

Learn All About : LIVING WITH

# OSTEOARTHRITIS

Diagnosis, Treatments & Prevention



**Patient Guide**  
Authentic Medical Facts



12,000+ Patients Treated Successfully



**Dr. Santosh Kumar**

MBBS, D.Ortho, M.Ch.[ Ortho ],  
Specialist Orthopaedic Surgeon



POORVA ORTHOPAEDIC FOUNDATION

# About Dr.Santosh Kumar



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Head : Department of Computer Assisted Joint Replacement Surgery : BELLE VUE CLINIC  
JOINT REPLACEMENT SURGEON, ARTHRITIS FOUNDATION,INDIA  
Subspecialty- Knee Joint- Total Knee Replacement, Knee Arthroscopy.  
Fellowship in Joint Replacement, Max Hospital, New Delhi  
TRAINED IN COMPUTER ASSISTED JOINT REPLACEMENT FROM AUSTRIA  
Trained in Revision Knee and Hip Replacements  
Trained in Complex Joint Replacement from the DELTA FOUNDATION of AUSTRALIA

## INTRODUCTION

Dr Santosh Kumar and his team are leading knee specialists in Kolkata. He is one of the best doctors in Knee replacement today. Knee replacements are routine in Kolkata (Calcutta) today and Dr Santosh Kumar has been instrumental in making international quality knee surgery affordable to the mass.

HE HAS EXPERIENCE OF MORE THAN TWO THOUSAND KNEE REPLACEMENTS



## GRADUATION

MBBS – from Jawaharlal Institute of Post Graduate Medical Education and Research (JIPMER, Pondichery) Directorate General of health Services, Govt. of India from 1995 to 2001.

HOUSE JOB in Department of Orthopedics, JIPMER from April 2001 to June 2002.

## POST GRADUATION

D Orth from Jawaharlal Institute of Post Graduate Medical Education and Research (JIPMER, Pondichery) Directorate General of health Services, Govt of India from 1st April to 31st March 2005.

## BONE BANK JIPMER

In charge bone bank JIPMER from April 2004 to March 2005. TRAUMA COURSE online of ADVANCED TRAUMA LIFE SUPPORT at CMC Vellore January 2005.

Clinical Research Fellow in Orthopaedic Oncology at JIPMER Hospital from April 2005 to June 2005.

## REDISTRAR ORTHOPEDICS

Whole time registrar in Orthopaedics at Bhattacharyya Orthopaedics and Related Research Center (P) Ltd., Narayanpur, Kolkata – 136 from 1st July 2005 to 31st June 2007.

## MCh ORTH

Passed MCh ORTH from the University of Seychelles American Institute of Medicine, March 13th 2008.

MCh Thesis : a study into the controversial aspects of interlocking nail of femur.

## TRAINING

DELTA COURSE for advanced aspects of complex primary and REVISION knee replacement. At MAX Hospital, New Delhi in Sept, 2008.

FELLOWSHIP in KNEE REPLACEMENT in Max Hospital, New Delhi from Sept, 2008 with Dr. S.K.S. Marya for total of 54 knee replacement surgeries.

AO SPINE Training in Bombay July 2009.

AO TRAUMA Training 8th to 10th Oct, 2009, Kanpur

DELTA COURSE for Advanced Aspects of Complex Primary and Revision Knee Replacement, at SUN SHINE Hospital, Hyderabad in Nov, 2009.

Ranawat joint replacement course in Jan 2010 Kolkata

Trained in complex joint replacements, at Bangkok. Jan 2011 by DEPUY institute at Bangkok

Trained in revision joint replacements by DE PUY institute at Chennai, June 2011.

Medtronic Academy course in cervical spine in October 2011

Trained in computer assisted knee replacement at Fortis Chandigarh in Jan 2012

AO advanced trauma course in March 2012 at Kolkata

## TRAINING [ continued ]...

Trained in complex joint replacements in USA , PHOENIX, by KLEOS foundation ( Smith and Nephew educational body) April 2012

Trained in minimally invasive spine surgery by Medtronic Academy foundation May 2012

Trained in computer assisted navigation technology for knee replacement in Vienna Austria, in June 2012.

## PAPERS PUBLISHED / PRESENTED

Bilateral fracture dislocation of Hip, pipkin 1 – its management and the result – published in the West Bengal journal of orthopaedics – vol 20, number 2, September 2006, myself as Primary author.

The role of total hip replacement in ankylosing spondylitis patients – under consideration for publication in the Indian journal of orthopaedics.

OPPONENSPLASTY – a method to reconstruct the post polio paralytic thumb – presented at the midcon 2005, West Bengal Orthopaedic Association.

Follow up of 24 total hip replacements in ankylosing spondylitis patients presented at the annual conference of the West Bengal Orthopedics Association 2006.

## AWARDS RECEIVED :

Dr.Santosh Kumar received Certificate of International Excellence in Minimally Invasive Computer Assisted Joint Replacement Surgery by the ASCULAP ACADEMY, Germany



# Titles

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## OSTEOARTHRITIS

Diagnosis, Treatments & Prevention

## Part B

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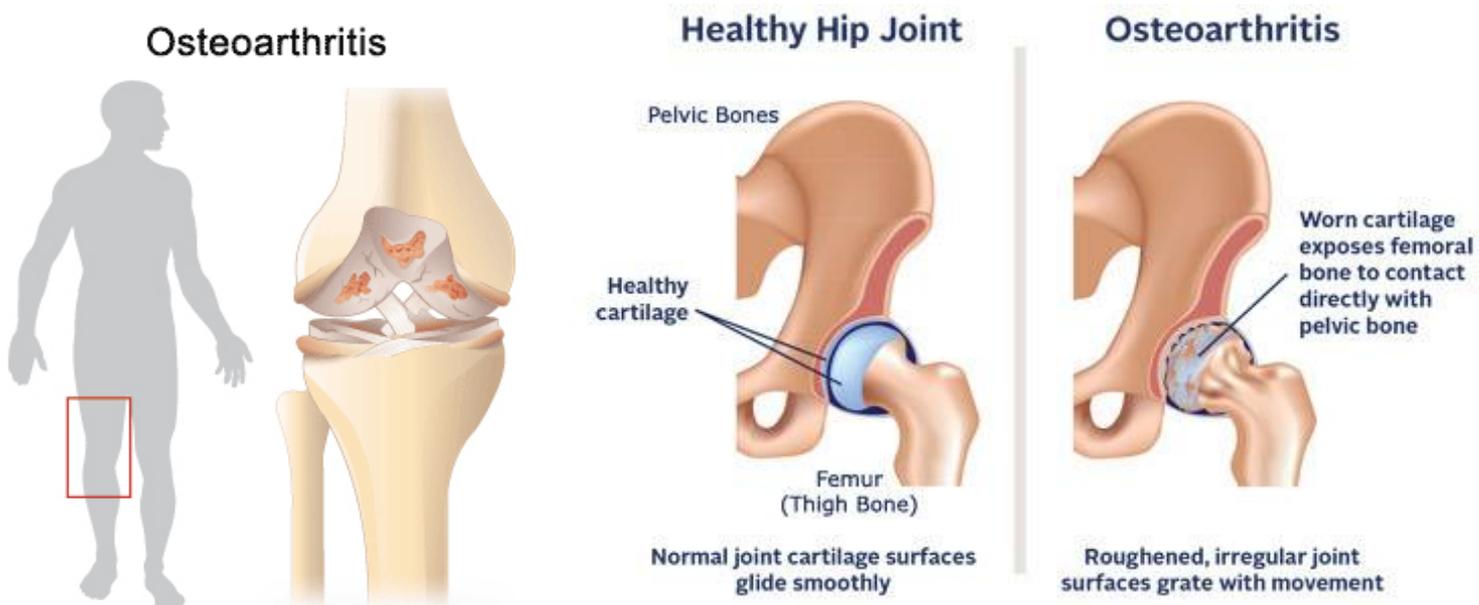
# SECTION A



