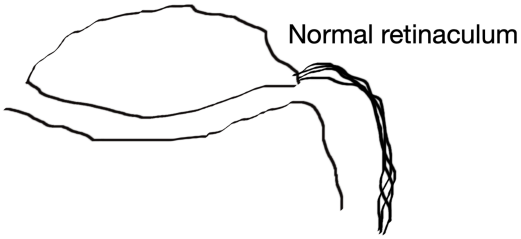
Kneecap (Patella) Surgery for Pain

Kneecaps can cause pain, instability, or both. The solutions depend on age, degree of wear and what else is wrong with the knee.

Excess lateral patella pressure syndrome.

In a normally functioning knee, the kneecap (patella) is exposed to forces some 9 times the body weight with normal activities - eg climbing stairs and getting out of a chair. These forces are higher again with sporting activities.



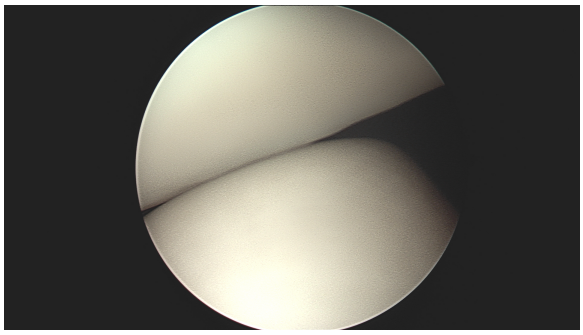
The lateral retinaculum provides a "check reign" to avoid the kneecap moving too far from its normal position.

If the kneecap isn't "tracking normally" in the groove in the front of the femur (the trochlear) then the forces are higher again. Physiotherapy, ITB stretching, taping, and VMO strengthening carry a 90% cure rate - so most patients need physiotherapy, not surgery. The VMO is a muscle on the inner aspect of the knee that usually helps keep the kneecap in place. If it becomes weak, it needs to be strengthened.

The recalcitrant cases - where pain persists for months despite good physiotherapy - may be suitable for a minor operation - lateral release - lengthening the structure pulling the kneecap outwards, and thus spreading out the pressure on the kneecap.

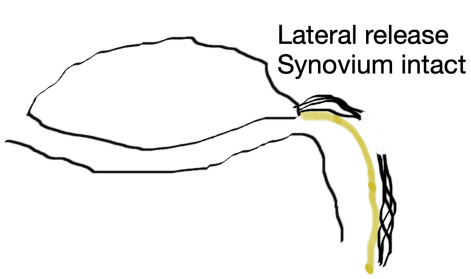
Open or arthroscopic release?

Arthroscopy is a useful component of the operation. Sometimes additional problems are found in the joint that need addressing. It is possible to confirm if the kneecap is actually pulled off the side of the groove. Any damaged joint surface, or inflamed synovium may need to be removed.



In this image - the kneecap is at the top, femur lateral facet below, and the femur trochlear where the kneecap should be is to the left of the image.

Some surgeons will do a lateral release entirely arthroscopically. Others make an additional incision and release the retinaculum only, leaving the synovium (the inner layer of the joint capsule and blood vessels) intact. A new phrase for this old operation is a "fractional lengthening" of the lateral retinaculum



As a result of releasing the retinaculum, the kneecap resumes its normal position, with more normal forces applied to it.

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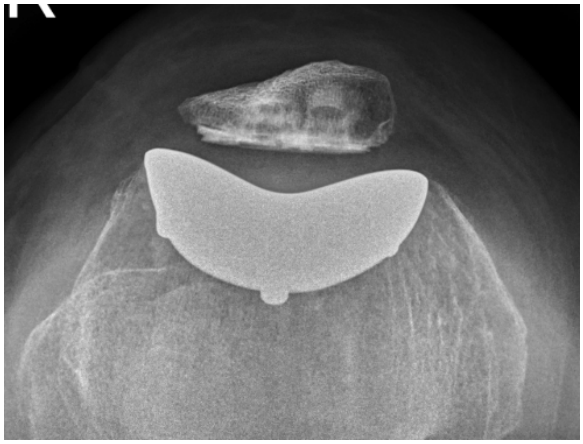
Severe wear of patella.

In some folk – the kneecap has bone on bone arthritis. If they are elderly – it might actually present as "instability" that the knee can't be trusted – especially on stairs. In a normally functioning knee, the kneecap (patella) is exposed to forces some 9x your body weight with normal activities - eg climbing stairs and getting out of a chair.

Kneecap looking from top to bottom with knee a bit bent – shows kneecap at top and femur at bottom, with ground down arthritis between.

