirmed that the spleen is no longer enlarged, the athlete may participate in his or her sport once again.

In a healthy athlete, the spleen is subject to injury when the athlete’s body makes contact with another athlete or an object, such as a fence or bench. The athlete described previously recovered and was able to return to football because his injury was recognized promptly and treated correctly. If your athlete has symptoms of nausea, stomach pain, and pain in the left shoulder after a blow to the stomach, take him or her to a doctor or to an emergency room for immediate evaluation.

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Lighting a Safe Home

The American Academy of Orthopaedic Surgeons reports that 90% of the 340,000 hip fractures that occur each year result from falls. Because most falls occur at home, you should make your home as "fall proof" as possible. One way to make your home safer is to ensure that you can see where you are walking. During the day, use nightlights to lighten dark or dim pathways; at night, use plenty of overhead light or lamps to illuminate those areas. Place a nightlight along the route between your bedroom and bathroom. Keep a flashlight next to your bed, even if you have a lamp there, in case of a power outage or for when you may need additional light. Make sure you have plenty of light around stairs, so you can see each step and landing. During the day, open your window blinds and curtains and let the light shine in. For night, consider installing motion sensors outside your home. These sensors automatically turn on outdoor lights when they detect movement. Use them to illuminate your outside walkways, steps, doors, and keyholes. A fairly new way of lighting your home is remote lighting; using a remote control from your car, you can turn on a lamp that is inside your house.

Taking the time to better light your home can help prevent you or a loved one from taking a dangerous fall. However, even with these suggestions, you must always remember to watch your step!

The *Hughston Health Alert* is a quarterly publication of the Hughston Sports Medicine Foundation, Inc. The Foundation's mission is to help people of all ages attain the highest possible standards of musculoskeletal health, fitness, and athletic prowess. Information in the *Hughston Health Alert* reflects the experience and training of physicians at The Hughston Clinic, P.C., of physical therapists and athletic trainers at Rehabilitation Services of Columbus, Inc., of physicians who trained as residents and fellows under the auspices of the Hughston Sports Medicine Foundation, Inc., and of research scientists and other professional staff at the Foundation. The information in the *Hughston Health Alert* is intended to supplement the advice of your personal physician and should not be relied on for the treatment of an individual's specific medical problems.

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Suggested readings and classic references for articles contained in this issue can be found at www.hughston.com

Health Hint

Is your body absorbing the calcium it needs? For calcium to be absorbed properly and used effectively by the body (including the bones), you need Vitamin D. The United States Food and Drug Administration's Recommended Daily Allowance (RDA) for vitamin D is 400 international units (an eight-ounce glass of milk has 100 international units). Talk to your doctor about your calcium absorption and how vitamin D can help.



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