

Cartilage Treatment with AMIC[®]

Regenerative Therapy for Cartilage Defects

**Patient
Guide**

 **swiss made**



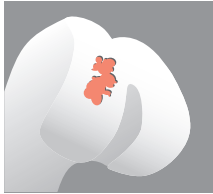


“I can go through everyday life as before, with no more restrictions.”

Hanna Laura Müller, AMIC® knee patient

Results can vary depending on a patient's age, health, and other factors.

About Cartilage



Cartilage is a strong and flexible tissue that covers the surface of the bones in a joint. It provides cushioning and a smooth, lubricated layer between the bones. But unlike skin or muscle tissue, it does not have blood vessels or nerves. That means it has very limited ability to repair itself. If not treated, a defect can grow larger over time, leading to osteoarthritis.

How Cartilage is Damaged

Cartilage damage can result from a trauma or injury, such as a fall during sports activities. It can also be caused

by imperfect alignment or instability of the joint. Or it can simply happen because of wear and tear. Minor injuries may heal over a few weeks or months, but more serious damage can often require surgery.

Treatment

Treatment depends on many factors, such as the size and location of the defect, your biological age, general health status and activity levels. The goal is always to repair the cartilage, alleviate pain, restore joint function, and prevent the progression of damage.



HANNA'S STORY

In 2015, Hanna fell while horseback riding and damaged the cartilage in her knee. Her surgeon recommended arthroscopic surgery with AMIC® to repair her knee.

Since the surgery, Hanna has resumed her active lifestyle. She practices yoga and enjoys horseback riding once again. She is now pain free and her knee is fully functional.

About AMIC®

AMIC is short for Autologous Matrix-Induced Chondrogenesis, meaning that a membrane (in this case made of collagen fibers) supports the body's own healing potential to repair cartilage. AMIC was developed for regenerative therapies that support the body's own healing potential and aim to restore joint function. It is used to repair damaged cartilage in the knee, ankle and hip.

What Happens During AMIC

During AMIC, damaged cartilage is removed. Cells from the underlying bone are released into the defect where they promote the growth of new tissue. A small piece of collagen membrane is used to cover the area and protect the new forming tissue from substances and forces in the joint.

A Special Collagen Membrane

The collagen membrane used with AMIC is made in Switzerland from natural collagen material sourced from pigs. Collagen is one of the major building blocks of bones, skin, muscles, tendons, and cartilage. During the manufacturing process, the collagen fibers are isolated, and a flexible but resistant membrane is produced. Over time, the membrane is resorbed by the body and replaced by newly formed tissue.

Positive, Lasting Results

AMIC is backed by more than 10 years of positive clinical results. Developed by Geistlich Surgery in collaboration with leading orthopedic surgeons in Europe, AMIC is a minimally-invasive, 1-step treatment to repair cartilage lesions, alleviate or prevent pain, and slow the progression of joint degeneration.