In folk in their 70s & 80's – it is easy to accept doing a knee replacement. It might only be a replacement of their kneecap & the front of the femur, depending on how good the rest of the knee is.

Patellofemoral replacement looking from side on. The joint surface between the femur and the tibia are still the same as prior to surgery. There is plastic behind patella



Patellofemoral replacement looking from top to bottom with knee a bit bent – shows kneecap at top, with new plastic surface, and new polished metal front of femur.

There as some younger patients we might do this as well – even as day surgery, but once it's done, you are obliged to have an artificial knee replacement for the rest of your life, and they can have complications.

Kneeling is not assured after knee replacement surgery - partial or total.

In some folk – the rest of the knee might also be found to be worn, and either before, or at surgery, the decision needs to be made to do a total knee replacement instead. Total knee replacements don't necessarily restore full knee function, they might still be a bit stiff, and sometimes stiffer than they were before surgery.

Total knee replacement looking from side on. The joint surface between the femur and the tibia (thigh and shin) are still the same as prior to surgery

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Moderate wear, no instability

For patients typically teenagers to 50's – a biological operation to reduce the force of the kneecap might be considered. The Force across the kneecap is typically 9x (nine times) your body weight. It has been shown this can be reduced by 30% by changing where the patella tendon connects to the front of the tibia.

Maquet in the 1980's proposed moving it forward 25mm – but problems occurred with the soft tissue healing around the bone. It has subsequently been shown being more circumspect works better, less force reduction, but less complications of surgery.

Fulkerson had a way of leaving a hinge distally, and placing two screws – we modified this operation putting a screw across the bone as well – reducing the risk of losing the correction.

Our modified Fulkerson Osteotomy - The tibial tubercle has been moved forwards 10mm, and slightly medial (inwards) to correct the direction of pull across the kneecap.

If there is extreme wear – 15mm anteriorisation can be achieved with only 5mm medialisation.

Other orthopaedic investigators have suggesting putting a small plate on to minimize the risk of the tibial tubercle pulling proximally. We have used this where the bone quality, or the distal hinge hasn't been good enough.

Modified Fulkerson Osteotomy with a plate to improve strength. The tibial tubercle is 15mm anteriorised.

Chondrocyte grafting

Typically for traumatic injuries - a complex technique of harvesting some of your cartilage cells, culturing them in laboratory, then implanting them back into your knee. Other surgery to correct forces on the knee are undertaken at same time if necessary, (like above).

It's typically done where defects are great than 20mm in diameter.

A long recovery program, of 18months-2 years. It is expensive (say $20,000) and not all insurers support it. We have done some cases over the last twenty years – the techniques keep improving – but the long recovery hasn't changed!!

Recovery usually required a knee brace limiting motion for a prolonged prior of time – and 20-30 physiotherapy visits.

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Non operative treatments?

Weight loss

A significant number of Australians are overweight and to cope with this arthritis, you need to be THIN.

Adults should have a body mass index (BMI) of 20-25. For an average height male, this would equate to 70-78kg. Being overweight will overload your joints. The knee for example carries 9 times your body weight when climbing stairs or getting out of a chair.

People need to know what they should weigh. A BMI of 25 kg/m2 is the usual goal. Your height in metres, multiplied by that again, then by 25.
eg: 1.75m x 1.75m x 25 = 76.5kg
or: 1.65m x 1.65m x 20 = 54.5kg

Michael Mosley (ex GP now Journalist on ABC & BBC) has written a book "The Fast 800 – Keto". Read it & learn.

Grampians Weight Loss Specialists.
210 Drummond Street North.
Ph: 5317 7206

Impact reduction

Different sporting pursuits alter how much the joints are loaded. Swimming and cycling on the other hand generally reduce arthritic pains. For kneecap pain, stairs and squats are hard, but accepting it hurts and doing it improves your function.

Muscle strengthening

Strength is improved with activity such as walking, swimming and cycling. For kneecap pain – strength is critical and most people should consider gymnasium training.

Improve suppleness

Stiff joints hurt. The natural response is to avoid activities that put pressure on the joints but the opposite approach is probably better. Western society avoids pushing joints to their full range of movement by sitting on chairs. A physiotherapist can demonstrate stretching exercises to you. Another option is taking up yoga classes.

Physiotherapy / GLA:D programs

Specific patellofemoral tricks such as VMO strengthening, patella glides, and patella taping are useful.

A physiotherapist is likely to be of help with strength and suppleness exercises. These can be useful at any stage of arthritis. Physiotherapists also have a specific value prior to and immediately after surgery as a constant source of information and coaching.

Knee brace

A standard elastic knee brace from a chemist shop or sports store can help control swelling, and provide some additional comfort. It is hard to know for patella pain if the braces with a patella cut out perform better.

