Sports Healing MAKO unicompartmental rehab protocol and information

Introduction

Depending on how much of your knee is affected by arthritis, surgeons can sometimes perform a partial knee replacement (also known as a unicompartmental knee replacement, UKR) as opposed to a total knee replacement (TKR). In most cases, the clinical team can say whether a UKR is possible before your surgery. However, the final decision whether to perform a UKR or a TKR is made at the time of your surgery when the surgeon inspects the knee joint surfaces and ligaments. If you are suitable for UKR, there are a number of potential benefits. These are: • Medical complications are minimised • There is less blood loss during surgery and hence less chance of requiring a blood transfusion • UKR is performed through a smaller incision with less soft tissue disruption • Recovery is faster • Patients often have a very good range of movement in their knee after surgery • We see very

How successful is UKR surgery?

Research suggests 85% of patients who undergo a UKR have a successful outcome with a large improvement in their quality of life. Of the remainder, 10% of patients improve but not quite to the extent they had hoped, and 5% have a poor outcome.

What are the risks of surgery?

All operations involve an element of risk. Risks you should be aware of before and after your operation include: Medical problems Infection: A number of precautions are undertaken to prevent infection during this type of surgery. They include the use of antibiotics as well as performing the surgery under strict sterile conditions in the operating theatres.
Despite these precautions, there is a risk of developing infection but this is less than 1%. Hospital-acquired blood clots: Operations involving the lower limb carry a risk of blood clots that can form in the deep veins of the legs (Deep Vein Thrombosis, DVT) and the lungs (Pulmonary Embolus, PE). The overall risk of DVT is between 2-5%. The risk of PE is less than 1% but it is a serious complication.

We will make a careful assessment of your risk and follow the National Guidelines for minimising this risk. Ongoing Pain: You may continue to experience some pain following this procedure. This is usually between 2-5%. Stiffness: There is less than 1% risk that the knee joint remains stiff due to scar tissue.

Bleeding: In less than 5% of patients there may be continued bleeding into or around the knee which can leak into the dressing covering the wound. This can take a few days to settle, but very few patients require a blood transfusion or further surgery. Nerve/Vessel/Tendon damage: This happens in less than 1% of patients.

Need for revision/re-do surgery:

Your knee replacement may wear out or become loose over time (usually after many years) and require further surgery to replace the components. This means that for each patient there

is approximately a 1% chance each year that more surgery will be required. Overall at least 80% of patients are still functioning well at 20 years after their surgery.

Day of surgery

Patients are routinely admitted to the ward on the day of their surgery unless there is a specific clinical reason for coming in earlier. Please arrive on the specified ward at 7am. It is important that you arrive on time as any delay in your arrival may result in your surgery being cancelled. Note: The reason that all patients need to arrive at 7am is that sometimes the order of the operations may be changed on the morning of surgery due to clinical reasons. Hence it is important that all patients are prepared for surgery at the beginning of the day. You will be admitted by one of our nursing staff who will check your pulse, blood pressure and other vital signs. A member of the surgical team will visit you again to answer any further questions you may have and confirm your consent for undergoing a UKR. A member of the anaesthetic team will also visit you to explain the type of anaesthetic and the pain relief you will receive during and after the surgery. You will either have your surgery under a general anaesthetic or spinal anaesthetic. The anaesthetist will discuss the details of these two techniques with you in order to decide on the most suitable option for you.

The surgery

UKR is performed under sterile conditions in the operating theatre. You will be anaesthetised so that you don't experience any pain or discomfort during the operation. A vertical incision about 10cm long is made over your knee and the worn out joint surfaces are removed. The lower thigh bone (femur) surface is replaced with a new rounded metal surface and the upper shin bone (tibia) surface is replaced by a flat metal surface. A plastic insert (called a "bearing") is then placed between these two metal components so they can glide smoothly on one another when you bend and straighten your knee. The wound is closed with sutures or surgical clips. It is then dressed with a sterile waterproof dressing and wrapped in a bandage. After the surgery, you will be transferred to the recovery suite for further monitoring. You will also have a small drip in your arm for administering medication. Routine measurements of your vital signs (such as pulse and blood pressure) are taken at regular intervals and you will be transferred to one of the wards after a few hours.

The first few days after surgery

For most patients the 'arthritis pain' has gone following the surgery. However nearly all find the knee is very painful for the first few days. This usually settles within the next 2 - 3 weeks. You will be able to eat and drink within a few hours of your operation. Once you have done this you will be able to stand and start walking with a member of the clinical team. For most people this will be on the same day as the surgery. Physiotherapists will ensure that you can walk independently and safely using crutches or sticks and advise you on stair climbing. During this initial 24 to 48 hour period it is common for your knee to swell and feel painful – THIS IS NORMAL.

