PARTIAL KNEE RESURFACING

INFORMATION AND PROTOCOLS

PREAMBLE

Significant advances in total knee resurfacing (TKR) have meant that this is a much more reliable and satisfactory operation than ten or fifteen years previously.
The success of total knee resurfacing has allowed surgeons and engineers to develop the concept of partial knee resurfacing to deal with patients developing the early changes of osteo-arthritis in isolated areas of the knee.
These patients have a very much higher activity profile than those with total knee arthritis.

INDICATIONS FOR PARTIAL KNEE JOINT RESURFACING

In an age of increasing patient activity and sporting interests through middle life, and with the development of more sophisticated ways of analysising knee joint deterioration, it has been possible to identify patients who are experiencing early wear in specific parts of their knee joint.
In the past these patients might have been advised to give up their sport or reduce their activity until a time where the wear had spread throughout the whole of their joint and their mobility and activity decreased entirely. They then were offered a total knee joint replacement.
Nowadays advancing design has made it possible to resurface these isolated parts rather than wait for the entire joint to deteriorate and the patient's mobility to decrease.
The object is to keep the patient mobile and active, whilst resurfacing only the damaged area of the joint in a much smaller and reduced operation.
There are many advantages in undergoing a smaller procedure with more rapid rehabilitation and greater activity at an earlier stage following operation.

MEDIAL (INNER) KNEE JOINT WEAR

Approximately 80% of knee patients will begin to wear on the inner aspect of their joint, prior to the rest of the joint being involved. Patients present with pain on the inner aspect of the joint related to activity or movement which is easy to pinpoint and becomes more troublesome and tiresome related to activity, but then later even more minor activities cause discomfort and sleep may be disturbed.
The articular cartilage or lining cartilage of this aspect of the joint becomes worn down and the bone of the femur and tibia begin to grind together to cause pain and discomfort. At this early stage it is possible to resurface just the inner aspect of the femur and tibia with a very thin lining of a special medical grade of stainless steel which is implanted on top of the bony surfaces.
To prevent the two metal surfaces grinding together a small plastic bearing is inserted on to the top of the tibial plate to allow easy articulation.
The advantages of this procedure is that none of the ligaments around the knee or indeed inside the knee are disturbed by this procedure which is simply a recoating or relining of the worn areas of the joint.
This bearing replicates the role of the cartilage in the natural knee.

The prosthesis used for this resurfacing procedure is the SIGMA high performance resurfacing prosthesis (see Links section) made by DePuy, a Johnson & Johnson Company.

This prosthesis has been recently developed purposefully for the more active patient and also has a number of features which allows it to be revised or added to as various other parts of the joint may wear out in the future in an active patient.

LATERAL (OUTER JOINT) RESURFACING

The mechanism of wear which causes eventually the bones to grind together on the outside aspect of the joint is very similar to that described for the medial or inner joint wear process. The minority of patients (20%) wear their knee initially on the outer aspect and this may reflect a degree of malangulation which may have been present since youth.

Nevertheless, the bone grinding on bone produces very similar pain and discomfort to that on the inner aspect of the joint and if the rest of the knee remains intact, lateral (outer joint) resurfacing is a very similar procedure to that of inner or more medial resurfacing.
Those looking for information in different sources and different websites may find that surgeons will state that resurfacing may only be performed on the medial or inner side and that lateral or outer resurfacing is not advised.
This does represent a historical standpoint and in the past outer joint resurfacing was discouraged as the results were disappointing.

There are some implants that are only designed for inner joint resurfacing such as the Oxford component.
Redesign and more advanced techniques however have allowed a new concept which is equally implantable on the inner or outer aspect of the knee, this being the SIGMA high performance resurfacing prosthesis.

PATELLOFEMORAL (KNEECAP) RESURFACING

Isolated patellofemoral resurfacing is a procedure in which only the worn out and bare bone surface of the under surface of the kneecap or patella and the front surface of the femur (trochlear) are resurfaced with a metal prosthesis for the trochlear and a polyethylene or plastic surface cemented onto the patella.
The attraction here of course is that if only the patella or kneecap is worn the patient may keep the rest of the natural or native knee without operation whilst a much more reduced procedure is performed to resurface the patellofemoral joint.

