ANKLE ARTHROSCOPY





Ascension Providence

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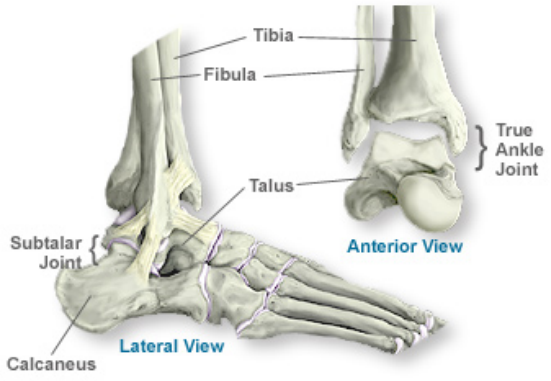
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Introduction

This booklet will provide a general guide to the common indications for ankle arthroscopy, what to expect if undergoing the surgery, the significant risks, and a general guide to the expected recovery pathway. This document is not by any means fully comprehensive, and any specific questions should be addressed with your surgeon. The development of the arthroscopic techniques has allowed surgeons to improve the treatment of ankle injuries.

Normal Ankle Joint

The ankle joint is one of the most important joints in the body. The ankle is a hinge joint and allows primarily flexion (plantarflexion) and extension (dorsiflexion).



Indications for Arthroscopy

As doctors became more experienced with ankle arthroscopy the indications evolved to include more technically demanding procedures. There are many advantages to having ankle arthroscopy. Instead of a large incision to view inside the ankle, small incisions allow the camera to visualize inside the joint and the surgeon can use small instruments to treat a variety of ankle problems. Some of the more common problems that ankle arthroscopy is used for are:

1. Soft tissue impingement
2. OLT (Osteochondral lesion of the talus)
3. Instability of ankle
4. Os Trigonum (subtalar joint)
5. Ankle arthritis

These are the four most common problems of the ankle that require the ankle arthroscopy and will be described below.

What is soft tissue impingement?

Ankle sprains are one of the most common sports injuries, with inversion of the ankle sprain occurring 1 per 10,000 persons per day. Some patients, 10-50%, have chronic pain following an ankle sprain. Ankle inversion injuries are associated in the following sequence; torn anterior talofibular ligament (ATFL), torn calcaneofibular ligament (CFL), and torn posterior talofibular ligament (PTFL), during this sequence syndesmotic ligaments (ligament between the tibia and fibula) can also be injured. The primary cause of chronic pain after an ankle sprain is soft tissue impingement. Anterior impingement of the ankle is the most common type of soft tissue impingement due to the mechanism of the most ankle sprains. It is thought that in an inversion sprain (ankle rolls out) the ankle suffers tears in the ATFL and/or CFL but without leading to residual instability. With continued and repetitive motions, the torn ligaments and tissue thicken and gets bigger and results in inflammation and

pain. Arthroscopy is indicated for a diagnosis of anterolateral impingement when the patient has a history of ankle sprains and has failed to have resolution of pain following therapy and other conservative treatments.



FIGURE: Arthroscopic view of fibrous band traversing the anterior lateral ankle

What is OLT?

OLT stands for osteochondral lesion of the talus. Lesions involving the articular cartilage of the ankle can range from small to more severe injuries such as large cysts or fractures of the underlying subchondral bone. Most common term for these injuries is OLT. Subchondral cysts can be seen on MRI or CT and is believed to be caused by damaged cartilage functioning as a one-way valve. The valve allows the flow of fluid from the joint space into the subchondral bone but not in the opposite direction. During weight bearing, in the talus and tibial cartilage forces fluid into the damaged subchondral bone; unloading allows fluid to reenter the articular cartilage but as the cycle of fluid shift continues the formation of cyst continues. The average age of patients with OLT is between 20-30 years old, in males predominantly. Because of some problems resulting from an open ankle surgery approach, many surgeons have resulted to arthroscopy to treat OLT. Because of the advance of technology and equipment we are able to more thoroughly see through arthroscopic visualization of the talar dome can be made and better treatment can be made.