# Osteoarthritis : An Introduction

Osteoarthritis is the most common type of joint disease, affecting more than 20 million individuals in the United States alone. The numbers are high in India too. It is the leading cause of chronic disability in those older than 70 years. It can be thought of as a degenerative disorder arising from the biochemical breakdown of articular (hyaline) cartilage in the synovial joints. However, the current view holds that osteoarthritis involves not only the articular cartilage but the entire joint organ, including the subchondral bone and synovium.

- OA is the most common form of arthritis and the most common joint disease
- Most of the people who have OA are older than age 45, and women are more commonly affected than men.
- OA most often occurs at the ends of the fingers, thumbs, neck, lower back, knees, and hips.
- OA is a disease of joints that affects all of the weight-bearing components of the joint : Articular cartilage, Menisci, Bone

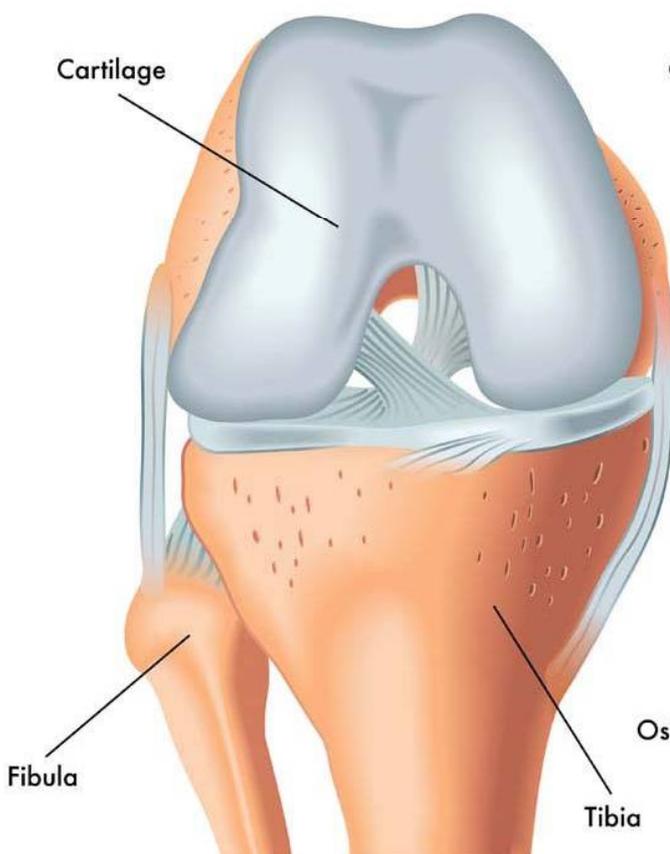


# Osteophytes

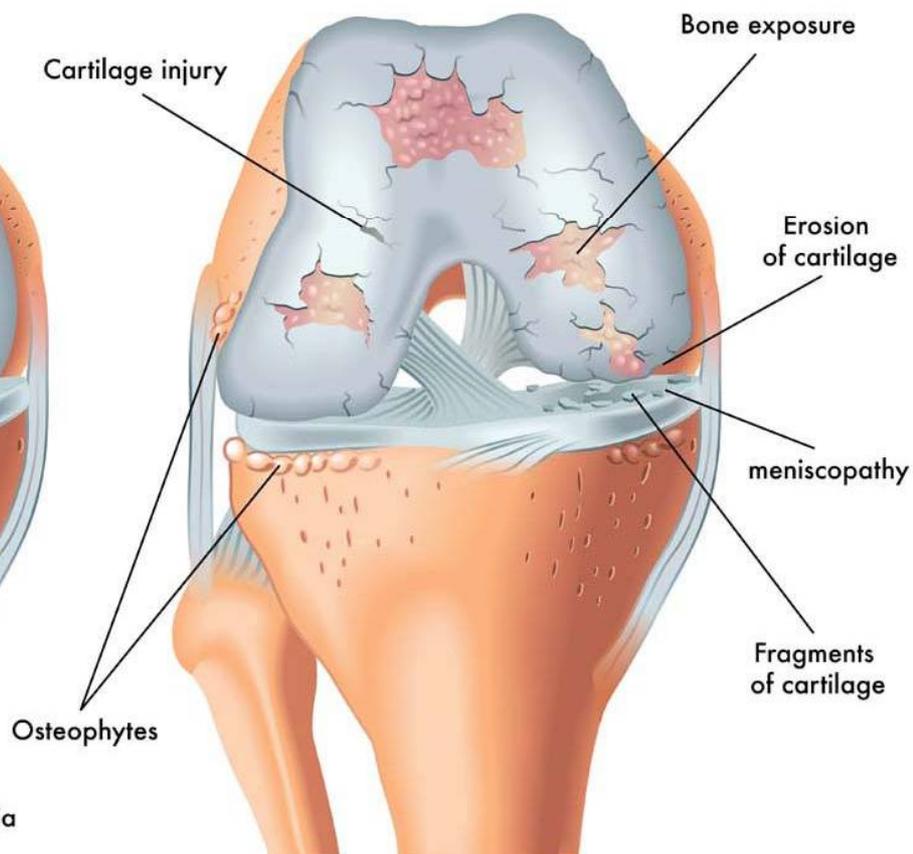
The repair mechanisms of tissue absorption and synthesis get out of balance and result in osteophyte formation and bone cysts

Osteophytes are bony lumps (bone spurs) that grow on the bones of the spine or around the joints. They often form next to joints that have been affected by osteoarthritis. Osteophytes can grow from any bone, but are most often found in the: Neck, shoulder, knee, lower back, fingers or big toe, foot or heel

Normal knee



Arthrosis of the knee



# Articular Cartilage

Articular cartilage is the main tissue affected .

