



arthrosurface

# Are you living with knee pain?



## **Julie**

Actual ArthroSurface  
Knee HemiCAP®  
Patient and Martial  
Arts Instructor

Unlike a total knee replacement, the ArthroSurface® Joint Restoration Systems can allow you to resume full activity and preserves the natural anatomy of your joint. Find out if the ArthroSurface HemiCAP® or UniCAP® is right for you!

[www.arthrosurface.com](http://www.arthrosurface.com)



arthrosurface®

## OUR PATIENTS CAN DO MORE

### THE ACTIVE ALTERNATIVE TO A TOTAL JOINT REPLACEMENT

Have you been told you may need a total knee replacement? Artificial joints can limit a person's range of motion and ability to perform daily tasks. Total knee replacements also restrict high-level pursuits such as cycling, martial arts and weightlifting. The Arthrosurface HemiCAP® and UniCAP® implants consist of a cap and screw that allow the surgeon to restore only the damaged area of the joint without removing excessive bone and tissue. Your natural anatomy is preserved, allowing you to resume an active lifestyle without pain.



## What is a joint?

Joints are the locations in your body where two bones meet. Articulation of these bones against each other is what permits our bodies to move. Cartilage is located at the end of our bones and is a smooth, slippery tissue that allows them to slide against one another with minimal friction. Once cartilage is damaged, it cannot heal itself and the progressive deterioration leads to a loss of cartilage and exposed bone. Because pain sensors are located in bones and not in cartilage, it is the exposed bone that results in a painful joint.

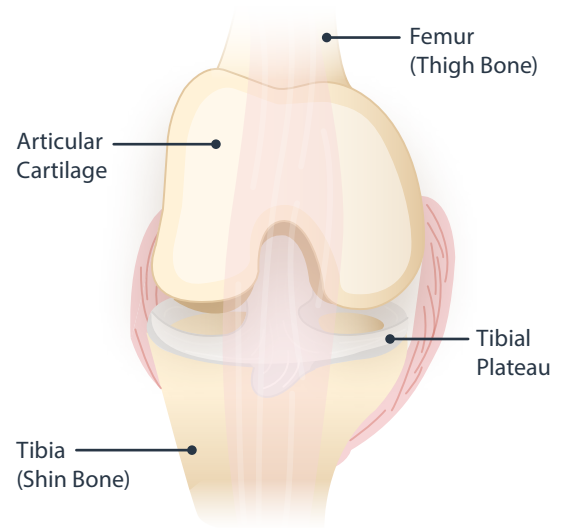
## How does cartilage get damaged?

A variety of events can damage cartilage, including trauma (injury), infection, inflammation or a joint that is not properly aligned. A traumatic injury can cause an isolated defect, while malalignment tends to cause widespread damage to both sides of the joint. This is very similar to the way a car tire loses its tread when the wheels are not properly aligned.

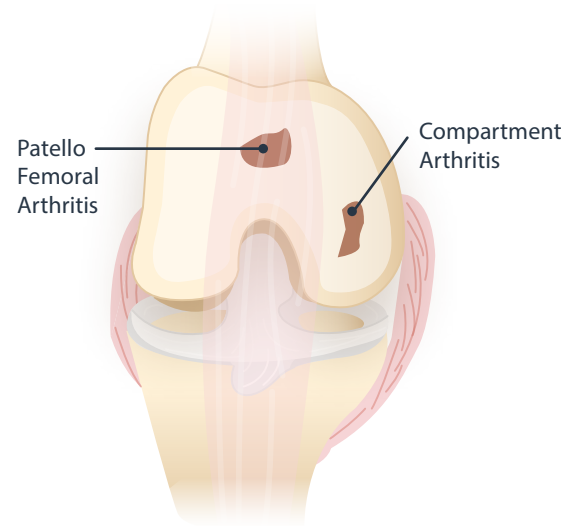
## What is Osteoarthritis?

Osteoarthritis is a disease process that causes the deterioration of both the articular cartilage and bone in major joints.