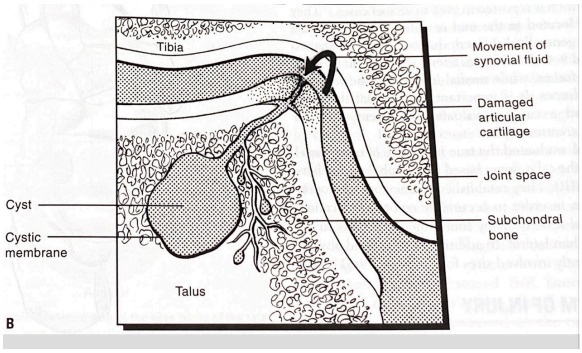


FIGURE: Cyst formation with synovial fluid leaking through the crack in cartilage

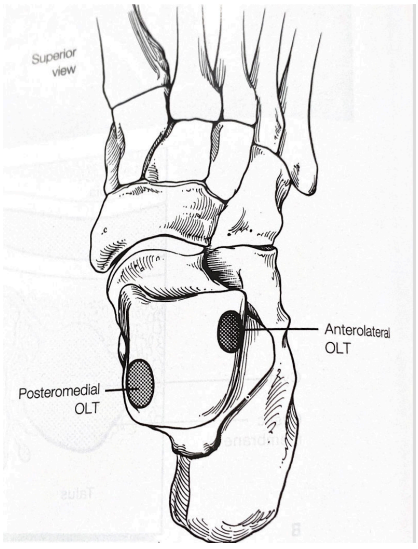


FIGURE: Most lesions are central to posteromedial or anterior to midlateral

What is instability of the ankle?

With recurrent instability, progression can lead to more and worsened laxity, pain and swelling as well as unpredicted intra-articular pathology. When conservative measures fail doctors will provide the option of surgery to repair ankle stability and address intra articular lesions. The front side of the ankle is commonly injured after an inversion ankle sprain but syndesmotic ligament is less common in an isolated soft tissue injury. Patients with chronic lateral ankle instability complain about recurring ankle sprains which also cause pain and swelling. Many patients have success by strengthening doing rehabilitation but for those who don't, surgery is also an option for treatment of instability. The goal of surgery is to restore normal contact mechanics and motion patterns in the ankle. A stress X-ray helps diagnose and confirm instability

What is Os Trigonum?

An injury to the trigonal process or os trigonum is among the most common type of posterior foot pain. The os trigonum is an inconstant accessory bone of the talus that arises from a separate ossification center posterior to the lateral tubercle. This ossification appears radiographically in puberty and typically mineralizes at the age of 8-10 years in girls and 11-13 in boys. Os Trigonum is very common and is present in about 50% of the population, and is more commonly seen in one foot rather than in both. The most common symptom with os trigonum is pain. There are various treatments such as casting, steroid injections, ice, anti-inflammatory's and when these fail then surgery is the next option but instead of an open surgical incision, os trigonum can be treated arthroscopically to minimize surgical morbidity, and offer shorter recovery times.

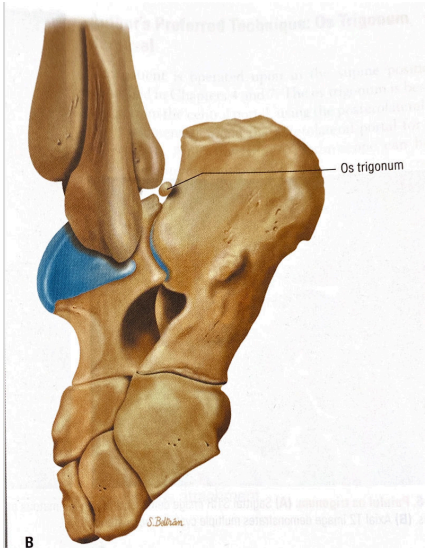


FIGURE: Shows os trigonum in posterior ankle



FIGURE: posterior lateral radiograph shows large os trigonum

What is Ankle Arthritis?

Treatment of the ankle arthritis with arthroscopic treatment is another indication for arthroscopy and depending on how bad the arthritis is may determine

which treatment is performed. Patients with arthritis present with pain and loss of motion. Arthritis of the ankle joint can be diagnosed through radiographs. Conservative measures and treatment include modified activity, anti-inflammatory medication, orthotics, a steroid injection, and viscosupplementation and PRP injections. The indication for arthroscopic fusion of an arthritic ankle joint is when the patient has severe arthritis and has persistent pain after conservative treatments.

Which Patients Should Consider Ankle Arthroscopy?

