Introduction

Total hip joint replacement is an operation carried out for patients suffering from arthritis of the hip joint. The arthritis may be inflammatory in origin such as rheumatoid arthritis or it may be Osteoarthritis that usually affects the older age group.

Osteoarthritis is usually confined to fewer joints in any one individual compared to rheumatoid arthritis that is usually symmetrical polyarthritides. Other conditions that might be considered for joint replacement result from injury, tumours and arthritis secondary to childhood hip disorders. Occasionally haemophiliacs with avascular changes require joint replacement.

The cause of Osteoarthritis in the hip is usually a combination of a genetic predisposition and some other contributing factor such as previous injury or occupation.

Osteoarthritis has prevalence in the community of approximately five percent in those over 65 years of age. Osteoarthritis of the knee is more common that Osteoarthritis of the hip but many patients with x-ray evidence of knee disease are asymptomatic. It has been estimated that 1.2% of the population over the age of 65 are suitable candidates for hip replacement surgery. The average age for hip replacement in patients in New Zealand is 68 years.

Patients with degenerative changes complain of pain, stiffness and deformity. With increasing stiffness in the hip joint it becomes increasingly difficult to get in and out of a chair and to reach down to put on shoes and socks. Most patients with Osteoarthritis of the hip have difficulty trimming their toenails.

As the hip becomes more painful walking distance becomes restricted and most patients begin to limp.

Painkillers and anti-inflammatory drugs gradually become more ineffective. Most patients take regular painkillers such as Paracetamol for pain relief.

Likely Outcome After Surgery

The indications for surgery are usually severe pain and disability. The pain is usually severe enough to interfere with daily activities and it may disrupt sleep.

A number of factors will influence the outcome following total joint replacement. The first of these are patient factors including the presence of other medical conditions and whether or not one or more joints is involved. The presence of pre-existing disease and the anatomy of the affected joint, together with any previous surgery or infection will affect the outcome as well as the technical difficulty of performing surgery. Age is also an important factor as it will influence the ability to withstand surgical intervention but on the other hand the older patient will often make less demand on a joint and hence prolong its life-span. Patients who are not compliant are likely to do less well in the long term. Treatment during the peri-operative period is vital to minimize the risk of complications such as deep venous thrombosis, infection and dislocation.
Alternative Treatment Options

There may be alternative treatments for hip disease other than hip joint replacement. Some patients benefit from an exercise program, avoidance of aggravating activity, anti-inflammatory tablets, paracetamol and the use of a walking stick. Other surgical options for hip diseases include, Osteotomy (changing the shape of the hip joint), arthrodesis (fusing the hip joint), or an excision arthroplasty (removing the hip joint). Each of these operations has its place in certain hip conditions.

Most patients will wish to proceed with joint replacement when the usual conservative measures have been unsuccessful. Some patients are intolerant of non steroidal anti-inflammatory medication because of indigestion with or without peptic ulceration. The choice of management and decision to recommend surgery are based on the severity of symptoms, the effect on daily living and any threat to independence. Other factors taken into account are age, weight, pre-existing pathology and the presence of co-morbid medical conditions.

Potential Complications of Hip Surgery

Major advances in joint replacements were made in the early 1960's and 70's. At that stage the most feared complication was infection. The incidence of deep infection has declined over the decades with meticulous peri-operative technique and the use of antibiotics and patient education on the importance of infective episodes after surgery. The most common long term complication of joint arthroplasty is loosening and wear of the components. Design criteria as well as operative technique can influence outcome. Almost all joint replacements have a metal on plastic bearing and the metals are usually high grade stainless steel or titanium alloys. As problems of loosening and wear occur many years after surgery an effective follow up period of 10 years is required to discern differences in implants and techniques.

Laboratory experimentation and previous failures have all led to changes in implant design and operative technique.

The effectiveness of changes that are occurring now will only be measurable in the next decade.

Current data suggests that joint replacements can expect a ninety percent survival or better over a ten year period.

