PATIENT INFORMATION FILE:

MORTON'S NEUROMA OR INTERMETATARSAL NEURALGIA

Your surgeon has suggested that you undergo surgery for your foot-and-ankle problem.

The main lines of this treatment have been explained to you: the alternatives, how the operation will be conducted, the postoperative course, the expected results and also the possible complications. The present file is a supplementary document that your surgeon would like you to have, setting out the key issues concerning your particular pathology and enabling you to check over the important points about the future operation.

Your surgeon will be available to see you before the actual operation, to answer any further questions you may have.

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

This file is also available on-line at:
AFCP (https://www.afcp.com.fr/infos-publiques/infos-patients/)
SOFCOT (http://www.sofcot.fr/Infos-public-Patients)
ORTHORISQ (http://www.orthorisq.fr)

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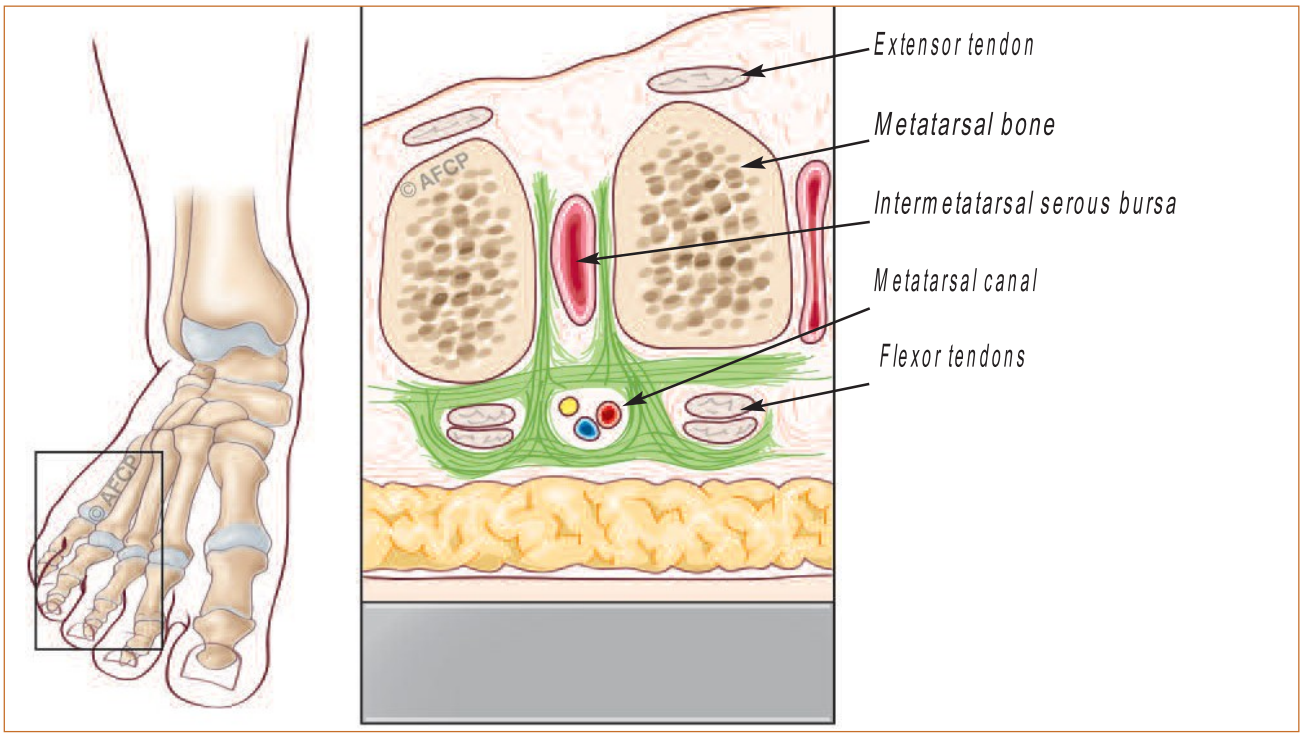
ANATOMY AND PATHOLOGY