Patients with symptoms of ankle pain that have not responded to conservative treatments and physical therapy, might be candidates for an ankle arthroscopy. A preoperative MRI or x-ray can help to confirm the diagnosis of these problems prior to the arthroscopy.

Preparing Yourself and Your Home Before Surgery

Recovery is a gradual process and will take time after surgery. Plan for your return home before you enter the hospital. Most patients return home the same day of surgery.

- Ask your spouse, children or friends if they can assist you with activities of daily living for about two days.
- Before surgery, it may be helpful to practice daily activities that will be affected by surgery.

If you are interested in assistance from a home healthcare agency or public health nurse, select the agency before hospitalization. Your doctor's office can help you with these arrangements. Most of the time, your insurance will cover the cost of home health care for a few days (7-10 days) after surgery. It can be arranged that you have a nursing assistant come to your house and help with day to day things you may need as well as help with physical therapy exercises.

- Anticipate temporary changes to your activity level.
- Plan to leave your home clean and in order.
- To prevent falling, remove throw rugs and excess clutter from traffic paths.
- Place a sturdy armchair in your living room near a table so that magazines, hobby supplies, TV remote, telephone (a cordless is a good idea) or other items you want can be within reach.
- Rearrange your kitchen so that often-used utensils are easily accessed. Place them at a height so that you do not need to bend or reach to get them. It also would be helpful to have a study chair available in the kitchen.
- Prepare some meals in advance and freeze them.
- If possible, ask your mail and newspaper carrier to deliver to the door.

- Ask your place of worship (e.g. church, synagogue) to arrange visits while you recover, if desired.

What to bring to the surgery center

- Remember to bring your crutches (leave in car)
- Leave your valuables at home.
- Do not bring your medicines that you usually take. It is important to have a list with the appropriate dosages. This will be requested from you at the time of registration.
- Comfortable, non-skid walking or athletic shoes. Elastic laces are available, eliminating the need to tie your shoes. Athletic shoes are available with hook and loop fasteners. Another option are slip-on shoes or slippers.
- Clothes that are soft and loose fitting. Women can bring pants with elastic waistbands. For men, gym pants are easiest.

Your Surgery Center Stay

You will be provided a time to come to check in to the surgery center. It is important to follow these instructions:

- You should stop all medicines that have a potential to cause bleeding. The most common medicines that fall into this category include aspirin (14 days), anti-inflammatories (such as Advil, Motrin, Naprosyn)(7 days) and blood thinners such as Plavix and Coumadin. (ask your doctor)
- Supplements: In general, you should discontinue all herbal and over-the-counter supplements one week before surgery. Some supplements affect bleeding tendencies and may cause problems with wound healing. You may continue multivitamins and **should take Vitamin C 500mg/day** beginning when surgery is scheduled and continued for 1 month after surgery. This helps prevent bleeding at surgery and is helpful for healing.
- Before surgery, do not eat or drink anything after midnight. Your stomach must be empty before you receive the anesthetic. This helps prevent nausea, vomiting and other complications during and after anesthesia.
- Take a shower or bath the evening or morning before surgery. This will help decrease the amount of bacteria on your skin.
- A good night's rest is important before surgery.
- Do not wear makeup the morning of surgery.
- Take only the medication your physician or nurse tells you to take on the morning of your surgery (with a small sip of water).

Morning of Surgery

- After admission, the nursing staff will take your temperature, pulse, respiration rate and blood pressure.
- The anesthesiologist will discuss the type of anesthesia to be used.



Going to Surgery

- You will be asked to empty your bladder
- Remove all jewelry (including rings), dentures, and contact lenses
- You may wear your glasses/hearing aid if necessary
- You will be taken back to the operating room on a stretcher.
- An intravenous (IV) line will be started before surgery
- The affected ankle may be scrubbed and shaved to prepare for surgery

Anesthesia

The surgery is most commonly performed under general anesthetic and regional anesthesia. The patient will be typically offered a nerve block in the leg to prevent pain. (Popliteal +/- saphenous nerve block)

Ankle Arthroscopy

Two incisions are made on the front part of the ankle and one on the back and more will be made if needed during the surgery.

These portals allow the camera and saline (water for visualization) to be placed as well as all other instruments to do the work.

The patient's ankle will then be placed in a distraction device to open up the joint area. This distractor is useful to create space to see inside the joint.



