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## Early Arthritis of the Knee

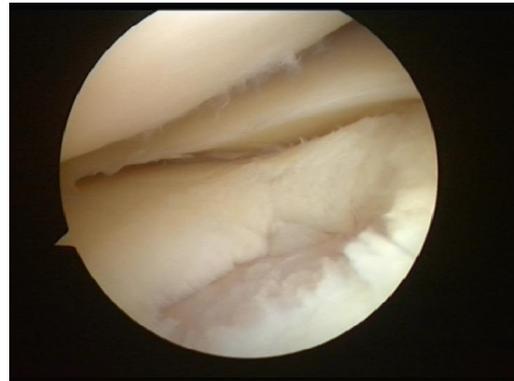
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## Early Arthritis of the Knee

Key words: Knee, knee arthritis, knee pain, stiffness, effusion, swelling, knee arthroscopy, knee injury, anterior cruciate ligament injury, knee replacement

### THE ANATOMY OF THE KNEE

The knee comprises the joint between the femur and the tibia but also the joint between the patella and the front of the femur. Between the femur and the tibia sit two crescentic cartilages or menisci. These fibro-cartilaginous discs dissipate the compressive forces between across the knee and thereby avoid excessive loading, wear and damage. The ligaments around the knee stabilise the knee. They include the collateral ligaments; medial and lateral, lying either side of the knee and the cruciate ligaments, anterior (ACL) and posterior cruciate ligament (PCL), lying within the joint. The fibrous capsule, which surrounds the knee, completes the stability of the joint. The two most important groups of muscles supporting the knee are the quadriceps muscle, which is the large bulk of muscle lying at the front of the thigh, and the hamstrings which lie behind the thigh.

### CONSERVATIVE TREATMENT

Certain measures can be undertaken to slow down this wearing away process and delay or even prevent the onset of arthritis and the need for surgery. Avoidance of those activities which cause your knee to swell and/or ache. Prolonged running and demanding sports such as football, squash or badminton are out if the damage is between the main tibia and femur. Jumping, bending, stair and hill climbing are to be avoided if the damage is under the kneecap. You can allow your knee to be a "barometer". When it aches or swells – you have done too much.

If you are overweight you must lose some. The excess load will wear the joint out more quickly. It is often difficult to lose weight when activity is restricted. If you cannot diet well, I would recommend a dietician. You should keep the muscles of your leg as strong as possible. A physiotherapist can demonstrate the exercises required. Other modalities of treatment are also available from the physiotherapist. You will need to take anti-inflammatory tablets occasionally if you have a "flare-up" or a particularly busy time. Medication can be prescribed by your family doctor.

#### Physiotherapy:

Muscle strengthening exercises can have a significant effect on the discomfort, stability and strength of the knee. Static quadriceps exercises consist of tensing the muscle on the front of the thigh whilst the knee is straight. Hold the contraction for 5 to 10 seconds, rest for 5 or 10 seconds and begin again. This should be repeated 10-50 times. Whilst lying on your back the straight leg should be lifted into the air and held for 5 to 10 seconds, then lowered rested for 5 to 10 seconds and repeated 10 to 50 times. Knee bending should be achieved by sitting on a high chair or table and bending the knee over the edge. The good leg may be crossed over the bad one in order to assist.

#### Glucosamine:

Many patients find taking proprietary glucosamine dietary supplement to be helpful. Alternately cod-liver oils are a traditional remedy. However there is little objective evidence to support taking these dietary supplements. Many patients find that their symptoms fluctuate especially with cold and wet weather. This is a normal cycle of events. Many patients also find that drinking red wine or port makes the joint ache more noticeably.

#### Supports:

Braces and supports commonly help relieve the discomfort of degenerative joints. These include insoles or foot orthotics. These are particularly appropriate for patients with flat or pronated feet. Use of soft-heeled shoes rather than leather soles shoes help to cushion the heel strike in the walking cycle and is helpful.

Knee supports are also very helpful and popular. Where the knee swells or feels uncomfortable a simple knee sleeve, neoprene sleeve or tubigrip bandage may be helpful. This provides support, a feeling of security and comfort to the knee and may reduce the amount of swelling. Specific special supports are needed for patients with uni-compartmental, patellar or patello-femoral arthritis.

#### Steroid Injection:

Injection of steroid and local anaesthetic into the inflamed tendon or into the knee joint can help the inflammatory process to settle down. The steroid is only active in the local area of the injection and has no effect on the surrounding bones or the general metabolism. The injection may be painful for several minutes, but an improvement in the pain is then noticed. The improvement may last for several weeks or months or indeed be permanent. If the symptoms return, one or two further injections may be helpful, more than this rarely has any advantage and may damage the joint. If two or three injections have been undertaken without any lasting effect then alternative treatment and possibly surgery should be considered. Whilst steroid injections into the knee joint may be helpful in this way there is some evidence to suggest that it may accelerate the wearing process. Therefore whilst intra-articular injection into the knee joint may be appropriate if the joint is very arthritic a joint replacement is imminent. In other circumstances it is often best to avoid a steroid injection and consider an arthroscopy to treat the internal damage.