The procedure is much more minimal than that undertaken with total knee replacement and the patients are up and mobile often three times more quickly than with a larger procedure. In the long term there is the possibility that further activity may cause wear and tear in the main joint of the knee but such is the patellofemoral joint employed, it is possible to resurface any extra areas of wear and tear when those occur rather than employing a total knee joint replacement at that time.

MULTI COMPARTMENTAL RESURFACING

Occasionally it is found that patients have worn in two of the three areas of the knee but because of their age and activity, total knee joint replacement is not desirable. In those isolated cases a very new and developing field of surgery is to resurface two out of three of these areas such as the patellofemoral and inner aspect of the knee or indeed the outer aspect of the knee and the patellofemoral joint, which allows the knee to keep its natural cruciate ligaments and the majority of the ligaments around the joint.
This is a new and specialised procedure and may only be undertaken in patients who are particularly suitable for the operation.

The advantages however mirror those of partial resurfacing with more activity being possible in the post surgery period and much more rapid recovery.

PRE-ASSESSMENT

You will be called to the hospital prior to your operation for assessment of your physical health.

This ensures that you are fit and medically well to undergo surgery and there will be no problems with the administration of anaesthetic or other treatments.

Samples of blood and urine are taken and the heart and lungs are assessed and checked to ensure all is well

OPERATION

On the day of operation you will be seen by myself and my anaesthetist prior to surgery.
The operation to resurface the knee may normally take one and a half hours, although more time may be required if the operation is difficult or complex.

The incision is made obliquely on the inner aspect of the joint to allow access to the knee without damage to the ligaments or at the patella or kneecap. The advantages of a minimal approach allows more rapid mobilisation and avoids disturbing the sensitive connective tissues around the joint.

Following surgery, you will be returned to the ward and will note that there will be a dressing on the knee consisting of a elasticated bandage. During the procedure your knee will be infused with local anaesthetic to avoid discomfort on waking and to control any discomfort in the post-operative period. There will be some discomfort after the operation and painkilling drugs are given during the procedure.

If you do have discomfort, however, please alert a member of the nursing staff as all patients are prescribed painkilling drugs which should be used to reduce discomfort. Pain control is vital to ensure you are able to co-operate with physiotherapy over the time of your hospital stay.

If you are well enough, you will see a physiotherapist in the afternoon to begin your exercises and gait training.

ANGELA BRIVIO'S RECOVERY APP

You will shortly be coming into hospital for your planned knee surgery.

We have developed an individualised app, which is complimentary, aimed at guiding you through the surgical process and helping you through your recovery, instructing you in exercises daily and recording your progress. The app is free to download and you can access this by scanning the QR-code on the enclosed leaflet or going directly to www.myrecovery.app/abri.

I urge you to log on to this app in advance of your surgery so you can benefit from the full support as you go through the process.
The app contains a series of information modules which will help you understand your surgery and the postoperative rehabilitation. It also contains physiotherapy exercises which are illustrated and ways you can record your progress through the recovery programme, monitor it, and see your progress and recovery in graphical form.

Many patients have found this extremely useful as it is the daily reminder on your own telephone or mobile device to complete and log the exercises and, at the same time, receive guidance and input as to how you might feel and progress each part of your journey.

Therefore, do please go to the website or scan the code and download the myrecovery app which is relevant to you. The major benefit is obtained by looking at this app the week before your surgery as it has a number of details which are helpful at the time of your admission to hospital.

RECOVERY

Day 1

On the morning following surgery blood samples will be taken to ensure all is well following the operation. X-rays are taken to ensure that the knee prosthesis is correctly and accurately situated. These can be shown to you during your hospital stay. The physiotherapists will encourage weight bearing and walking. Some patients will have also achieved stair climbing by the end of the day and the majority will be ready for discharge home the day after surgery.

Day 2-3

During the stay on the ward the aim is to achieve full straightening of the knee, the ability to bend the knee to a right angle (90°) and to promote wound healing and reduction of swelling and discomfort.
The physiotherapist will visit regularly to encourage muscle exercises to allow the knee to be moved more fully and strengthen the muscles.