FIGURE: standard setup for non-invasive distraction in the supine position

Risks Associated with Ankle Arthroscopy

Most patients do not experience complications from ankle arthroscopy. As with any surgery, however, there are some risks. Potential risks with any surgery include but are not limited to pain, bleeding, infection, damage to surrounding structures like nerves or blood vessels, failure to heal or cure, need for additional procedures, and any medical or anesthetic complication. Loss of limb or death would be exceedingly rare with ankle arthroscopy surgery.

Though usually uncommon, there are a few specific risks associated with ankle arthroscopy. Those reported include nerve injuries and traction injuries.

There is risk of injury to the superficial peroneal nerve which can lead to numbness, tingling, and burning pain, but it is always tried to be avoided.

Another risk of the surgery is ankle stiffness. Though some stiffness is expected, inadequate exercise and physical therapy can cause unnecessary stiffness. Additionally, over doing it or inadequate rehabilitation during the recovery time period can also lead to inflammation and cause pain to surgical area. Taking it easy and not over doing it will be most beneficial for best healing and recovery.

Realistically, there are some cases were patients simply do not get the pain relief from the operation that is expected. The reasons for this problem are usually associated with more extensive arthritis than was noted on preoperative studies such as x-rays and MRI.



What to expect After Surgery

After surgery, you will be moved into the Post-Anesthesia Care Unit (PACU). Your relative(s) will be told when you are in the PACU. One of the most important functions of the PACU is to manage pain and nausea as you awaken from anesthesia. Nurses will monitor your vital signs, alertness, pain or comfort level and need for medication.

In the PACU, you may notice a variety of equipment. The room is brightly lit, and as you awaken, the noises may seem louder than usual. If you feel cold, blankets are available. It is normal to receive oxygen through a facemask.

It is normal to feel pain or discomfort after surgery. Tell the nurse if you are having pain or discomfort. When you have pain, the nurse will ask you to rate your pain on a scale of zero to 10. (O= no pain, 10= worst pain imaginable).
Your pain may not be totally relieved. However, pain medication can be given to make you more comfortable. Tell your nurse if you experience any other discomfort. If you suspect the pain medication is causing any nausea or other symptoms, let your nurse know.
There are many different medicines that are used for pain control and these are all available to you while you are in the surgery center or hospital.

The average length of stay in the PACU is one hour. If there is an extended delay, your relative may check with the staff. When the anesthesiologist decides you are ready to leave, your family member will be notified and you will be transported via wheelchair to your car.

After Surgery Exercises

Exercising your legs after surgery is one way to promote blood flow and decrease your chance of developing a blood clot. Begin the day of surgery. It is okay to loosen splint if too tight but do not remove it. Keep in mind elevation of the ankle will

reduce swelling and no weight bearing on ankle.

To exercise your feet:

- Wiggle toes but make sure not to move ankle joint

To exercise your legs:

- Lie on your back
- Tighten the muscle on top of your thigh by pressing your knee down toward the bed
- Hold for five seconds
- Relax
- Repeat 10 times on each leg 4-5 times a day

To exercise your buttock:

- Lie on your back
- Squeeze your buttock together
- Hold for three to five seconds
- Relax
- Repeat 10 times on each leg 4-5 times a day
- Straight leg raises are also encouraged hold for 5 seconds and repeat on each leg 10 times

Crutches

No weight bearing on the affected leg. You will be provided crutches or walker to use for the duration of recovery to prevent weight bearing on the injured ankle and will be instructed by the doctor when you can stop using crutches.

Ice, NO Heat

Ice does not penetrate through the splint but can be used after you have been changed to a removable boot and start PT.



Physical Therapy

Each individual's surgery is different but after ankle arthroscopy (except fusion) most patients will begin physical therapy after their first post-operative visit.

Discharge Instructions

WOUND CARE: Your incisions have stitches that will need to be removed in the office in about 10 days to 3 weeks after the surgery. You should not submerge the wound either in a bath or pool for 3 weeks. Avoid prolonged sun exposure. Too much sun may cause permanent irregular pigmentation changes to the incisions for the first three months. Adequate sun protection with SPF greater than 60 should be used in the first three months.

SPLINT CARE: You should remain in a splint until your first post-operative visit. Keep the splint clean and dry. If it feels tight you should carefully loosen the Ace wrap, gently pull the splint apart as needed and rewrap it looser. DO NOT REMOVE. Contact the office or on call doctor if tightness or splint pain persist. If loose, the wrap may be removed and wrapped tighter.

