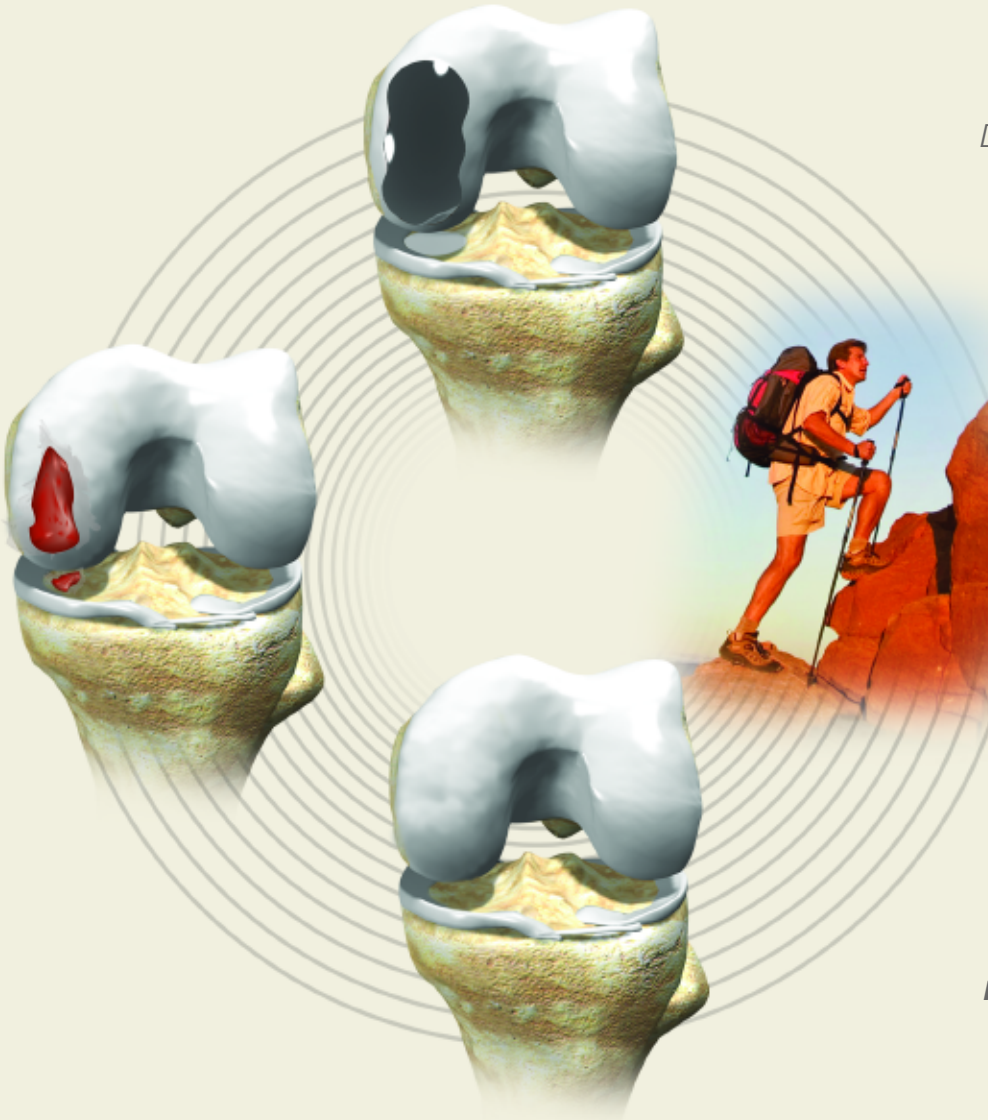


Arthroscopically assisted *Knee Resurfacing (AKR)*

*Do you have pain in your knee
that prevents you from doing
the activities of daily life?*

*Has your doctor
told you that you
might need a joint
replacement in the
future?*