“"If there are any concerns relating to the potential risks these should be raised with the surgeon prior to surgery”.

Risks Related to Hip Surgery

As with any operation there are risks involved in undergoing surgery. The recommendation of surgery is based upon the belief that the perceived benefit outweighs the potential risk involved. The potential for risk is often dependent on age and the presence of pre-existing disease.

The potential risks of surgical operations include:
- Perioperative death
- Bleeding or hemorrhage
- Infection
- Thromboembolism
- Leg Length Discrepancy
- Joint Dislocation
- Nerve & artery damage

Major complications are rare and usually associated with a pre-existing medical condition.

Total hip joint surgery is very “instrument intensive”.

Mixing the bone cement (polymethylmethacrylate)
Getting In Shape Before Surgery

In order to get the best result out of surgery is recommended that you get into the best possible physical shape before the operation. Being in good shape will help to minimize complications and make your recovery quicker.

Exercise is the key to good muscle tone and strength. Walking, swimming and cycling are excellent forms of exercise which, if performed regularly, will increase your health and well-being. It will often be difficult to exercise regularly with your arthritic condition but still try as you are unlikely to come to any harm.

Teeth can be a source of infection if you have periodontal disease or caries. Get your dentist to check you out before surgery.

Prostate problems in men can be a source of difficulty (and embarrassment) after surgery so if you have any symptoms attributable to prostate enlargement see to them before surgery.

Any skin conditions should be treated vigorously before surgery to decrease the risk of a wound infection.

Being over weight can be a problem in the short period after surgery and may even make surgery difficult. Try to loose a little weight to make the surgery and anaesthetic easier.

Medical problems can surface at the time of surgery so a general check up by your GP or general physician before surgery is strongly advisable.

Getting Equipped Before and After Surgery

There are a number of pieces of equipment that may make life easier both before and after surgery.

A high chair with arms will be easier to get into and out of in the first few weeks after surgery.

A “Stocking Aid” will help you to put on socks or stockings.

A Walking Stick will give support and relieve some of the stress on the new joint.

Crutches are an alternative to a stick.

A high toilet seat is a must for the first month after surgery.

Elastic Stockings may help to minimize swelling in the ankles if you are prone to this.

A “Helping Hand” will help you to pick things up off the floor.

Hand Rails in the shower and toilet can be very useful.

A Walk-in Shower would be ideal but not always available.

Meals in the freezer or meals on wheels may help in the first few weeks after surgery.

Pain Relief Before and After Surgery

Paracetamol is the simplest and safest pain killing medication available. Taking regular Paracetamol will raise your pain threshold and decrease the need for other stronger medication.

Non-steroidal Anti-inflammatory Drugs (NSAIDs) are very effective for musculo-skeletal pain but are irritating on a sensitive stomach. It is best to take these drugs with food to minimize stomach upset. Side effects of NSAIDs include stomach ulceration and bleeding. If there are symptoms suggestive of stomach upset it is wise to stop taking the drugs.

Stronger Pain-killers may be required in the first few days after surgery but most patients do well with regular simple pain-killers reserving the stronger medication for pain relief above their threshold.

“Suggested long term follow-up is an x-ray at 1 year and then at 5 yearly intervals looking for any signs of wear or loosening of the artificial joint”.

Trial Stems

Trial Cups
Stopping and Restarting Medications in the Perioperative Period

Some drugs and medicines taken for medicinal purposes may interfere with your anaesthetic and surgery. Even herbal remedies purchased over-the-counter may lead to problems around the time of surgery eg. Feverfew, Ginger & Garlic prolong clotting times and may lead to bleeding complications, Ephedra may cause increased blood pressure and heart beat irregularities.

With some medications the risk of stopping may be greater than the risk of continuing, so it is important to discuss your medications with your family doctor, surgeon and anaesthetist before surgery.