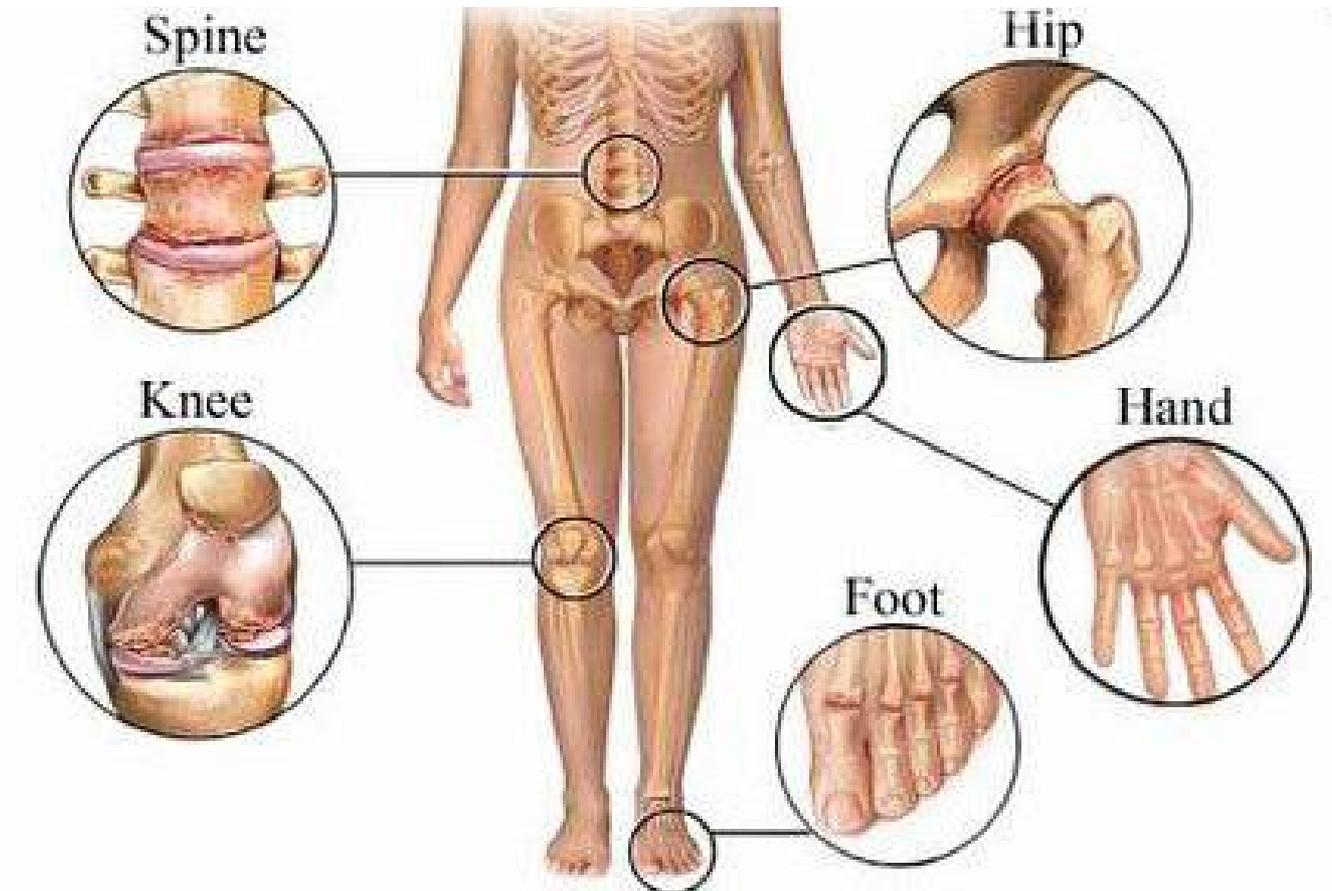
Osteoarthritis results in:

- Increased tissue swelling
- Change in color
- Cartilage fibrillation
- Cartilage erosion down to subchondral bone

Histology of Human Normal and Osteoarthritic Cartilage



# Areas commonly affected



## Commonly Affected Areas

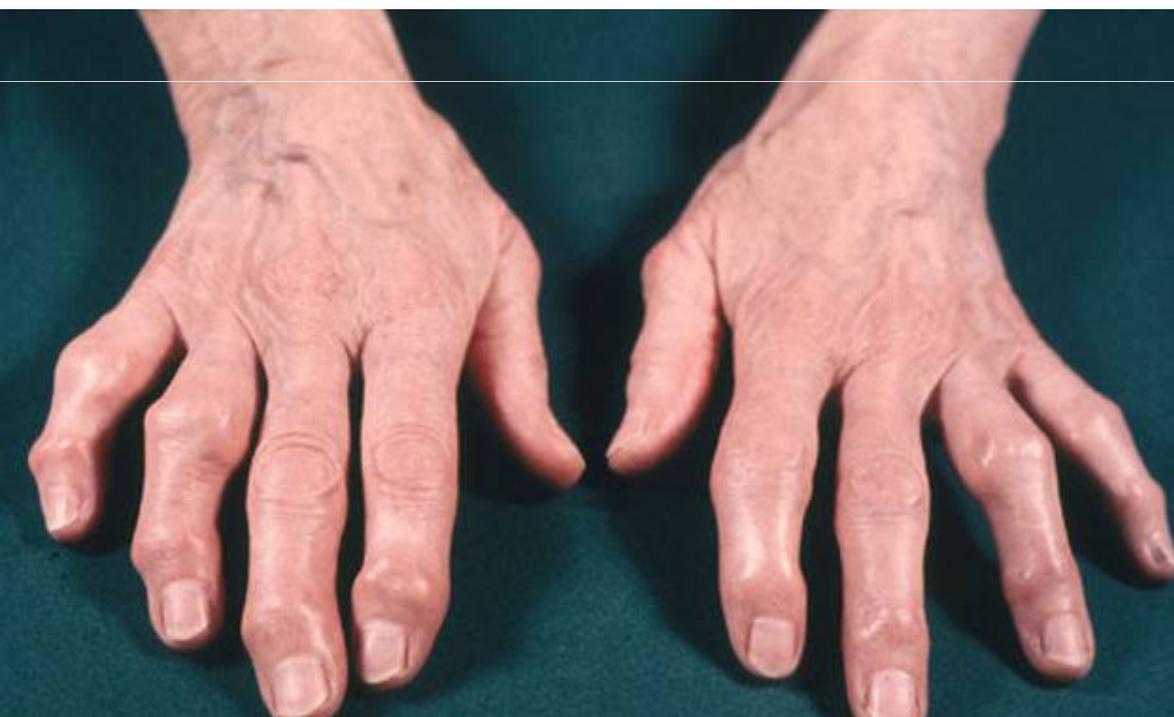
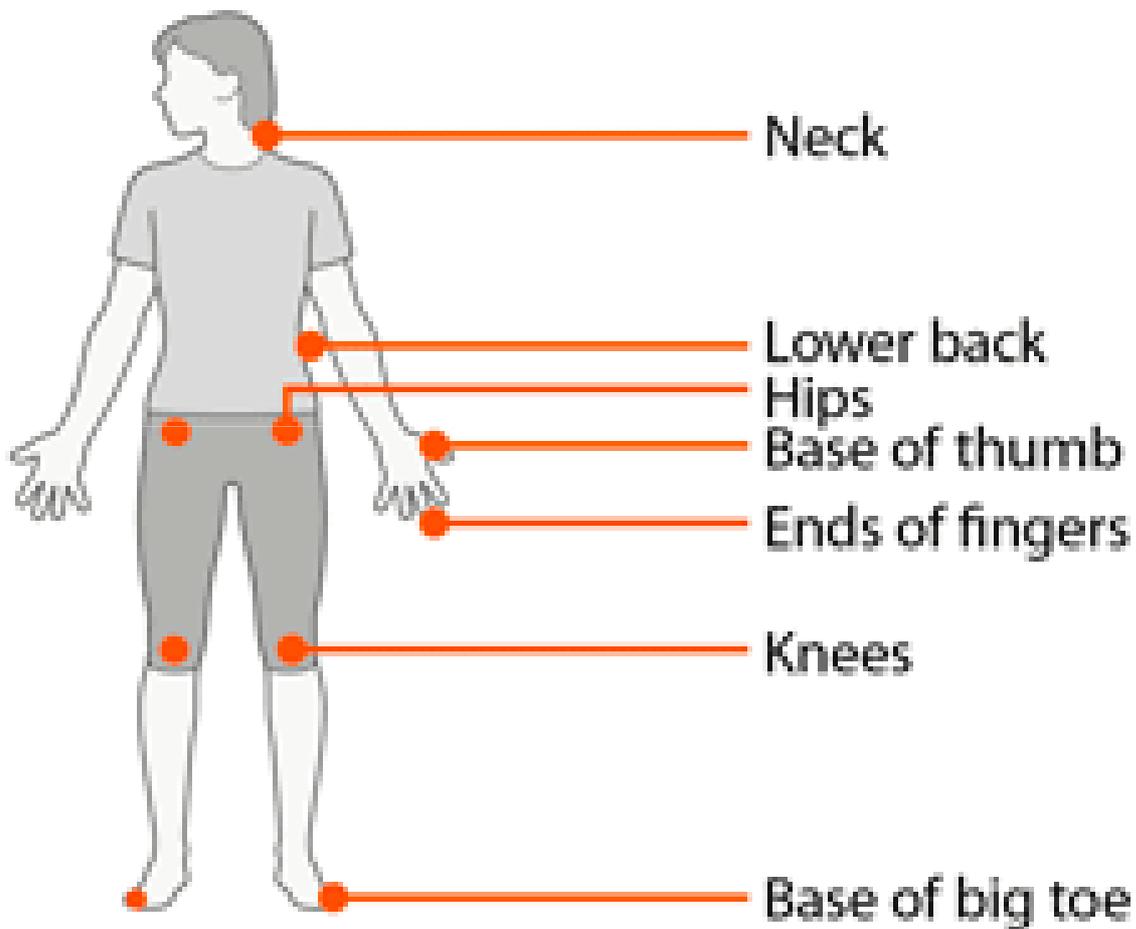
- Hips
- Knees
- Feet
- Spine
- Hands (Interphalangeal joints)