**ARTHRITIS =  
DETERIORATION AND/OR  
LOSS OF CARTILAGE**



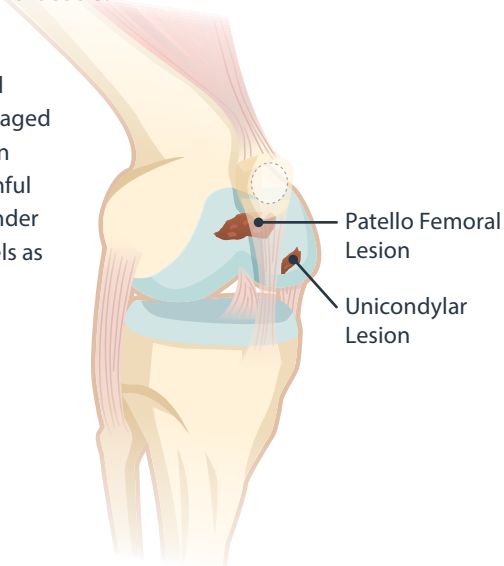
**Healthy Knee**



**Arthritic Knee**

10 years ago, Arthrosurface® introduced joint preserving technologies that would allow the damaged part of the knee to be restored without limiting motion or removing significant amounts of bone and tissue.

Even a small area of damaged cartilage can be very painful and may hinder activity levels as a result.



## Can Arthritis get worse?

Any event, continued malalignment or disease process (i.e. inflammation) that injures the cartilage may cause joint damage or arthritis. A small cartilage injury may become larger and lead to widespread cartilage loss or degenerative joint disease over time.

## What parts of the knee can develop arthritis?

Arthritis commonly occurs where the joints in your knee meet, known as the condyles (the end of your thigh bone) or in the area behind the kneecap. If you have pain in your knee when getting up from a chair or going up and down stairs, you may have damage in your kneecap (patello femoral joint). If your knee hurts after standing or long walks then it may point to a problem in one of the condyles.

## What are treatment options for damaged cartilage?

Depending on the degree of cartilage injury, patient age and the level of activity desired, patients may be candidates for: microfracture or the Arthrosurface NanoFx® (nanofracture), allograft, injections, an Arthrosurface HemiCAP® or UniCAP®, or a traditional total joint replacement.



Microfracture/  
NanoFx®



Allograft



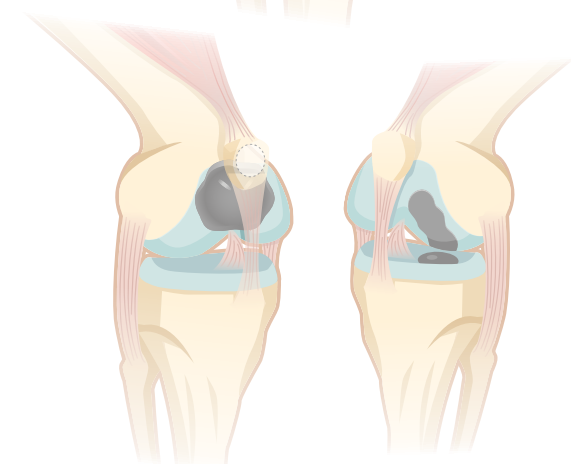
Injections



Arthrosurface  
HemiCAP®/  
UniCAP®



Total Joint  
Replacement



Restoring the joint with Patello Femoral HemiCAP® (kneecap) or a UniCAP® (condyles) creates a new congruent joint surface. It also restores the native anatomy of your joint and can greatly reduce the pain.



## What is Microfracture?

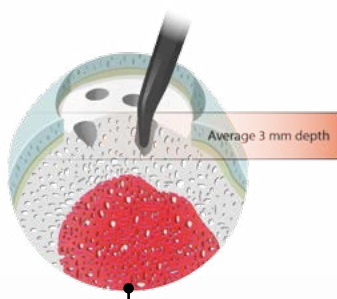
In a microfracture procedure, a surgeon uses a pick or an awl to create holes in the exposed defect that will cause bleeding. This will initiate a fibro-cartilage healing response. The fibro-cartilage then grows and fills the lesion creating a new surface. This response is similar to a “scar” or the way a scab grows over a cut. This technique may provide short-term pain relief and is generally indicated for patients under 35 years old. The rehab for microfracture can be lengthy and involve minimal weight bearing for weeks. Do not expect a full return to activity until at least one year post surgery.



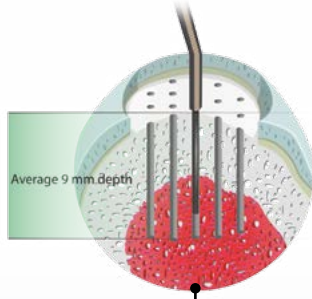
## I’ve heard about NanoFx® (Nanofracture). How is this different than a traditional Microfracture technique?

Arthrosurface® provides a device for marrow stimulation called NanoFx® (Nanofracture) that offers a better solution than a traditional microfracture technique. The NanoFx® procedure creates smaller and deeper cell channels, therefore stimulating more bone marrow. Patients most likely to benefit from this procedure are the same as those targeted for any microfracture technique.

