

PATIENT INFORMATION MANUAL



TOTAL KNEE REPLACEMENT Using COMPUTERISED NAVIGATION

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Anatomy of the Knee Joint >>>



To understand how the knee problems occur, its important that we understand the anatomy of the knee ie how the parts work together

Lets begin with the basics of the knee anatomy

The knee joint is formed by the conjunction of three bones, the thigh bone or the femur, the shin bone or the tibia, the knee cap or the patella.



The meeting surfaces of these bones are capped by cartilage. This cartilage is a cushioning and lubricating system on the weight bearing area of the knee. There are two important ligaments, the ACL and the PCL which join the two bones together. Also the movement of the knee is controlled by several ligaments and muscles. The important muscles include the quadriceps muscles in the front and the hamstring muscles in the back.



Schematic movement at the knee showing flexion and extension.

What is arthritis >>>

Arthritis means destruction of the joint. What is the thing that is destroyed? It's the cartilage that caps the two meeting surfaces of the bones taking part in the joint.

There are several forms of arthritis

- Rheumatoid arthritis- this is a multi joint arthritis. its generally genetic and it involves many joints big and small together and it affects the body as a whole.
- Osteoarthritis- this is a mechanical wear of the joints much in the same way as the wheels of the car would wear out. This is something that we see most commonly in the knees. This is more common in the women and it starts by age of fifty.
- Secondary osteoarthritis- this is a type of osteoarthritis which occurs at a younger age than expected. This is because of some incident which affects the joint like some trauma/fracture or ligament injury. It accelerates the wear of the knee.

SYMPTOMS OF OSTEOARTHRITIS-WHEN MOVEMENT HURTS

The symptoms of osteoarthritis of the knee are five fold

- Pain with movement and finally pain at rest also
- Stiffness and crepitus.
- Swelling off and on
- Instability- occasional sense of giving way of the knee.
- Deformity or gradual bending of the knees - the knees do not look fully straight.

Treatment options

The treatment options include medicines, in the early forms of the disease and supportive measures like walking stick. Exercises are recommended **AT ALL STAGES** of the disease.

WHO NEEDS TOTAL KNEE REPLACEMENT

- Knee pain that limits your every day activity. You find it difficult to climb stairs, or walk out doors
- Moderate pain persisting at rest
- Chronic inflammation of knee persisting despite treatment
- Bending of knees ie deformity
- Stiffness or inability to bend or straighten your knees
- Failure to obtain pain relief from the non steroidalanti inflammatory drugs.

WHAT IS THE AGE OF KNEE REPLACEMENT

There is no such fixed age but a person is more likely to benefit more when he or she is still active and this has to be assessed from case to case basis

HOW LONG WILL THE IMPLANT LAST

Navigation increases the life of the implant by its precision. we also use vacuum assisted cementation techniques to increase the life of the implant, but still life of the implant depends on many factors.

BENEFITS OF TOTAL KNEE REPLACEMENT

- Significant reduction in the joint pain or no joint pain
- Increased painless mobility
- Correction of deformity
- Restoration of confidence

HOW LONG IS THE HOSPITAL STAY AND RECOVERY

One is expected to stay for a 3 days in the hospital. One stands up the same day of surgery and walks with a walking aid like a walker the next day. One uses a walker for about one weeks. Climbing stairs start in a week. Sitting on a chair and commode starts in four to five days. One is discharged three days after surgery with walker. Independent walking starts by a month.

The Implants >>>

The various components of the implant which include the tibialfemoral and the patellar surfaces work together in congruity and in tandem to bring about painless motion with minimum friction



REALISTIC EXPECTATIONS AFTER KNEE REPLACEMENT SURGERY

Its important to understand what the procedure can do and what it can not. Total knee replacement is expected to bring about dramatic reduction in knee pain and bring about painless mobility but it can not make you an athlete. You should not sit on ground after total knee replacement.

ROLE OF COMPUTER NAVIGATION IN KNEE REPLACEMENT

Computerized Navigation is a technology used in knee replacement which maps the patients knee and records the real time axis of movement. It precisely calculates the bone cuts and the placements and rotation of the implants. It also gives a simulation to various situations and allows the surgeon to select the best situation.

It is different from the conventional knee replacement which puts the implant in a pre determined way but this navigation puts the implant as per the specific suitability of every patient. The navigation machine ORTHOPILOT uses infra red diodes, computer, sophisticated soft ware, the specific camera to record and suggest the real time patient specific information .



Proven in USA, EUROPE and ASIA PACIFIC, this navigation system introduces far more accurate implantation and precision technology. This drastically improves the results.

At the beginning of the surgery the surgeon specifically positions small infra red transmitters on the leg and the real time mapping of the knee bones and the various movement are done. This data is used by the computer to create the real anatomic picture of the knee and guides the surgeon to the utmost precise bone cuts, soft tissue balancing implant position.

MINIMALLY INVASIVE KNEE REPLACEMENT USING THE ORTHOPILOT HAS REVOLUTIONIZED KNEE REPLACEMENT

ORTHOPILOT also has very sophisticated soft ware for MINIMALLY INVASIVE KNEE REPLACEMENT.

This makes the surgery possible with small incision and much faster recovery.

WHAT IS THE ADVANTAGE OF ORTHOPILOT IN KNEE REPLACEMENT SURGERY?

The results of knee replacement are entirely based on precision ie the accuracy or the fineness of the surgery.

Orthopilot is the 4th generation navigation system which has the worlds most advanced soft ware for accurate bone cuts and ligament balancing and hence makes the surgery very precise and predictable.

WHAT ARE THE ADVANTAGES OF MINIMALLY INVASIVE COMPUTER ASSISTED KNEE REPLACEMENTS?

The word minimally invasive in knee replacement surgery DOES NOT mean key hole surgery.

Minimally invasive means its a anatomy preserving surgery. the skin incision is smaller, the quadriceps muscle is not cut, the surgery being done through subvastus approach. the recovery is faster and pain is less. our Orthopilot has special instruments for the same.

WHAT IS THE ADVANTAGE OF THE CRUCIATE RETAINING KNEE?

In the cruciate retaining knee, the posterior cruciate ligament is preserved, this is a high performance knee as cruciate ligament is important in femoral roll back and full bending of knee along with being sense organ of knee to sense position sense.

IS FEMALE KNEE DIFFERENT FROM THE MALE KNEE?

Yes sometimes the female knee is narrower than the male knee and we have special implant for the female knee called the COLUMBUS NARROW.



Dr. Santosh Kumar

Dr. Santosh Kumar graduated and post graduated from the prestigious Jawaharlal Institute of Postgraduate Medical Education and Research, (JIPMER), Pondicherry, the premier med school under the Government of India .

He also worked in the same institute as orthopaedic surgeon under the directorate general of health services Government of India.

He was the youngest surgeon in this country to have started doing independent joint replacements.

He has been trained at the MAX HOSPITAL New Delhi in joint replacements, by the KLEOS FOUNDATION in phoenix, and the delta foundation of Australia.

He has been trained in Vienna, Austria in computer navigated knee replacement.

He heads the Poorva International Orthopaedic Foundation.

Certificate of International Excellence in Computer Assisted Knee Replacements by Aesculap Academy Germany.



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