Arthroscopic Meniscal Repair

Camera controlled keyhole surgery of the knee is performed for many reasons, the most common being a torn cartilage. Many cartilage tears can't be repaired, but it has been judged that your tear is probably suitable to repair.

Cartilage is the common name for the meniscus.

The meniscus is a piece fibrous tissue or cartilage in the knee. There are two of them. They are “C” shaped view from above, and triangular in cross section. When pressure is placed through the knee – be it walking, jumping, or squatting, the cartilage reduces the force on the joint surface, protecting it from damage over the years. Confusingly, another form of cartilage (hyaline) is in the joint as the surface of the bones.

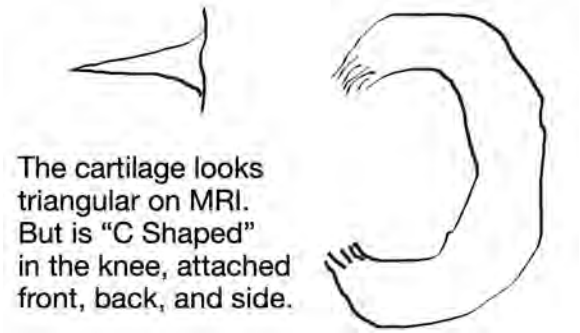

Figure 1. Diagram of the fibrocartilage, or meniscus. It works to spread the area of force between the femur and the tibia. It is almost rubbery in its consistency. Fibres run from the posterior horn to the anterior horn - these stretch when weight is placed through the knee and behave like hoops around a barrel keeping it all together. Other fibres weave the hoop fibres together.

Why does the meniscus tear?

In young people, usually a significant injury occurred, typically in sport. In older people, the cartilages seem to behave more like old rubber, and more easily damaged. The forces in heavy people are higher. Some people have bowlegs or knock knees, and this increases the force on one of the cartilages.

Bucket Handle Tears

An acute sporting injury might cause a "bucket-handle" tear where the cartilage is turned inside out, and jams the knee, preventing it from fully extending. This is commonly called "locked".

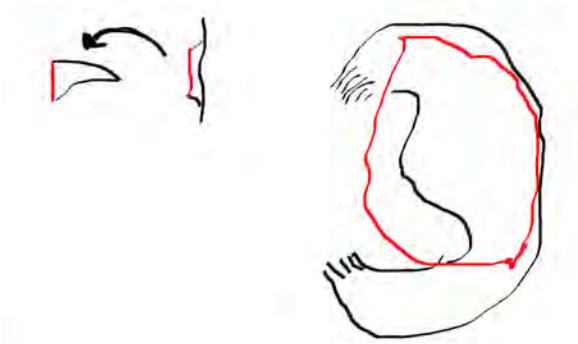

Figure2. If the cartilage is detached peripherally, it can "turn inside out" like the handle of a bucket being flipped from one side to the other, jamming the knee from fully extending.

The location of the tear can be classified as to how likely it is to heal. A very peripheral tear is said to be in the "red-red" zone, and is suitable for repair in young people. Success is also more likely in patients requiring a cruciate reconstruction. In a stable knee, young patient, the success rate is said to be 80%.

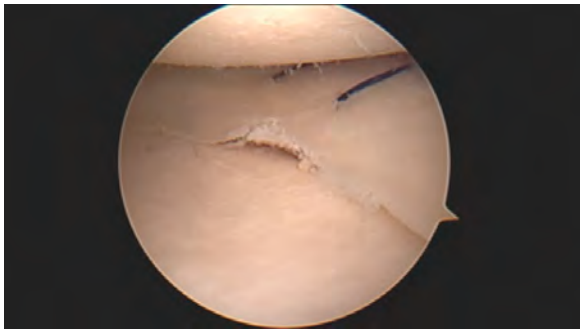

Figure 3. Arthroscopic appearance after an "Inside out" meniscal repair of a bucket handle tear. These sutures are placed from inside the knee, and retrieved through a separate incision outside the knee and tied over the capsule. Sometimes "all inside" techniques are used - Fastfix sutures have a small barb pushed through the cartilage and the capsule. Each has its place.

After the surgery, these patients may be allowed to partially weight bear, but will need crutches initially. Often a hinged knee brace is required to prevent the patient putting too much force on the knee in a flexed position. That brace may not be needed initially, but as the pain of surgery settles, it can be useful. Often six weeks of partial weight bearing, and up to three months in the brace might be required. Sport can't resume until six months.

