Your Practice Online

PRESENTS

# REVISION KNEE REPLACEMENT

Multimedia Health Education

Your Practice Online

## *Disclaimer*

This information is an educational resource only and should not be used to make a decision on Revision Knee Replacement or arthritis management. All decisions about Revision Knee Replacement and management of arthritis must be made in conjunction with your surgeon or a licensed healthcare provider.


**Australia**

Dr. Prem Lobo
G.P.O Box No. 635
Sydney NSW-2001

Phone: +61-2-8205 7549
Fax: +61-2- 9398 3818
Email: info@yourpracticeonline.com.au

**USA**

Holly Edmonds RN, CLNC
1006 Triple Crown Drive
Indian Trail, NC 28079

Office: 1.877.388.8569 (Toll Free)
Fax: 1.704.628.0233
E-mail: info@yourpracticeonline.net

**New Zealand**

Greg Eden
P O Box 17 340 Greenlane
Auckland 1130

Phone: +64-9-636 1118
Fax: +64-9-634 6282
E-mail: info@yourpracticeonline.co.nz

MULTIMEDIA HEALTH EDUCATION MANUAL

TABLE OF CONTENTS

# REVISION KNEE REPLACEMENT

Multimedia Health Education

## INTRODUCTION

The knee is essentially made up of four bones. The femur or thighbone is the bone connecting the hip to the knee. The tibia or shinbone connects the knee to the ankle. The patella (kneecap) is the small bone in front of the knee and rides on the knee joint as the knee bends. The fibula is a shorter and thinner bone running parallel to the tibia on its outside. The joint acts like a hinge but with some rotation.

The knee is a synovial joint, which means it is lined by synovium. The synovium produces fluid lubricating and nourishing the inside of the joint.

Articular cartilage is the smooth surfaces at the end of the femur and tibia. It is the damage to this surface which causes arthritis.

## a. Knee Anatomy

### Femur

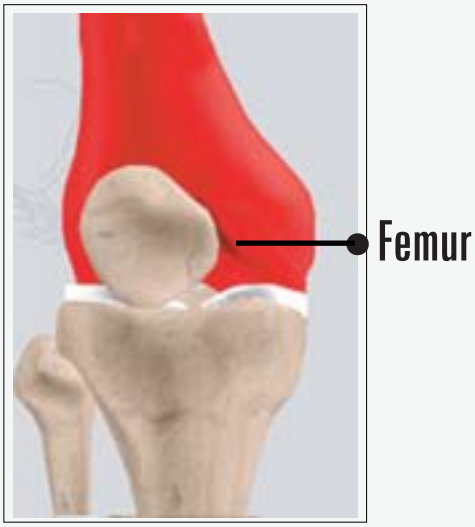
The femur (thighbone) is the largest and the strongest bone in the body. It is the weight bearing bone of the thigh. It provides attachment to most of the muscles of the knee. *(Refer fig. 1)*

### Condyle

The two femoral condyles make up for the rounded end of the femur. Its smooth articular surface allows the femur to move easily over the tibial (shinbone) meniscus. *(Refer fig. 2)*

### Tibia

The tibia (shinbone), the second largest bone in the body, is the weight bearing bone of the leg. The menisci incompletely cover the superior surface of the tibia where it articulates with the femur. The menisci act as shock absorbers, protecting the articular surface of the tibia as well as assisting in rotation of the knee. *(Refer fig. 3)*




(Fig. 1)


(Fig. 2)


(Fig. 3)

## Fibula

The fibula, although not a weight bearing bone, provides attachment sites for the Lateral collateral ligaments (LCL) and the biceps femoris tendon.

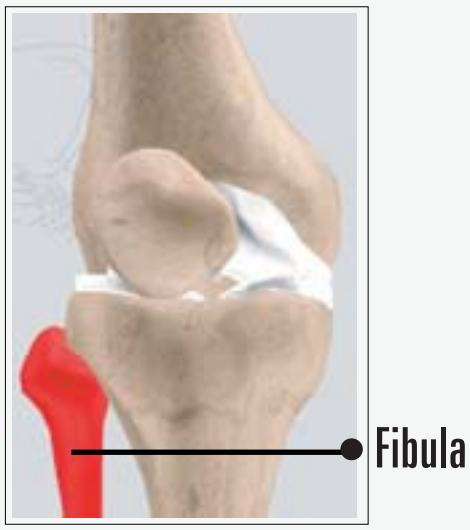
The articulation of the tibia and fibula also allows a slight degree of movement, providing an element of flexibility in response to the actions of muscles attaching to the fibula.

