



PATIENT INFORMATION FILE:

ANKLE INSTABILITY

Your surgeon has suggested surgical treatment for your ankle instability.

He or she has explained the general points about this treatment: alternatives, procedure, postoperative course, expected results, and also the main possible complications. This file is a supplement provided as a reminder of the key points regarding your pathology, enabling you to check out the important aspects of the coming operation.

Your surgeon is also available before the operation to answer any further questions you may have.

File produced by the medico-legal commission of the French Foot and Ankle Surgery Association (AFCP)

File available on-line at the following websites:
AFCP (<https://www.afcp.com.fr/infos-publiques/infos-patients/>)
SOFcot (<http://www.sofcot.fr/Infos-public-Patients>)
ORTHORISQ (<http://www.orthorisq.fr>)

UNDERSTANDING ANKLE INSTABILITY

> ANKLE ANATOMY

The ankle joint is meant to be stable thanks to its bone structure and ligament and tendon reinforcements.

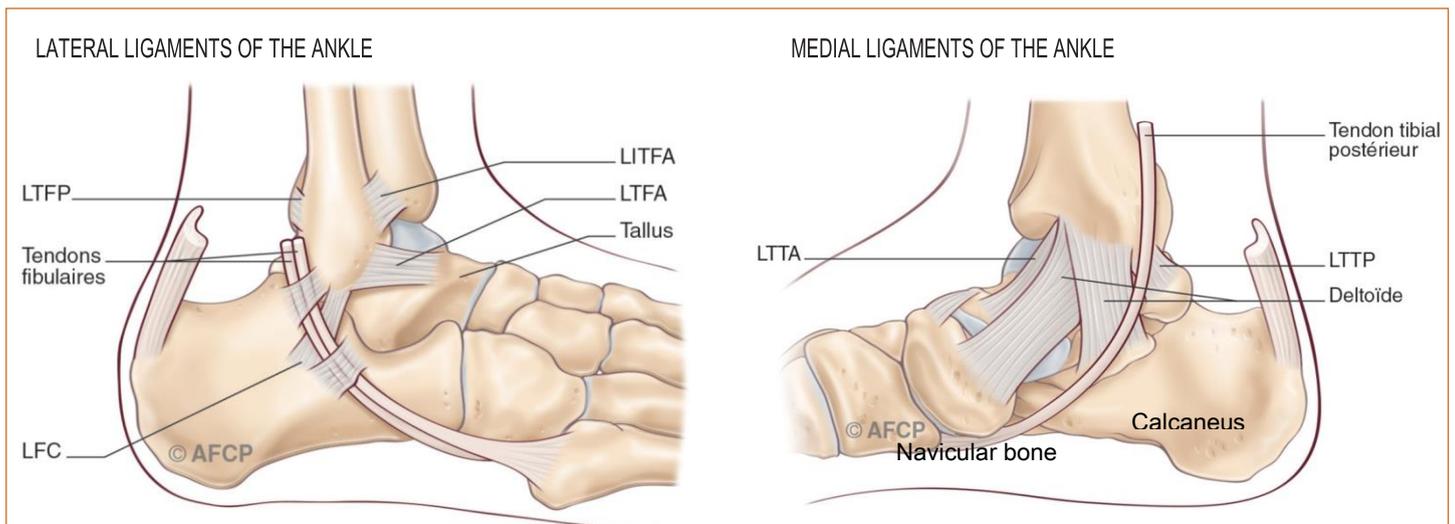
Bone stability is achieved by the "talus" (ankle bone) being embedded in the bimalleolar mortise, between the medial and the lateral malleolus.

Ligament stability is more complex. There are three ligament structures in the ankle itself, and also the ligaments of the neighboring joints.

- The lateral ligament comprises three bundles: anterior tibiofibular ligament (ATFL), which is the one most frequently injured, the calcaneofibular ligament (CFL), running backward and crossing the peroneal tendons, and the posterior talofibular ligament behind, which is rarely affected.
- The medial ligament comprises two deep bundles, the anterior (ATTL) and posterior (PTTL) tibiotalar ligaments, and the more superficial deltoid ligament that fixes the medial malleolus onto the neighboring navicular bone and calcaneus. The tibionavicular bundle is reinforced by the posterior tibial tendon.
- The intertibiotalar ligaments (ITFL) and the interosseous membrane fix the fibula against the tibia.