You will have a routine x-ray of your knee before going home in order to check the position of the knee replacement. Your surgical team will visit you to check on your recovery and

answer any questions you may have concerning your surgery and post-operative care. Your wound must be kept dry until your stitches or clips have been removed (usually 10 days following your operation). Some patients may find it difficult to sit on the toilet during the first 24 hours due to feeling unsteady from the anaesthetic agents and also due to pain in the knee.

This is normal and in such circumstances, the nursing staff will help you to use a bedpan. As a routine part of preventing the development of blood clots in the leg, you will be required to wear compression stockings (called TEDS) and have blood thinning injections (called Heparin) following your surgery for approximately2 weeks. The exact length of this treatment would be discussed with you prior to discharge from hospital.

Walking

You will be taught by the physiotherapist how to walk with appropriate walking aids, probably crutches, putting as much weight through your operated leg as is comfortable. You should continue to use the walking aids provided until at least two weeks after your operation. It is important not to discard your crutches or sticks too quickly. It is better to walk well with a walking aid than to limp without it.

Points to aim for when walking:

- Step length – make sure both steps are of equal length
- Rhythm – try to spend the same length of time on each leg
- Always put your heel on the ground first
- Remember: when turning around, take care not to twist your knee. Step around taking small steps

Climbing up Stairs

If you prefer you may wish to use the banister, if you have one, to go up and down the stairs. Hold the banister with one hand and the crutch in the opposite hand. If you want to carry the other crutch up and down the stairs with you, hold it in a “T” shape against the other crutch as shown in the picture. Remember to carry the second crutch on the outside so that if you do drop it, it won’t hit your legs or trip you up

Ready to go home

Some patients will go home safely on the same day as their surgery while others take longer. For all patients, the following items are required prior to being discharged:

- Physiotherapists are happy with your mobility and you are performing your exercises correctly.
- Clinical team are happy with the status of your wound and your postoperative progress.
- Pain management for home is in place and you understand what tablets you have to take and how often you should take them.

After leaving hospital & recovering at home

Please ensure that your wound is covered with the dressings and kept dry until the clips/sutures are removed. We will arrange for you to have this carried out either at your GP surgery by the practice nurse or at home by the District Nurse at about 10 days following your surgery. Your follow-up visit at the hospital will normally be 6 weeks after surgery. Most patients are discharged by the orthopaedic clinic at this point if there are no outstanding issues related to their UKR. However, we will monitor your progress by sending you special postal questionnaires to ensure that you are on track in terms of your recovery.

Pain relief after the operation.

As with all joint replacement operations, it is normal to have some pain after your surgery. You will be given painkilling tablets to help reduce this. We strongly advise you to take the prescribed painkillers before going to bed on the day of your operation. Continue to take the painkillers regularly, at the dose prescribed, for the first few days after surgery. This tends to work much better than waiting until the knee is painful before taking pain relief because tablets normally take about one hour to reach their full effect. As the pain settles in the first 6 weeks you can reduce the dose or how often you are taking the painkillers. You will be given two or three different types of painkilling tablets to take home. The different tablets reduce pain in different ways, so it is best to take them as a combination of drugs rather than a single drug on its own. It is normal to experience pain even in the first 12 weeks after your surgery. This will gradually improve. Your pain is likely to improve for up to 6 months after your surgery.

What painkilling tablets will I be given?

This depends both on the type of anaesthetic you have and any side effects you may be susceptible to.

Paracetamol

This is an effective painkiller particularly when taken regularly. It has a reputation for being weak but you should not forget it as it helps reduce the amount of other drugs you need. It has very few side effects.

Codeine (codeine phosphate)

This painkiller is moderately strong when taken at the same time as Paracetamol. It causes sleepiness, mild nausea and constipation in some people. You may wish to increase fruit and fibre in your diet and take the laxative prescribed for you whilst you are on codeine.

Ibuprofen

These aspirin-like drugs are very effective painkillers. They can make indigestion worse however, and you should not take them if you have had a stomach ulcer in the past. Some people with severe asthma may also have been advised to avoid them but they rarely cause breathing problems.

Morphine/Sevredol/Oxycodone
These opiate tablets are the strongest you can use outside hospitals and are very effective painkillers. They can make people drowsy, nauseous or constipated. If you find these side effects troublesome you may want to stop them or reduce the dose. For most patients these are the painkillers to stop first after your operation.