*(Refer fig. 4)*

## Patella

The patella (kneecap), attached to the quadriceps tendon above and the patellar ligament below, rests against the anterior articular surface of the lower end of the femur and protects the knee joint. The patella acts as a fulcrum for the quadriceps by holding the quadriceps tendon off the lower end of the femur.

*(Refer fig. 5)*




**(Fig. 4)**


**(Fig. 5)**

## Menisci

The medial and the lateral meniscus are thin C-shaped layers of fibrocartilage, incompletely covering the surface of the tibia where it articulates with the femur. The majority of the meniscus has no blood supply and for that reason, when damaged, the meniscus is unable to undergo the normal healing process that occurs in the rest of the body.

In addition, a meniscus begins to deteriorate with age, often developing degenerative tears. Typically, when the meniscus is damaged, the torn pieces begin to move in an abnormal fashion inside the joint.

The menisci act as shock absorbers protecting the articular surface of the tibia as well as assisting in rotation of the knee. As secondary stabilizers, the intact menisci interact with the stabilizing function of the ligaments and are most effective when the surrounding ligaments are intact. *(Refer fig. 6)*


**(Fig. 6)**

## Why does a Knee need to be revised?

- Pain is the primary reason for revision. Usually the cause is clear but not always. Those knees without an obvious cause for pain, in general, do not do as well after surgery.
- Plastic (polyethylene) wear .This is one of the easier revisions where only the plastic insert is changed.
- Instability which means the knee is not stable and may be giving way or not feel safe when you walk.
- Loosening of either the femoral, tibial or patella component. This usually presents as pain but may be asymptomatic. It is for this reason why you must have your joint followed up for life as there can be changes on X-ray that indicate that the knee should be revised despite having any symptoms.
- Infection-usually presents as pain but may present as swelling or an acute fever.
- Osteolysis (bone loss). This can occur due to particles being released into the knee joint which result in bone being destroyed.
- Stiffness-this is difficult to improve with revision but can be helped with the right indications.

## a. Surgical Procedure

**It will be explained to you prior to surgery what is likely to be done but in revision surgery the unexpected can happen and good planning can prevent most potential problems. The surgery is often, but not always, more extensive than your previous surgery and the complications similar but more frequent than the first operation.**

**The surgery varies from a simple liner exchange to changing one or all of the components. Extra bone (cadaver bone) may need to be used to make up for any bone loss.**

- **The surgeon makes an incision in front of the knee exposing the knee joint.** ***(Refer fig. 7)***
- **The knee cap along with its ligament may be moved to make room for the operation.** ***(Refer fig. 8)***
- **The surgeon removes the old femoral component.** ***(Refer fig. 9)***

**(Fig. 7)**

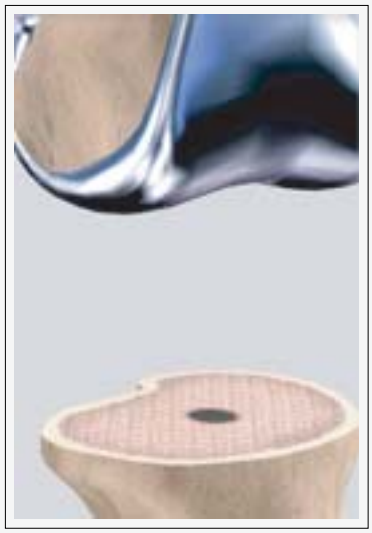
**(Fig. 8)**

**(Fig. 9)**

- The femur is then prepared to take the new component. Sometimes the damaged bone may be removed. *(Refer fig. 10)*
- The femoral component is then fixed in place. Sometimes extra bone or a metal wedge may be used to make up for the lost bone. *(Refer fig. 11)*
- Occasionally cement may be used depending on surgeons' preference.
- The surgeon then concentrates on the tibia to remove the tibial component along with the old plastic liner. The damaged bone is cut. *(Refer fig. 12)*

(Fig. 10)


(Fig. 11)



(Fig. 12)

- The tibia is then prepared to take the new tibial component. The lost bone is then replaced either by a metal wedge or bone graft depending on surgeons' preference. *(Refer fig. 13)*

- The tibial component is secured to the end of the bone with bone cement or screws depending on a number of factors and on surgeon's choice.

- A plastic liner is placed on the tibial component. Occasionally, the knee cap may also be prepared and resurfaced to receive a plastic component. *(Refer fig. 14)*

- The femoral and the tibial component are fixed in place to form the new knee joint. The muscles and tendons are then approximated. Drains are usually inserted to drain excessive blood. *(Refer fig. 15)*


(Fig. 13)

(Fig. 14)

(Fig. 15)

## b. Risks and complications

- As with any major surgery there are potential risks involved. The decision to proceed with the surgery is made because the advantages of surgery outweigh the potential disadvantages.
- It is important that you are informed of these risks before the surgery takes place.

