UK HealthCare
Orthopaedic Surgery & Sports Medicine

Articular cartilage injuries/focal chondral defects

I have an injury to my articular cartilage! What are the next steps in my treatment?
If an articular cartilage injury, better described as a focal chondral defect, is suspected, there are several things that your Doctor may do:

- Your doctor may perform a thorough clinical exam and questioning for previous injuries and surgeries to the joint.

- You may undergo X-rays and an MRI scan of the involved joint is necessary. These exams have to be done within approximately three months of the evaluation.

An arthroscopy of the joint is often needed to evaluate the cartilage defect under direct vision and to correlate these findings with your pain and symptoms of focal chondral defects.

Once all this information is available, our physicians will discuss the different treatment options with you. Focal chondral defects often result from more than just one problem, therefore they often require a very individual treatment plan, specifically designed for your situation.

What is an arthroscopy and why do I need it?
During an arthroscopy the surgeon introduces a small camera into the knee or shoulder joint to evaluate the cartilage damage. If there is a small cartilage defect, the initial treatment can be the trimming of the defect edges and a clean up of debris that is floating inside the joint. This debris can be the cause for inflammation and mechanical symptoms such as popping and clicking.

The surgeon can also create small holes into the underlying bone. This technique is called microfracture and helps the body to regenerate and repair tissue that is similar to articular cartilage and may be sufficient to repair a small defect.

What may have led to the focal chondral defect?
There are many factors that may cause a focal chondral defect inside a joint:

- Direct blow to the joint during a car accident or sports activities such as football, hoops or soccer.
- Loss of blood supply to areas of the joint resulting in a breakdown of bone and cartilage such as osteochondritis dissecans or avascular necrosis.

- Acute or chronic joint instability such as a ligament tear in the knee or recurrent dislocations of your knee cap.
- Malalignment of your bones or the extensor apparatus of your leg such as bowed legs or knock knees.

Any of these factors alone or in combination may play a role in the development of the focal chondral defect that you have. All of these factors may need to be addressed in order to restore your cartilage successfully.

What options are available to treat the focal chondral defect?
The first line treatment is often the microfracture treatment that can be done during the initial arthroscopy. If the defect is larger than $2cm^2$ this technique may not work. In that case several other options are available to treat these cartilage defects.

Autologous Cell Implan-tation (ACI)
During the arthroscopy, some of your own cartilage cells are harvested and sent to a laboratory. They get cultured and in a second surgery over 10 million of your own cartilage cells are implanted into the defect. This procedure is very successful for larger defects or defects that have previously been treated unsuccessfully.

Osteochondral Allograft Transplantation
This technique is particularly good for large defects that have already led to loss of bone. In this technique, the entire defect area including the underlying bone is replaced. This technique requires "donor tissue". This donor cartilage will then be sized to fit your defect and can be implanted in a second surgery.

Osteochondral autograft transplantation
(aka: OATS, Mosaic)
This technique was one of the earlier developed cartilage regeneration techniques. It is mainly indicated for small defects of less than 10-12 mm in diameter. This technique can be done purely arthroscopically and may only require one surgery. A plug of bone and cartilage is harvested from a nonweight-bearing area in the joint and transferred to the area with the defect. Unfortunately this technique often leads to pain at the site where the plug was harvested and for that reason is it is rarely used in our practice.

Joint resurfacing
If the cartilage defect is very large (> 35-40 mm^2) and not surrounded with normal cartilage, a cartilage restoration procedure may not be feasible. However, a resurfacing of this area with a limited metal surface may be possible. This technique is particularly useful for the patellofemoral joint and the shoulder joint. In this technique, a pre-shaped metal surface is fashioned as an inlay to fit perfectly into the defect area thus restoring a smooth and durable gliding surface.

Additional procedures:

All of the above outlined cartilage repair and restoration procedures require an anatomic alignment of your leg and your knee cap. If necessary a bone cut (osteotomy) has to be done to achieve this.

Any joint instability (shoulder or knee) has to be corrected with a ligament reconstruction. Often these procedures can be done at the same time of the cartilage repair procedure. Occasionally, this is not possible and has to be staged in two separate surgeries. Your Doctor will discuss this with you in detail.

Rehabilitation
It is important for our patients to understand that these procedures are very advanced surgical techniques that require a very strict and involved rehabilitation period for 6-12 weeks after the surgery.

The rehabilitation process may be one of the most important factors for the success of the procedure.

Please call **859-323-5533** with questions or for more information.