#### Hyaluronic Acid Injection :

Joint injections either with hyaluronic acid (Synvisc) or a similar substance may be considered, and may be helpful. For early degeneration or in patients in whom there has been a rapid deterioration or injury keyhole arthroscopic treatment may prove to be very helpful. Alternately joint replacement may be appropriate because of advanced disease or where the other treatments prove to be ineffective. However where there is no internal damage to the menisci or cartilage and where there are continuing symptoms such injections may be helpful. They have been shown to be as effective as steroid injections for early arthritis of the knee but are not damaging to the joint itself.



## **SURGICAL TECHNIQUE**

#### Arthroscopic Debridement Of The Knee:

An arthroscopic "clean up" or debridement of the damaged surfaces of the knee can in the majority of cases diminish the level of pain and may slow down the rate of progression of the arthritis. Partial removal of the worn cartilage is often necessary and undertaken at the same time, the rough edges of the articular surface are smoothed out and any loose pieces in the joint can be removed. This often has an excellent result with loss of the pain and a return to the previous level of activity. However, because of the underlying problem of wear the symptoms may return in the future, albeit not perhaps for many years. The duration of the improvement in the symptoms is entirely dependent upon the extent and stage of the underlying arthritis. If the symptoms return the arthroscopic debridement may be repeated at intervals but eventually more major surgery may be necessary. Simple joint irrigation or washout of the knee is much less successful at helping to relieve the symptoms of early knee arthritis and may not be a worthwhile procedure.

#### Osteotomy:

When the arthritis only affects only one compartment of the knee, usually the medial, and the leg develops an angle or bowing in a younger patient (less than 55) a high tibial osteotomy (straightening the leg) may be advised. You can image that your knee is like a tyre badly worn on one side due to poor alignment. Rather than replace the knee, the knee is re-aligned to wear on the unworn part and not on the worn part. This often results in resolution of the symptoms for many years. However the technique is only applicable to certain patients with a particular distribution and type of arthritis. This procedure involves surgical division of the bone, re-aligning it into a new position and holding this with a plate, then allowing the bone to heal in its new position. A plaster cast is no longer required following this procedure and patients mobilise with the use of crutches initially, but walking is allowed after 3 to 6 weeks. The benefits of the procedure in reducing the level of pain is often not fully realised until 3-6 months after surgery. The other benefit of this procedure is to delay the progression of the arthritis which otherwise can accelerate as the leg deformity increases.

#### Uni-compartmental Knee replacement:

When the arthritis is severe in one compartment of the knee either the inner medial aspect or the lateral; outer aspect of the knee. Only a single side may be replaced in a uni-compartmental knee replacement. This may be particularly indicated in a young patient (under 65) so as to preserve as much of the patients original knee as possible. A uni-compartmental replacement of the knee can be performed by a minimally invasive technique where the incision is less than 10cm in length. This is often associated with a much quicker recovery for the patient with less pain, stiffness, a shorter hospital stay and a more rapid return to activity, work, driving and to sport.

#### Total Knee Replacement:

When the arthritis is severe, or affects more than one compartment of the knee. Where there is rheumatoid arthritis or in older patients, the whole knee joint is removed and replaced in a total knee replacement. In very special cases this may be necessary in younger patients when a special type of knee replacement will be used. New technology, new techniques and new types of knee replacements have made this procedure much more successful in recent years and the results are now as good or better than hip replacement. Total knee replacement can now also be undertaken using minimally invasive techniques. The incision for knee replacement may now be less than 12cm in length. The surgery involves replacing the joint surfaces with a metal and plastic surface to all 3 compartments. The main ligaments are preserved and the leg straightened (if bowed) during the procedure. The range of movement is usually improved following surgery. The artificial joint usually bends from a straight position to at least 110°. About 5-7 days are required in hospital. Pre-operative and post-operative physiotherapy is essential for success. The relief of arthritis pain is usually quickly apparent.



### RETURN TO WORK AND SPORT

If your job is sedentary and mostly sitting you may wish to return after only 3 - 6 weeks. If your job is physically demanding and requires standing or walking for most of the day, your return to work may take several months. Driving can usually be performed after 4 to 6 weeks, providing that the hip is pain free and you are able to control the car with foot pedals and make an emergency stop. Swimming is often possible after 3 - 6 weeks. Return to golf, gentle tennis or badminton may take 3 months. Jogging and squash is not advised.

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