*Now there is a less
invasive solution that
might be right for you.*



Anatomy

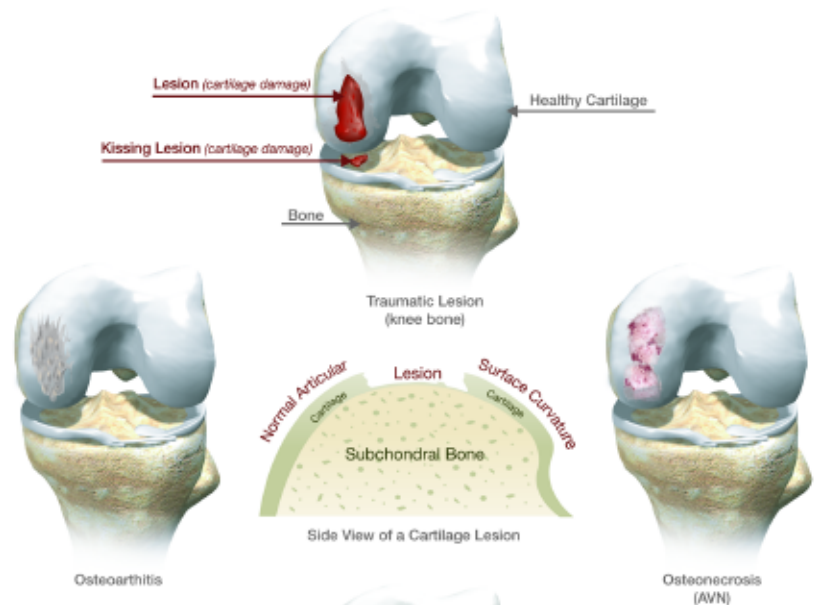
Have you become frustrated because of the limitations of a painful joint?

Before we begin to explain a possible solution, it is important to understand the problem.

What is a joint?

Joints are the locations in your body where two bones meet. Movement of these bones at the joint permits our bodies to move. Cartilage is a specialized tissue in the joints which caps/covers our bones where they meet. Cartilage is a smooth, slippery tissue that allows the bones to slide against one another with minimal friction.

How does cartilage get injured?
A variety of events can damage cartilage, some include trauma (injury), infection, inflammation, osteonecrosis (dead bone) and malalignment. A traumatic injury can cause an isolated defect just like a golfer creates a divot in the grass. Malalignment can cause widespread damage to the joint surface similar to the way the tires on a car lose their tread if the wheels are not properly aligned. In many instances, physicians may elect only to replace the damaged area rather than replacing the entire joint.



UniCAP™ AKR

What is Osteoarthritis?

Osteoarthritis is a disease process causing the deterioration of the articular cartilage usually occurring in the major joints.

Arthritis = Deterioration of Cartilage

Osteoarthritis is noted by joint pain and stiffness usually after activity

Can arthritis get worse?

Any event that injures the cartilage may cause joint damage or arthritis. A small cartilage injury with time, may become larger and lead to widespread cartilage loss or degenerative joint disease.

What is Osteonecrosis?

This condition literally means bone death (osteo=bone, necrosis=death). Also known as avascular necrosis (AVN), this condition is caused by lack of blood supply to the bone. It is triggered by a variety of factors including trauma, alcohol abuse, blood abnormalities, pregnancy, corticosteroids used in medical treatments (e.g., cancer treatments, lupus and organ transplantation), but in approximately 25% of the patients, the cause is unknown.

Osteonecrosis = Bone Death

Osteonecrosis is noted by aching joint pain

What are treatment options for injured cartilage?

Depending on the degree of cartilage injury, age and activity level, patients may be candidates for either: abrasion arthroplasty, microfracture, allograft, a traditional total joint replacement or now with the advent of resurfacing technologies, a less invasive procedure such as the Arthrosurface AKR system.

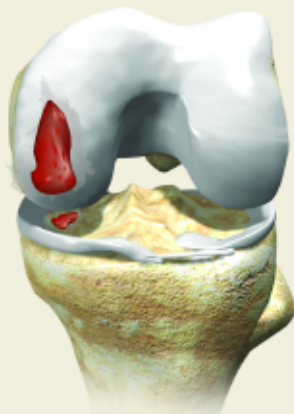
What is Abrasion Arthroplasty?

In abrasion arthroplasty, a high-speed rotary burr or shaving device is used to remove about 1mm of bone from the surface of the lesion. This creates an exposed bone bed that will bleed and this will initiate a fibro-cartilage healing response. The fibro-cartilage then grows into and fills the hole or lesion creating a new but inferior surface. This response is similar to a "scab" or scar tissue that grows over a cut. This technique may provide short-term pain relief and is generally indicated for patients under 35 years old.