## Uncommonly affected Joints

- Shoulder
- Wrist
- Elbow
- Metacarpophalangeal joint
- TMJ
- SI
- Ankle



# Anatomical Distribution



Severe osteoarthritis of the hands affecting the distal interphalangeal joints (Heberden's nodes)



# Risk Factors

Certain factors are known to increase the risk of OA. Some of these factors are beyond your control. However, you can reduce the risk of developing OA from damage caused by lifestyle factors such as: overuse of joints, obesity, posture.

## Family History

Osteoarthritis (OA) sometimes runs in families. If your parents or siblings have OA, you're more likely to as well. Doctors don't know why OA runs in families. No gene has yet been identified as the cause of OA. Yet, many genes may contribute to OA risk.

## Age

OA is directly connected to wear and tear on joints. It becomes more common as people get older. More than one-third of adults over the age of 65 have symptoms of OA.

## Gender

OA can affect both men and women. It's slightly more common in men until age 45. After that, it's more common in women. This may reflect the different joint stressors experienced by men and women at different ages.

## Previous Injury

People who have injured a joint are more likely to develop OA in that joint.

## Obesity

Being overweight or obese puts increased stress and strain on the body. This increases the risk of OA in the joints. Obese and overweight people are particularly susceptible to OA in the: knees, hips, spine. However, obesity is also associated with OA in non-weight-bearing joints, such as those in the hands. This suggests that extra mechanical stress on the joints or weight alone may not increase OA risk.

## Certain Occupations

Repetitive actions can put undue stress on joints. Occupations that include such repetitive actions can increase OA risk. Job tasks associated with an increased risk of OA include: kneeling or squatting for more than an hour a day, lifting, climbing stairs, walking. People who regularly participate in joint-intensive sports may also have an increased OA risk.

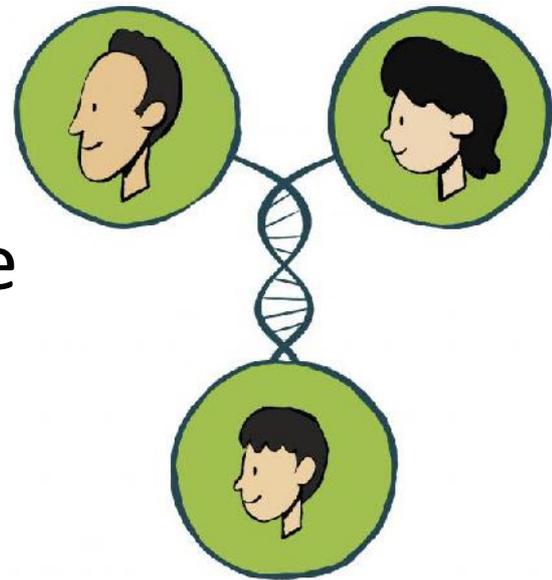
## Poor Posture

Sitting or standing improperly can strain your joints. This can increase OA risk.



## Risk factors you cannot change

- Gender Factor
- Family history of disease
- Age Factor



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## Risk Factors you can change

- Obesity
- Overuse of the joint
- Major injury
- Muscle weakness



# Symptoms

The most common signs and symptoms of osteoarthritis include:

## **Pain**

Pain is the most common symptom of osteoarthritis. It is usually made worse by moving the joint or placing weight on it, and it is usually relieved by rest. As the condition progresses and inflammation develops, pain may become constant.

## **Stiffness**

Stiffness of the affected joint is often noticed first thing in the morning, and after resting.

## **Swelling**

Swelling, which is sometimes warm to touch, may be noticeable in an arthritic joint.

## **Deformity**

Deformity can occur with osteoarthritis due to bone growths and cartilage loss. Bone growths in the end joints of the fingers are called Heberden's nodes. Bouchard's nodes are bone growths in the middle joints of the fingers. Degeneration of knee cartilage can result in the outward curvature of knees (bow-leggedness).

## **Crepitus**

Crepitus (a crackling sound or grating feeling) may be noticed when an arthritic joint is moved. This is caused by bone rubbing against bone or roughened cartilage.



# Where do the symptoms appear ?

OA most often occurs in the following areas:

## **Knees**

Because knees are primarily weight-bearing joints, they are very commonly affected by OA. If you have OA in your knees, you may feel that these joints are stiff, swollen, and painful, making it hard to walk, climb, and get in and out of chairs and bathtubs.