For more information on NanoFx® as a biological option visit [www.arthrosurface.com](http://www.arthrosurface.com).



Bone Marrow Stem Cells  
Microfracture



Bone Marrow Stem Cells  
Arthrosurface NanoFx®



## What about Allografts?

Allografts are human donor tissues. Unless the allograft is “fresh”, meaning that it has not been frozen or treated with a variety of preservation and other processes, the cartilage surface on the donor tissue is inactive. In essence, it is a bone graft and not a cartilage graft. Fresh allografts are available but they are difficult to find and are limited to key sites in the United States.

The surgeon takes bone that is roughly the same size and shape as your knee and then creates a graft that will fit into the damaged area to be replaced. This is a difficult surgery as it is very hard to match each patient’s individual surface curvatures. There is also a small risk of disease transmission and there are lengthy wait lists for grafts and surgery. Outside the United States, grafting is limited or non-existent.



## I’ve heard of injecting cartilage cells to regrow normal cartilage. Does that work?

This is an option where a cartilage biopsy is taken from the patient and then sent to a lab where new cartilage cells are grown. The patient then returns for a second surgery where the cells are placed in the damaged area and covered with a tissue patch so that the cells stay in place until healed. Some downsides of this procedure include: varying results, lengthy rehab, multiple surgeries, and expensive costs because it is not always covered by insurance. Almost half the patients require a third surgery to address further issues in the joint.



## What about a Total Knee Replacement?

This major surgery is designed to relieve the pain of widespread arthritis. It removes all cartilage in the knee, a significant amount of bone, ligaments, usually the ACL, PCL and both menisci. Total joint replacements were originally indicated for patients over 65 years old who had a sedentary lifestyle. Because this is an artificial joint, your motion will no longer be normal and activities will be severely limited, especially any type of pivot, squatting or kneeling. While total joint replacements may be a reliable end stage procedure, published data shows that 1 in 5 patients continue to be dissatisfied with their outcomes. In younger patients, total joint replacements have a lifespan of approximately 10-12 years. A knee replacement can take up to six months or longer of rehabilitation and the return to an active lifestyle may be permanently compromised.



A Total Knee Replacement (left) versus the Arthrosurface UniCAP® (right)



## What about restoring the joint with the Arthrosurface HemiCAP® or UniCAP®?

The HemiCAP® and UniCAP® implants are technologically advanced systems designed to match the shape and contour of the individual patient's cartilage surface. The implants are two separate components which consist of a cap and screw that lock together via morse taper. The cap is a contoured surface that restores the area of damaged cartilage and is designed to protect the remaining, healthy cartilage in the joint with minimal bone removal. The Arthrosurface® screw system has been a stable construct with no reported loosening over the last 10 years. The idea behind the system is to prevent further damage to the joint while maintaining the patient's native anatomy and motion. The HemiCAP® and UniCAP® systems are ideally suited to treat patients with focal, localized or early arthritis.

The HemiCAP® and UniCAP® systems match not only the diameter of the damaged area, but also the precise radius of both curvatures on the patient's joint surface, superior to inferior (top to bottom) and medial to lateral (side to side). Once the mapping points are defined, the appropriate implant is chosen and is then placed into the patient's joint. Different diameters & curvatures are available to provide a proper fit for each individual patient.





## How are the HemiCAP® and UniCAP® different than other existing devices?

- It is custom matched and fit to the patient's joint size and shape
- Screw fixation provides a stable implant
- Significantly less cartilage and bone is removed than traditional joint replacements
- It is placed into the surface rather than on top, leaving the joint less surgically altered
- Joint motion and natural anatomy of the knee is preserved so no bridges are burned
- May be performed on an outpatient basis

## What is the difference between a HemiCAP® and a UniCAP®?

Both implants are part of the Arthrosurface® Knee Systems but are used to treat different parts of the knee. If your cartilage damage is located behind your kneecap then the surgeon would select a Patello Femoral HemiCAP® implant to stop the pain you feel. If your damage is located on the inside or outside of your knee, then the UniCAP® implant would be selected. The different names help your surgeon find the best match, depending on the location of the damage in your knee.

## How long will the HemiCAP® implant last?

Your surgeon expects the devices to last as long as similar metallic devices but it will depend on your general health, activity level, and adherence to your doctor's orders following surgery. Currently over 50,000 patients have been treated with Arthrosurface® implants and many have hit the 10 year mark!