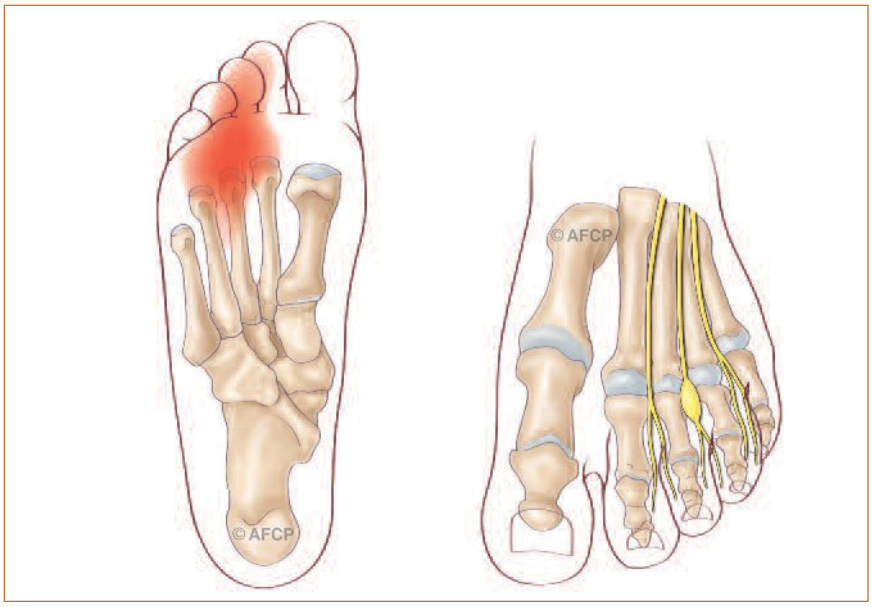
> ANATOMY

In the toes, sensitivity depends on the interdigital plantar nerves, the branches of which ensure sensitivity in the interdigital commissure. Just before branching, adjacent to the space between the metatarsal heads, they cross a fibrous tunnel called the metatarsal canal. Its walls consist of the superficial transverse ligament below, the intermetatarsal transverse ligament above, and fibrous walls between the two on the sides. Just above the metatarsal canal, there is a space, bordered laterally by the metatarsals (forefoot bones), containing the lumbrical and interosseous muscles and a serous bursa.



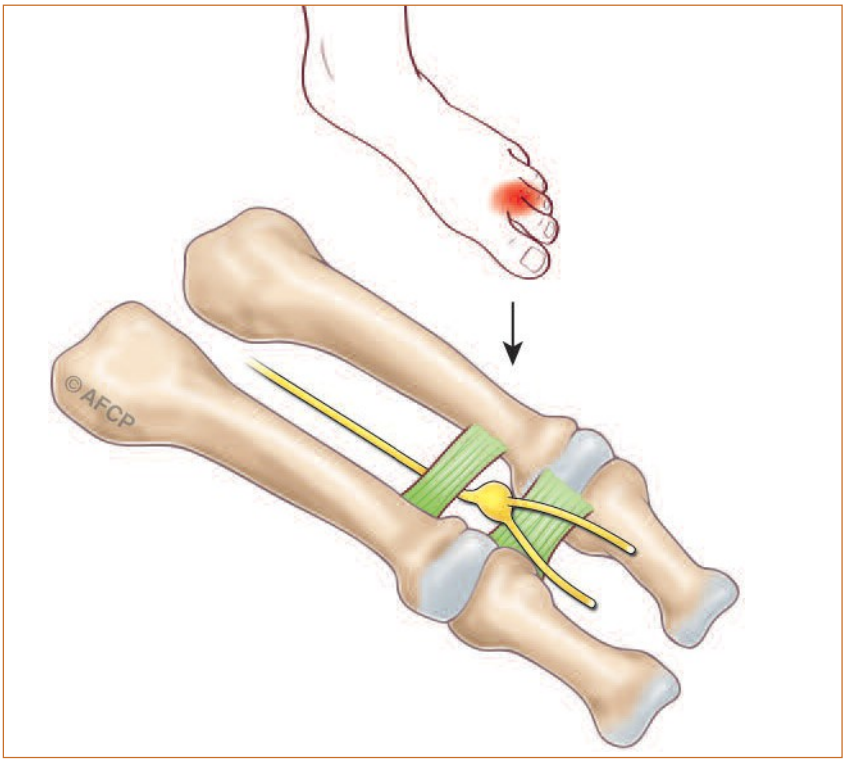
> PATHOLOGY

In walking, when the foot thrusts against the ground, the nerve is repeatedly compressed within the metatarsal canal. This is aggravated by narrow footwear. It causes irritation of the nerve.



The irritation causes the nerve to thicken, and a swelling is formed. It is this thickening or swelling that is referred

to as "neuroma".