Frequently asked questions

Who can I contact if there is a problem?

For 'Day Case' patients discharged within 48 hours of surgery, please contact the hospital using the advice given to you on discharge. If you would like medical advice in the case of an emergency, you should contact your GP.

How long will I be in hospital?

One of the advantages of UKR is that the recovery is faster and hence many patients go home on the day of surgery or within 24 hours. Others may take longer. Note: Patients who can be discharged home on the same day as their surgery are identified beforehand and will be provided with further information with regards to this. What do I do about the wound? Please ensure that your wound is covered with the dressings and kept dry until the clips/sutures are removed. We will arrange for you to have this carried out either at your GP surgery by the practice nurse or at home by the District Nurse. You can wash or shower and use ice packs, but protect the wound with cling film. Avoid using lotions near or on the wounds until they are well healed.

Do I need to do exercises?

Yes. This is an extremely important part of the recovery as only you can get the movement and strength back in your knee. There are some simple exercises shown in this booklet and on the TEPI website (www.ndorms.ox.ac.uk/tepi). They aim to stop your knee getting stiff and to strengthen the muscles. It is common to have pain immediately after surgery and for some weeks. Use pain medication to control the pain and do not be frightened to gently move your knee joint and walk. Initially the best exercise will be moving the knee during normal, gentle activities. You cannot damage the surgery that has been done but overall let the pain settle before over-challenging the knee. Follow the advice from your physiotherapist

Are there things that I should avoid?

There are no restrictions (other than the pain) to movement although kneeling on your knee is not recommended until about 6 weeks after surgery.

When can I drive? Drive once you are no longer using your crutches or sticks and feel you can be in complete control of your vehicle. For most patients it may be possible to drive at around 6 weeks depending on how quickly you are recovering.

When can I return to work?

Returning to work depends on your level of mobility and your job but you must avoid any strenuous activities for at least three months (for example lifting heavy objects). Ask your consultant and physiotherapist about specific work related or sporting activities.

When can I participate in my leisure activities?

In general you can start to try your leisure activities any time between 6 weeks and 6 months but this will depend on your progress following surgery and the activity involved. Regular exercise is recommended but avoid high impact activities such as running. Swimming: We recommend that you use front or back crawl, avoiding breast stroke until at least six months. If breast stroke is uncomfortable when you try it, leave it for 2-3 weeks and try again once you are a little stronger. As with all exercises build up the amount you do gradually. Cycling: Only cycle if your knee feels comfortable on a full turn of the pedal and it is not being forced to bend. You may like to begin with an exercise bicycle then progress to an outdoor bicycle when you feel safe to do so. Gym Work: If you wish, you can return to your local gym from 6 weeks onwards. Start with gentle non-impact activities and progress the exercise intensity and variety gradually as you get stronger. Do remember to warm up prior to starting heavier exercises.

How long will my UKR last? Research shows that 80% of patients will still have a well functioning UKR at 20 years after surgery

Outpatient Rehabilitation Guidelines for MAKOplasty UKA

PHASE I (surgery to about 3 weeks after surgery)

Appointments	• Start as early as post-operative day (POD) 2, with continuation of inpatient (IP) exercises if any lag time between hospital discharge and starting outpatient PT (Could be over weekend) • Frequency of OP PT should be 2-3 times weekly to start for all patients, for a minimum of 2 weeks, depending on range of motion (ROM) progress
Rehabilitation Goals and Priorities	• Priority placed on Quad function, ROM and minimizing edema • By 5-6 days after surgery: ◦ ROM: 90° Flexion ◦ Strength: Ability to perform a straight leg raise (SLR) ◦ Edema: Evaluation and education on home management with elevation and ice • By 0-3 weeks after surgery: ◦ ROM: Full Extension, 110-120° Flexion (flexion to be equal to or greater than pre-operative range) ◦ Gait: with weight bearing as tolerated (WBAT) safely in home and stairs ◦ Patients will be WBAT/ full weight bearing (FWB). Encourage use of an assistive device until no limping is present, and full extension at heel strike is present
Precautions	• Use assistive device(s) for normal gait, WBAT; Incision protection
ROM Exercises	• Supine heel slides, gravity assisted flexion sitting at edge of bed, supine heel props for gravity assisted extension, hip flexion, ankle dorsiflexion and plantarflexion • Encourage self-directed range of motion beyond premature end point with education on hurt versus harm; this can be done on supine leg press if light enough resistance is available (20-60 lbs); unaffected leg can be used for active assisted range of motion (AAROM) on this as well • Stationary bike full or partial revolutions, minimal to no resistance
Suggested Therapeutic Exercise/Treatment	• Quadriceps set, SLR, ankle pumps, hip abduction, short arc quadriceps, standing hip active range of motion (AROM) with and without bands • If edema is problematic, quad sets need to be done in elevated position while at home • Patellar mobilization • Possible options: Standing mini-squats, calf raises, use of supine shuttle with light resistance through available range, weight shifting, reciprocal stairs if possible, but no unilateral leg loading in lunge-like positions for 8 weeks
Cardiovascular	• Upper body circuit training or upper body ergometer if patient desires
Progression Criteria	• Normal gait with assistive device on level indoor surfaces • No extensor lag • Full proximal hip strength • Double leg squat to 45° knee flexion