These bone and tendon elements neighbor the neural and vascular structures that descend from the foreleg to the foot:

- Laterally, the peroneal tendons lie close to the sural nerve, while the superficial peroneal nerve runs forward of the lateral malleolus in the subcutaneous region.
- Medially, the posterior tibial nerve and vessels pass over the medial ligament and posterior tibial tendon



PTFL / Peroneal tendons / CFL // AITFL / ATFL / Talus

ATTL / Posterior tibial tendon / PTTL / Deltoid

> ANKLE SPRAIN AND INSTABILITY

Ankle sprain consists in the stretching of one or more ligaments in a forced movement of the foot. Depending on the degree of traction, it may involve just ligament "distension", "complete tear", or "avulsion" of the bony attachment.

The most frequent mechanism is an inward torsion of the foot around the lateral edge in contact with the ground; but there are plenty of other ways of twisting your foot, with a range of ligament injuries that have to be screened for. These ligament lesions are not confined to the ankle, and ligament or bone lesions are frequent in neighboring joints but sometimes difficult to detect.

Ankle immobilization usually enables the ligament to heal; but sometimes the repair is defective, leaving abnormal looseness or "joint laxity". Certain foot and limb morphologies hinder recovery: cavus foot, limb-length discrepancy, intorted foot, etc.

HOW TO MAKE THE DIAGNOSIS?

> CLINICAL EXAMINATION: INSTABILITY

Instability leads to fear of having an ankle sprain on unstable ground or of repeated sprain despite an anodyne mechanism, such as walking on flat ground. Instability can be painful, in which case associated lesions are to be screened for.



> COMPLEMENTARY EXAMINATIONS

Anteroposterior and lateral weight-bearing X-rays screen for associated fracture or bone avulsion. In some cases, special X-rays may be called for: stress X-ray, reproducing the sprain mechanism, reveals joint movement (which may be restricted by fibular muscle contraction).

Ultrasound provides full ligament and tendon assessment, with the possibility of dynamic testing. CT-arthrography and MRI complete the ligament work-up and analyze cartilage or bone lesions (such as intraosseous edema).

TREATMENTS

> MEDICAL TREATMENTS

Before surgery, the ankle can be stabilized by orthopedic methods such as strapping, an ankle brace or high shoe. Insoles, produced by a podologist or chiropodist, with lateral stabilization are also indicated. Corticosteroid injection can in some cases relieve pain.

Rehabilitation can strengthen the ankle stabilizer muscles.

These orthopedic techniques can help you pursue your sports and occupational activities, but the ankle may continue to deteriorate, leading to painful osteoarthritis after several years.

> PROGRESSION WITHOUT TREATMENT: RISK AND POSSIBLE COMPLICATIONS

If it is not treated, the instability will persist and worsen, even on flat or almost flat ground. In some cases, painful osteoarthritis may develop, requiring the joint to be blocked or in some cases replaced by an implant.

> SURGICAL TREATMENTS

Surgery aims to repair or supplement the injured ligaments. It needs to take full account of all associated lesions discovered during preoperative assessment, and others, such as tendon fissures, that may only be revealed during surgery itself, and others again for which there is no surgical remedy.

In some cases in which malalignment of the foot contributed to the ligament lesion, axial correction may be performed, for instance by sectioning the heel-bone so as to reorient mechanical forces.

HOSPITAL ADMISSION

Hospital stay generally ranges between a few days and 1 week, depending on the operation, associated procedures and your medical and social situation. In some lucky cases, the problem can be dealt with on an outpatient basis by day-surgery.

ANESTHESIA

There is always a preoperative consultation with an anesthesiologist, who will explain the types of anesthesia adapted to your operation and your state of health.

In this consultation, he or she will also ask about any medication you are taking. New treatments may be started, either before or after surgery. The most frequent are anticoagulants, antibiotics, analgesics and anti-inflammatories; each, of course, has its own specific risks.

Anesthesia for surgery may be: locoregional, in just one part of the limb, from foreleg to toes; spinal, in pelvis and limbs, with an injection between two vertebrae; or general.

Blood transfusion may be necessary after surgery. Blood loss is not usually great, but certain situations require an input of red blood cells: preoperative anemia, coagulation disorder, or ongoing anticoagulant or antiplatelet treatment.

OPERATIONS

When you go to the operating room, do not be surprised if you are asked more than once for your identity, and the side to be operated on (on arrival, and again when you are being positioned on the table): this “security check-list” is mandatory, under French Health Authority regulations, for all patients.



You will be positioned on your back or on your side for surgery, which takes in general between 30 minutes and an hour. The incisions to be made depend on the technique, ranging from several very small incisions to a single incision about 10 cm (4 inches) long. A tourniquet is generally used to interrupt blood flow in the operative area, and may be applied at the thigh, foreleg or even the ankle.