You may fully weight bear through the knee and initially the physiotherapist will supervise you in the use of crutches and walking exercises. Movement out of bed is encouraged and progressively the physio will increase the bending angle of the knee during this period. Initially mobilisation will take place on crutches with the supervision for trips around the room and for toilet visits, but subsequently these walks will become longer down the corridor and before discharge all patients will be confident and safe in ascending and descending stairs. The physiotherapist will instruct and help you in achieving muscular co-ordination and strengthening of the knee during this period. Active participation is required

for this and thus the pain and discomfort you may have must be controlled with painkillers to allow you to help the physiotherapist get the knee moving again.

REHABILITATION

Recovery from partial knee resurfacing is said to be a little more rapid than standard knee surgery.
Initially, the knee will be a little stiff and I would encourage you to actively bend and straighten the knee gradually increasing your activity and walking distance in the first few weeks following surgery. The physiotherapist will continue her treatment in out patients and will be offering further advice and exercises to allow you to improve the function of the joint. These physiotherapy visits will be arranged prior to your discharge from hospital if subsequent physiotherapy is required.
A follow-up appointment with myself will take place approximately 6 weeks following surgery and by this time most patients are feeling a little more confident and have improved their walking distance and stability. Rates of individual progress vary however, and depending on the extent of the original arthritis some patients will proceed faster than others.
If all is well at the 6 week appointment, I then normally see patients in approximately 6 months post-surgery to ensure that a full range of movement has been achieved, that the knee is working well and normal walking has been recovered with or without a stick for stability.
Further improvement is known to occur up to a year following joint replacement.

RESULTS

Results from partial knee resurfacing are available on the inner aspect of the joint over the last twenty years. They lead us to anticipate that we should expect at least fifteen to twenty years good function from this area. The particular implant that I use has an exchangeable bearing made of polyethylene or plastic which may be exchanged beyond ten years post-surgery in order to improve and prolong the life of the implant. The partial knee resurfacing system that I employ also has components which will cover the outer aspect of the knee and additionally the patellofemoral (kneecap) joint. Therefore if arthritis spreads as the patient becomes older, it will be possible to add further areas of resurfacing to the existing resurfacing covering all eventualities for the future.

ACTIVITY

Patients who undergo this procedure have a higher rate of activity and achievement than those having a total knee resurfacing. It is reasonable to undertake most forms of active sport on this knee including dancing, doubles tennis, swimming, walking and most gym activity. Jogging or long distance running is possible on these implants. Many patients ski and are involved in winter sports as well as sailing and other marine activities.

COMPLICATIONS

As with any demanding or major joint surgery, there may be complications which hopefully are of a minor nature.

Some patients occasionally suffer problems with wound healing and the scar on the outer or inner aspect of the knee which is approximately 4 ins. long (please also see elsewhere the section on wound healing) sometimes takes a little time to heal and will exhibit some bruising.
Sometimes patients suffer some problems in achieving bending of the knee and this often is related to the severity of the arthritis before surgery. Every assistance and help will be given by the physiotherapist to achieve full function of the knee.
The most serious complication is that of infection. The knee prosthesis is an artificial insert into the human body and therefore it is possible for bacteria that may arise in the bloodstream to infect the joint. This causes pain within the knee replacement and in the most serious cases requires the removal of the knee prosthesis with its subsequent replacement a few weeks later.
This serious complication occurs in less than 1% of patients in my practice and is be minimised by the use of antibiotics during the implantation procedure and the use of antibiotics subsequently if it is apparent there is any infection in the foot or knee. Any extensive dental procedures that may require intra-oral surgery should be covered by antibiotics also and your dentist should be made aware of the fact that you have a joint replacement.

Deep venous thrombosis (DVT) or the forming of clots in the veins of the knee is a recognised complication. To avoid DVT, patients' blood is thinned during surgery and for a short period afterwards. Intermittent compression pumps on the feet maximize the circulation post-surgery in the first few days. Patients also wear compression stockings for the first few weeks post operation.

HELP AND ADVICE

Should you have any questions regarding knee surgery or be concerned regards pain or swelling in the post operative period please feel free to contact the person on any of the numbers listed below:

King Edward VII Hospital, Marylebone

Nurses Station, Ward 2	0207 7467 4202
Nurses Station, Ward 3	0207 7467 4203