CLINICAL PRESENTATION

Compression of the nerve usually causes violent pain below and between the toes. It often feels like an electric shock, spreading to the tips of the toes or up toward the ankle. It is usually brought on by walking or prolonged standing, especially if you are wearing tight shoes.

When pain sets in, you need to take off the shoe and massage the foot to relieve it. There may also be a sensation of "pins and needles" or of reduced sensitivity between the toes.

It is possible to have several Morton's neuromas on the same foot, or for both feet to be involved.

DIAGNOSIS

In examining your foot, the surgeon tries to locate the pain. Specific tests can also be used to locate the neuroma or neuromas. The surgeon may look for a loss of sensitivity in the interdigital commissures (spaces between the toes).

Ultrasound or MRI examination may be prescribed by your doctor or surgeon, to image the swelling of the nerve or compression by a neighboring structure. Foot X-ray is often performed, to rule out other bone or joint pathologies.

These examinations can also serve to screen for pathologies often associated with Morton's neuroma, or to differentiate it from other diseases with similar clinical signs.

POSSIBLE TREATMENTS

First of all, you should adapt your footwear, with wide-toed shoes that do not compress the forefoot; avoid high heels.

You may be prescribed orthopedic insoles (produced by a chiropodist-podiatrist), adapted to your foot morphology, to be worn all the time inside your shoes. These are intended to prevent repeated pressure on the nerve, and thus to reduce irritation.

One or several corticosteroid injections may be given, to reduce or eliminate symptoms. If effective, the relief may be temporary or definitive. These injections unfortunately do not always manage to control the pain, and may prove ineffective in some patients. Your surgeon will then suggest surgery, either to release the intermetatarsal nerve ("neurolysis"), or to remove it ("neurectomy").

Without treatment, the pains worsen, creating ever-increasing problems for walking and footwear.

HOSPITAL ADMISSION

You may be admitted on an outpatient basis, with just the day in hospital, or for a few days, depending on the type of operation, any associated pathologies and/or your medical or home situation

ANESTHESIA

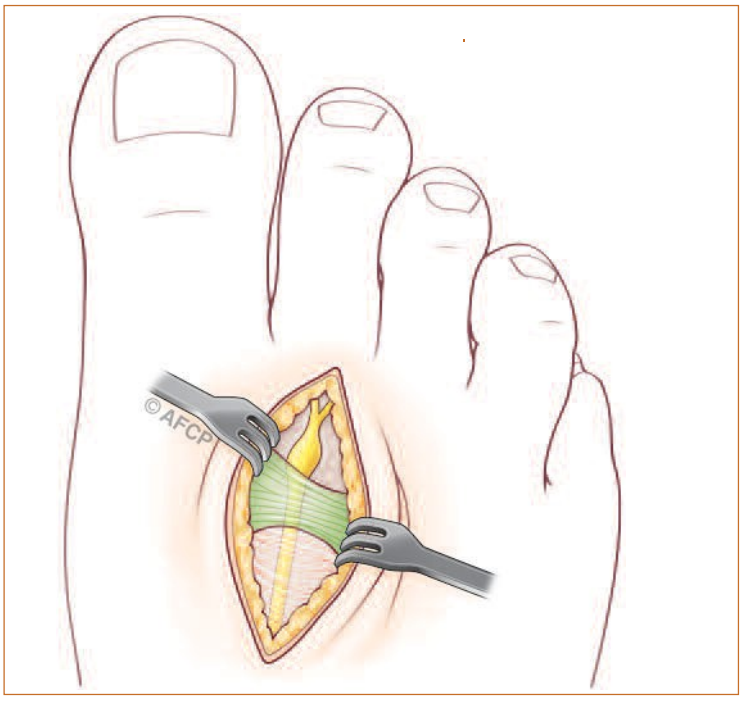
It is essential to have a preoperative consultation with an anesthetist. This doctor will explain to you the different possible types of anesthesia, adapted to the surgery you are to undergo and to your general health status.
During this consultation, the anesthetist will also check any medical treatments you are taking. New medications may be prescribed, before and/or after the operation; the most common are anticoagulants, antibiotics and/or anti-inflammatory drugs – and of course each has its own specific risks.
For the surgical operation, anesthesia may be "**locoregional**" (anesthetizing a segment of the leg from the tibia down to the toes), "**spinal**" (anesthetizing the pelvis and legs with an injection between two vertebrae), or "**general**".
Blood transfusions are rarely needed in this kind of surgery, which does not involve any heavy bleeding.