To stabilize the ankle, it is often not enough just to suture the ligaments tightly, and the damaged ligament has to be reinforced with healthy tissue. This will be either the "periosteum" (a membrane covering the lateral malleolus) or the "extensor retinaculum" (a kind of pulley maintaining the extensor tendons. Another option is to transfer a tendon or part of a tendon, such as the peroneus brevis or gracilis. Yet another possibility is to use artificial ligament.

At end of surgery, immobilization is set up, using a plaster cast, splint, walking boot, ankle brace, etc.

During the operation, your surgeon may run up against an unexpected or unusual situation or event requiring procedures complementary to or different from those originally planned. Once the operation is over and you have come round from the anesthesia, anything like this will be explained to you.

POSTOPERATIVE COURSE

>**POSTOPERATIVE PAIN** in this pathology is usually not a great problem: although strong analgesics may be prescribed just after surgery, you will generally be able to be discharged home with simple pain-killers.

>**EDEMA** (swelling of the ankle, foot and toes) has to be treated, not just to relieve pain but also to ensure good-quality immobilization.

> **REHABILITATION** instructions will be given to you by your physiotherapist, following the surgeon's protocol: whether weight-bearing is allowed or not, movements of the ankle and toes, etc. Rehabilitation generally starts a few days or a few weeks after surgery.

>**DRESSING** is carefully performed at the end of surgery, according to the surgeon's habits, and usually is not to be changed. If, however, you are having treatment at home, it is important to ensure the hygiene of the surgical scar while the sutures are still there and the scar is not yet completely dry. Hand hygiene is vital, and you must never touch the scar without first washing your hands. Make sure you always have a place nearby to wash or else a hydroalcoholic solution or gel for the nurse who comes to look after you.

>**PREVENTING PHLEBITIS**: Anticoagulant injections are sometimes prescribed, depending on your state of health as assessed by the surgeon and anesthetist.

POSTOPERATIVE CONSULTATIONS

Your surgeon will make regular clinical, radiological and biological check-ups, and the results will go in your medical file.

The (anonymized) data from your file may be used by your surgeon in scientific studies, presentations or publications, in line with the "Jardé" law of March 2012 (Decree 2016-1537). In this case, you will be asked for your specific consent, which will be included in your file.

The first postoperative consultations are to check on the scar and the local conditions. Later consultations are to monitor progression and functional recovery.

Monitoring and finally removing the immobilization, starting rehabilitation and authorizing return to work and sport will follow your surgeon's usual protocol.

WHAT TO EXPECT FROM THE OPERATION

The aim of the operation is to restore ankle stability to enable safe walking, even barefoot on irregular ground. The stability, and also pain, may sometimes be dependent on associated ligament, bone or cartilage lesions, for which treatment and outcome are specific.

Returning to physical activity (work and sport), is authorized, perhaps with the help of an ankle brace, at around 2 or 3 months; but this may sometimes be considerably delayed because of associated lesions.

RISKS

Surgery is NEVER entirely risk-free. However much care is taken, “zero risk” does not exist. When you decide to undergo surgery, you need to be aware of this, and weigh the risks against the expected benefit; this is known as the “risk/benefit ratio”.

However skillful your surgeon and the team, any treatment can sometimes unfortunately result in failure: recurrence or worsening of symptoms, or other even more serious risks. This may be pure chance or bad luck, but may also implicate your own particular health issues, whether these are known or not, local or general. There is no way of listing every conceivable complication, but we shall present below the most common or the most serious cases sometimes found with your pathology.

> CHRONIC PAIN AND COMPLEX REGIONAL PAIN SYNDROME

In painful pathologies, any medical or surgical treatment may unpredictably leave persistent pain or even worsen existing pain. Chronic pain may set in over the long term, as complex regional pain lasting several months and sometimes leaving trophic or joint sequelae.

> INFECTION

Despite all precautions in disinfection and skin preparation, any surgical incision is open to a risk of microbial contamination that may lead to infection. Infection may occur early, or much later. It often requires antibiotics and sometimes revision surgery, and may leave pain or functional sequelae. Certain factors such as diabetes, smoking or use of immunosuppressants (corticosteroids, etc.) can increase this risk.

> SCAR DISORDER

Despite all the precautions your surgeon takes with the operative wound and all the nursing care, there may be cicatrization problems, sometimes induced by general or local health issues such as diabetes or circulation disorder. Healing may thus be delayed or defective, ranging from a blemish to non-healing or skin necrosis. Scar disorder can also lead to infection.

> THROMBOEMBOLIC COMPLICATIONS

Any surgery, especially in the lower limbs, can lead to a blood clot obstructing the veins and causing phlebitis. The clot may reach the lung vessels, causing embolism, which can have serious or even life-threatening consequences. Prevention may involve anticoagulation therapy, depending on the operation and your general state of health.