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Glucosamine tablets

50% of patients report these are useful. If they work for you, happily continue to use. It certainly seems a safe alternative to NSAIDs. If the cost exceeds the benefit, move on.

Paracetamol

Panadol ® and Panamax ® are quite safe in normal doses and do not cause stomach irritation. Some patients feel it is just as useful as NSAIDs without the side effects. It makes good sense to try this first! It can be used on an intermittent basis such as when pain is present, or even prior to predicted painful activities.

Anti-inflammatory tablets (NSAIDs)

There are hundreds of different anti-inflammatory tablets. Nurofen can be bought "over the counter" at a pharmacy without a prescription.

Modern long acting anti-inflammatories such as Celebrex and Mobic are felt to reduce the potential risk of stomach ulcers, and last perhaps 36 hours. These tablets are best used before activity, so you can do the activity, and enjoy it!

They can be used on a regular basis. This class of tablets has been associated with an increase risk of heart attacks, but the serious risks of these tablets is probably lower than the risk of surgery. It is usually advised the tablets are taken with you meal.

Cortisone injections

Cortisone is a naturally occurring substance that reduces inflammation. It can be injected into the knee joint quite easily in the consulting rooms. It is very useful to control an acute flare up of arthritic pain. Surgeons typically limit how many injections are given to an area to minimize the risk of joint deterioration, and infection either before or after joint replacements. Joint replacement surgery isn't possible in the immediate time after a cortisone injection. Three months is a common rule.

Hyaluronic Injections

Joints have a natural lubricating fluid (synovial fluid) that contains "hyaluronic acid". Injecting the knee with a commercial version of this can provide relief (80% of patients claim a benefit for 6 months or more). We use Durolane, a synthetic equivalent, costing $475, not covered by Medicare.

Combined injection "Cingal"

We commonly use a combined hyaluronic acid and steroid injection. Even in the presence of bone on bone arthritis, it often settles the symptoms, possibly for six months.

Walking stick

A walking stick is extremely useful to reduce arthritic pains. Particularly, they may be helpful with activity related pain.

Raised chairs / toilet seats / bed

Difficulty getting out of a low chair is a characteristic problem with knee arthritis. Some people find the use of higher chairs/seats to be beneficial.

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The Process of having a corrective osteotomy.

Pre-operative planning

The degree of deformity is measured usually with a long leg standing x-ray. The required amount of correction depends on the deformity, the amount of wear and, to a lesser degree, whether the other leg also has the same trouble. Previous arthroscopies done by other surgeons may provide useful information, including intra-operative photos and previous operation reports. An MRI scan can sometimes be helpful.

Admission to hospital

Typically patients are admitted on the day of surgery to the hospital through the Surgical Admission Unit. Pack a small bag only, you won't be in hospital long! You will be advised when to “fast” from prior to admission, but typically you may have clear fluids or Powerade up until one hour prior to admission.

Anaesthesia

Surgery can be done under general or regional anaesthetic, the anaesthetist decides, if given the choice of both – choose both! The anaesthetist will meet you before you go to the operating theatre to discuss any concerns. If you are a high-risk patient, it may be appropriate to meet the anaesthetist some weeks prior to surgery.

Recovery room

Typically you will wake up in the recovery room, adjacent to the operating theatre. When conscious they offer you an icey-pole. They may ask you how much pain you have (scored out of 10). Minor discomfort should be rated 1-2, if you are grimacing / clenching your tear, with the pain it might be 6/10. If you report more than 4/10 they may inject you with morphine. This may cause nausea & vomiting instead.

Physiotherapy

The physiotherapist may help you get up walking the first time. If not available, the nurses will do this. Sometimes the first time is with a frame, subsequently crutches. Go quietly to start with - lay day when not actively walking

What will the knee be like?

The knee will be swollen, and swelling may increase for the first few days. The bruising will increase and change colour for the first weeks after the surgery. This can make bending the knee difficult and the thigh muscle feel weak. A knee brace may be used for the first few days, rarely a hinged brace for eight weeks. Swelling control is important – when not doing something – put your leg up (lay on lounge suite). Sitting for prolonged periods can increase the swelling.

Activities after Osteotomies

You need to put at least 50% of your weight through the operated leg for the first two weeks. Just hopping is not enough, you leg recovers faster if used.

As you will need crutches to walk, TAC regulations prevent you from driving except if the surgery is to your left leg and you drive an automatic. Even then, driving in the first two weeks would not be advisable, as you may be still using strong painkillers.

Crutches and brasce MUST be used in the first 4 weeks, then a brace or crutches until you can lift your leg straight & walk around the house with confidence. It may take 8 weeks from surgery to discard the crutches. This plan may be modified if a chondrocyte graft has also been done.