## **Hips**

OA in the hip can cause pain, stiffness, and severe disability. Hips both support the weight of the body and enable movement of your lower body. When you have OA in your hips, you may also feel the pain in your groin, inner thigh, or knees. OA in the hip can lead to difficulty moving, bending, and walking.

## **Fingers and Hands**

When OA occurs in hands and fingers, the base of the thumb joint is commonly affected and people experience stiffness, numbness, and aching. Other symptoms of hand and finger OA include:

Heberden's nodes: small bony knobs that appear on the end joints of fingers

Bouchard's nodes: small bony knobs that appear on the middle joints of fingers

## **Spine**

If you have OA of the spine, you may experience stiffness and pain in the neck or in the lower back. Sometimes arthritis-related changes in the spine can put pressure on the nerves, causing weakness or numbness in your arms or legs.



# Major Types of OA

Historically, osteoarthritis has been divided into primary and secondary forms. Secondary osteoarthritis is conceptually easier to understand: It refers to disease of the synovial joints that results from some predisposing condition that has adversely altered the joint tissues (eg, trauma to articular cartilage or subchondral bone). Secondary osteoarthritis can occur in relatively young individuals.

The definition of primary osteoarthritis is more nebulous. Although this form of osteoarthritis is related to the aging process and typically occurs in older individuals, it is, in the broadest sense of the term, an idiopathic phenomenon, occurring in previously intact joints and having no apparent initiating factor.

Some clinicians limit the term primary osteoarthritis to the joints of the hands (specifically, the DIP and PIP joints and the joints at the base of the thumb). Others include the knees, hips, and spine (apophyseal articulations) as well.

As underlying causes of osteoarthritis are discovered, the term primary, or idiopathic, osteoarthritis may become obsolete. For instance, many investigators believe that most cases of primary osteoarthritis of the hip may, in fact, be due to subtle or even unrecognizable congenital or developmental defects.

- Primary or Idiopathic
  - Most common type
  - Diagnosed when there is no known cause for the symptoms
- Secondary
  - Diagnosed when there is an identifiable cause
    - Trauma or Underlying joint disorder
- Each of these major types has subtypes



# Diagnosis

For most people, a diagnosis of OA begins with a medical history and a physical exam. The physical exam will look for:

- noises when you move your joints
- swelling in the joints
- loss of range of motion
- tenderness in the joints
- pain during movement

Your doctor will also ask questions about when you have pain and how symptoms are affecting your daily life.

## Imaging Tests for Osteoarthritis

Imaging tests are important both for diagnosing OA and assessing its severity.

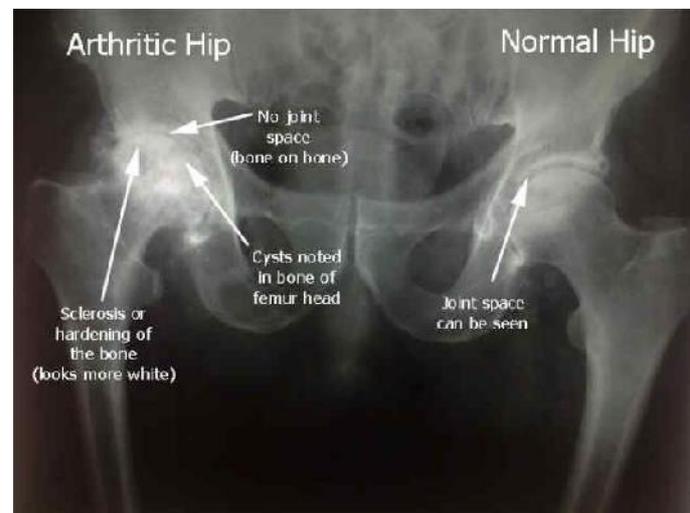
### X-Rays

An X-ray can't show cartilage loss directly. However, it can show changes in the spacing between the bones. This is one of the most obvious signs of OA. As cartilage degrades, the bones move closer together.

X-rays can also allow doctors to identify:

- excess fluid in the joint
- bone damage
- bone spurs

X-rays may not show early destructive changes that are better seen with MRI technology. However, they are often used to track the progression of OA.



## Stages of knee OA



Stage I

Stage II

Stage III

Stage IV



# Diagnosis 2

## Magnetic Resonance Imaging

In diagnosing arthritis, an MRI (magnetic resonance imaging) scan can be helpful. An MRI scan is a test that produces very clear pictures of the human body without the use of X-rays. MRI uses a large magnet, radio waves, and a computer to produce these images.

Using MRI, your doctor can see soft tissue damage. It is possible to directly visualize changes not only in bone but also in: Cartilage, tendons, ligaments.

- **To detect arthritis.** MRI can be helpful in evaluating joint damage, particularly damage to the spine, knee, or shoulder.
- **To track the progress of disease.** In repeat scans, MRI can determine how fast the arthritis is progressing.



Osteoarthritis Knee MRI



# Diagnosis 3

Lb tests can sometimes be useful in ruling out other causes of joint pain.

## Lab Tests

Blood and urine tests can not diagnose OA. However, they can be used to help confirm a diagnosis by ruling out other causes of arthritis such as:  
another type of arthritis (infectious, autoimmune, inflammatory, metabolic)  
other health problems (endocrine disorders, autoimmune diseases)

Blood tests can be used to identify:

- white cell counts
- inflammatory markers
- specific antibodies associated with RA

Urine tests can check for levels of uric acid and other markers of inflammation.

## Joint Fluid Analysis

Joint fluid is also called synovial fluid. It can be obtained by inserting a needle into the joint space. The fluid can be examined for markers of inflammation. It can also identify other causes of joint inflammation, such as infection or gout.

### Synovial Fluid Analysis

	NORMAL	Non-Inflammatory	Inflammatory	Septic	Hemorrhagic
Clarity	Transparent	Transparent	Translucent	Opaque	Bloody
Colour	Clear	Yellow	Yellow	Dirty/Yellow	Red
Viscosity	High	High	Low	Variable	Variable
WBC/mm <sup>3</sup>	<200	200-2,000	2000-10,000 (up to 100,000)	>80,000	200-2,000
PMNs%	<25%	<25%	>50%	>75%	50-75%

