CQ HAND + UPPER LIMB
SPECIALIST ORTHOPAEDIC SURGEON

PATIENT INFORMATION

Knee stiffness and arthrofibrosis

What you're feeling

A stiff knee after surgery or injury usually means the joint will not bend or straighten as far as it should. You may feel a hard block at the end of the movement, rather than a simple stretch. Some people cannot get the knee fully straight, which is called a flexion contracture. Others lose bending, so the knee stops short of where it used to reach.

The tightness is often felt around the front of the knee and behind the kneecap. Swelling can make it worse. Moving after you have been sitting or lying down, such as getting out of bed or standing up from a car, can be harder at first. Long periods on your feet can also flare things up, and resting usually eases the ache.

Everyday tasks show up the problem. Squatting to a low cupboard, stepping into trousers, getting into a bath, or kneeling to pick something up all need deep bending. Walking downhill or down stairs can feel awkward when the knee will not straighten fully or absorb load smoothly.

If the stiffness came on after a ligament reconstruction, it may be arthrofibrosis. This means scar tissue inside the joint is limiting movement. It is not common, but it matters. About 1 in 10 people who have a knee ligament reconstruction and start supervised rehabilitation within 30 days of surgery are diagnosed with it within 12 months. In children and teenagers the figure is about 3.7%. Roughly 2% of people who have this ligament surgery need treatment for it.

Stiffness can also follow a knee replacement. It is defined as movement that stays below 90 degrees for more than 12 weeks, when nothing else is complicating the picture. If this sounds like your knee, tell your surgeon. Early assessment matters, because treatment started within the first year tends to work better than treatment left longer.

What's actually happening

Your knee is built to glide. The joint lining produces a small amount of fluid that lets the surfaces slide smoothly over each other, a bit like oil in a hinge. When the knee is injured or operated on, the body responds by making extra scar tissue. In arthrofibrosis, that scar tissue grows inside the joint and thickens the lining, so the surfaces can no longer glide freely. The joint tightens up from within, which is why you feel a hard block rather than a simple stretch.

CQ HAND + UPPER LIMB
Dr Kieran Hirpara — Specialist Orthopaedic Surgeon
Suite 2, Level 1, Mater Private Hospital Rockhampton, 31 Ward Street, The Range, QLD 4700
Phone 07 4863 6556 · office@cqupperlimb.com.au · cqupperlimb.com.au

Scar tissue can also shorten the structures around the kneecap. The tendon below the kneecap can gradually lose length in severe cases, which pulls on the front of the knee and makes bending harder. Once scar tissue has matured, it does not always respond to stretching alone, even when the knee is gently moved while you are under anaesthetic.

Time matters here too. A knee held still for more than 3 weeks usually ends up with some permanent stiffness, which is why early movement is such a focus after knee surgery. After a knee replacement, stiffness has several possible causes, including things present before the operation, things that happen during it, and things that happen in the weeks afterwards. Sometimes the kneecap component sits slightly thicker than the knee is used to, and each extra bit of thickness takes away a little bending.

The good news is that this problem has recognised treatments. Gentle movement programs started soon after ligament surgery have been shown to prevent permanent arthrofibrosis altogether in the people who follow them. When stiffness does take hold, options range from releasing the scar tissue with a small camera, to gently moving the knee under anaesthetic, to further surgery in more severe cases. Most of these approaches improve how far the knee can bend and straighten.

What we can do about it

Dr Kieran Hirpara, an upper-limb surgeon at Mater Private Hospital Rockhampton, starts with the least invasive options that suit your condition. Patients are generally referred to our clinic by their GP; if a physiotherapist has suggested you see us, you will still need a referral from your GP in order to be eligible for the Medicare rebate. At your first visit we take a history, examine your knee, and arrange imaging such as X-rays or scans if they are needed. If infection could be causing a stiff, painful knee replacement, we rule that out before anything else.

For most stiffness problems we begin with non-operative care. Physiotherapy aims to restore bending and straightening through gentle, regular movement. One approach uses a static stretch held in place to improve range of motion. Another uses gravity to help the knee bend while you relax. If your knee was operated on recently, an early movement program matters: starting motion straight away has been shown to prevent permanent arthrofibrosis in the people who follow it, with a 0.7% reoperation rate for knee motion limits. If your knee was fractured near the joint, we aim for 90 degrees of bending by 4 weeks after surgery. If you have not regained that by 8 to 10 weeks, we move to more active treatment with a physician and physiotherapist directing your exercises. Holding the knee still for more than 3 weeks usually causes some permanent stiffness, so we avoid that wherever we can.

When stretching and physiotherapy have not given enough improvement, we consider procedures. One option is manipulation under anaesthetic, where your knee is gently moved while you are asleep to break up tightness. This works more reliably for restoring bending than for restoring straightening. Another is arthroscopic release, where a small camera and instruments are used to remove the scar tissue limiting movement. This can restore bending, straightening, and kneecap mobility while limiting extra trauma to the knee. For severe stiffness that has not responded to these steps, further surgery may be discussed, including revision of a knee replacement or an open release of tight soft tissues. These are bigger operations with higher rates of further surgery and complications, so we weigh them carefully with you. Timing matters: if stiffness appears after ligament

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reconstruction, having surgery within the first year tends to lead to better results than waiting longer. We will talk through what each option involves and decide together on the path that suits your knee.

What to expect

Most stiff knees improve with treatment, but the outlook depends on what is causing the stiffness and how soon it is addressed. If stiffness sets in after a knee replacement and stays below 90 degrees of movement for more than 12 weeks, it rarely settles on its own. The same applies to stiffness that follows a ligament reconstruction: once scar tissue has matured inside the joint, it does not usually loosen with time or simple stretching.

Acting early makes a real difference. If stiffness appears after ligament surgery, treatment started within the first year tends to lead to better results than waiting longer. The same principle applies after a fracture near the knee: people who started moving their knee within 4 weeks of surgery got back to full activity sooner and were less likely to develop lasting stiffness than those who waited longer. A knee held still for more than 3 weeks usually ends up with some permanent stiffness, which is why your care team will keep pressing you to keep the joint moving in the early weeks.

When stiffness is managed well, most people regain useful movement. Treatment usually follows a stepped approach, starting with physiotherapy and gentle stretching, then moving to procedures such as manipulation under anaesthetic or releasing scar tissue if the first steps are not enough. These approaches improve how far the knee can bend and straighten for most people who need them. For severe stiffness after a knee replacement, further surgery can bring meaningful gains in movement, though the improvement is often modest rather than complete, and these bigger operations carry higher rates of further surgery and complications.

If stiffness is left alone, it tends to persist. The scar tissue does not usually soften or fade on its own, and the longer it is there, the harder it is to treat. Some people with severe, long-standing stiffness go on to need further surgery down the track. The realistic goal of treatment is a knee that bends and straightens enough for daily life, not a return to exactly how it was before.

When to see someone

Tell your surgeon if your knee is not bending or straightening as far as it should in the weeks after surgery. Ask for a review if movement has stalled below 90 degrees more than 12 weeks after a knee replacement, or if stiffness is still there a year after ligament surgery. See your GP sooner if the knee is hot, swollen and increasingly painful, since infection can also cause stiffness and needs checking first. Go to an emergency department if you cannot bear weight at all, the leg looks badly out of shape, or the knee will not move after an injury. If a child is having a stiff knee moved under anaesthetic, the growth plate near the knee can be injured, so this needs careful specialist handling.

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