Arthroscopy for Osteo-Arthritis

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Arthroscopy is a keyhole technique that allows for surgery within a joint. It is helpful in the knee when there are symptomatic meniscal tears, loose bodies that are catching and need removal, or where there are other mechanical problems. Unfortunately, it does not allow for any significant treatment of the arthritic (worn) areas, noting that cleaning up what is a pot-hole in the bearing surface of a joint, merely leads to a smoother pot-hole; it does not fill in the defect. In the elderly, in particular, it is important to exclude a stress reaction or stress fracture as the cause of the pain before considering removal of any meniscal tear which, in itself, may be causing minimal symptoms. For many therefore, an MRI may be worthwhile to fully define the pathology.

Arthroscopy, as a treatment for the arthritic knee (and perhaps for any other joint for that matter), is currently a hot topic in Orthopaedic Circles. This is because, over the last 2 - 3 years, many articles have been published which imply that, for many people, there is no benefit to be had with this sort of treatment. Indeed, recent articles include studies that suggest that:

1) Arthroscopic debridement does not help (on average)
2) Arthroscopic washout does not reduce pain or swelling
3) Sham arthroscopy (making portals, but no surgery) is as good as the real thing
4) Degenerative meniscal tears, if left, do as well as with resection

Does anyone with an arthritic knee benefit from an arthroscopy?

The simple answer to this of course is yes, but defining those most likely to benefit is hard. The commonest group to benefit are those with mechanical symptoms - locking, jamming, catching etc. So this includes those with loose bodies that are jamming in the joint, meniscal tears with flaps that catch, and chondral flaps that catch. It must be understood however, that the benefit here is a resolution or diminution of the mechanical symptoms, not pain relief, and not a loss of swelling: and this needs to be clearly understood.

What about the symptomatic meniscal tear in an arthritic joint?

Despite the studies, some of these people may benefit from an arthroscopy for meniscal resection. All studies balance those who have improved with those who have been made worse, and debridement of the damaged and worn arthritic surfaces can certainly make things worse. In amongst the good group however, there are some who have benefited from meniscal resection. The hard part is to determine whether the pain is coming from the meniscus rather than from the arthritis or the bone. Given that in the chronic knee, the nature and location of the pain is pretty much the same, it may only be in the more acute circumstances that this can be determined. For example, a patient with mild to moderate arthritis (wear of the chondral surface), who presents with a sudden onset of pain, which is focused on the mid joint line (usually medially, but sometimes laterally), and who has marked tenderness right on the joint line (and only there), most likely has had an episode of acute meniscal failure. If this is then confirmed with an MRI scan, then isolated resection may benefit the patient by removing the meniscal element to the pain.

Why do an MRI and not a CT arthrogram?

The commonest missed diagnosis, be that as an isolated pathology, or in association with a meniscal tear, is a sub-chondral stress fracture. Usually seen in the femur, but occurring in the tibia as well, this diagnosis can only be picked up with an MRI scan. In the older population, particularly in women, osteoporosis leads to an increased risk of stress fracture. Where the soft articular surface on the bone ends becomes worn (arthritis), there is decreased stress absorption with every day impact loading. This alone can lead to a stress fracture but, if degenerative meniscal failure supervenes, then the consequence is one of even less impact absorption, thus leading to the possibility of a stress fracture.

Sub-chondral stress fractures

These are not uncommon and need to be looked for, particularly in the elderly population. They frequently present acutely like a meniscus tear and, for the reasons...
described above, may present because of a meniscal tear. Despite the coalescence of the pathologies, it is often the stress fracture that is most symptomatic, not the meniscal tear. Indeed, meniscectomy in this situation leads to a further reduction of impact stress absorption, hence this may actually aggravate the fracture. In addition, particularly in the younger, more active patient, prolonged aggravation of the damaged sub-chondral bone may lead to worsening chondral damage and rapid progression of the arthritis.

Treatment of the stress fracture, or stress reaction, requires an accurate diagnosis (MRI) followed by appropriate activity reduction for about 8 weeks. This may include time on crutches or similar. Importantly, it is to be noted that, symptoms from this entity do not slowly recover, but rather they get better suddenly when the fracture heals. Hence, if the symptoms are unchanged at say 5 weeks, the patient should be reassured that in the next 2 - 3 weeks they will most likely improve, and that this resolution will happen quite suddenly. When this happens, a gradual return to normal activities should be encouraged, but with an emphasis on low impact type exercise. Bone density assessment should also be undertaken and, if low, appropriate treatment instigated.

**Appropriate Investigations**

**Plain x-ray** is very important, both as an overall assessment modality, and to look for loose bodies. All patients should have a plain series including a 20° weight bearing PA (taken from the back of the knee) film (that being the most sensitive for chondral wear / joint line narrowing)

**MRI**, if needed, is the investigation of choice to refine the diagnosis. It can visualise stress fractures, underlying bony swelling and bone cysts. It can also be useful in diagnosing associated conditions, such as ACL degeneration and ACL ganglion formation, some
of which can be symptomatic.

**CT arthrogram** is probably inappropriate as a refining investigation because it does not see enough of the pathology, and it does constitute a moderate radiation exposure.

**Treatment**

**All those with underlying fractures** should be treated conservatively until the fracture has healed. Only then should any arthroscopy be undertaken to deal with residual problems.

**Arthroscopy** should be reserved for mechanical problems (such as catching, jamming, locking etc.) and for residual symptomatic meniscal tears: but should only be undertaken after any stress reactions, or stress fractures, have healed.

**Osteotomy** to correct mal-alignment (varus (bow-legged) or valgus (knock-kneed)), in order to unload the arthritic side of the knee, may be appropriate in those under 50 years of age: but may also be indicated for some older, more active individuals, who are looking to delay replacement.

**Patella re-alignment and/or Lateral retinacular release** may do a similar unloading job where the patello-femoral joint is the arthritic part of the knee, not the tibio-femoral joint.

**Knee replacement** still remains the definitive treatment where the arthritis is advanced: and sometimes, this represents a quicker path to resolution than a series of minor procedures which are undertaken just because they are minor (albeit sometimes with only a small statistical chance of success). Hence, if the plain x-ray shows significant wear, this may actually be the treatment of first choice, not the last.

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**Tibial Osteotomy**

The bone is cut and opened. It is then filled with bone or bone substitute, and a plate applied to maintain correction until healing takes place. This changes the alignment, unloading the damaged or worn area, loading up the other side of the knee.

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**Knee Replacement**

For end stage osteo-arthritis, the worn out ends of the bone are replaced with metal and plastic.

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Further information can also be obtained, on this and other related topics such as:

- Knee arthritis
- Osteotomy
- Knee replacement