

## PATELLO FEMORAL ARTHROPLASTY ( PFA )

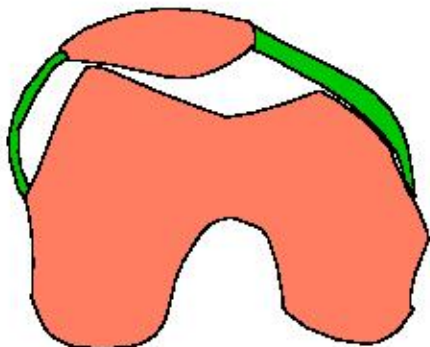
### INTRODUCTION

Malalignment of the limbs, sequelae of fracture, traumatic or congenital dislocation, anatomical abnormalities ( abnormal femoral torsion or Patellofemoral dysplasia ) lead to some degree of tilt and maldistribution of forces on the patella and lead to patellofemoral arthritis. Patellar resurfacing using a metal prosthesis may be necessary in patients with patellofemoral osteoarthritis.

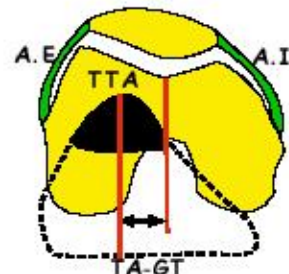
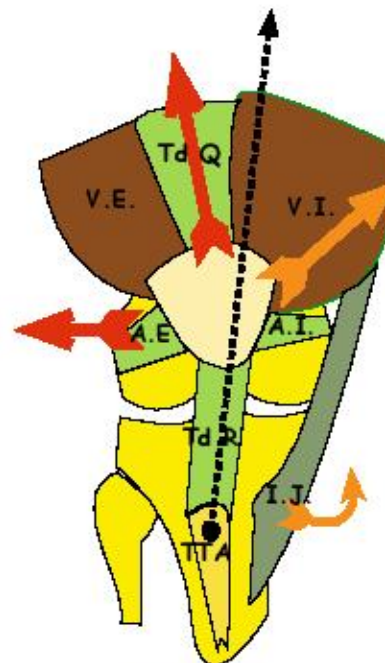
When the medical treatments ( antalgic and anti-inflammatory medications, heel wedges, off-loading knee braces, weight reduction, activity modification, the use of ambulatory aids , intra-articular corticosteroid or viscosupplementation (eg, Synvisc; Genzyme Corp; Cambridge, Massachusetts, and Hyalgan; Sanofi-Synthelabo; New York, NY) injections, physiotherapy have failed, time is coming to implant a prosthesis to relieve pain and to restore knee function.

### ANATOMY

Patella is situated in front of the tibio-fémoral joint articulating with the trochlea groove of the fémur. This bone is important in the stability and force of the function of the knee. The primary soft tissue static stabilizers of the patellofemoral joint are the medial ( A I ) and lateral patellofemoral ligament ( A E ), and the extensor system : vastus medialis ( V I ) , quadriceps ( Td Q ) and patellar tendon ( Td R ) fixed on the Tibial tubercule ( T T A ) .



In case of malalignment , hyper pressure and maltracking lead to cartilage lesions and patellofemoral osteoarthritis after many years.



## INDICATIONS

Patellofemoral arthroplasty to be appropriate when there was clinical and radiological evidence of severe and established arthritis in the patellofemoral compartment, with a well-preserved and pain-free tibiofemoral joint

It possible to implant such a prosthesis in conjunction with measures to obtain satisfactory alignment of the extensor mechanism since persistent lateral malalignment, if not corrected, will cause lateral tilt, subluxation and early wear of the patellar button. Tibial tubercle osteotomy, HTVO, tensioning vastus medialis or retinacular ligaments.

A Uni compartmental Arthroplasty may also be associated in case of medial femoro tibial arthritis.

This type of prosthesis offers a reasonable alternative to total knee replacement in patients with isolated patellofemoral disease, particularly in those who are considered too young for a total joint replacement.

The procedure is not suitable for patients who have evidence of algodystrophy, regional pain syndrome, or for those who have substantial patella infera, or a fixed flexion deformity less than 110°.

## PATELLO FEMORAL PROSTHESIS

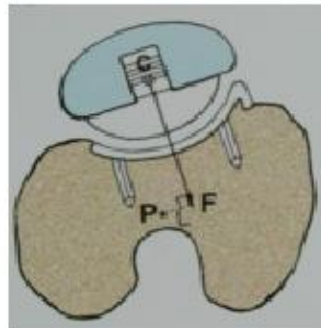
Since the first report of a patellofemoral replacement by McKeever in 1955, the PFA evolved through several different patellofemoral designs.

The goals of patellofemoral realignment surgery are to create both a stable environment for optimal extensor mechanism performance and an appropriate load transmission for optimal cartilage wear and joint loading

it is made of :

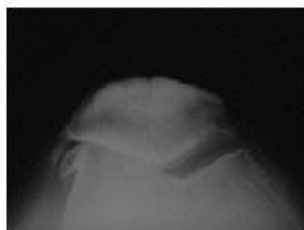
- a metal femoral trochlea, fixed on the femur with or without cement .
- a polyethylen patella button cemented or not at the posterior surface of the patella.

