OSTEOCHONDRAL GRAFTING OF THE KNEE

PATIENT INFORMATION SHEET

Introduction

It has been suggested that osteochondral grafting may be appropriate for the problem with your knee. This information sheet is intended to provide you with information about the problem you have and the surgery which has been recommended. It will include a brief explanation of what is meant by a chondral or osteochondral lesion, a description of the surgical procedure called osteochondral grafting and what will happen post-operatively and through your rehabilitation.

What are chondral and osteochondral lesions?

Articular cartilage is the covering of the bones in the knee, and should not be confused with the meniscal form of "cartilage", which are the "shock absorbers" of the knee. It is glossy white in appearance with a firm consistency and some elasticity. Articular cartilage serves as the load bearing material of joints with excellent friction, lubrication and wear characteristics. It allows smooth movement and can adapt to variable loads and impact. Although it is only a few millimetres thick it can be extremely resilient to force.

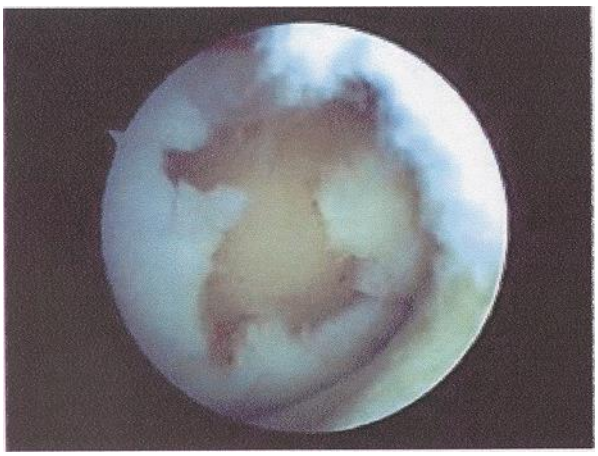
Mechanical injuries to articular cartilage occur with either repetitive and prolonged joint overloading or sudden impact, producing high forces through the tissue to the junction of the deeper underlying bone.

"*Chondral*" means cartilage and "*osteo*" means bone. A chondral lesion is thus a defect of cartilage alone whereas an osteochondral lesion is a defect involving the underlying bone as well as cartilage.

It is known that articular cartilage has a very limited ability to repair itself and therefore many techniques have been devised to help stimulate repair from the deeper underlying bone and prevent further degeneration, or alternatively to provide replacement forms of articular cartilage.

Chondral and osteochondral lesions do not always cause pain and this is why an accurate diagnosis is necessary. Exactly the same lesion can be completely painless in one patient whilst very painful in another.

Diagnosis of articular cartilage lesions can be difficult as clinical examination, x-ray and MRI have in general a low sensitivity for these problems. Arthroscopy ("keyhole surgery") is the most accurate diagnostic tool as this allows the surgeon to visualise directly and probe the articular cartilage which can be very soft or has become semi-detached from the underlying bone.



Arthroscopic appearances of an osteochondral lesion

Osteochondral grafting

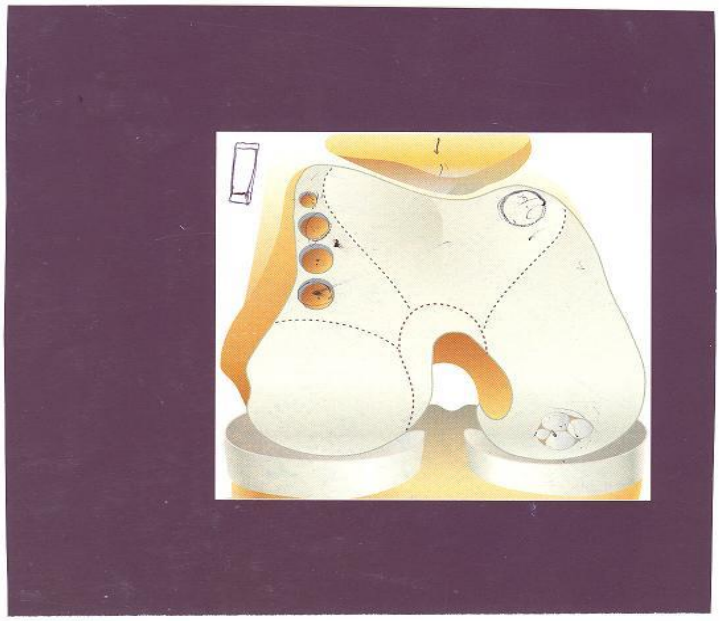
Osteochondral grafting (or mosaicplasty) is one of the available methods of treating *symptomatic* (i.e. painful) chondral and osteochondral lesions. It is a technique whereby small cylinders of bone are harvested and transplanted into the area of lost articular cartilage to restore the surface contour. This technique was developed in the early 1990's and now shows good longer term results in the treatment of chondral and osteochondral lesions.

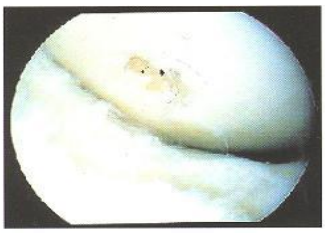
Osteochondral grafting is a single procedure done through a small open incision, although sometimes it may be possible to do it arthroscopically. The operation is normally performed under a general anaesthetic although it can if necessary be performed under

various “local” or “regional” anaesthetic techniques. These act like a dental injection that numbs the teeth more distantly, thereby reducing pain.

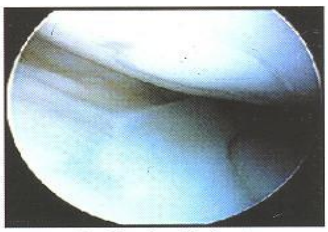
A small coring device is inserted and cylindrical plugs of bone are harvested from the donor site. The donor site is an area in the knee that is relatively “underused” such as the outer margin of the outside of the femur or from the central notch area in the knee.