> NEIGHBORING COMPLICATIONS

Given how close the operative zone is to various bone, vascular and neural structures, there can be consequences directly or indirectly related to surgery for neighboring elements: hemorrhage, hematoma, paresis, paralysis, loss of sensitivity, loss of motion, joint stiffness, etc. Depending on the location of the scar, damage to a little nerve may lead to loss of sensation or persistent pain. In ligament reconstructions, the most frequent lesions involve the superficial peroneal nerve or sural nerve, affecting sensitivity in an area of the foot: either loss of sensation or painful hyperesthesia. In some cases, surgical revision may be required, for example to drain a hematoma, decompress a nerve or release a tendon.

> DRUG-RELATED COMPLICATIONS

After surgery, you may be prescribed specific medication. This most often comprises anticoagulants, analgesics or anti-inflammatory drugs. Obviously, each has its own risks, which may be serious and sometimes unpredictable.

> SMOKING

Smoking is an important risk factor in foot and ankle surgery, notably leading to scar disorder, infection and thromboembolic complications and problems of bone consolidation.

It is recommended to cease smoking completely 6 weeks before surgery and for 6 weeks after. If you need help, do not hesitate to call on your family doctor.

> STIFFNESS

Any joint surgery can lead to joint stiffness, which may be transient or definitive. It may require specific rehabilitation, or even surgical revision.

> HARDWARE DISASSEMBLY OR BREAKAGE

Your operation involves mobilizing bone segments and may need some surgical hardware, such as a plate, screws, pins or sutures, to correct a deformity. Like any material, these implants may lead to complications, due either to their intrinsic fragility (breakage) or to displacement of the assembly due to excessive mechanical stress on the structures in which they are implanted, leading to correction loss. The implants may thus sometimes require repeat surgery in case of postoperative displacement or specific complications.



Finally, at a later stage, well after the immediate postoperative period, when your pathology is fully cured, the hardware may be removed in a scheduled operation, depending on the location, or if it is causing discomfort or local impingement.

>FAILURE

Results are not always as hoped, especially in case of pre-existing bone or joint lesions, which can impair surgical outcome. Sometimes, there remains a sensation of instability; in other cases, on the contrary, the ankle may become stiff. Or again, a new trauma can affect the results, with a new ligament tear.

> POSTPONEMENT OF SURGERY

Finally, your operation may have to be postponed, to ensure maximum safety:

- an illness just before you were going to be admitted;
- some recent change in your usual treatment;
- a wound or infection close to the area to be operated on;
- forgetting or failing to adhere to the instructions given by your surgeon or anesthesiologist;
- unexpected unavailability of some necessary equipment, or some problem arising with the operative room, liable to interfere with the procedure, even after you have been anesthetized.

Frequently asked questions

➤ ***Can both ankles be operated on at once?***

Usually, even if you have instability in both ankles, it is not recommended to have both operations in the same step.

➤ ***How am I going to manage at home? Will I be able to drive?***

Depending on the type of operation, you may or may not be able to put your foot on the ground without crutches. In ankle surgery, immediate weight-bearing is not always authorized, and you may need either a removable boot or some more rigid type of immobilization, such as a plaster or resin cast. During the immobilization period, it is not possible and would indeed be dangerous to drive. Your surgeon will explain how you can start driving again, depending on your progression.

➤ ***What do I do if my foot or ankle hurts or swells (edema)?***

Edema is frequent, and usually not pathological.

In some cases, it can be associated with severe pain, which may be the sign of something abnormal in the skin scar, the ligament repair or the bone (e.g., a displacement of hardware).

➤ ***What do I do in case of fever or a problem with the scar?***

If you run a temperature (fever), that may be a sign of infection.

If, on dressing, you find that the scar has reddened, is inflamed or shows effusion, consult your surgeon as quickly as possible: he or she will be able to advise you and set up suitable local or general treatment, such as antibiotics.

➤ ***What do I do if I have pain in the calf, or difficulty breathing?***

These signs may be related to a blood clot in a vein (phlebitis) or to migration of a clot to the lung (pulmonary embolism), which may have serious consequences.

The risk is all the greater if, because of the type of operation you have had, you are not authorized to put your foot down on the ground. In that case, you will have been prescribed preventive anticoagulants; but even so, there remains a risk, and these signs should alert you to that.

In general, onset of any new symptom is a reason for consulting your family doctor or your surgeon or, in case of emergency, the center in which you were operated on.

If you cannot manage to contact any of these, do not hesitate to phone 15 (the French emergency ambulance number), where you will be referred.