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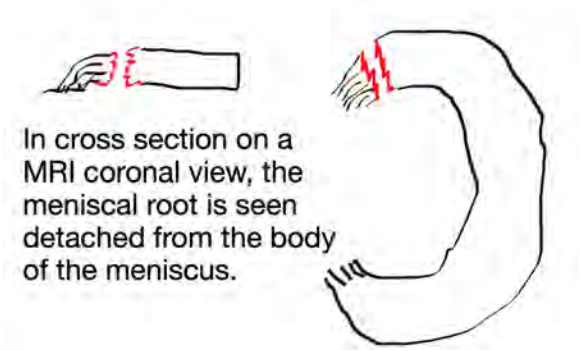
Meniscal root tears

Either end of the cartilage is anchored to the bone, the so-called meniscal root. They can tear off exactly at the bone (uncommon), with a fragment of bone from a sporting injury, but most commonly near the bone seen after squatting injuries. These tears might look benign, but seem to rapidly progress to arthritis untreated, as the "hoop stresses" no longer protect the joint surfaces.



Surgical repair is possible if the tear is close enough to the normal bony attachment. The area of bone has its surface removed, then tunnels drilled up into it. Special suture passers are required to put stitches through the remaining cartilage and tied it done to the bone. Sometimes release of the cartilage from the capsule is required.

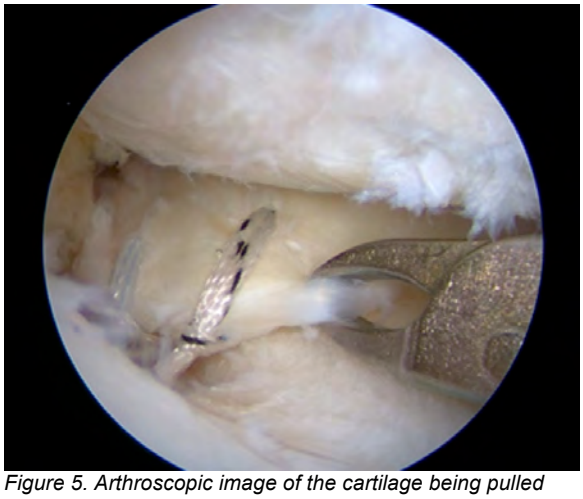
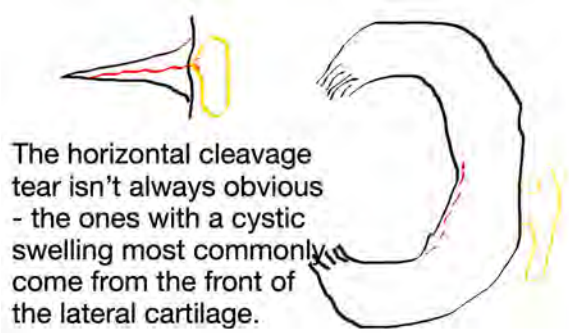


Figure 5. Arthroscopic image of the cartilage being pulled back to the root area, before the sutures have been tied off.

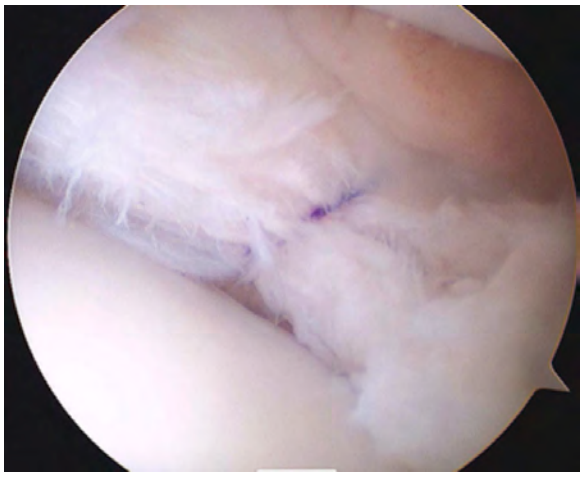
The postoperative period invariably require prolonged used of crutches, bracing, and physiotherapy. The risk of blood clots and swelling is much greater in this patient group than other knee surgery. The alternate however isn't attractive as arthritis often ensues, requiring realignment osteotomy in young patients, or partial or total knee replacement in older patients.

Horizontal cleavage tears and meniscal cysts.

Sometimes a split in the top and bottom layer of the cartilage occurs. Often these are in older patients, and they aren't always problematic. Or if they are, they are toward the back of the knee, and are easy to find and remove the unstable parts of the tear. Sometimes a cyst (a swelling) arises from the torn cartilage more commonly on the outer (lateral) aspect of the knee.