THE OPERATIONS

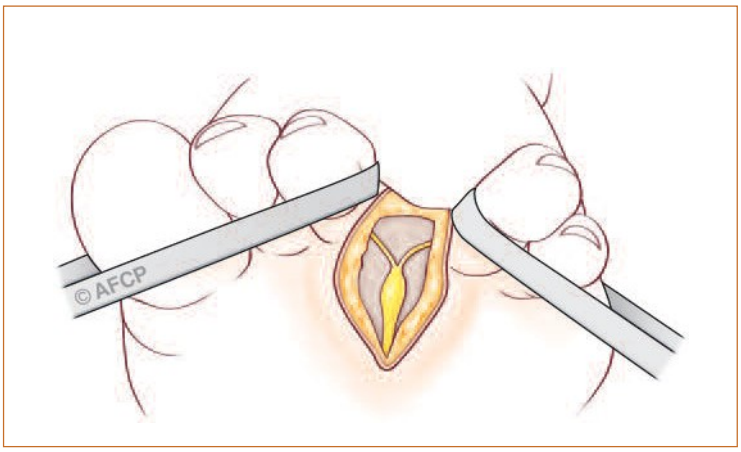
During the operation, your surgeon may come up against an unforeseen or unusual circumstance that requires a complementary procedure or a procedure not initially planned for. Once the operation is over and you have come out of the anesthesia, you will be told exactly what the surgeon did.

> NEUROLYSIS

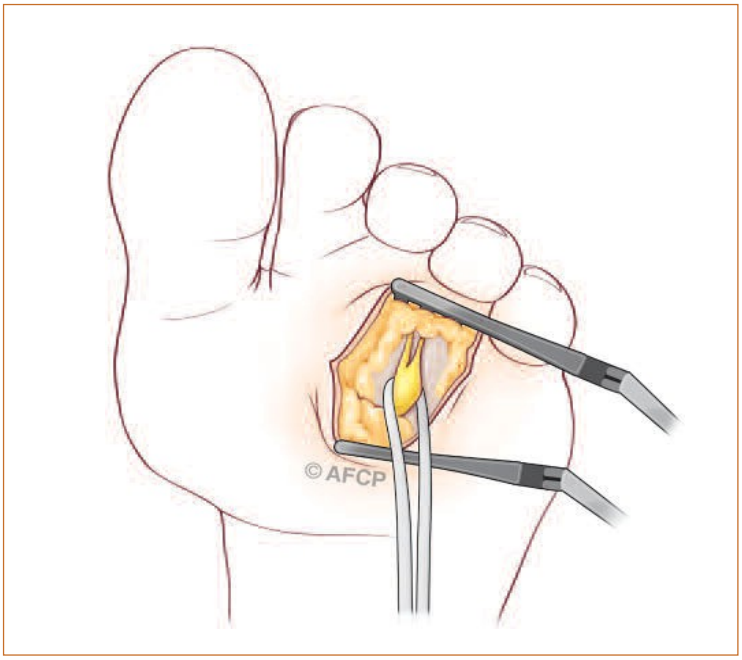
Neurolysis consists in surgical decompression of the nerve. You will usually be positioned on your back, with a pneumatic tourniquet around the ankle, calf or thigh, depending on the type of anesthesia. The position and size of the incision depends on your pathology and your surgeon's habits and chosen technique. It is usually around 4-5 cm (about 10 inches) long, and may be dorsal (on the top of the foot: diagram 1), commissural (in the space between the toes: diagram 2) or plantar (on the sole of the foot: diagram 3), or else consist of several very small incisions, in percutaneous surgery; endoscopy is another possible technique.



1-Dorsal approach



2-Interdigital (commissural) approach



3-Plantar approach

> NEURECTOMY

The principle of neurectomy is to remove the nerve causing the pain. During surgery, you will be positioned on your back, with a pneumatic tourniquet around the ankle, calf or thigh, depending on the type of anesthesia. Like in neurolysis, the position and size of the incision depends on your pathology and your surgeon's habits and chosen technique; it may be on the top of the foot (diagram 1), on the sole (diagram 3) or in the commissure (diagram 2). **This operation often causes anesthesia** (in the sense of loss of sensitivity) **or reduced sensitivity in the space between the toes in question.** For example, removing a neuroma between the 2nd and 3rd toes mainly impairs sensitivity on the lateral side of the 2nd toe and medial side of the 3rd toe.