## Arthrosurface® Knee Systems



HemiCAP® Implant for Patello Femoral with Patellas



Extra large HemiCAP® for Patello Femoral with Patellas



UniCAP® Implant with Tibial Component for Femoral Condyle



## A Patient's Story

"One day during the spring of 2004, I was playing tennis, which I do several times a week. During the game, my knee started to hurt. It was strange because I didn't fall or remember doing anything traumatic, it just started to hurt. After the game, it got worse and that night my knee began to swell.

When I went to see my surgeon, he decided it was more than just a minor injury. He scheduled me for an arthroscopic surgery so he could look inside my knee to see what was wrong. That's when he found that I had damage to my articular cartilage and that I would need surgery to correct the problem.

My surgeon told me that with microfracture, the rehab was going to be fairly long. This was an issue for me because I am a very active and wanted to continue to play tennis.

After discussing several options, my surgeon suggested that I might be a good candidate for the HemiCAP® implant from Arthrosurface®.

The implant is custom fit to cover the damaged area and since it is metal, I could put my weight on it much earlier.

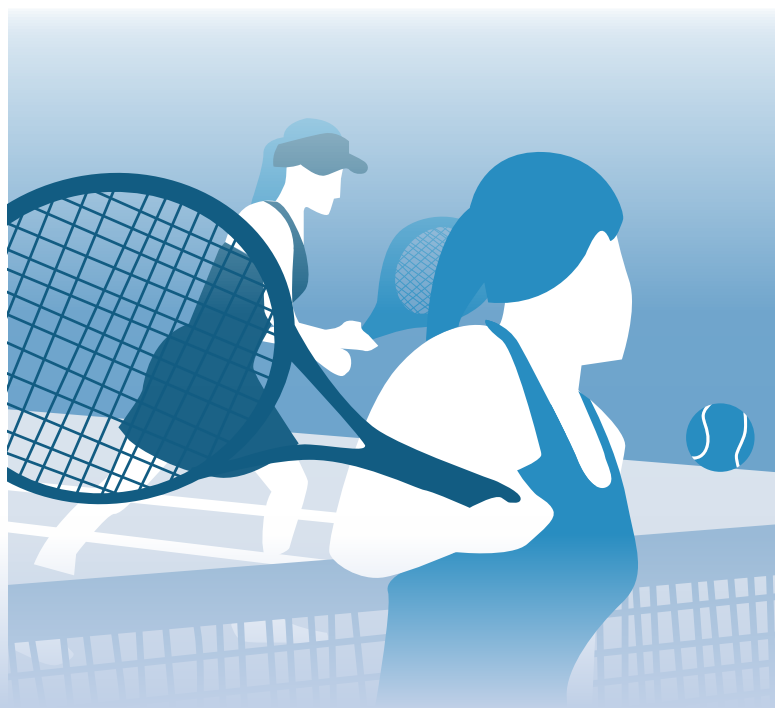
Being able to move around early was very appealing to me so I decided to have surgery the next month. After the surgery, I went home to start my rehabilitation. I still had pain at first but each day it got better. By the end of the first week, the worst pain was gone. Even though the whole rehab program took only about 8 weeks, by 6 weeks almost all my pain was gone. I started to play tennis as soon as my doctor approved, which was about 8 weeks after surgery.

I recently went on a one week bike tour in Germany. This was the first time that I was going to exercise my knee for several hours so I was a little concerned.

**IT WAS GREAT!** No pain, my legs felt strong and the best thing was that no one could tell I had surgery only a year before.

When I first had the pain in my knee I was very concerned. I thought I might not be able to exercise or be as active as I wanted. With the HemiCAP® implant, I have everything I wished for. The rehab was short, it didn't really affect my work, I can play tennis, hike and ride by bike, all with no pain. The HemiCAP® implant sounded like a good idea when I first heard about it but now I know it is. I couldn't be happier with how it turned out."

– P.R., Germany





## What happens if my HemiCAP® or UniCAP® fails?

If it ever fails, it may be replaced with a traditional total joint replacement.

## Does it burn any bridges?

There is minimal bone removed with the HemiCAP® and UniCAP® implants, while existing joint replacements surgically remove the entire bone surface (on both sides of the joint). This means there is far less of the natural bone to work with if future surgery is required. The HemiCAP® and UniCAP® systems leave more bone intact, providing more options should future surgery be required.

## Will I feel it?

No. The implant is surgically placed so there are no protruding edges. The bone and the implant become a smooth surface you will not feel.