Cylindrical holes of a depth and diameter appropriate to those of the grafts are prepared at the site of the cartilage defect with a special punch device. The depth of the tunnel may be 15–25mm. The harvested donor grafts are then transported into the prepared recipient area. They are placed in a way to restore the original curvature of the
articular surface.





Primary Lesion



One Year Post-Op Result

Requirements for Surgery

Osteochondral grafting is appropriate for relatively small defects, approximately up to 3cm by 2cm in area. The procedure is limited by the areas required to donate the graft. It is not appropriate for large areas of degenerative arthritis. You will need to have a full range of motion in the knee and good quadriceps (thigh muscle) tone prior to surgery. In the run up to surgery, try to avoid any stressful activities which involve twisting or pivoting on your knee as this may cause your knee to become swollen. If your knee is swollen at time of operation or does not have full range of movement it may lead to a poorer outcome.

The day of surgery

You will be admitted on the day of your surgery. You will be advised as to what time to stop eating or drinking, usually 6 hours prior to the operation.
Your surgeon will always see you on the day of your operation and answer any last minute questions you may have. At this stage he/she will ask you to sign a formal consent form and also draw an arrow on the leg to be operated on.

The anaesthetist will also visit you on the day of surgery to explain the anaesthetic and any post-operative pain control and answer any questions you may have.

When you wake up from your operation in recovery (the area of the operating theatre which allows you to recover from an anaesthetic safely) there will be a white stocking and padding on your leg. You will return to your room and rest until the next day. You may be placed on a CPM machine (a *Continuous Passive Motion* machine which gently and continuously moves the knee) if for any reason it is necessary to keep your knee gently moving.

First post-operative day

Your dressing will be changed only if there is significant blood staining. Some leakage of blood often occurs and is usually not

important, but the nursing staff will assess this and call your surgeon if they are worried. Any other attachments such as patient controlled analgesia will also be removed at this time. A physiotherapist will visit you and commence active exercises to help increase the range of motion and quadriceps strength. You will be assisted out of bed and start mobilising with a pair of elbow crutches.

Subsequent in-patient stay

You will normally be discharged from hospital 1-3 days after surgery when you are safe on crutches and your Consultant is happy with your range of motion and muscle strength. You will be able to negotiate stairs on crutches before you go home.

You will be given adequate advice/instruction on what to do with your dressings, tablets and post operative appointments with your surgeon and physiotherapy.

After discharge from hospital

For the first **3 weeks** after surgery weight bearing through your operated leg will normally be restricted to **partial weight bearing.**

You will need to return to the outpatient clinic for assessment by your surgeon at 1 week after surgery. For the first week or so you will not normally need to see a physiotherapist, but will need to do the exercises demonstrated to you in hospital.

You should be able to return to driving 1-2 weeks after surgery (if you drive an automatic car and the surgery is on the left knee then you may be able to drive immediately).

Most patients in sedentary occupations take 1-2 weeks from work, the time taken largely depending upon the mode of transport to work. In manual occupations the period of time from work may need to be longer.

It will take approximately six months to fully recover from the operation. This does not mean that you will be significantly inconvenienced for this long but swelling from the operation itself may take some time to settle down. Very few operations on the lower limb settle within six months, except perhaps relatively minor arthroscopic surgery, which itself takes three months.

Physiotherapy and rehabilitation

Initially on discharge from hospital you will need to continue with the movement and quadriceps exercises you were taught in hospital.

When you are referred to outpatient physiotherapy the protocol that is related to this information sheet is a guide to your full rehabilitation period. Please ask your Consultant or physiotherapist if you have any specific queries relating to your rehabilitation.

Possible complications

There is no surgical procedure in existence that is free from complications. Although osteochondral grafting has a good record, complications can occur.

Complications include;

1. Stiffness of the knee. The knee may have difficulty in achieving full extension or flexion. This is minimised by early physiotherapy, and to some extent requires a degree of effort on your part to do your exercises. In some patients, a manipulation under anaesthetic or an arthroscopy may be required if the knee becomes stiff.

2. Persistent pain in the knee over the area of surgery especially on weight bearing activities. There may be persistent numbness around the area of the incision.

3. Persistent swelling of the knee, again mainly after weight bearing activities.

4. Venous thrombosis ("blood clots in the veins"). Every attempt is made to minimise this complication, although heparin is not routinely given. It is advised that patients should not be taking the oral contraceptive pill for six weeks prior to surgery. Finish your current packet and take other contraceptive precautions until after your operation. It is also advisable not be taking hormone replacement therapy (HRT) at the time of surgery. Please ask for advice if necessary.

5. Infection of the knee – this is a rare but serious complication. Antibiotics are given during and shortly after the operation to minimise this risk.

6. Donor site effects – although the donor sites of the graft in practice appear to cause little in the way of problems, the operation does involve altering the anatomy and mechanics of the knee after surgery, and theoretically this may interfere with the knee after surgery. However in the operations around the world completed so far, complications of this type have been infrequent.

Please contact me if you are at all concerned that there is a problem. In particular, act immediately if you develop a fever, severe pain or significant wound problems. You do not need to contact your GP (unless you wish to do so also)

How successful is the operation?

Whilst not a complication in itself, in a number of patients the operation does not fully relieve the symptoms that were present prior to surgery. The pain may not be relieved or may only partially be relieved. Unless there is a specific complication as described above, even with failure the knee should be no worse after surgery than before.

You will have been recommended surgery only if the potential benefits of the operation outweigh the risks. If you have any

questions or queries in this regard, please do not hesitate to discuss these with your consultant.