> ASSOCIATED PROCEDURES

If you have associated pathologies, your surgeon my perhaps treat these at the same time, with specific procedures that will be explained to you.

When you come to the operating room, don't be too surprised if you are asked more than once (on arrival, then again when you are being positioned) for your name and which foot is to be operated on: this is the mandatory

procedure for all patients, known as the "security check-list" and required by the French Health Authority.

AFTER THE OPERATION

Special postoperative footwear is usually prescribed, depending on your surgeon's protocol.

Dressing is meticulously performed during the operation, according to your surgeon's habits, and usually should not be changed later. However, if there is care to be performed at home, it is important to ensure that the scar remains hygienically clean so long as the sutures are still there and the wound is not fully healed. Clean hands are essential, and you must never touch the scar without first washing your hands. Make sure that there is somewhere at your home for the nurse to wash her hands, or a hydroalcoholic cleanser. This kind of nursing care usually goes on for 2 weeks to 1 month.

Prevention of phlebitis: Anticoagulant injections may be prescribed, depending the surgeon's and anesthetist's assessment on your general health status.

Post-operative pain in this kind of pathology is not usually a great problem. Strong pain-killers may be used just after surgery, but as a rule you will be able to return home with just simple analgesics.

Postoperative edema (swelling of the foot and toes) is normal after foot surgery, and does not count as a complication. It is essential for it to be treated, not just to relieve pain but also to improve scar healing: a certain rest period, with the foot raised and wearing compression socks or stockings may be useful. The edema can last a long time (weeks or months), with no lasting harm, although you may need to adapt your footwear in the meantime.

Sick leave from work is usually necessary after the operation. On average, it is for 6 weeks, but this depends on your job and on the surgical procedures that have been performed.

Postoperative consultations:

Your surgeon will carry out regular clinical, radiological and biological check-ups, and enter the results in your medical file.
The data in your file (rendered anonymous) may be used in medical studies or scientific communications or publications by your surgeon, in line with the French "Jardé" law of March 2012 (Decree 2016-1537). If so, your surgeon will ask for your specific consent, and this will be recorded in your file.

The first postoperative consultations are to check on scar healing and conditions around the surgical site. The later consultations are to check progress and functional recovery.
Functional rehabilitation, if any, and authorization to return to work and to sport will follow your surgeon's protocol.

WHAT YOU CAN EXPECT FROM THE OPERATION

The aim of the operation your surgeon is suggesting is to relieve or eliminate pain due to Morton's neuroma.

THE RISKS

No surgery is ever without risk. Whatever the precautions, "zero risk" does not exist. When you decide to be operated on, you need to be aware of this, and to weigh the risks against the expected benefit: this is known as the "risk/benefit ratio".

However skilled your surgeon and the team, there is always, unfortunately, a risk of failure with any treatment. Failure here may mean recurrence of symptoms or even worsening, or other more severe risks. These risks may just be a matter of bad

luck, but they can also be aggravated by your particular health issues, whether known to you or not, and whether local or general. It would not be possible to detail here every conceivable complication, but we have listed below the most frequent or the most serious risks that may arise with your pathology.

> LOSS OF SENSITIVITY

After neurectomy, loss or decrease of sensitivity in the commissure of the toes involved is frequent and normal, as the sensory nerve has been completely removed. This anesthesia-effect may be total or partial. After neurolysis, the nerve may be traumatized, reducing sensitivity or inducing "pins and needles" in the commissure.

> CICATRICIAL NEUROMA

After neurectomy, the nerve stump may, in some rare cases, heal pathologically (cicatricial neuroma), causing new pain and sometimes requiring a second operation.

> PERSISENT SYMPTOMS

Despite painstaking nerve release (neurolysis), neuroma may persist, remaining painful and sometimes requiring re-operation.

> RESIDUAL PAIN DUE TO OTHER FOREFOOT PATHOLOGIES

If your Morton's neuroma is associated with other bone or joint pathologies, the clinical result of treating just the neuroma may be insufficient.

> CHRONIC PAIN AND COMPLEX REGIONAL PAIN SYNDROME

In any medical or surgical treatment for pain, some pain may unpredictably persist and other pains may worsen. These chronic, long-term phenomena may constitute a "complex regional pain syndrome" that may progress for several months, sometimes with trophic or joint sequelae.

> INFECTION

Despite all precautious in terms of disinfection and skin preparation, any surgical incision incurs a risk of microbial contamination leading to infection, early on or much later. Antibiotics are often needed, or surgical revision, with risk of pain or functional impact. Factors such as diabetes, smoking or immunodepressant treatments (corticosteroids, etc.) may increase the risk of infection.