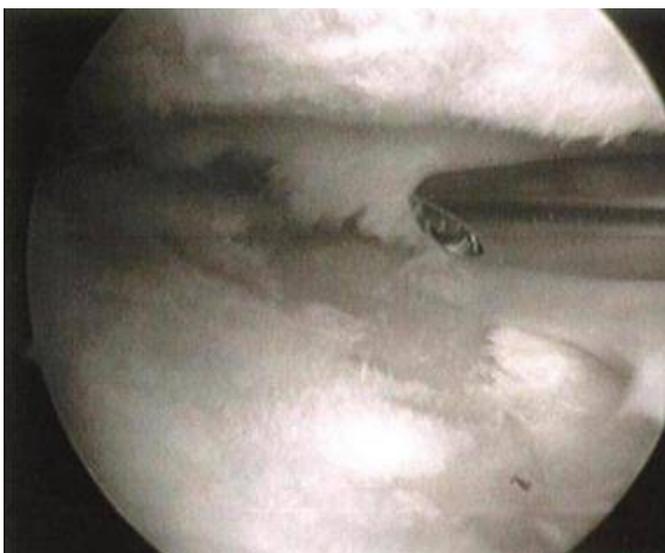
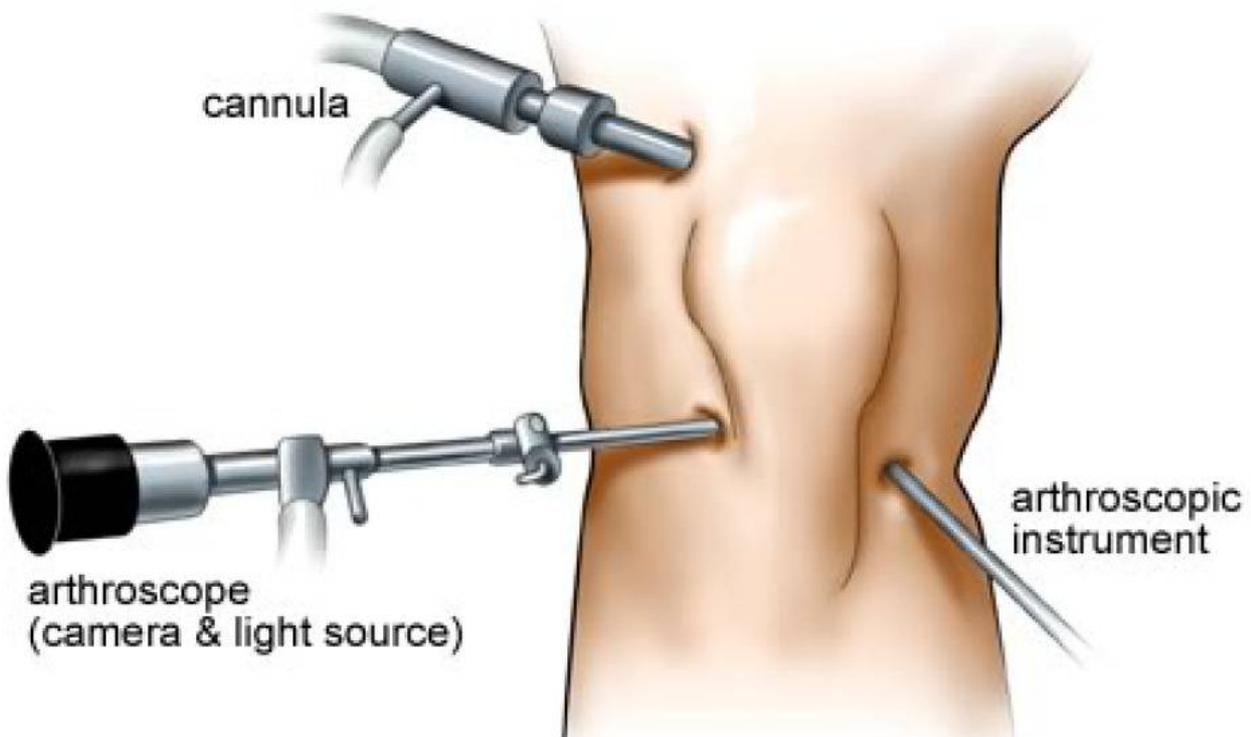
Depending on the clinical scenario, synovial fluid is analysed for:

- Cell count and differential
- Crystals
- Culture and sensitivity (if septic arthritis suspected)
- Cytology (if malignancy suspected)



# Arthroscopic Diagnosis

Arthroscopy allows earlier diagnosis by demonstrating the more subtle cartilage changes that are not visible on x-ray.



Arthroscopic view of an arthritic knee.



Arthroscopic view of a torn meniscus



# Disease Management / Treatment

- OA is a condition which progresses slowly over a period of many years and cannot be cured
- Treatment is directed at decreasing the symptoms of the condition, and slowing the progress of the condition
- Functional treatment goals:
  - Limit pain
  - Increase range of motion
  - Increase muscle strength



# Treatment Plans

**Osteoarthritis treatment plans can involve:**

- 1. Exercise.**
- 2. Weight control.**
- 3. Rest and joint care.**
- 4. Nondrug pain relief techniques to control pain.**
- 5. Medicines.**
- 6. Complementary and alternative therapies.**
- 7. Surgery.**



# Medications

Your doctor will talk to you about medicines which can control symptoms of osteoarthritis, including painkillers.

## **Painkillers**

The type of painkiller (analgesic) your GP may recommend for you will depend on the severity of your pain and other conditions or health problems you have. The main medications used are described below.

## **Paracetamol**

If you have pain caused by osteoarthritis, your GP may suggest taking paracetamol to begin with. However, when taking paracetamol, always follow the dosage your GP recommends and do not exceed the maximum dose.

## **Non-steroidal anti-inflammatory drugs (NSAIDs)**

If paracetamol does not effectively control the pain of your osteoarthritis, your GP may prescribe a stronger painkiller. This may be a non-steroidal anti-inflammatory drug (NSAID). NSAIDs are painkillers that work by reducing inflammation. There are two types of NSAID and they work in slightly different ways :

- Traditional NSAIDs – such as ibuprofen, naproxen or diclofenac
- COX-2 inhibitors – often called coxibs – such as celecoxib and etoricoxib

Some NSAIDs are available as creams (topical NSAIDs) that you apply directly to the affected joints. Some topical NSAIDs are available without a prescription. They can be particularly effective if you have osteoarthritis in your knees or hands. As well as helping to ease pain, they can also help reduce any swelling in your joints. Your doctor will discuss with you the type of NSAID you should take and the benefits and risks associated with it. NSAID tablets may not be suitable for people with certain conditions, such as asthma, a peptic ulcer or angina, or if you have had a heart attack or stroke. If you are taking low-dose aspirin, ask your GP whether you should use an NSAID.

If your GP recommends or prescribes an NSAID to be taken by mouth, they will usually also prescribe a medicine called a proton pump inhibitor (PPI) to take at the same time. NSAIDs can break down the lining in your stomach that protects it against stomach acid. PPIs reduce the amount of acid produced by the stomach, reducing the risk of damage to your stomach lining. COX-2 drugs have a lower risk of causing stomach problems, but still need to be used with a PPI if you take them regularly.



# Medications

## Opioids

Opioids, such as codeine, are another type of painkiller that may ease your pain if paracetamol does not work. Opioids can help relieve severe pain, but can also cause side effects such as drowsiness, nausea and constipation. Other opioids that may be prescribed for osteoarthritis include tramadol and dihydrocodeine. Both come in tablet form and as an injection. Tramadol is not suitable if you have uncontrolled epilepsy, and dihydrocodeine is not recommended for patients with chronic obstructive pulmonary disease (COPD). If you need to take an opioid regularly, your GP may prescribe a laxative to take alongside it to prevent constipation.

