Welcome to the: Orthopaedic Opinion Online Website

The website for the answer to all your Orthopaedic Questions

- **Orthopaedic Opinion Online** is a website designed to provide information to patients who have orthopaedic and musculoskeletal problems and are undergoing treatment.
- **Patient information** is provided in the form of downloadable information sheets.
- **Orthopaedic advice** and second opinions can be provided by our expert internationally renowned Consultant Orthopaedic Surgeons.
- **Online review** of patients' X rays or MRI scans can also be provided and any proposed treatment plans reviewed.
- **Book a clinical consultation** with one of our internationally renowned consultant orthopaedic surgeons in Bristol or London.
- **Orthopaedic reports** can be provided for Injury or Accident Claims and Medical Negligence claims.

This Patient Information Sheet is provided by Orthopaedic Opinion Online

ACL Surgery:

2 The Surgical Procedure and Rehabilitation

Author:
DAVID P JOHNSON
MB ChB FRCS FRCS(Orth). MD
Consultant Orthopaedic Surgeon
www.Bristol-Knee-Clinic.co.uk

2 ACL Surgery: The surgical procedure and rehabilitation

Pre-operative rehabilitation is extremely important for the successful outcome of ACL reconstruction. Patients with an ACL deficiency, suitable for reconstructive surgery, are educated on the nature of their problem, surgical technique and peri-operative rehabilitation, by the surgeon, at the time of the first clinic visit. They are also visited by the physiotherapist, prior to the operation, and guided through an updated rehabilitation programme. Regaining a full range of motion, strength and proprioception before the operation, especially full symmetrical hyperextension, minimises post-operative problems.

The main aim of ACL rehabilitation programme is to follow carefully all patients preoperatively and postoperatively and advance the program to minimise postoperative complications, maintain ACL stability and allow a faster return to daily activities while progressing to full work ability and sporting activities. Future modifications of this rehabilitation guide are inevitable and will be based on those changes that give the patient the best short and long term results.

1 Before the operation:

Patients for ACL reconstruction should ideally have a full range of knee motion including extension equivalent to the other side. The quadriceps and hamstring muscles should be strong and active. The knee should not be swollen or excessively painful. In the elective situation gym exercises and strengthening in the weeks prior to surgery are helpful. In the acute situation following a recent injury

this may not be possible. However where there is recent pain, swelling and stiffness with a restricted range of knee motion a delay in surgery and physiotherapy for a few weeks is important to avoid stiffness following ACL reconstruction.

Use of the contraceptive pill increases the sight risk of leg thrombosis following ACL reconstruction. Ideally you should stop taking the pill 4-6 weeks prior to your operation, and take alternative precautions. Please ask your GP Practice for further advice if required. However where this is not feasible or practical low-molecular-weight Heparin injections will be given at the time of surgery. This has the effect of preventing thrombosis to a large degree. This should be discussed with your surgeon.

2 On admission to hospital:

Please tell us in advance of your admission if you have any allergies (especially a latex allergy) or any relevant medical problems. Hairy legs are usually shaved before surgery. If you wish to undertake this it should be done several days before surgery or alternately in the hospital immediately before the operation. Pre-existing skin problems, boils, spots or infections will result in the operation been delayed because of the risk of infection. Aspirin and anti-inflammatory medication should be stopped two days prior to surgery. Please bring your medication to the hospital at the time of admission. Patients must attend starved and should not eat or drink for 6 hours prior to surgery.

3 General Rehabilitation Advice for ACL Reconstruction

Discharge from Hospital

Patients are usually able to stand and walk with crutches on the first postoperative day following surgery. Sometimes the procedure is undertaken as a day case or 24-hour hospital stay. Once the healing is progressing satisfactorily, the pain and swelling are controlled and mobility is comfortable with or without crutches then patients may be discharged home.

Analgesia, pain relief and anti-inflammatory medication

Analgesia or pain killers are usually necessary regularly for 2-4 days and then intermittently for 2-4 weeks. Non steroidal anti-inflammatory medication (Ibuprofen, Diclofenac or Voltarol) is helpful in addition to analgesia in the first few days. However they should if possible be avoided in the first few weeks as they have an effect in slowing down the healing of the ACL graft as well as reducing the pain and swelling. The wounds are usually inspected on the first and second days and the wound dressing changed.

Wound dressing

The dressing should be kept dry unless a shower proof dressing is used. The sutures should be removed at your GP's surgery after 10-14 days. If the wound becomes red, hot, smelling or a drainage from the wound occurs medical review should be sought by the GP or practice nurse or at the hospital. Once the wounds are dry and the stitches removed bathing and pool exercises can be undertaken.

Swelling

Wear a tubigrip on the knee during the day (do not use at night). Ice the knee regularly 2-5 times a day for 10 minutes after exercise and whenever the knee swells. Physiotherapy and Interferential therapy may also be used to decrease swelling. Your physiotherapist will apply this is necessary.

Tubigrip

An elasticated bandage or tubigrip is usually worn on the knee for a period of 4 weeks. The bandage is usually removed at night. The bandage provides a subjective feeling of comfort and security but also helps reduce the swelling within the knee. The bandage also provides a feeling of security and stability which may be comforting. An additional benefit is that it can be used under the knee brace to avoid skin chaffing and blistering.