BLEEDING: In some cases, oozing at the point of incision does persist for several hours. If this should persists beyond this amount of time please contact our office.

SWELLING: Swelling is commonly experienced after the surgery. To minimize the swelling, please elevate the leg above the heart.

NUMBNESS/TINGLING: It is not unusual to experience some diffuse numbness and tingling along the operated ankle Secondary to the nerve block. In most situations, the feeling will subside within about 12-24 hours. If there is continued numbness, you should contact our office.

RELIEF OF PAIN: You will be prescribed pain medication to be used at home after your surgery. This is a narcotic pain reliever. Take 1-2 tablets every 4-6 hours as needed for pain. It is usually recommended to take the pain medicine every 4 hours for the first 24-48 hours, and then take it as needed. Keep in mind that the medication will cause drowsiness and should not be used with alcohol. Also, taking this medication on an empty stomach may result in nausea. It is common to feel discomfort when lying down to sleep at night, so you may find it beneficial to take the pain pill at bedtime. If unusual side effects occur, please discontinue the medication and contact our office. When additional refills are needed, please contact our office or the pharmacy during regular business hours. Hopefully, in a short period of time you will be able to use over-the-counter medications for relief of pain and save the prescribe medication for use only when necessary.

DIET: The day after surgery, drink lots of fluids and eat soft, nutritious foods. An adequate diet is essential for the healing process.

NAUSEA AND VOMITING: Although unusual, both can be experienced after anesthesia. If you have a tendency for this, please discuss it with the anesthesiologist. Otherwise, it is usually alleviated with a clear liquid diet. Medication is typically prescribed as well That can be taken.

DROWSINESS: After anesthesia, drowsiness may persist for quite a while. It should cause no undue concerns. Do not drive until you feel clear-headed.

QUESTIONS: If you have any additional questions or should problems develop, please do not hesitate to contact us.

Activity at Home

Everyone's progress is different after this surgery. Listed are guidelines to follow. Follow all specific instruction from your surgeon, nurse and physical therapists. The following guidelines may be of benefit:

The following are the basic guidelines and restrictions:

- No lifting or holding weight until given permission by the surgeon. No heavy housework such as vacuuming. Some housework can be done earlier, but in many cases, heavy work is limited for the first six weeks. At the six- week follow-up appointment, your surgeon may permit you to start lifting.
- Increase your activity only as your surgeon has directed . It may take three months to one year before you regain

optimum function and strength of your ankle.

Driving

You should not drive until you have completely stopped using the postoperative narcotic medications. If there is any question, you should wait until you see the surgeon at your post-operative visit. Part of this restriction relates to your insurance company's restrictions following surgery of a limb. In addition, you should have good control of your leg so that you can step effectively on the pedals if an emergency situation arises. In most instances, patients drive within 3 to 5 days of surgery if it was the left leg that was operated on. For right ankle surgery you will need to be out of the splint and able to come out of the boot safely to drive.

Sexual Activity

You may resume sexual activity as soon as you are comfortable. Feel free to discuss sexual activity with your surgeon, nurse or physical therapist.

Diet

Follow an eating plan to achieve and maintain a healthy body weight for the rest of your life. Maintaining a healthy weight will help avoid straining your new joint.
Eat a variety of foods to maintain a nutritionally balanced diet. This means including foods from all food groups on a daily basis. Wound healing depends on a well-balanced diet.
Constipation can occur as a side effect of pain medication and as a result of decreased activity after surgery. Eat high fiber foods such as fresh fruits/vegetables and whole grains to help prevent constipation. Drink six to eight glasses of water daily unless instructed otherwise.
Ask a dietitian for your general nutrition questions.

When to contact the Surgeon

- Drainage or odor from the incision
- Fever (temperature above 100.4 degrees F or 38 degrees C for two days)
- Increased pain unrelieved with pain medications
- Sudden, severe ankle pain or calf pain
- Increased redness around the incision(s)
- Increased swelling at the incision(s)
- Leg or foot pain, tenderness or swelling
- Numbness or tingling of the leg or foot
- Changes in color and temperature of the leg
- Change in motion ability

Follow-up Appointments

Your surgeon will have you return for a follow-up examination to be sure your ankle has healed properly. This is usually around 2 weeks after your surgery. An appointment can be set up for you at the time your surgery is scheduled.