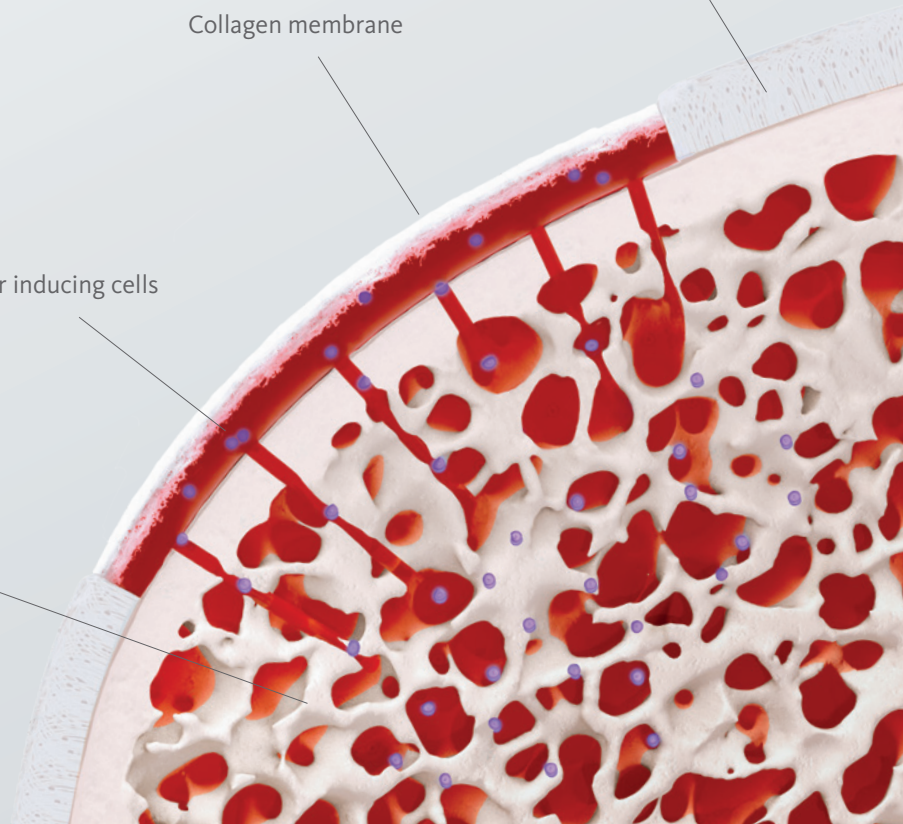
Joint cavity

Cartilage

Collagen membrane

Repair inducing cells

Bone



AMIC® Knee Surgery – What to Expect

Here are answers to some common questions about AMIC knee surgery. If you have other questions, please talk to your surgeon.

Will I need to be hospitalized for the surgery?

Your AMIC operation will be performed during a short hospital stay. Before the procedure, your doctor will talk you through the possible risks of the operation.

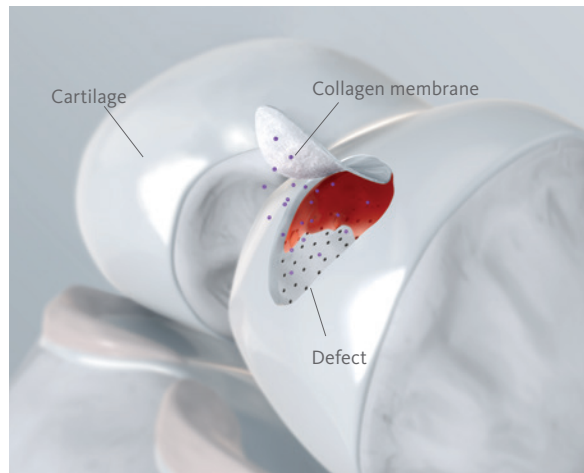
Will I be under anesthetic during the operation?

Yes. You will also meet with an anesthesiologist, who will discuss your anesthesiology options (general, spinal, or local) with you, and then recommend the most suitable option.

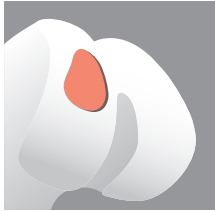
When can I do sports activities again?

After 3 months, you should be able to resume light sports activities such as walking, swimming, and cycling. However, healing times vary, depending on each person's age, general health, and other factors.

For more details and a sample rehabilitation timeline, please see page 6, “AMIC Knee Surgery Rehabilitation.”

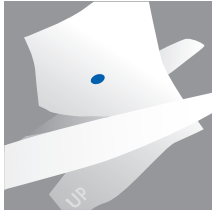


AMIC® Knee Surgery Step-by-Step



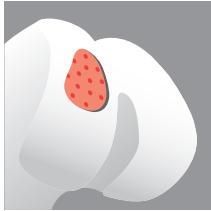
Preparing the Damaged Area

The damaged cartilage is removed.