Many designs are available. Here is the "GRAMMOND prosthesis" ( DePuy - USA )

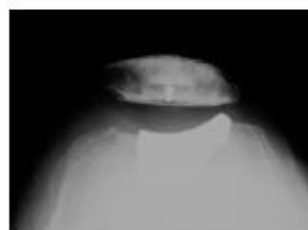


**Surgery is performed through a medial parapatellar incision and a medial incision of the capsule. The femoral component is cemented or not onto the femoral groove and the patellar component is cemented after cutting bone.** A formal lateral retinacular release is performed

**Immediately aftersurgery, range of movement exercises (0° to 90°) were started as tolerated by the patient.**



arthrosis



prosthesis



## CHECK-UP BEFORE SURGERY

In order to detect vital risk for anesthesiology, and to assess a potential risk of post-operative complication in a short or long term follow-up, a medical questionnaire checking list is needed to be accepted by the surgeon and his team.

Risk factors influencing complications are :

### factors increasing risk of infection

- **Obesity** is associated with a higher risk of infection. Individuals with a body-mass index (BMI) >35 had a 2.1 times greater risk of infection compared with those with a lower BMI
- **patients with osteonecrosis and rheumatoid arthritis** had a 2.2 times greater risk of infection compared with those with osteoarthritis.
- **diabetis** :
- **previous infection of the joint**
- **arteritis**
- **tooth infection** : a panoramic dental X-Ray and treatment of dental problems is necessary to eliminate a potential risk of infection

### factors increasing risks for medical complications

- American Society of Anesthesiology (ASA) scores > 3 is at risk.
- Previous algo neuro dystrophy may be a recurrent risk .
- Previous deep venous thrombosis is a predisposing factor to recurrent episode

No blood transfusion is necessary.

## POSTOPERATIVE CONSIDERATIONS

Surgical technique is an only one part of the success of TKA ; The role of superior pain management, better soft-tissue techniques, more advanced anesthetic techniques, more aggressive physiotherapy and perhaps, most importantly, improved patient education and enhanced rehabilitations are as important components in improving stability, function, component longevity, and patient satisfaction.

You will stay 7 days in the surgical department of orthopaedics and then 14 days in the rehabilitation center.

### Day of operation

The patient is mobilised using a CPM at approximately 4 h post-op, under physiotherapist supervision. Straight leg raising exercises are encouraged, and a pillow is placed under the heel of the operated leg to allow the knee to rest in a fully extended position.

Intravenous patient- controlled analgesia (PCA) systems or other analgesic shedule plan is commenced for overnight analgesia.

### First postoperative day

The postoperative haemoglobin level is measured. The PCA was discontinued, but only after commencement of the pre-prescribed analgesic regimen, to ensure that pain levels is well controlled throughout the recovery period. Regular anti-emetics are continued, and the patients undergoes further range of motion, quadriceps, and hamstrings exercises twice a day under control of the physiotherapist. Walking with a frame is started.

### Second , third, fourth postoperative day

The dressing was reduced to a light non-adherent dressing, and the drainage removed. The patients continued to walk with the assistance of a frame or walking sticks. CPM is used twice a day. Active exercises are encouraged.

### fifth and subsequent postoperative days

The patients is encouraged to climb steps, to rollskate while sitting, and to walk safely with two sticks and climb stairs independently.

### Seventh day

transfer to the rehabilitatin center where exercises of muscles reinforcement, and stability are performed.

**NB:** a full physiological and functional recovery usually requires around 3 months.

## COMPLICATIONS

Even with a careful act performed by perfectly trained team, any complications may happen the same as in every surgical act. These are exceptional ; The list below is not exhaustive.

- **Infection** is one of the most dreaded complications of knee replacement. The efficacy of prophylactic measures and risk factors play an important role.  
prophylactic measures: laminar flow, body suits, drains, surgical time (length), surgeon volume, and hospital volume the use of preoperative antibiotics.  
detection and treatment of risk factors : Obesity, diabetes, pre-op treatment of dental or urinary infection.

- **Skin necrosis** should well controlled with adapted local healthcare . Its prevention is realised with a central skin incision. If not controlled, the risk is to transmit an infection to the prosthetic joint. A reoperation is necessary.

- **stiffness** Outcome variation in range of motion exists despite excellent surgical technique, refined implants, and uncomplicated postsurgical recovery. Mobilisation under anesthesia without opening the knee is sometimes necessary at the end of first week if flexion is still inferior to 90° and painful.

- **phlebitis** : preventive measure ( early mobilisation, anti-thrombotic socks, low Weight Molecular Heparin anti-embolic prophylaxis for 6 weeks) and systematic echodoppler control at 7th day allow the risk to be minimize ; in case it happens, an anticoagulation treatment is started and rehabilitation is slowed.

## LONG TERM FOLLOW-UP

- **wear** is not a short term problem: a regular follow-up control is necessary every three years. Overweight and overuse are favorable factors for bone loosening

- **loosening** is not a short term problem : a regular follow-up control is necessary every three years . Overweight and trauma are favorable factors for bone loosening

### - post-operative requirements

- **Do not overweight** to prevent wear and loosening.

- Help with your arms to stand up from a chair, and climbing stairs to lessen the strains on the prosthesis.

- Tell your doctor or dentist that you have a prosthetic knee so that in case of infection he gives you adequate treatment with antibiotics to prevent an infection of the prosthetic knee that may occur even years after your surgery

- Do exercises at home and at least walk 30 mn a day. Sports activities are possible according to comorbidity, age, range of motion and stability, ; waiting 3 to 6 months after a TKA is the current recommended waiting time for return to sporting ( [see special form](#) ).