Complications can be medical (general) or local complications specific to the knee.

**Medical complications** include those of the anesthetic and your general well being. Almost any medical condition can occur so this list is not complete. Complications include

- Allergic reactions to medications
- Blood loss requiring transfusion with its low risk of disease transmission
- Heart attacks, strokes, kidney failure, pneumonia, bladder infections
- Complications from nerve blocks such as infection or nerve damage
- Serious medical problems can lead to ongoing health concerns, prolonged hospitalization or rarely death.

**Local complications**

- **Stiffness in the knee**
  Ideally your knee should bend beyond 100 degrees but on occasion the knee may not bend as well as expected. Sometimes manipulations are required; this means going to theatre and under anesthetic the knee is bent for you.

- **Wound irritation or breakdown**
  The operation will always cut some skin nerves so you will inevitably have some numbness around the wound. This does not affect the function of your joint. You can also get some aching around the scar. Vitamin E cream and massaging can help reduce this.

  Occasionally you can get reactions to the sutures or a wound breakdown which may require antibiotics or rarely further surgery.

- **Infection**
  Infection can occur with any operation. In the knee this can be superficial or deep. Infection rates are approximately 1%. If it occurs, it can be treated with antibiotics but may require further surgery. Very rarely your knee prosthesis may need to be removed to eradicate the infection.

- **Blood clots (Deep Venous Thrombosis)**
  These can form in the calf muscles and can travel to the lung (Pulmonary embolism). These can occasionally be serious and even life threatening. If you get calf pain or shortness of breath at any stage you should notify your surgeon.

- **Damage to nerves or blood vessels**
  Also rare but can lead to weakness and loss of sensation in part of the leg. Damage to blood vessels may require further surgery if bleeding is ongoing.

- **Wear**
  The plastic liner eventually wears out over time, usually 10 to 15 years, and may need to be changed.

- **Cosmetic Appearance**
  The knee may look different than it was because it is put into the correct alignment to allow proper function.

- **Dislocation**
  An extremely rare condition where the ends of the knee joint lose contact with each other or the plastic insert can lose contact with the tibia(shinbone) or the femur (thigh bone).

- **Patella problems**
  Patella (knee cap) can dislocate. That is, it moves out of place and it can break or loosen.

- **Ligament injuries**
  There are a number of ligaments surrounding the knee. These ligaments can be torn during surgery or break or stretch out any time afterwards. Surgery may be required to correct this problem.

- **Fractures** or breaks in the bone can occur during surgery or afterwards if you fall. To fix these you may require surgery.

Although every effort has been made to explain the complications there will be complications that may not have been specifically mentioned. A good knowledge of this operation will make the stress of undertaking the operation easier for you to bear.

The decision to proceed with the surgery is made because the advantages of surgery outweigh the potential disadvantages. It is important that you are informed of these risks before the surgery.

**You must not proceed until you are confident that you understand this procedure, particularly the complications.**

## Conclusion

**We hope that you have found this information helpful. We also trust you will know that if any of the material mentioned in this booklet is confusing or hard to understand, your surgeon will be glad to address your concerns either by phone or on your next visit to the clinic.**

**Thank you for taking the time to read this material. We understand that this manual contains a great deal of information. We also know that the best results come from the most informed patients and those motivated to see themselves in their best condition as quickly as possible.**

**Surgery exists as a method of correcting a problem and improving a patient's condition which is everyone's goal. Please be assured that your surgeon and the medical team are more than willing at any time to answer any questions or to review any material before and after surgery. The best results are obtained when people are provided the right information to become informed, motivated, and confident.**

**Your REVISION KNEE REPLACEMENT Team**

Your Practice Online

# REVISION KNEE REPLACEMENT

Multimedia Health Education

☐ ☐ 2006 YOUR SURGERY DATE

- ☐ READ YOUR BOOK AND MATERIAL
- ☐ VIEW YOUR VIDEO/ CD/ DVD/ WEBSITE
- ☐ PRE-HABILITATION
- ☐ ARRANGE FOR BLOOD
- ☐ MEDICAL CHECK UP
- ☐ DENTAL CHECK UP
- ☐ ADVANCE MEDICAL DIRECTIVE
- ☐ PRE-ADMISSION TESTING
- ☐ FAMILY SUPPORT REVIEW

**Physician's Name:** _____ **Patient's Name:** _____

**Physician's Signature:** _____ **Patient's Signature:** _____

**Date:** _____ **Date:** _____