Repairing this sort of cartilage tear requires cleaning out the inside of the tear and any "jelly", placing a fibrin clot within it, and then repairing the top to the bottom leaf of the cartilage. The fibrin clot of growth factors is made from your own blood taken from a vein whilst anaesthetised.



After surgery, the patient will be on restricted weight bearing for six weeks, not to squat for three months, and six months off sport. Patients regaining their movement quickly may require a knee brace to protect their knee. Sometimes the surgery is done in combination with realignment osteotomy.

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What anaesthetic?

Most standard arthroscopic surgery is done as day surgery under **general anaesthesia.** A standard requirement is you will be not be alone in the first day and night after the surgery to ensure you will be safe. You may not drive or make business decisions after the drugs we use for this anaesthetic.

Local anaesthetic probably won't adequately cover the time required for the operation. Spinal anaesthetic is possible, but usually delays discharge from hospital.

How is the surgery done?

The leg is painted with a pink antiseptic (chlorhexidine), which is more effective than administrating antibiotics. Usually two small incisions are made to allow the camera and whatever tools are required to be inserted in the knee. Surgery to repair cartilage often takes more than an hour, so the time at the hospital is more like two to three hours.

What happens after the surgery?

Typically, within an hour or two after the surgery, the anaesthetic will have worn off and, you will be able to go home. You will not be able to drive yourself home, and until the following day not make any business or important decisions.

Usually the patient is required to walk with crutches afterwards. A knee brace may be required, and may have been arranged prior to surgery. An instruction sheet and summary of the surgery will be provided so you can commence physiotherapy sooner rather than later.

Tablets

You will probably need some painkillers when the local anaesthetic wears off – eg Tramal. Anti-inflammatory tablets (eg Voltaren or Mobic) are prescribed to help settle the joint inflammation down. If there is no pain, then the tablets are not needed. It is common for patients benefit from using anti-inflammatories for three weeks or so.

Bandaging

The knee will have a bandage on it. The bandage is removed after three days. It can be replaced if it is uncomfortable or falling off. An elastic knee brace or Tubigrip may help control any swelling.

Wound dressings

Under the bandage are small plastic dressings. These usually stay on until reviewed in the rooms. They are waterproof – after showering they should be "patted" dry. What are the risks of arthroscopy?

Bracing

A hinged knee brace is commonly required for some weeks after the surgery. It may not be critical to have it on in the first two days whilst there is a bulky bandage, each patient will receive specific instructions. The hinged braces commonly have a mechanism to restrict the range of motion to keep the knee safe.

Physiotherapy

Physiotherapy is valuable for athletes and others trying to get to full function as soon as possible, for those not wishing to do physiotherapy; there is value in doing some work on an exercise bike, and stretching exercises on the hamstrings and quadriceps.

Next appointment with your surgeon

A review appointment with your surgeon is made for typically 10-12 days after the surgery to remove sutures, discuss findings, discuss future plans, and whether further medications or physiotherapy is required.

First Six Weeks

Usually crutches and a brace are required.

Second Six Weeks

Usually a brace is required.

Urgent problems after surgery

It may be necessary to attend an emergency department such as at St John of God Ballarat. If you are not sure, in hours phone the consulting rooms. Out of hours, contact your surgeon on his mobile phone, or SJG emergency department on 5320 2127.

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Things that can go wrong.

Haemarthroses & pain
Bleeding into the knee after the surgery occurs in 10% of patients. It slows down recovery, requires crutches and creates an annoyance for you. Occasionally the swelling is dramatic enough to require re-operation. Most often though, the blood adds to the healing environment for the cartilage, and some blood in the knee is better than none!

Infection
Infection after knee arthroscopy is said to occur in one in 600 patients. It would make you unwell, re-admission to hospital for at least a week and further surgery (possibly even open surgery) may be required.

Tenderness and swelling
Tenderness around the scars is common, and can make kneeling difficult for up to six week (although usually it is less than this). The portals get an area of swelling like a pea under the skin maximal at six weeks.

Numbness
A small numb area over the front of the knee can occur. With time these areas of numbness usually becoming smaller. Large areas are rare, more likely in complex surgery requiring additional portals.

Recurrence of problem
Cartilage repair operations are not 100% yet. The most common cause of ongoing symptoms though is some of the repair material pulls back into the joint causing pain and clicking. It often isn't apparent on MRI, but easy to find with another arthroscopy.

Meniscectomy required
Either at the initial operation, or at a subsequent operation it may be found the cartilage won't or hasn't been able to heal. Often these cartilage tears are treated by removing the torn fragments.