Knee Brace

A postoperative range of motion knee brace is commonly used in the first few weeks following surgery. The brace may provide a limited range of motion to prevent the graft being stretched during the first few weeks. Such a brace is used in all cases which are undergoing a revision procedure. The brace can also be locked straight at night. This helps maintain full knee extension.

Crutches
Initially the quadriceps muscles are weak and the muscular control of the knee will be inadequate. In order to walk safely and with a good gait crutches should be used. Generally with proper rehabilitation the muscular control and stability rapidly improves such that the crutches may be discarded after a couple of days. Initially the crutches should be discarded when walking indoors on flat surfaces.

Walking
Wean yourself off your crutches after 1-3 days. Following a hamstring reconstruction, a revision reconstruction or where there are other injuries this period may be longer.

Extension exercises
Scar tissue can build up around the ligament graft and cause a permanent block to full knee extension can sometimes occur. Therefore early full knee extension exercises are started straight away to achieve full extension if not immediately within 1-2 weeks following surgery. Once full extension is achieved DO NOT progress beyond this into hyper-extension, but maintain full extension.

Range of Motion Exercises.
Exercises to obtain a range of knee bend or flexion are started straight away. These are gentle flexion exercises whilst sitting or lying. Initially a range of 30-40° is possible. Ideally this should be increased rapidly to 90° by 1-2 weeks. Full flexion of 130° knee bend should be obtained after 3-6 weeks. Full knee flexion places some strain on the ACL reconstruction so this should be obtained slowly and without excessive force.

Straight leg raising exercises.
Lifting the straight leg induces a strain or force in the ACL reconstruction. This is equivalent to that seen when walking or static cycling. Some surgeons therefore advise avoiding straight leg raising exercises in the first few weeks. This may be advisable where the hamstring graft has been used where the initial fixation is not as strong as following a BPTB graft. However early activation of the quadriceps and control of knee extension is important and helps early mobilisation, walking, stability and walking without crutches.

Patellar mobilisation.
The patellar and soft tissues at the front of the knee may become inflamed and some pain and stiffness may result. This is perhaps more common after use of a BPTB graft. This may result in long term stiffness and a restricted range of knee flexion and extension. Early exercises to maintain patellar mobility are important in the first few weeks. The patellar should be pushed or manipulated whilst the knee is in extension and the quadriceps muscles relaxed. The patellar should be able to be moved superiorly and inferiorly and from side to side.

Hydrotherapy
You may start to exercise in water after 2-4 weeks. Your therapist will advise you on exercises, these will include range of movement exercises, strengthening exercises, balance and body awareness, and gait re-education. Gentle crawl swimming can be started after 6 weeks and normal swimming after 3 months.

4 Post-operative problems following ACL Reconstruction
Success following reconstructive ACL surgery depends upon many factors of which rehabilitation is of utmost importance. The most perfectly performed surgery can be quickly undone by insufficient or inappropriate rehabilitation

Complications following ACL ligament reconstruction can occasionally occur. Some of the more common occurrences include significant swelling in the knee. In the early days this may be due to bleeding within the knee. If the swelling persists for several weeks the cause is often fluid in the knee or an effusion. This occurs perhaps in 20% of knees to some degree. The swelling usually settles over the course of time. Rest, immobilisation in a splint or brace, regular icing or the use of anti-inflammatory medication, may help the swelling. A wound infection usually presents 3-7 days following surgery as a hot, red and swollen wound with pain, stiffness a fever. The wound may leak serous fluid or frank pus. Should this occur urgent medical assessment should be undertaken and treatment with antibiotics or surgical drainage may be necessary. Bruising may occur around the knee, posteriorly behind the knee or which may seep down to the ankle. Bruising may cause muscular

tenderness or discolouration but usually settles. Occasionally there may be a small area of skin numbness adjacent to the surgical scar. Numbness just next to your scar is usually temporary but may be permanent.

The failure rate of recurrent laxity and instability has been generally reported to be higher when a hamstring tendon graft has been used as compared to a BPTB graft. The failure rate in BPTB grafts is generally less than 2%. The comparative failure rate of hamstring grafts was reported by Steadman of Vail Colarado to be three time greater in a young skiing population. Not all patients are able to return to their previous level of sporting activity. The reasons for this may affect perhaps 15% of patients be varied and include a change in lifestyle or work. Perhaps 5% of patients may not return to the previous level of sport because of weakness, stiffness or discomfort of the knee.

If you have questions about your rehabilitation, please contact your physiotherapist. If there are any wound problems including skin redness, persistent wound discharge, excessive swelling, increasing or severe pain, fever, infection, pain and swelling in the calf muscle or chest pain please seek urgent medical advice. This may be from your GP or practice nurse for wound dressings, the hospital ward for suture problems or infections or Mr. Johnson's secretary Andrea directly. If you have questions about your surgery, please contact Mr. Johnson's secretary Andrea on 01179 706655. Follow up appointments with Mr. Johnson should be booked through Andrea and are usually after 3, 6 and 12 weeks.