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PHASE II (begin after meeting Phase I criteria, usually 3-6 weeks after surgery)

Appointments	• Physician appointment at 6 weeks after surgery • Rehabilitation appointment based on patient progress, 1-2 times every week
Rehabilitation Goals and Priorities	• Regain muscular strength (focus on quadriceps) • Progress off assistive device for all surfaces and distances, if able • Reciprocal gait on stairs by 6 weeks • Knee flexion range at 6 weeks should be at 80-120% of what is expected for final outcome, depending of course on ROM going into surgery (range for these is 95°-145°; average 125°) • Double leg sit to stand from chair with no upper extremity assist • Single leg balance 15 seconds, or ability to put on socks in standing • Return to work by 6 weeks
Precautions	• Post-activity soreness should resolve within 24 hours • No impact activities
Suggested Therapeutic Exercise	• Progress exercises from Phase I to include increased resistance • Progress ROM exercises • Manual therapy to incision • Joint mobilization • Neuromuscular re-education to minimize substitution patterns
Cardiovascular Exercise	• Treadmill if tolerated, elliptical if tolerated, swimming if incision is healed/completely closed (not before 4 weeks in most cases, check with surgeon if unsure)
Progression Criteria	• Regain muscular strength (focus on quadriceps) • Progress off assistive device for all surfaces and distances, if able • Reciprocal gait on stairs by 6 weeks • Flexion ROM by 6 weeks should be 80-120% of normal (95°-145°; average 125°) • Double leg sit to stand with no upper extremity assist • Single leg balance 15 seconds, or ability to put on socks in standing

Outpatient Rehabilitation Guidelines for MAKOplasty UKA

PHASE III (begin after meeting phase II criteria, usually 6 weeks after surgery)

Appointments	• Rehabilitation based on patient progress, one time every 1-3 weeks although some patients may be independent by this point
Rehabilitation Goals and Priorities	• Improve muscular strength and endurance • Good control and no pain with all activities of daily living as well as work specific movements • Able to walk longer distances (1 mile) without a limp
Precautions	• Post-activity soreness should resolve within 24 hours • No impact activities
Suggested Therapeutic Exercise	• Strength and balance exercises with progression from double leg to single leg and single plane drills to multi-plane drills • Dynamic control exercise beginning with low velocity, single plane activities and progressing to higher velocity, multi-plane activities • Work specific balance and proprioceptive drills • Progression of hip and core strengthening • Work on non-impact portions of sports allowed in those patients who wish to do so including tennis, classic cross country skiing and bowling
Cardiovascular Exercise	• Replicate sport or work specific energy demands (non-impact)
Return to non-impact sport/work criteria	• Normal gait on all surfaces, including longer distances (1 mile) • Dynamic neuromuscular control with multi-plane activities, without pain or swelling • Return to impact sports such as tennis, downhill skiing, and others will be discussed with surgeon and therapist • No impact activities will start before 6 months after surgery

Possible Physical Therapy Outpatient Completion of Care Criteria:

1. Maximum range of motion achieved, or plateau of three weeks duration
2. Return to prior functional level
3. Eight plus week suggested goal of return to lunges versus bodyweight without discernible discrepancy over 5-10 reps or single leg squat versus bodyweight x 5-10 reps, or leg press to match unaffected side or within a certain percentage. Modify parameters based on patient goals
4. Timed Up and Go (TUG) 6 minute walk test
5. Independence with home program
6. Attainment of goals stated above along with any other patient specific goals

General Advice: Many patients find it very helpful to continue with some/all of the above exercises for many months after their surgery. However, a gradual increase in a normal active lifestyle which includes regular exercise such as walking and some of the above exercises will help you regain full function in your knee and prepare you for more active pastimes.