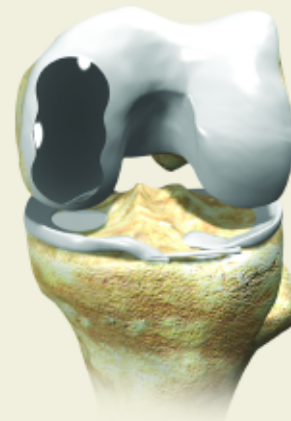
What about microfracture?

This technique is very similar to abrasion arthroplasty except that the bleeding is initiated by impacting awls, picks or drilling directly into the bone within the lesion. The clinical literature suggests that microfracture is less effective in patients over the age of 40 years old, however it is commonly used as a first line treatment for early cartilage damage.

Cartilage damage of a large enough size may be problematic. This damage typically causes pain, may increase in size and risk spreading damage to surrounding areas of normal, undamaged cartilage.



Damaged articular cartilage can be very painful and may inhibit activity levels as a result.



Joint resurfacing with a AKR implant creates new congruent joint surfaces and may greatly reduce the pain.

"Fifteen years ago while playing football at school I injured my right knee and tore my ligament. A few years later while water skiing I did the same thing to my left knee. Of course, I knew that if I wanted to keep doing sports my ligaments needed to be fixed so I had both repaired. Physical activity is part of my life. Not only do I ski, play football and do sports like ultimate frisbee but I have a very physical job where I have to move equipment around an area the size of three football fields. I was always able to manage my pain but then a few years ago my knees started to become painful when I did activities for extended periods of time. As a matter of fact the pain got so bad that after a fantastic ski week in Tahoe I could barely walk. Even though it was tough I always managed.

Then last year things changed. While skiing with my daughter I fell and could hear a pop in both my knees. I thought, "that's it I've torn my ligaments again and now I'm going to need a joint replacement." The thought of a total knee scared the heck out of me. You would think I would be OK with it since I work at a hospital where they perform these operations everyday but it just seemed to be such a big operation. Nonetheless, I had my knees checked out and sure enough the damage to my cartilage was so significant that just fixing the ligaments wasn't going to help much.

Thankfully, one of the doctors at our hospital has been working on minimally invasive surface replacements in the knee, so when the new system became available I decided to check it out. The basic idea was to just fill the damaged areas with new surfaces that matched my own anatomy so I could buy some time. I went ahead with the operation and not only was it better than I could have imagined but I was back at work, virtually pain free and with great range of motion in my knee after only 12 days!! For me, the defining moment came while I was cutting my lawn. I was mowing the grass when all of a sudden I realized that for the first time that I could remember I didn't have any pain in my knee!!

It's a weird feeling to realize that you are better because you don't feel something but for me it just felt great. The whole reason I decided to try this new knee system from Arthrosurface was because I wanted to preserve what I have for as long as I can keep it. Because I now have no pain and normal motion it just feels like I got another chance."

-R.F., Ohio

Many patients treated with the UniCAP™ device experience relief from pain and symptoms, however individual patient results will vary. Consult your physician to see whether this treatment is right for you.

What about Allografts?

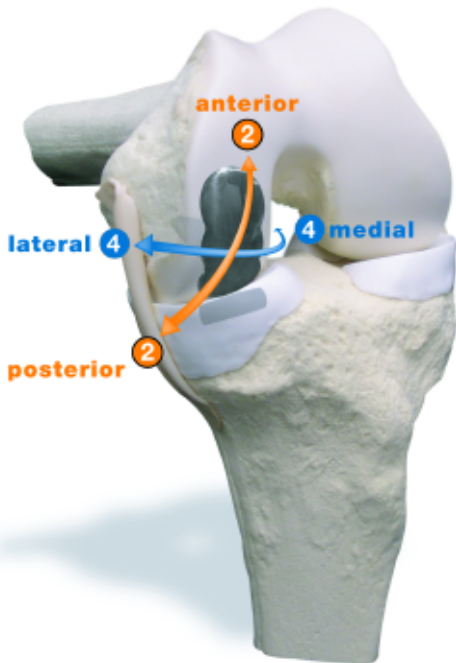
Allografts are human donor tissues. This can be a difficult surgery because it is very hard to reconstruct the existing joint surface curvatures. There are also risks of disease transmission and a lengthy waiting list for grafts and surgery.