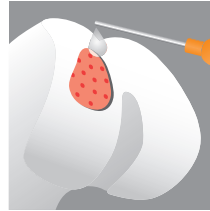
Trimming the Membrane

The defect is measured and the collagen membrane is trimmed to fit the damaged area.



Perforating the Bone

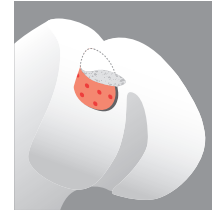
Several tiny holes are made in the bone to release cells.



Applying the Glue

A special type of glue is applied directly to the bone.

In some cases the membrane can also be sutured.



Positioning and Affixing the Membrane

The membrane is placed into the damaged area. The surgeon checks the position of the membrane and then closes the wound.

AMIC® Knee Rehabilitation

Your doctor will create a post-treatment plan that is tailored to your individual needs and also based on the specifics of your operation (e.g., the size and location of the damaged cartilage). The plan outlined below is just an example of what you can expect.

Phase I: Limited Movement

For the first few days after the operation, your knee will be immobilized in a splint. Your doctor will prescribe pain relievers and possibly, cooling therapy, manual lymphatic drainage, or

compression therapy to reduce swelling. Later on, your leg will be put in a brace and a physiotherapist will show you how to walk using forearm crutches. You'll need to make sure you keep your full weight off your leg.

Phase II: Regaining Mobility

Your physiotherapist will focus on moving your knee joint in a targeted manner to rebuild the muscles and gradually restore joint mobility. You may also use a continuous passive motion



Immediately After Surgery

Your leg will be immobilized in a splint. Your doctor will prescribe pain relievers and other measures to alleviate swelling.



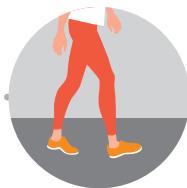
A Few Days After Surgery

Physiotherapy begins. In physiotherapy, your therapist will gently move your knee.



2 Weeks–3 Months

If you keep your full weight off your leg, you can walk with crutches and gradually increase the amount of weight you put on your leg until full weight bearing is possible.



(CPM) machine to move your knee gently and repeatedly. Your therapy plan will depend on the location and size of the cartilage damage. Some cartilage defects require a longer period of restricted movement than others. Your surgeon will tell you whether you will need to wear a knee brace that restricts the movement of the joint and can be adapted to the healing phase.

Phase III: Returning to Sports Activities

Increased load will help to train your muscles and improve joint function. To further improve your performance and joint function, do the exercises assigned by your physiotherapist diligently. Discuss with your doctor when you can resume specific sports. The newly-formed tissue typically takes 6 to 9 months to mature to the point where you can do more intensive sports.



3–6 Months

Low-impact sports such as walking, swimming, and cycling are possible. You can gradually increase your sports activities.



6–9 Months

You can resume sports like jogging, cross-country skiing, or downhill skiing.



After 9 to 12 Months

You can resume high-impact and contact sports like soccer, basketball or karate.

AMIC[®] Ankle Surgery – What to Expect

Here are answers to some common questions about AMIC ankle surgery. If you have other questions, please talk to your surgeon.

Will I need to be hospitalized for the surgery?

Your AMIC operation will be performed during a short hospital stay. Before the procedure, your doctor will talk you through the possible risks of the operation.

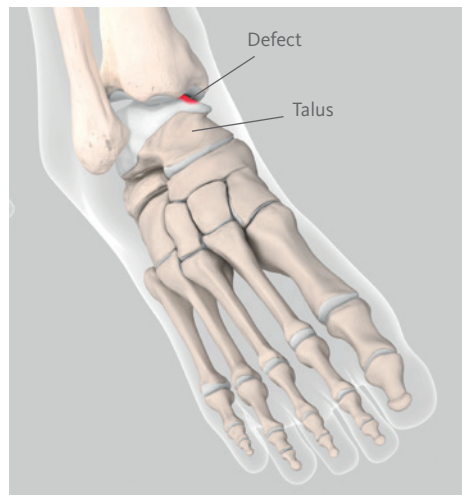
Will I be under anesthetic during the operation?

