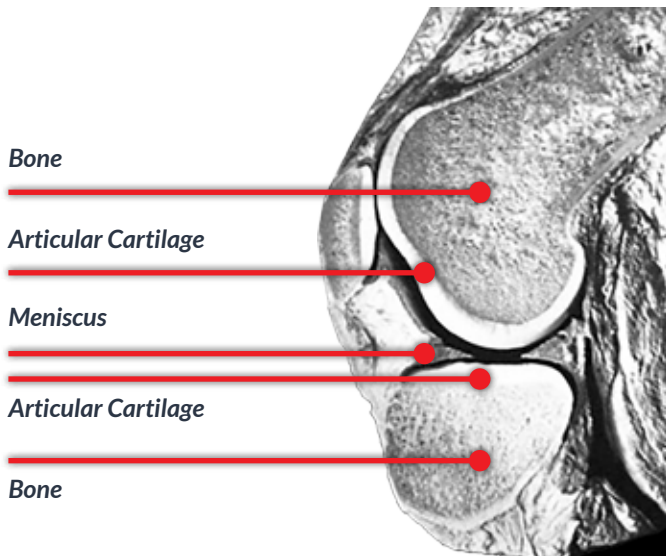


Osteoarthritis of the Knee

Osteoarthritis of the knee is a common condition and is becoming an increasingly important problem for the community as a whole.



In the normal knee joint the ends of the bones are covered with a type of gristle called articular cartilage. This surface has special characteristics that make it an ideal bearing surface. The articular cartilage needs to be distinguished from the meniscus, commonly called "the cartilage". The meniscus is like a gasket around the margins of the joint and fills in the gap between the rounded end of the femur and the relatively flat surface of the tibia.

Osteoarthritis is a condition where the articular cartilage breaks down and is essentially worn away leaving the underlying bone exposed. On an X-ray this appears as a loss of the space between bones.

There are many factors that can contribute to the development of osteoarthritis. Some individuals probably have a hereditary predisposition to the condition, as it does seem to run in some families. Females are more at risk of developing osteoarthritis than males. Obesity is a very important contributory factor as the biomechanics of the knee are such that the effect of extra weight is magnified in the knee joint. The effect is like a stiletto heel, where all the force goes through a very small area. Injuries to the knee can also contribute to the development of osteoarthritis. Such injuries include damage to the meniscus or articular surface itself and a tear of the anterior cruciate ligament.

The treatment of osteoarthritis depends on the severity of the condition, the symptoms, the lifestyle of the individual, as well as their age and general health. In general, treatment can be divided into non-surgical and surgical options. As a basic principle it is always better to try all non-surgical options before proceeding down a surgical path.

NON-SURGICAL TREATMENT

SIMPLE MEASURES

- Strengthen thigh muscles
- Lose weight
- Paracetamol

Non-surgical treatment starts with ensuring that there is adequate strength in the muscles around the knee and in particular the quadriceps muscle at the front of the thigh, and getting one's weight back to a normal level. Obviously it is difficult for many patients with osteoarthritis of the knee to exercise because of their pain. However, riding an exercise bike is a good way of strengthening the quadriceps muscle and at the same time burning calories, which will help in efforts to lose weight. However, dietary intake also needs to be modified and it may be helpful to seek specific advice from a dietician. As one loses weight and builds up strength in the quadriceps muscle it generally becomes easier to walk and this in turn will help with losing weight.



(X-ray of a normal knee)

(X-ray showing loss of joint space)

Using simple painkillers can be a very effective way of relieving symptoms and improving function. Paracetamol should be the mainstay of pain relief. Various formulations are available but the basic principle is that the total dose should not exceed 4 grams per day (8 standard 500mg tablets). It is often helpful to take a larger dose (1000 - 1500 mg) in the morning and again at night. This will help get over morning stiffness and pain and relieve night pain, two of the most troublesome symptoms of osteoarthritis.

OTHER OPTIONS

- Anti-inflammatories.
- Nutraceuticals (glucosamine, chondroitin sulphate, fish oil, Lyprinol)
- Cortisone injection
- Viscosupplementation

Anti-inflammatory medications can also provide good relief of symptoms, both pain and swelling. However, they can all be associated with significant side-effects including indigestion and stomach ulcers, aggravation of high blood pressure and heart disease, and impairment of kidney function. They should therefore not be used indiscriminately and preferably only for short-term benefit. If your knee causes you most difficulty with activities such as golf or tennis, one strategy is to take anti-inflammatory medication on the day you are playing sport and perhaps the following day but then not again until you play sport the next time.