> SCAR HEALING DISORDER

Despite all the care your surgeon takes to look after the surgical wound and all nursing care, there can be problems of scar healing, sometimes induced by general or local pathologies such as diabetes or circulation disorder. Wound healing may thus be delayed or defective, leaving a blemish or unhealed scar or skin necrosis. These scar issues can also lead to infection.

> THROMBOEMBOLIC COMPLICATIONS

Any surgery, and especially in the legs, can lead to a blood clot blocking the veins and causing phlebitis. The clot can even get into the circulation system of the lungs and cause an embolism that may have very serious or even fatal consequences. Prevention may involve anticoagulation therapy, depending on the type of surgery and your general health status.

> ADJACENT COMPLICATIONS

As the surgical site is close to bones, tendons, blood vessels and nerves, the operation may directly or indirectly impact these elements: hemorrhage, hematoma, paresis, paralysis, loss of sensitivity, restriction of motion, joint stiffness, etc. Given the position of the scar, injury to a small nerve can lead to loss of sensitivity or to persistent pain. In some cases, revision surgery may be necessary: to drain a hematoma, decompress a nerve, release a tendon...

> MEDICATION COMPLICATIONS

Following surgery, you may be prescribed certain specific medications: most often, anticoagulants, antibiotics, pain-killers, or anti-inflammatory drugs. These obviously all come with their own risks, that can be serious and sometimes unpredictable.

> SMOKING *(NICOTINE INTOXICATION)*

Nicotine intoxication is a major risk factor in foot and ankle surgery, notably causing healing problems, infections and

thromboembolic complications and hindering bone healing.

Complete cessation of smoking is recommended for 6 weeks before and 6 weeks after surgery. If need be, do not hesitate to consult your family doctor about this.

> STIFFNESS:

Any joint surgery can induce temporary or definitive stiffness. This may require physiotherapy or even re-operation.

> POSTPONEMENT OF SURGERY:

Finally, your operation may need to be postponed, for your own safety, in case of:

- an illness just before admission;
- recent change to your usual treatment;
- a wound or infection near the intended operative site;
- forgetting or failing to respect the instructions given to you be the surgeon and anesthetist;
- unexpected unavailability of the material and equipment needed for the operation, or unforeseen incident in the operating room liable to interrupt surgery, including after anesthesia.

Frequently asked questions

"Is it possible to operate on both feet at once?"

This can sometimes be possible, depending on your surgeon's habits, the technique employed and the type of anesthesia used to operate on both feet in the same step. Ask your surgeon, who can explain and advise on what is the reasonable thing to do in your situation.

"If both my feet are operated on, will the pain be worse and the sick leave longer?"

Regarding pain, the treatment is usually the same, adapted to the operation. The sick leave period is also usually the same, barring the unexpected (such as delayed bone healing).

"How am I going to manage at home? When will I be able to drive again?"

Depending on the operation, you may or may not be able to place your foot on the ground, with or without crutches. If you have had forefoot surgery, you will be able to walk, using one or two special shoes prescribed by your surgeon, to protect your foot during bone healing and scar healing.
While wearing this kind of "medical shoe", driving is strongly advised against; your surgeon will be able to explain the possibilities of driving again, according to how you progress.

"What should I do if my foot or ankle becomes painful again or swells up (edema)?"

Edema is frequent, and usually not pathological.
In a few cases, if it is accompanied by severe pain, it may be the sign of some problem with healing or with the bone (such as material displacement).

"What should I do in case of fever or a problem with the scar?"

If you develop fever, this might be a sign of infection.
If, when you change dressings, your scar is red, inflamed or suppurating, consult your surgeon as quickly as possible, for advice and adapted treatment - local or general (antibiotics).

"What should I do if I have pain in the calf or difficulty breathing?"

These signs may point to a blood clot in a vein (phlebitis) or a clot migrating to the lung (pulmonary embolism), which can have serious consequences.

The risk is greater if, because of the type of operation, you are not allowed to put your foot on the ground; in that case, your surgeon will have prescribed protective medicines (anticoagulants) for you – but even so, the risk remains and this kind of sign is an alarm.

Generally speaking, any new symptom means you should consult either your family doctor or your surgeon or, in case of emergency, the center in which you were operated on.

If you cannot reach them, do not hesitate to dial 15 for the emergency medical service, which will guide you.