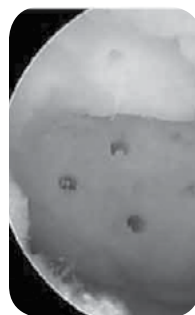
## How long will I be out of work?

This will depend on your overall health, range of motion and the type of work you do. Many patients have experienced a rapid return to daily activities. However, as with all medical treatments, individual results may vary.

## What type of physical therapy will I need to do?

Your doctor and therapist will design a rehabilitation protocol to return strength to your muscles so you can resume your original lifestyle as quickly as possible. Patients are encouraged to walk and move around immediately to prevent the buildup of scar tissue and rehab is usually measured in weeks rather than months.

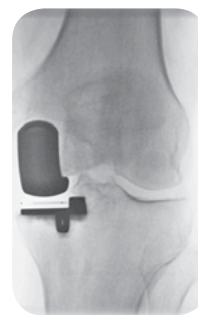
## Compartment Arthritis Treatment Algorithm by Age



ages 35 & under  
Microfracture/  
Arthroscopic  
NanoFx®

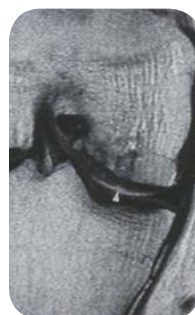


ages 35-55  
Arthroscopic  
UniCAP®



ages 55+  
Unicompartmental  
Replacement

## Patello Femoral Arthritis Treatment Algorithm by Age



ages 35 & under  
Grafting



ages 35-70  
Arthroscopic  
Patello Femoral  
HemiCAP®



ages 70+  
Total Knee  
Replacement

## Are you a candidate?

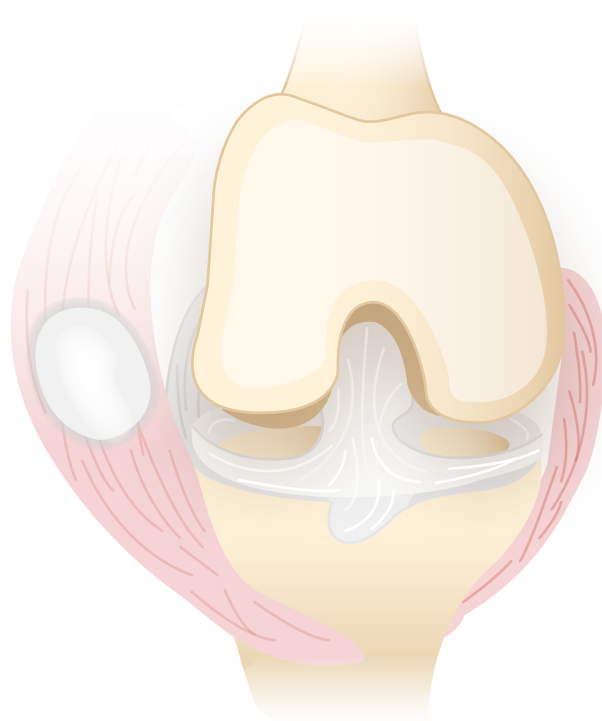
- Aged 35 to 75 years old
- Want to regain your active lifestyle
- You have had a microfracture treatment or injections, but the pain has returned
- You cannot afford lengthy rehabilitation time or excessive time off work
- You want to fix your knee problem now versus waiting for your knee to undergo further damage
- Your surgeon has told you that you will need a knee replacement in the future


## Questions to ask your doctor during your visit.

- Will my joint feel normal and move naturally after I have the surgery?
- Will you remove my ACL?
- Is my cartilage damage localized?
- Is the alignment of my joint close to normal?
- Is my joint unstable?
- Do I have any joint space remaining?
- How long will I be hospitalized?
- Can the procedure be performed on an outpatient basis?
- Will the recovery take weeks or months?
- Can I go back to all my previous sports and activities?

## Where is my damage?

Ask your doctor to indicate what parts of your knee are damaged.





Due to its general applicability, do not rely on information in this brochure to assess any particular patient condition. Individual results may vary. Seek professional medical advice for specific personal care. Do not delay seeking professional medical advice or disregard professional medical advice because of something you have read in this brochure.

  
arthrosurface

For more information, visit our website  
[arthrosurface.com](http://arthrosurface.com)

28 Forge Parkway • Franklin, MA 02038  
**1 508 520 3003**  
fax: 1 508 528 3785

This pamphlet and information is intended for markets  
where regulatory approval has been granted.

PN 0020-1240 REV D