DVT & Pulmonary embolism
Blood clots can occur in the leg and migrate into the lung- approximately 1in 20 000. Patients most at risk have a personal or family history of this problem and should tell their surgeon so additional precautions can be taken.

Pain
Minor pain requiring tablets is common in the first few days. Unusual pain may indicate a problem. In the first instances, take the prescribed tablets and use an ice pack. If it is not settling contact your surgeon.

Exacerbation of pain.
Fibromyalgia is an uncommon pain problem and sufferers often find that surgery exacerbates that pain. We can do better if you tell us before surgery.

Complex regional pain syndrome can follow prolonged surgery, especially in heavier patients.

Other rare complications
There is no absolute limit to complications of surgery and anaesthesia. For instance I have heard of a case of popliteal artery injury requiring limb salvage surgery, compartment syndrome after arthroscopic fracture repair, and other complex surgery has been seen.

Checklist prior to surgery

- Have you advised your surgeon of significant medical history?
- Tell your surgeon about blood thinners such as Warfarin, Iscover, Plavix, Aspirin
- Tell your surgeon about unusual pain responses in the past – eg Fibromyalgia
- Tell your surgeon about previous operations or injuries to the knee
- Tell your surgeon about any allergies
- Submit hospital paperwork
- Do you have any infections in your body? If one develops prior to surgery, please telephone your surgeon.
- Arrange a driver to take you home
- A magazine to read whilst waiting
- Do you need a brace after surgery? It is easier to fit it prior to surgery!
- Fasting: no solid food for six hours prior to surgery, or fluids within 1 1/2 hours of arriving at the hospital
- Is a medical certificate required? Telling the surgeon prior to the operation will ensure the correct certificate type (eg Work Cover, TAC, Carers Certificates).

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Cost of meniscal repair surgery

Health Insurance generally pays for most of the hospital expense, but only covers a fraction of the doctors' fees. This is because Medicare hasn't adjusted their schedule to match CPI since 1983, or at all since 2014, Medicare is now worth less than one third of the real value of 1983. So there will be out of pocket expenses for doctors.

Included in the **surgeon's fee** is performing the surgery, follow-up in the hospital and consulting rooms for three months. The surgeon takes personal responsibility for the post-operative pain control –including extensive local anaesthetic infiltration around the wounds. For patients off track, the surgeon intervenes, or supervises interventions. The surgeon takes personal responsibility for achieving a low infection rate. If an infection does occur, aggressive surgical and antibiotic treatment is required.

Other doctors involved in the operation are: the anaesthetist, surgical assistant, and if any medical problems occur, or are anticipated, a physician. The surgical assistant is a skilled nurse, doctor, or surgeon working alongside your main surgeon. The surgical assistant's billing will occur through Ballarat OSM. Typically there will be an out of pocket expense which contributing to paying the salary or fee of the assistants. Typical out of pocket expense after Medicare & private health insurance rebates (estimates) are $500 for hospital, $400 for anaesthetist, and $200 for surgical assistant.

The AMA calculates annually the change in cost of medical practice, covering practice staff, insurance, rent etc, which roughly follows the CPI. Following the AMA fee suggestion, the surgeon's fee for meniscal repairs is **$2305** (item number 49563). Insurers are only required by law to pay $171 towards the surgeon, Medicare pays $513, and thus you're $1551 out of pocket for the surgeon. Insurers require us to discount more than 50% to allow "Gap cover" arrangements, and 33% with out of pocket expenses, so we generally don't use their fee structure, but the AMA. BUPA + OPE may pay "close enough" in some cases.

For patients without insurance - the meniscal repair tools may be an issue. Fast fix sutures cost about $400 each, and we might need five or more! Meniscal root repairs need a number of single use tools that the hospital will charge you for. The exact decision as to what will be used depends on what is found at surgery, and what was planned prior to surgery.

Physiotherapy and bracing requirements has not been included in these estimates.

ESTIMATED OUT OF POCKET FEES - based on 49563

ESTIMATED	BUPA	Other Insurance	Medicare only	No Medicare
Surgeon	$ 500	$ 1,496	$ 1,698	$ 2,305
Total	$1,700	$ 2,200	$ 6,500	$ 7,500

If you are experiencing personal financial hardship, please discuss this well prior to the surgery so an amicable arrangement can be made. The out of pocket expenses will be required to be paid two weeks prior to surgery to avoid cancellation.

Knee meniscal repair. v1.0
13th October, 2019

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