Yes. You will also meet with an anesthesiologist, who will discuss your anesthesiology options (general, spinal, or local) with you, and then recommend the most suitable option.

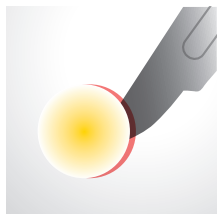
When can I do sports activities again?

After 3 months, most AMIC ankle patients are able to resume light sports activities such as walking, swimming, and cycling. However, healing times vary, depending on each person's age, general health, and other factors.

For more details and a sample rehabilitation timeline, please see page 10, “AMIC Ankle Surgery Rehabilitation.”

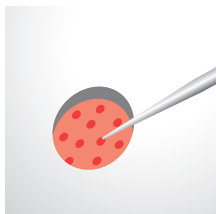


AMIC® Ankle Surgery Step-by-Step



Preparing the Damaged Area

The damaged cartilage and loose pieces of tissue in the joint are removed.



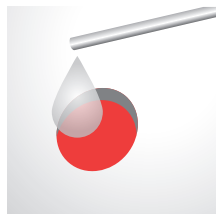
Perforating the Bone

Several tiny holes are made in the bone beneath the cartilage to release cells. If there is bone damage as well, the damaged bone will be removed. A bone graft or bone substitute will be used to rebuild the bone up to the level of the damaged cartilage.



Trimming the Membrane

The defect is measured and the collagen membrane is trimmed to fit the damaged area.



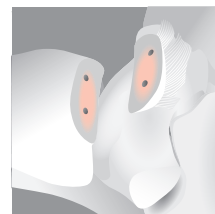
Applying the Glue

A special type of glue is applied directly to the bone beneath the cartilage.



Affixing the Membrane

The membrane is placed into the damaged area. The surgeon checks the position of the membrane and then closes the area.



Creating the necessary space

Depending on the size and location of the defect, the surgeon might need to gain access to the lesion by cutting through the bony prominence of the shin bone. The surgeon will later re-attach it with screws and carefully close the skin.

AMIC® Ankle Rehabilitation

After the operation, your doctor will prescribe medication to help reduce pain and swelling. You will spend a few days in the hospital after the operation. During this time, your leg will be elevated to counteract swelling.

Your doctor will create a personalized rehabilitation plan that reflects your individual needs. To ensure optimal results from your operation, following your doctor's instructions is critical. The plan outlined below is just an example of what you can expect.

Phase I: Limited Movement

During the first 2-6 weeks after surgery, put only a little weight on your leg. Use forearm crutches to bear most of your weight. Your ankle will be protected by a plaster splint or a stable bandage, depending on what your doctor has found during surgery.

You can move your ankle up and down slightly. But avoid tilting it sideways. Your doctor may also prescribe physiotherapy and manual lymphatic drainage to support the healing process. In physiotherapy, your therapist will gently bend and straighten your ankle.



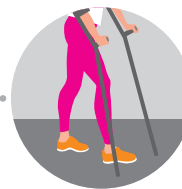
Immediately After Surgery

Your ankle will be immobilized in a splint or bandaged. Your doctor will prescribe pain relievers and measures to alleviate swelling.



2–6 weeks

You can walk with crutches if you keep your full weight off your leg. Passive movement of your ankle in physiotherapy will help to increase your mobility.



6 weeks–3 months

You can gradually increase the amount of weight you put on your ankle.

Phase II: Regaining Mobility

After 6 weeks, you can start to put more weight on your ankle. Over 12 weeks, you can gradually increase the load on your ankle to your full weight. Your physiotherapist will show you how to gauge and slowly increase the weight on your leg. Focus on increasing the load gradually. Physiotherapy will help increase your mobility. But you cannot do any sports at this time.