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

It has been tried in certain patients but is expensive, requires two surgeries and has long and difficult rehabilitation.

What about Joint Replacement?

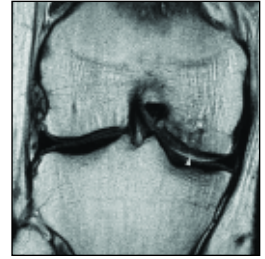
This is major surgery designed to relieve the pain of widespread arthritis. It removes all of the cartilage in the knee and a significant amount of bone from the joint. Joint replacement was originally indicated for patients aged 70 years and older. Total joint replacements usually have a lifespan of approximately 10-12 years in younger patients.



What about the Arthroscopic AKR implant?

The AKR implant is a technologically advanced system designed to match the shape and contour of the individual patient's cartilage surface. It is a new contoured implant for an area of damaged cartilage. It was designed to protect the remaining, normal cartilage in an attempt to prevent further damage. The AKR system is for one side of the joint, either medial or lateral, that has been disabled by early degenerative or post traumatic disease.

The AKR system matches not only the diameter of the damaged area but also the precise radius of both curvatures of the patient's joint surface (top to bottom) **anterior** to **posterior** and (inside to outside) **medial** to **lateral**. The technology for mapping the joint curvatures comes from eye surgery where it was used to make products to protect the corneal surface. The mapping is done in the operating room by the surgeon. Once the mapping points are defined, an appropriately sized and curved implant is chosen and then implanted into the patient. Different diameters & curvatures are available to provide a proper fit for each patient.



Biological Grafting

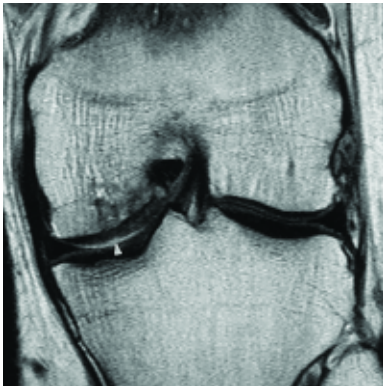


Unicompartamental Knee Replacement



AKR Joint Resurfacing

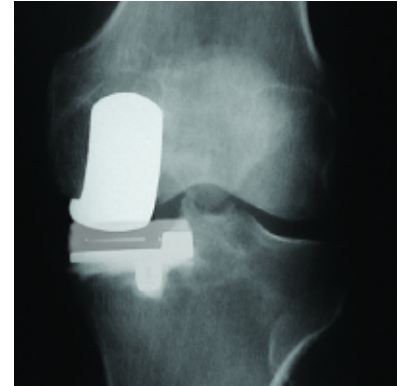
UniCAP™ AKR



Biology



AKR Joint Resurfacing



Unicompartamental Knee Replacement

Is this different than a joint replacement?

The AKR implant is a new contoured surface that is matched and fit to a patient's joint size and shape. The surfaces are precisely milled so that it removes a much smaller amount of cartilage and bone than traditional joint implants. Simply put "This is not your grandparent's joint replacement." Instead, it is a bridge technology that allows you to maintain your existing joint biomechanics without compromising other future surgical options.

How long will the AKR implant last?

Your surgeon expects the devices to last as long as existing devices but it will depend on your general health, activity level, and adherence to your doctor's orders following surgery.

What happens if it fails?

If it ever fails, it may be replaced with another AKR device or, if necessary, it may be converted to a joint replacement.

Does it “burn any bridges?”

Compared to existing joint replacements there is minimal bone loss with the AKR implant. With a joint replacement, the entire bony surface, sometimes even both sides of the joint, are surgically removed to facilitate the implant being placed. This means there is far less of the natural bone to work with if future surgery is required. The AKR system leaves more bone and cartilage intact therefore leaving 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.

Will it set off airport security alarms?

It should not. However, after receiving the AKR implant you can ask your surgeon to give you an implant identification card (similar to your driver's license) that can be shown to anyone should there be any question.

How long will I be off of work?

This will be dependent on your muscle strength, 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, your 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 that you can return to your original lifestyle.

Due to its general applicability, do not rely on information in this brochure to assess any particular patient condition. 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.



AKR Joint Resurfacing
(Side View)



AKR Joint Resurfacing
(Front View)



To *Find a Doctor* visit our website:

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