Exercise bike work can start typically 8-10 weeks. Light jogging may be possible at 4 months. Swimming could commence at 10 weeks. Kneeling exercises should commence at three-six weeks.

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Complications following corrective osteotomy

An osteotomy is a major surgical procedure with some risk. This list cannot be complete, but does deal with more common problems. Accepting and minimizing these risks is a responsibility of both the patient and the surgeon.

Numbness

The osteotomy involves cutting a number of layers to do the surgery. It is common for an area near the scar to be numb. The area may become smaller with time (years) but it is usually permanent.

Scar tenderness & kneeling

The scar will be tender for three months. A small number of patients have irritation by muscles or tendons rubbing over the plate. Removing the plate has successfully treated this. Rarely, the patient states they can't kneel. Removal of the plate is a separate operation that costs the patient time, and money.

Stiffness

A knee that was stiff before the surgery will still be stiff after the surgery, although the intention is that with time it improves. For knees with a good range of movement before the surgery, the surgery will have causes bruising and swelling which will gradually resolved.

Fracture & bracing requirement

The operation involves a controlled, incomplete break of the leg at the best location. Sometimes it "propagates" and cracks right through. Rarely it requires a brace for 8 weeks. Extremely rarely, it cracks right through the bone – this could require a larger plate, large incision and more numbness.

Neurovascular injury

Passing around the knee are nerves and arteries supplying the lower leg and they can be injured, resulting in permanent loss of function or viability of the limb.

Compartment syndrome

Excessive swelling of the leg after the surgery can permanently damage the muscles of the leg. If it does occur, urgent surgery to reduce the pressure would be undertaken.

Thrombosis & pulmonary embolism

Clots can occur within the veins of the leg and pelvis before, during, or after surgery. They are associated with a risk of dislodging and moving up to the lung. It can be fatal. Even if they remain in the leg, it can leave permanent swelling of the leg and can cause ulcers to develop. Using Aspirin (100mg daily), Venosan stockings and early mobilization reduces the risk. If you or your family have had clots – you are higher risk and need to tell us!

Infection.

Infections can occur directly after an operation. To minimize the risk of infection we prepare the operation site with antiseptics, use antiseptic impregnated drapes, and use intravenous antibiotics at the time of and after surgery.

Complex Regional Pain Syndrome

This rare diagnosis (previously know as Reflex Sympathetic Dystrophy) contributes to poor outcomes with pain and stiffness. If you have ever had this condition diagnosed in you, tell your surgeon so additional steps can be undertaken to minimize the risk.

Other

A small number of patients do not achieve the result required, and end up having a knee replacement.
It is not possible to provide a full list of complications. If you have a specific question, ask your surgeon, and he will answer it as well as possible.

Fulkerson. DJM. Version 1.1

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2026, 2nd January.

What is included in the cost of Realignment Osteotomy?

Insurance generally pays for the “spare parts” and 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.

Doctors involved in the operation are: the surgeon, anaesthetist, surgical assistant, and if any medical problems occur, or are anticipated, a physician. The surgical assistant is a skilled nurse, doctor, or surgeon or a combination of these 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 contributes to paying the salaries of our nurses and our fellow. If a physician is required, please discuss his fees with him. The anaesthetist will arrange his/her own financial consent. Typical out of pocket expense after Medicare & private health insurance rebates (estimates) are $500 for hospital, $400 for anaesthetist, and $400 for surgical assistant.

Included in the **surgeon’s fee** is performing the surgery, follow-up in the hospital and consulting rooms for three months is usually bulk billed. The surgeon takes responsibility for the whole process, and to solve whatever problems occur. 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.

The item numbers is typically: 49564 (tibial osteotomy & internal fixation) 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 this combination of operations is $3610. Insurers are only required by law to pay $268 towards the surgeon, Medicare pays $804, thus you're $2538 out of pocket, for the surgeon. Insurers require us to discount by 40-50% to allow "Gapcover" arrangements, even with moderate out of pocket expenses.

ESTIMATED COST	Insured patients	Medicare only insurance	No Medicare
Surgeon	$ 2,550	$ 2,806	$ 3,610
Total	$ 4,500	$ 10,000	$ 14,500

Included in the package of estimated fees are:

- Hospital, surgeon, assistants, anaesthetist, prosthetic implants
- followup phone call(s) after discharge, access to Ballarat OSM nurses for advice
- 2, 6 & 12 week appointment at rooms

Excluded:

- Physiotherapy requirements might be ten visits
- Further XRs at six and 12 weeks.
- Up to 5% of patients need reoperation to help the bone heal
- Removing the screws is minor day surgery, but not included in fee above
- Other orthopaedic or surgical problems

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.

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