There are a number of so-called nutraceutical preparations that have become very popular. These include glucosamine, chondroitin sulphate, fish oil and green-lipped mussel extract (Lyprinol). Some individuals find that they get good relief from these types of preparations but it is difficult to predict who will respond positively to them. At present there is little in the way of good quality scientific evidence to support their use. Fortunately they do not seem to have any significant side effects, so there is little harm in trying them. It would seem logical to try only one at a time. If it is unclear whether the preparation is helping, then it is probably worth taking it for 3 to 4 months and then ceasing it. If your symptoms do not deteriorate once you stop taking the preparation then there is little reason to recommence it. There is no convincing evidence to suggest that one formulation of glucosamine is better than another, or whether the addition of chondroitin sulphate provides an additional benefit.

There are two groups of injections that can also be used in the treatment of the osteoarthritis. The first are cortisone preparations and these can be used for the relief of an exacerbation of symptoms, particularly if there is significant swelling. It is probably not a good idea to have a lot of injections of cortisone into the knee, as each injection is associated with a very small risk of infection of the joint. The second group of injections are the so-called viscosupplements. These are basically preparations of hyaluronic acid, which is one of the substances that make up the articular cartilage. There is some evidence to indicate that the use of viscosupplementation provides relief that is similar to that achieved with the use of anti-inflammatory medication or cortisone injections for up to 3 to 6 months.

It is very important to realise that the use of anti-inflammatory tablets, cortisone injections, or viscosupplementation does not affect the progression of osteoarthritis in the longer term. These options are simply to provide relief of pain.

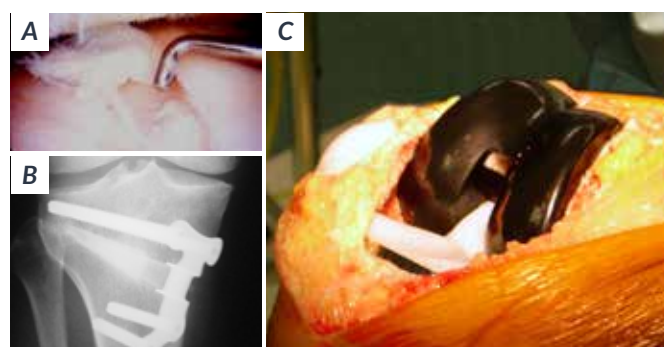
SURGICAL OPTIONS

Surgical options can be divided into three groups: arthroscopy, realignment procedures, and joint replacement.

Whilst arthroscopy is a relatively small and simple procedure and the idea of a “clean-up” operation seems attractive, there is increasing evidence to suggest that the use of arthroscopy for the treatment of the osteoarthritis provides little benefit compared to non-surgical options over a period of a couple of years. It does however still have a role in some situations. It seems to work better if there is swelling of the knee. It can be useful to address associated pathology such as a tear of the meniscus. It can also be useful by allowing unstable articular cartilage to be removed along with fragments floating in the joint. Once again, an arthroscopy is only aimed at relieving symptoms and does nothing to slow the progression of the osteoarthritis. Indeed, it occasionally seems to aggravate the process and may bring on the need for a knee replacement more quickly than if the arthroscopy had not been performed at all.

Realignment procedures are called osteotomies. These involve cutting the tibia or femur bone and changing the overall alignment of the leg to make it more “knock-kneed” or sometimes more “bow-legged”. The aim is to take weight away from the part of the knee that is affected by osteoarthritis. Such procedures can only be used in certain patterns of osteoarthritis and are better suited to people under the age of 55. They can however provide good long-term relief and put off the need for joint replacement, whilst at the same time allowing an individual to remain quite active.

Replacement involves shaping or cutting the bone ends and applying a metal or polyethylene component to the surface. Usually both sides of the joint are replaced. One can either replace all parts of the knee, which is a total knee replacement or just one part of the knee, which is a partial replacement. Like osteotomies, partial replacement can only be used for certain patterns of osteoarthritis. In general we try to put off joint replacement procedures for as long as possible because of concerns about long-term wear and loosening. In addition, replacement procedures are only compatible with low impact sporting activities. Golf, social or doubles tennis, cycling, and snow skiing are reasonable whereas running, basketball, netball, or any type of football should not be considered, because of the risk of premature wear and loosening of the prosthesis.



A: Arthroscopy. B: Osteotomy. C: Knee Replacement.

These notes have been prepared by orthopaedic surgeons at OrthoSport Victoria. They are general overviews and information aimed for use by their specific patients and reflects their views, opinions and recommendations. This does not constitute medical advice. The contents are provided for information and education purposes only and not for the purpose of rendering medical advice. Please seek the advice of your specific surgeon or other health care provider with any questions regarding medical conditions and treatment.