The following is a guide for stopping and restarting medications that you may be taking:

<table>
<thead>
<tr>
<th>Medication</th>
<th>When to Stop</th>
<th>When to Restart</th>
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</thead>
<tbody>
<tr>
<td>Herbal Remedies</td>
<td>1-2 weeks before surgery</td>
<td>When the risk of bleeding from surgery has diminished</td>
</tr>
<tr>
<td>Aspirin</td>
<td>7 days before surgery</td>
<td>When the risk of bleeding from surgery has diminished</td>
</tr>
<tr>
<td>Warfarin</td>
<td>7 days before surgery</td>
<td>When the risk of bleeding from surgery has diminished</td>
</tr>
<tr>
<td>Non-steroidal Anti-inflammatory Drugs (NSAIDs)</td>
<td>2-3 days before surgery</td>
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<tr>
<td>Oral Contraceptives</td>
<td>4-6 weeks before surgery</td>
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<tr>
<td>Hormone Replacement Therapy</td>
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</tr>
<tr>
<td>Oral Diabetes Medication</td>
<td>Withhold on the morning of surgery</td>
<td>When normal diet resumed</td>
</tr>
<tr>
<td>Insulin</td>
<td>Half dose on morning of surgery</td>
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<tr>
<td>Anti-epileptic Medication</td>
<td>Do not stop</td>
<td></td>
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<tr>
<td>Cardiovascular Drugs</td>
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<tr>
<td>Pulmonary Drugs</td>
<td>Do not stop</td>
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</tr>
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</table>

Important Information on Drug Interactions

It is extremely important to disclose all medications including over-the-counter drugs, nutritional supplements and vitamins, alcohol, tobacco and illicit drugs to your surgeon and anaesthetist as there are numerous possible drug interactions that may occur in your treatment, some of which may lead to harm.

If you have any questions related to the medications that you are currently taking then please discuss this with your surgeon or anaesthetist before surgery.
Blood Transfusion & Donating Bone to the Bone Bank

Blood Transfusion
Some patients undergoing hip replacement surgery will require a blood transfusion. As with any treatment, you have the right to decide whether you want to have this treatment. Blood transfusion and blood products are given when there is no better alternative treatment. There is some risk associated with receiving a blood transfusion. These risks are usually related to either infection or an allergic reaction. The chance of infection is very low. All blood donations are tested for signs of infection from HIV/AIDS, hepatitis B, hepatitis C, CJD and syphilis. You may wish to consider donating your own blood, but this also carries some risk.

Bone Bank
The operation to replace the hip joint involves removing the head of the femoral bone. This bone can be frozen and used at a later time as bone graft in either you or other patients. If you would like to donate your bone to the bone bank you will be asked to complete a short questionnaire and consent form. Some patients with certain medical conditions may not be able to donate bone to the bone bank. These conditions include a past history of cancer, hepatitis, rheumatoid arthritis or exposure to sexually transmitted diseases.

The First Six Weeks After Surgery
Prevention of thrombosis
Exercise the muscles in your legs several times during the day. If you are at risk of developing clots in the veins of your leg you may be placed on anticoagulants during and after your surgery.

Prevention of dislocation
Sit in a raised chair with arm supports. To get your shoes and socks on use a shoe horn or stocking aid between your knees and get someone else to trim your toenails. When reaching down to the floor, put your leg out behind you. When sitting or lying, keep your legs apart. Either strip wash or use a walk-in shower. Get someone else to do the driving in the first six weeks. On going up stairs put the good leg first, when going down put the operated leg and stick first. Put a pillow between your knees when getting in and out of bed.

Prevention of infection
During and for a short time after surgery you will be given antibiotics to help prevent infection. If you develop any infection, for example in your chest, kidney or bladder, it is important that this should be treated promptly and intensively to prevent any spread to the bloodstream and to the hip joint. You should contact your doctor promptly if you get any infection.

Beyond Six Weeks after Surgery
You may now drive, bath normally, sleep on your side and resume sexual relations.
You may now discard your sticks or crutches progressively as your ability to walk improves. It is advisable to go on using one stick when walking out of doors. Long term care of the artificial joint relates to the prevention of dislocation, infection, wear and loosening.