At the time of the appointment, x-rays may be obtained to determine the effectiveness of any bony work performed.

Following the initial appointment, you will need to be seen at approximately 6, 12,

and 18-24 weeks postoperatively. If everything is going well at that point, you will be released to return to all activities

Return to Activities

The decision to return to work is made depending on your job requirements. In most occupations that involve office and/or computer work, you may be able to return within a few days. The return at this point will not be normal and you may not be able to work all day, but you will certainly be able to be productive. Complete, unrestricted abilities with regards to office work will occur by about one week to ten days.

If your job requires significant manual labor, lifting, or time on your feet, the return will not occur completely until at least three months following surgery. Even after the three months, there may be significant restrictions if you are still experiencing problems.

Return to Sports

Your therapist will guide your total body fitness and recovery exercises during the post operative period.



Complete unrestricted sports and lifting activities are delayed until 4-6 months postoperatively. This includes sports such as soccer, football, tennis, waterskiing, etc. Essentially any sports requiring higher impact to the ankle should be delayed until this time.

What are the Results of Ankle Arthroscopy?

You should discuss your individual case with your surgeon, as there are many factors that impact your outcome. However, every individual is different and the severity of each case varies so it all depends of how severe of a case each surgery is can impact the outcome of surgery. We strive and hope that with every surgery there is a positive outcome for the patient and we can let them know how successful we think and how beneficial this will be for them in the pre-op.



Chad Stephen Conner, MD specializes in sports medicine and arthroscopic and reconstructive surgery of the shoulder, hip, knee, and ankle. He is board certified in orthopedic surgery by the American Board of Orthopedic Surgery with a subspecialty certification in orthopedic sports medicine.

Dr. Conner grew up in Dallas, Texas and attended Lake Highlands High School. Beginning at age 5 he practiced gymnastics and went on to compete for the University of Minnesota gymnastics team in Minneapolis, Minnesota. He attended The University of Texas Medical Branch for his medical school training and subsequent orthopedic surgery residency training. Following this, Dr. Conner completed a fellowship at the world-renowned Southern California Orthopedic Institute. There he specialized in sports medicine, arthroscopy, and reconstructive surgery of the shoulder, hip, knee, and ankle. He helped care for athletes from the high school level to the professional level. His training also included specialization in shoulder replacement surgery and reverse total shoulder replacement.

Dr. Conner currently practices with Ascension Medical Group Providence Orthopedics and Sports Medicine in Waco, Texas and is a team physician for a local high school team. He is a member of the Arthroscopy Association of North America, the American Orthopedic Society for Sports Medicine, and the American Academy of Orthopedic Surgeons. He has done extensive research on treatment of massive rotator cuff tears, ACL reconstruction, hip arthroscopy and ankle arthroscopy. He is also involved in teaching hip arthroscopy as an associate master instructor at the Arthroscopy Learning Center in Chicago, IL. With Baylor University, he gives lectures for student classes and is involved in the Baylor Health Science Studies internship program mentoring students interested in orthopedic surgery. Dr. Conner also volunteers at a community outreach organization called Mission Waco, which strives to provide Christian-based holistic, relationship-based programs that empower the poor and marginalized and was named Business of the Year by Mission Waco for 2013. He leads a monthly orthopedic and rehabilitation clinic at Mission Waco's free health clinic and has partnered with the hospitals to provide surgical care as well. Outside of the office, Dr. Conner enjoys his wife and children, church, mountain biking, wake surfing and the outdoors.

NOTES

Conner.

Arthroscopic Pictures/Radiographs: Dr. Chad S. Conner and Dr. Richard Ferkel

Special Thanks to Dr. Carlos A. Guanche and Dr. Richard Ferkel, Southern California Orthopedic Institute.
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Revisions, updates and ankle specific information.: Marissa Holquin and Dr. Chad

Word List

Active range of motion – joint movement occurring with active muscle contraction

Anesthesia – partial or complete loss of sensation or consciousness

Anesthesiologist – a physician who specializes in administering anesthesia

Antibiotic – a medication that prevents growth of or kills bacteria

Anti-embolism – to help prevent a blood clot

Arthritis – the inflammation of a joint with loss of the cartilage or damage to the joint's surface

Impingement – a mechanical irritation that occurs as a result of one bone hitting another

Intravenous – into a vein

Passive range of motion – joint movement without muscle contraction

Rehabilitation – treatment and education that leads to regaining function