Toe Resurfacing & Joint Preservation

“I got rid of my Toe pain and got my stride back!”

Restoring the Freedom of Motion
Do you have pain in your great toe that prevents you from doing the activities of daily life?

Has your doctor told you that you might need surgery or a fusion?

Now there is a joint preserving solution that might be right for you.
Anatomy

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

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

Anatomy of the great toe?
The great or big toe is an important part of how we walk. It needs to bend with every step we take. It has a major joint at its base called the metatarsalphalangeal joint or MTP joint. The MTP joint is where the metatarsal and phalangeal bones meet and articulate with one another. The ends of these bones are covered with a smooth articular cartilage that helps the bones move together freely.

How does cartilage get injured?
A variety of events can damage cartilage; some include trauma (injury), infection, inflammation, and malalignment. A traumatic injury can cause an isolated defect. Malalignment of the 2 bones can cause more widespread damage to the joint surfaces similar to the way the tires on a car lose their tread if the wheels are not properly aligned.
Normal Joint

Metatarsal Bone

Phalangeal Bone

Sesamoid Bones

MTP Joint

Normal Range of Motion

Hallux Rigidus

Osteophytes

Little to No Range of Motion
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. Typically as the “wear and tear” on the MTP joint progresses there are bone spurs or osteophytes that form on top of the bones. These bone spurs (osteophytes) can impede the motion of the joint which can lead to a painful condition called Hallux Limitus or Hallux Rigidus.

What are treatment options for Hallux Rigidus and injured cartilage?
Depending on the degree of cartilage injury, age and activity level, patients may be candidates for either a cheilectomy, arthrodesis (fusion), total joint replacement or now with the advent of resurfacing technologies, a joint preserving procedure such as the Arthrosurface® HemiCAP® system.
What about a Cheilectomy?
This technique involves making a diagonal resection of the top (dorsal) portion of the metatarsal head to remove the osteophytes as well as up to 40% of the dorsal portion of the joint surface. This is a fast and easy operation to perform but is only good when there is little of the joint surface involved. It has been reported that approximately 30% of patients will progress toward more arthritic changes. X-rays often underestimate the extent of the disease at this stage.

What about a Fusion or an Arthrodesis?
A fusion is a procedure where the metatarsal bone and the phalangeal bones are set at a predetermined angle and permanently fixed with 2 metal screws. This procedure does provide pain control and is appropriate when the arthritic changes involve the sesamoid bones. However, it also limits shoe wear especially in women and may limit activities such as running, golf, tennis and certain jobs. It may also increase the stress on the next toe over time. It may be considered an appropriate treatment for the older sedentary (less active) patient.
A Patient’s Story

For the last two years the pain in my foot got started to change the way I walked just so I started walking on the outside of my foot I ended up walking on the outside of my foot I ended well, which just made matters worse. I’m a carpenter up ladders, bending, kneeling and reaching could no longer do my job and that’s when I saw my surgeon he told me that my only option though it sounded pretty drastic, I decided to very familiar with the concept of fusing things up losing most of the movement in my toe was nothing else that would take care of my pain.

As fate would have it, just days before there might be another option. He told me about CAP® which was an implant that would give me a new surface. I could avoid getting for the toe, the HemiCAP® implant had eral hundred patients in the hip, shoulder difficult decision, especially given my job.

Well it’s now been a few months and I bend, jump, walk up ladders and after day, 5 days a week! Two weeks after surgery pain was virtually gone and I had the for the toe, the HemiCAP® implant had several hundred patients in the hip, shoulder difficult decision, especially given my job.

The strangest thing was that I had to lift Seven weeks after surgery I was working been able to do for years. The best part in my neck or back either. When I decided that it would turn out this good. The f still have my movement is just fantastic.

-J.R., Pennsylvania
It got progressively worse, so much so, that I had to avoid walking on my toe. When I went to the doctor, I ended up getting neck and back pain as a carpenter and so I spend a lot of time going into difficult places. The pain got so bad I knew I had to do something. When I first thought of the option to get rid of the pain was a fusion. Even though it wasn't my first choice, a fusion.

Before my surgery, my surgeon advised me that he told me about a product called the Hemi-shoulder. This would replace the arthritic part of my joint and allow me to keep the movement of my shoulder and keep pain relief. Even though it was new technology, it had already been used successfully in shoulder and knee. Deciding to try it wasn't easy, but it was my other choice, a fusion.

After surgery, my swelling was down, my shoulder was pain free and I couldn't be happier. I can now walk 3 miles a day and the movement back in my toe is amazing. I never expected the fact that I have no more pain and I can work and doing all those things I hadn't been able to do before. Restoring the Freedom of Motion.
What about Total Toe Joint Replacement?

This is major surgery designed to relieve the pain of widespread arthritis. The implants can be made of metal and plastic and some have been made of a silastic (silicone) compound. There is a lot more bone and cartilage removed which may make a future salvage operation much more difficult. Clinical studies have shown that the debris caused by the breakdown of the silastic (silicone) and polyethylene parts in these implants may lead to problems in the joint. In addition, it can be difficult to balance the soft tissue/ligaments which can result in partial dislocation of the bones (subluxation).

What about the Arthrosurface HemiCAP® implant?

The HemiCAP® implant is a technologically advanced system designed to match the shape and contour of the individual patient’s cartilage surface. It is a “contoured CAP” for an area of damaged cartilage designed to protect the remaining, normal cartilage in an attempt to prevent further damage to the joint while maintaining the patient’s range of motion. The HemiCAP® system is indicated for use in the treatment of patients with the following clinical conditions: hallux rigidus, hallux limitus, hallux valgus and an unstable or painful MTP joint.
The HemiCAP® 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) dorsal to plantar 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 implant is chosen and then implanted into the patient. Different diameters & curvatures are available to provide a proper fit for each individual patient.
How is this different than existing devices?

The HemiCAP® implant:

- Is custom matched and fit to a patient’s joint size and shape.

- Removes a much smaller amount of cartilage and bone than traditional joint implants.

- Is placed “into” the surface leaving the joint less surgically altered.

- Preserves joint motion versus a toe fusion.
Existing Devices

Total Toe Replacement

May lead to future joint problems due to wear debris from plastic or silastic components.

Metal Hemi Toe (Phalangeal)

Does not resurface side of the joint that typically shows arthritic change.

Arthrodesis (Fusion)

Typically provides pain relief but the toe is permanently fused and will not move again.
Why is the HemiCAP® placed on the metatarsal side?
The HemiCAP® implant is unique in that it is designed for the metatarsal side of the joint where the arthritic changes begin and which generally has more wear and tear on it. Other hemiarthroplasty devices replace only the end of the phalangeal side which may still have good remaining cartilage and do not address wear on the metatarsal side.

What happens if it fails?
If it ever fails, it may be replaced with total joint replacement or, if necessary, it may be easily converted to a fusion.

Does it “burn any bridges”?
Compared to existing toe implants there is minimal bone removal with the HemiCAP® implant. With existing joint replacements, 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 HemiCAP® system leaves more bone intact therefore provides more options should future surgery be required.

Will I feel it?
No. The implant is surgically placed using precision instrumentation. Your surgeon will map your joint intra-
operatively so that the implant will articulate with the sesamoids and phalangeal bones as they did originally. The bone and the implant become a smooth surface you will not feel.

**How long will I be off of work?**

This will be dependent 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, 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 foot so that you can return to your original lifestyle.

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**Are you a candidate?**

- Aged 35 to 75 years old?
- Want to regain your active lifestyle?
- Want to be able to bend your toe again?
- Want to wear normal shoes such as high heels or boots?
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.

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