Prevention of infection:
Prophylactic antibiotic cover is wise if you undergo dental treatment since this is often associated with the release of bacteria into the bloodstream. Your dentist will advise you on the need for antibiotic cover. It is still important to contact your doctor should you develop any infection in your: chest, kidney or bladder, for prompt and intensive treatment.

Prevention of loosening and wear:
Remember to use a stick when out of doors. Avoid vigorous activity such as running, jumping, and playing competitive tennis or squash.
Sedentary activities such as swimming, cycling, golf or bowls are excellent forms of exercise and are less likely to cause loosening. Remember to keep your weight down and exercise regularly.
The National Joint Replacement Register

When you have your hip operation you are invited to contribute information about your operation and the outcome to the National Joint Replacement Register. The Register currently records the technical data on all artificial hip and knee replacement surgery performed in New Zealand. As well as technical data collected, information also includes the type of implant used, the time taken to perform the operation and if any antibiotics were used. No personal information is collected apart from the person’s name, address and date of birth.

The National Register will provide independent data on the performance of these artificial joints over many years. The data will be used in the future for joint replacement outcomes research and will identify the factors that provide the best long-term surgical results for New Zealanders.

Audit & Research

Research and follow up is important in the management of patients undergoing hip joint replacement. Research assists in the development of new surgical techniques, new materials and new hip joint designs. An ongoing audit of procedures helps to identify potential problems early, especially those related to complications and outcome. As soon as any problem is identified then steps can be taken to rectify the situation, ultimately to the benefit of all patients.

Current audit & research includes the collection of data relating to operations and outcome. Patients are asked to complete questionnaires which explore their pain and disability both before and after surgery. A scoring system is used to assess pain and disability and follow up x-rays are analyzed in intricate detail.

Follow up x-rays are recommended at 12 months after surgery and thereafter at 5 yearly intervals to look for signs of early wear or loosening.

Some patients donate their artificial joint for analysis after their death and this provides surgeons and researchers with valuable information on the durability of these joints.

The Wishbone Trust is an organization set up to collect and distribute funds for research into aspects of Orthopaedic Surgery.

“Outcome research will identify the factors that provide the best long-term results for patients with artificial joints”

Antibiotic Prophylaxis for Dental & Surgical Procedures

The incidence of developing a joint prosthesis infection after a dental procedure is in the region of 0.1 to 0.2%. Routine dental procedures involving little or no bleeding may not pose a significant risk.

Cephalexin, Cephadrine or Amoxicillin should be given 1 hour before any procedure that carries a high risk of bacteraemia.

(If you are allergic to Penicillin, Clindamycin is a satisfactory alternative.

Other non-dental procedures may also increase the risk of an infection around an artificial joint.

A lower threshold for giving antibiotic cover applies to patients with associated diseases which may lower their immunity. Such diseases include:

- Diabetes,
- Rheumatoid Arthritis or other connective tissue diseases,
- Previous joint infection,
- Disease, drug or radiation induced immunosuppression (including steroid therapy),
- Haemophilia,
- Malnourishment,

The following dental procedures carry a high risk of bacteraemia (bacteria entering the blood stream):

- Dental extractions
- Peridontal procedures
- Dental Implant placement
- Endodontic instrumentation
- Root canal surgery
- Orthodontic band placement
- Intraligamentous local anaesthetic injections
Resuming Activity after Surgery:

Sitting in a Low Chair?
Problems that arise with sitting in a low chair are associated more with how you arise from it than with the sitting position itself. Depending on the surgical approach, you must avoid those positions that might engender prosthetic impingement and dislocation. With the commonly used posterolateral approach, hip flexion of more than 90 degrees associated with adduction and internal rotation should be avoided. With the lateral or modified lateral approach, extreme external rotation and hyperextension should be avoided because of the risk of anterior dislocation. When you arise from a chair the sum of hip and knee flexion generally exceeds 180 degrees placing the joint at risk of dislocation. The degree to which knee flexion is limited will place additional flexion requirements on the hip. Patients with rheumatoid arthritis and multiple lower-extremity joint involvement therefore find it particularly difficult to arise from a low chair—even more so if they have upper-extremity involvement as well.

