



QUESTION | I HAVE A 50 YEAR OLD MALE PATIENT WITH AN OSTEOARTHRITIC KNEE WHO WANTS TO PLAY WEEKEND SOCCER BUT FINDS THAT THE KNEE IS VERY PAINFUL FOR 2 DAYS AFTER EVERY GAME. ARE THERE ANY OPTIONS TO HELP HIM CONTINUE HIS SPORT?

ANSWER | Once the arthritic process has started it can never be halted or reversed but the rate of progress can be slowed down and the patient's symptoms improved with both surgical and non-surgical treatments. The location of the arthritis also makes a big difference to the efficacy of these treatments as discussed below. Patients must also have realistic goals to match their disease process.

Nonsurgical management includes:

- Activity modification
- NSAIDS
- Injections
- Supplements and
- Bracing

These all eventually fail and arthroscopic débridement, high tibial osteotomy, unicompartmental knee arthroplasty, and total knee arthroplasty can all be used to allow younger patients with arthritis to maintain an active, healthy lifestyle. The goals of all of these therapeutic options are to decrease pain and improve function. Some of these modalities may also have a disease-modifying effect by altering the mechanical environment of the knee (slowing down but not stopping the process). Total knee replacement works very well in older patients with osteoarthritis but can lead to serious long term problems with loosening and bone destruction when used for younger patients.

Exercise

Exercise has been shown to reduce pain and improve function in patients with early OA. This should be non-impact loading where possible and swimming, cycling and hydrotherapy are preferred to running or jogging exercises. Muscle strengthening can help improve a specific functional loss but aerobic exercise leads to better long term functional outcomes and is therefore preferred. If the patient is able to lose weight as part of the exercise programme their symptoms will also improve. Unfortunately the beneficial effects of exercise are lost six months after the exercise is terminated. This patient has what may be an unrealistic goal of participating in load bearing exercise and may be better using a cross trainer or water running. It is not recommended that you run on a total knee replacement.

Bracing

Bracing for medial sided unicompartmental disease can reduce pain and improve function but these benefits are lost immediately if the brace is not worn. They are achieved by reducing the biomechanical load on the bone and therefore the patient's deformity must be passively correctable for this to work. There is conflicting evidence regarding the use of foot orthoses for arthritis and in my experience it rarely works.

NSAIDS

Many patients are able to use NSAIDS safely for a very long time. Serious GI side effects have been reported in 2-4% of chronic NSAID users and this is halved with COX-2 drugs. It has been my experience that the 'safer' drugs are less effective for the more advanced stages of arthritis and that patients often need to try different NSAIDS to see which one works best for them. Many of these can be bought over the counter at a pharmacy but many still need a prescription.

Injections

The injection of hyaluronic acid (HA) into the knee joint should help early OA because of a combination of its viscoelastic properties as well as its anti-inflammatory, anabolic, analgesic, and chondroprotective potential (Some people believe it breaks the complement cascade). Most studies have shown that it works as well as NSAIDS and corticosteroid injections but tends to last longer. In general, injections should be used to provide short-term pain relief for patients with a flare up of their arthritis. They are unlikely to get this patient back to running regularly.

Mesenchymal Stem Cell Injections

Mesenchymal stem cells can be derived from muscle, fat, marrow or blood. They are thought to work by modifying the immune response. They seem to have an anti-inflammatory effect with secretory signaling, chondrocyte and capillary generation and down regulation of pro-inflammatory cytokines. The pluripotent cells probably not that relevant in how they work. They have been shown to work in horse and goat models but at this stage are still completely experimental in humans. Currently the average cost of this procedure is about \$9000 and requires a general anaesthetic to harvest the cells.

Once the joint has reached the bone on bone stage MSC injections do not work and the joint must be well aligned to have any chance of success.

The jury is still very much out on this one but early results should be available in a year or so from now.

Arthroscopy

Arthroscopic debridement and washout is no better than optimised medical therapy unless the patient has a specific meniscal tear which can be resected. The patient that will benefit from the procedure typically has a sudden change in symptoms and is able to localise the pain specifically to the medial joint margin. Up to three quarters of patients have an initial benefit following arthroscopic debridement but about 10% progress to a knee replacement within one year of the arthroscopy and as few as 44% have a clinically significant reduction in pain.

High Tibial Osteotomy (HTO)

The basic premise of an HTO is to redirect the mechanical axis from the worn area of the joint to a relatively normal compartment. Patients do not need to modify their activity levels and so this procedure is used for patients who wish to remain active in high-load activities. Contraindications to HTO include significant degeneration of the other knee compartment, inflammatory diseases (eg, rheumatoid arthritis), obesity, patellofemoral disease, loss of motion and an older age group.

If the patient meets strict criteria the results of this operation are good enough to offer it to the type of patient that refuses to modify their lifestyle. This operation also maintains the patient's range of motion allows them to kneel comfortably which a total knee replacement will not.

Unicompartmental Knee Replacement

The indications for UKA have changed significantly in the past 10 to 15 years. Classically, low-demand patients aged >60 years who have a low body mass index, intact ligamentous structures and isolated medial compartment OA (with no flexion or extension contractures) are candidates for UKA. Unfortunately these indications were not followed very closely and so there has been an unacceptably high revision rate for these prostheses in Australia in the last decade. UKS should only make up 5-10% of knee replacement surgery. This is not appropriate for your patient who wishes to keep running.

Total Knee Replacement

Results of knee replacement have continued to get better with improvements in polyethylene quality and prosthesis design. This has led to survivorship rates of 90% at 10 to 15 years, as well as better pain relief and functional improvement. There are good clinical results with long-term follow-up in older persons but we are unsure as to how well these new prostheses will function with the higher demands placed on them by younger and more active patients. For this reason total knee replacement is usually reserved as a final treatment option.

Summary

The treatment of OA of the knee in the young, active patient remains a challenge. Initial nonsurgical management will improve symptoms but will not dramatically alter the natural history of the disease process. Surgical treatments (following close indications) offer patients a good potential solution for their arthritis and allow for a return to some athletic activities. Treatment should be guided based on the patient's symptoms and time should be taken to ensure that the patient's expectations are realistic. Once all other treatment options have failed total knee replacement remains the final common pathway to relieve the pain of arthritis.

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