## Capsaicin cream

If you have osteoarthritis in your hands or knees and topical NSAIDs have not been effective in easing your pain, your GP may prescribe capsaicin cream. Capsaicin cream works by blocking the nerves that send pain messages in the treated area. You may have to use it for a while before it has an effect. You should experience some pain relief within the first two weeks of using the cream, but it may take up to a month for the treatment to be fully effective. Apply a pea-sized amount of capsaicin cream to your affected joints up to four times a day, but not more often than every four hours. Do not use capsaicin cream on broken or inflamed skin and always wash your hands after applying it. Be careful not to get any capsaicin cream on delicate areas, such as your eyes, mouth, nose and genitals. Capsaicin is made from chillies, so if you get it on sensitive areas of your body, it is likely to be very painful for a few hours. However, it will not cause any damage. You may notice a burning sensation on your skin after applying capsaicin cream. This is nothing to worry about, and the more you use it, the less it should happen. But avoid using too much cream or having a hot bath or shower before or after applying it, because it can make the burning sensation worse.

## Corticosteroid injections

If your osteoarthritis is severe, treatment using painkillers may not be enough to control your pain. In this case, you may be able to have a type of treatment where medicine is injected into the joints affected by osteoarthritis. This is known as intra-articular injection. If you need intra-articular injections, it is likely that you will have injections of corticosteroid, a medicine that reduces swelling and pain. If you get a prolonged response to the injection, it may be repeated. Ideally, you should have no more than three corticosteroid injections a year, with at least a three-month gap between injections.



# Therapy

Exercising and achieving a healthy weight are the best and most important ways to treat osteoarthritis. Your doctor also may suggest:

**Physical therapy.** A physical therapist can work with you to create an individualized exercise program that will strengthen the muscles around your joint, increase your range of motion and reduce pain.

**Occupational therapy.** An occupational therapist can help you discover ways to do everyday tasks or do your job without putting extra stress on your already painful joint. For instance, a toothbrush with a large grip could make brushing your teeth easier if you have finger osteoarthritis. A bench in your shower could help relieve the pain of standing if you have knee osteoarthritis.

**Braces or shoe inserts.** Your doctor may recommend shoe inserts or other devices that can help reduce pain when you stand or walk. These devices can immobilize or support your joint to help take pressure off it.

**A chronic pain class.** Some medical centers have classes for people with osteoarthritis and chronic pain. Ask your doctor about classes in your area. These classes teach skills that help you manage your osteoarthritis pain. And you'll meet other people with osteoarthritis and learn their tips and tricks for reducing and coping with joint pain.



# Exercises

Exercise is one of the most important treatments for people with osteoarthritis, whatever your age or level of fitness. Your physical activity should include a combination of exercises to strengthen your muscles and exercises to improve your general fitness.

If osteoarthritis causes you pain and stiffness, you may think exercise will make your symptoms worse.

But usually, regular exercise that keeps you active and mobile and builds up muscle, thereby strengthening the joints, will improve symptoms.

Exercise is also good for losing weight, improving your posture and relieving stress, all of which will ease symptoms.

Your GP, or possibly a physiotherapist, will discuss the benefits you can expect from your exercise programme and can give you an exercise plan to follow at home.

It's important to follow this plan because there is a risk that doing too much exercise too quickly, or doing the wrong sort of exercise, may damage your joints.

## **Losing weight**

Being overweight or obese often makes osteoarthritis worse as it can place some of your joints under increased strain.

If you are overweight, try to lose weight by doing more physical activity and eating a healthier diet.

Discuss any new exercise plan with your GP or physiotherapist before you start. They can help plan a suitable exercise programme for you. Your GP and practice nurse can also advise about how to lose weight slowly and safely.

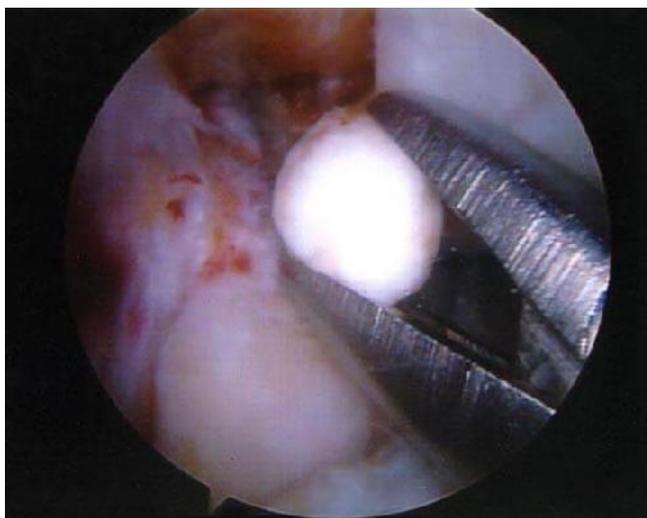


# Arthroscopic Treatment

It is a procedure of low invasiveness and morbidity.

In addition to being the most accurate way of determining how advanced the osteoarthritis is:

- Arthroscopy also allows the surgeon to debride the knee joint
  - Debridement essentially consists of cleaning out the joint of all debris and loose fragments. During the debridement any loose fragments of cartilage are removed and the knee is washed with a saline solution.
  - The areas of the knee joint which are badly worn may be roughened with a burr to promote the growth of new cartilage - a fibrocartilage material that is similar scar tissue.
  - Debridement of the knee using the arthroscope is not 100% successful. If successful, it usually affords temporary relief of symptoms for somewhere between 6 months - 2 years.
- Arthroscopy also allows access for surgical treatment of articular cartilage: graft-transplantation, micro-fracture techniques, sub-chondral drilling



Arthroscopic view of the removal of cartilaginous loose body.



# Surgery

Surgery for osteoarthritis is only needed in a small number of cases where other treatments have not been effective or where one of your joints is severely damaged. If you may need surgery for osteoarthritis, your GP will refer you to an orthopaedic surgeon. Having surgery for osteoarthritis may greatly improve your symptoms, mobility and quality of life. However, surgery cannot be guaranteed to get rid of your symptoms altogether, and you may still experience pain and stiffness due to your condition.

There are several different types of surgery for osteoarthritis. Some of them are :

## **Arthroplasty**

Joint replacement therapy, also known as an arthroplasty, is most commonly carried out to replace hip and knee joints. During an arthroplasty, your surgeon will remove your affected joint and replace it with an artificial joint (prosthesis) made of special plastics and metal. An artificial joint can last for up to 20 years, although it may eventually need to be replaced.

There is also a newer type of joint replacement surgery called resurfacing. This uses only metal components and may be more suitable for younger patients. Your surgeon will discuss with you the type of surgery that would be best.

## **Arthrodesis**

If joint replacement is not suitable for you, your surgeon may suggest an operation known as an arthrodesis, which fuses your joint in a permanent position. This means that your joint will be stronger and much less painful, although you will no longer be able to move it.