When May I Resume Driving?
A study was done with an experimental driving simulator that tests the patient’s ability to switch the right foot from the accelerator to the brake in a timely manner and with appropriate force. By 8 weeks after left total hip replacement, patients had generally improved to the point at which their reaction time and the force generated by their right foot approached those of normal control subjects. In contrast, patients who underwent right total hip replacement had mean reaction times preoperatively and at 8 weeks postoperatively that were significantly increased compared with normal control subjects and with patients undergoing left total hip arthroplasty. This study suggests that patients who undergo left total hip replacement can safely resume driving by 8 weeks postoperatively. Some patients with right total hip replacement who were progressing well by other clinical criteria but continued to have prolonged and “unsafe” reaction times well after 8 weeks. The decision about independent driving, particularly by elderly patients with right total hip replacement, must be individualized. It should also be remembered that if you are elderly you may have other cognitive or sensory deficits that may further compromise your ability to drive safely, regardless of the surgical site.

When May I Resume Sexual Activity?
A study of 86 patients who had successful total hip replacement, 55% were able to resume sexual intercourse by 1 to 2 months postoperatively. Patients preferred the supine position (patient on bottom) as sexual activity was resumed. The next most comfortable position for men was prone (facing down), whereas for women it was side-lying on the nonoperative side. Of particular note, 46% of patients experienced significant preoperative sexual difficulties attributable to their hip disease, whereas only 1% felt that the status of their hips precluded satisfactory sexual function postoperatively. Another study analyzed the relationship between sexual difficulties and total hip replacement in patients with rheumatoid arthritis. The vast majority of the patients with sexual difficulties attributable to their hips resumed more satisfying sexual relations following total hip replacement. However, almost 25% reported that other problems still rendered sexual function difficult.

When May I Resume Sports?
The literature generally supports the view that high activity levels, particularly those associated with high-impact loading, and increased body weight adversely affect the longevity of total hip replacement. Competitive tennis, jogging, horseback riding, backpacking, racquetball, handball, and heavy labor are generally regarded as high-impact activities. Low-impact activities are defined as swimming, golf, bowling, hiking, bicycling, skiing on groomed surfaces, and occasional social doubles tennis. Active patients who participated in high-impact sports activities have twice the risk of aseptic loosening of the artificial joint when compared with their less active counterparts. Notably, the differences in implant survival between these groups are not dramatically different at 5 years post-operatively but are apparent at 10 years. A survey of Surgeons belonging to the Hip Society of North America found that patients who resumed golf did not sustain increased rates of complications after total hip replacement when compared with their non-golfing counterparts. Of interest, most golfers experience an increase in their handicaps following total joint arthroplasty. While most golfers do not experience pain while playing golf, they do report a mild ache in the thigh after playing.

Sex & Sport

Chairs & Driving
Recommended Activity Levels after Surgery

“An important factor in deciding whether to have a hip replacement is understanding what you can and can’t do after surgery”

Dangerous Activity After Surgery
- Jogging or Running
- Contact Sport
- Jumping Sports
- High Impact Aerobics

Activity Exceeding Usual Recommendations After Surgery
- Vigorous Walking or Hiking
- Skiing
- Tennis
- Repetitive Lifting Exceeding 25 Kg
- Repetitive Aerobic Stair Climbing

Expected & Acceptable Activity After Surgery
- Recreational Walking
- Swimming
- Golf
- Driving
- Light Hiking
- Recreational Biking
- Ballroom Dancing
- Normal Stair Climbing

“With sensible use the artificial joint should last for years”

Mr R O Lander MBChB, FRACS
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