After 3 months, you should be able to go about your everyday activities without forearm crutches. You can cycle or swim. An ankle brace might help you feel more secure. If your ankle is still prone to swelling, try wearing a compression stocking.



3–6 months

You can walk without crutches. Low-impact sports such as walking, swimming, and cycling are possible.



6–12 months

You can safely increase your sports activities. Ideally, focusing on low-impact sports such as walking, hiking, and cycling.



After 12 months

You can resume high-impact and contact sports like soccer, basketball, tennis and jogging.

Phase III: Returning to Sports Activities

Cartilage healing depends on many factors besides surgery (e.g., age, weight, medication, metabolism). Full recovery can take 6–24 months. During this phase, you can increase your sports activities. But listen to your body. If you have increased pain, that means you might be putting too much strain on your newly repaired cartilage. In most cases, it's wise to avoid high-impact sports (e.g., jogging, tennis, squash, soccer) for 12 months after surgery. Before you increase your sports activities, consult with your doctor.

“I do yoga and horseback riding, and am physically active without having any problems.” Hanna Laura Müller, AMIC® knee patient



Results can vary depending on a patient's age, health, and other factors.

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For more information visit the
Geistlich Patient Website

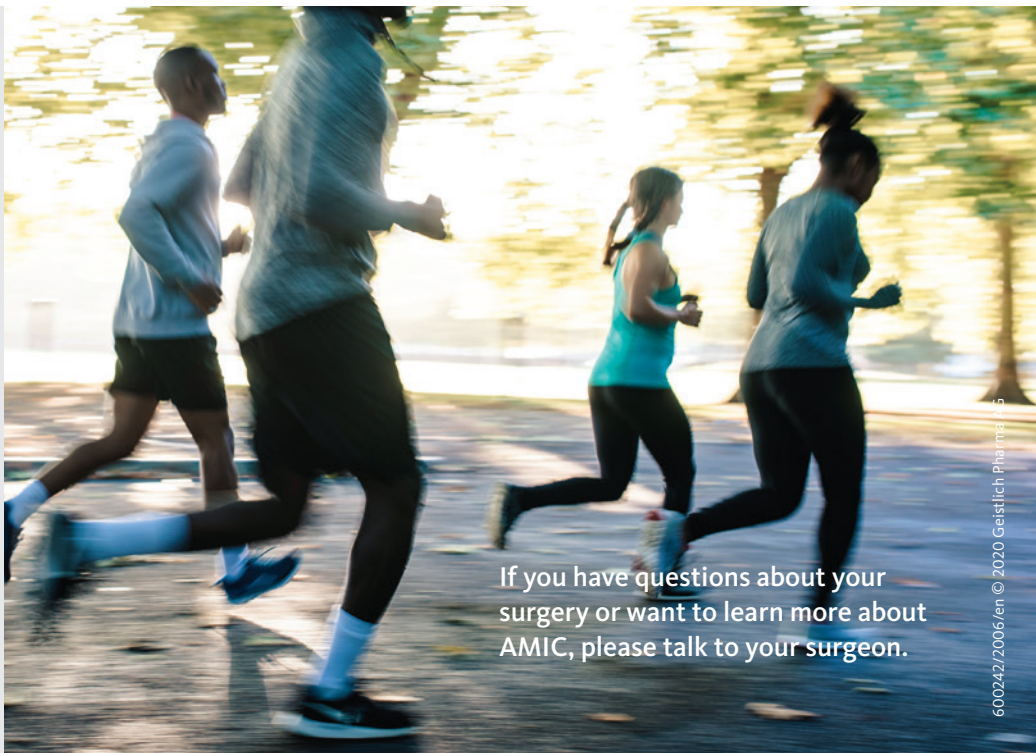
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Geistlich

Surgery



If you have questions about your
surgery or want to learn more about
AMIC, please talk to your surgeon.