## **Osteotomy**

If you have osteoarthritis in your knees but you are not suitable for knee replacement surgery, you may be able to have an operation called an osteotomy. This involves your surgeon adding or removing a small section of bone either above or below your knee joint. This helps realign your knee so your weight is no longer focused on the damaged part of your knee. An osteotomy can relieve your symptoms of osteoarthritis, although you may still need knee replacement surgery eventually.



# FACILITIES

State of the art Equipments & Advanced Diagnostic & Surgical Facilities are available here



# Rehabilitation

After you have been treated for your condition, we want to ensure that you heal properly and regain strength. Our rehabilitation team will work with you in a private setting, at your own pace and comfort level, so that you can return to your daily lifestyle. Through exercises and training, our certified physical therapy team is here to help you get back to the things you love.

**Your post operative care takes place here**



# Prevention

There are 6 basic recommendations for osteoarthritis prevention.

## **1 - Maintain Your Ideal Body Weight**

It has been estimated that the force of 3 to 6 times a person's body weight is exerted across the knee while walking. In other words, being 10 pounds overweight increases the force on the knee by 30 to 60 pounds with each step taken while walking. The force across the hip is, at most, 3 times body weight. Losing weight reduces stress on your joints.

## **2 - Exercise Regularly and Participate in Regular Physical Activity**

For optimal joint health, it's recommended that people perform 30 minutes of moderately strenuous exercise at least 5 days a week. It's an established fact that regular exercise has health benefits. Lower levels of exercise can also be beneficial, according to study results. It's better to get some exercise as opposed to no exercise.

## **3 - Protect Your Joints**

There are several joint protection principles, which if followed, will help to conserve energy and preserve joint function. The advice is quite simple, but you must be mindful of proper movements and recognize body signals (e.g., pain). Good posture and proper body mechanics are important because protecting your joints is a factor in osteoarthritis prevention.

## **4 - Avoid Repetitive Stress on the Joints**

Signs of repetitive stress include too many uninterrupted repetitions of an activity or motion, unnatural or awkward motions, overexertion, incorrect posture, and muscle fatigue. These symptoms usually are associated with your occupation. Try to find solutions at your workplace and avoid prolonged periods of repetitive stress.

## **5 - Listen to Your Pain**

This recommendation seems so obvious, yet people don't always do it. Learning to view pain as a signal that you are overdoing it and that it's time to rest requires conscious effort. Balancing rest and activity is optimal for healthy joints. It's part of self-management to learn not to overuse your joints and to learn not to push past your limits. Consider that the pain is like a stop sign.

## **6 - Avoid Injury to Joints**

Previous joint injury is recognized as a common cause of osteoarthritis. In joints burdened by improper alignment due to injury, articular cartilage wears away and osteoarthritis can begin to develop. Avoid injury if at all possible -- and if you do injure a joint, seek treatment immediately.



## Testimonial of An Osteoarthritic Patient

“I was to have a complete knee replacement, then I went to Dr.Santosh. I wanted to get his opinion before I had the operation. I was (a candidate) and started right away: first the x-ray, then the physical therapy and then the injection. Slowly within 5-6 weeks I was able to walk alone, sleep in my bed (I had to sleep in the recliner before) and now I can go on vacation with my husband. Our first (one) in a year and a half. I would say Dr.Santosh has given me my life back! No operation for me! If a friend or family member was curious about this Knee treatment, I would and have said come and see! You have nothing to lose except the pain in your knee. Look at me, I'm walking like a normal person.”



# SECTION B



# What The Press Says : Set 1

## THE TIMES OF INDIA

21 November, 2013

### New surgery boon for knee patients

**TIMES NEWS NETWORK**  
**Kolkata:** The periods of hospitalization and recovery for knee-replacement surgery patients have come down significantly, thanks to improved techniques and quality implants. Such surgery was conducted on three patients at Belle Vue Clinic on Wednesday.



A patient after surgery

Earlier, a knee replacement surgery meant at least six days of post-operative hospitalization and the patient would be able to walk only four days later. But now, patients can stand up within hours of the surgery and start walking on the second day.

While doctors in the city have been performing minimally invasive surgery for quite some time now, minimally invasive computer-assisted total knee arthroplasty was performed on three patients — Sambhunath Bit (52), Meera Devi Chowdhury (65) and Chhaya Chattopadhyay (72) — at Belle Vue on Wednesday.

“Computer-assisted total knee arthroplasty and minimally invasive surgeries have been performed in the city, but independently. Minimally invasive

computer-assisted total knee arthroplasty is being done in Belle Vue Clinic for the first time in eastern India,” said Dr Santosh Kumar who performed the surgery one of them live, on Wednesday.

The conventional procedure enabled the patient to stand up on the third day of surgery, walk on the fourth day and get discharged from the hospital either on the fifth or the sixth day. But minimally invasive surgery enables the patient to stand within a few hours of the surgery, walk on the second day and walk out of the hospital on the third.

## The Telegraph METRO

20th January, 2013

### Tech boost for surgery

OUR SPECIAL CORRESPONDENT

Hip and knee replacement surgeries in the city will now be more precise and less risky with a new computer-navigated technique that can tell from outside the exact position of bones and the alignment of ligaments.

Belle Vue Clinic on Monday claimed to be the first in the city to introduce the “fourth generation” machine from Germany. The new technique will make the surgeries at least 10 minutes longer. “It has more checks and balances and so it takes more than the standard one-and-a-half hours for other

computer-assisted procedures,” said Santosh Kumar, orthopaedic surgeon and head of the joint replacement surgery unit at Belle Vue.

Computer-navigated surgeries have been conducted in Calcutta since 2006, but the German technology promises to increase the accuracy of knee-replacement surgeries from around 80 per cent to up to 95 per cent, say doctors.

The machine maps the position of bones in the knee joint using sensors. These sensors create a detailed image and provide information on a computer screen that help the surgeon install the implant.

“The equipment not only

takes into account the bones but also aligns soft tissues like ligaments. So there is less chance of damage to ligaments and other uncertainties too,” Kumar pointed out.

Buddhadeb Chatterjee, orthopaedic surgeon with Apollo Gleneagles Hospitals, said the software would make things easier for surgeons. “Steps like bone registration are not required. Bone registration is a process in which pointers are rubbed on the bones and the images are transferred to the computer through infrared,” said Chatterjee.

He said the software was more precise and therefore better results were expected.

## The Statesman

KOLKATA, THURSDAY 21 NOVEMBER 2013

### Urgent joint replacement at prominent city hospital

STATESMAN NEWS SERVICE  
 Kolkata, 20 November



Good news awaits for people requiring urgent joint replacement and expecting a speedy recovery. The Belle Vue Clinic has introduced a minimally invasive procedure, which would take one and a half hours to conduct knee surgeries and more importantly the patient would be able to stand on his feet on the same day of the surgery.

A team of doctors led by Dr Santosh Kumar, who performed a live surgery before a battery of media persons at the Belle Vue today said, “The minimal invasive technique is less time taking and the patient can stand on his feet on the same day of the surgery and can walk or climb stairs on the second day.”

total knee arthroplasty has been done for the first time in the eastern part of the country. Unlike conventional surgeries where the patient takes a longer time to heal, the latest procedure not only saves time, but also leads to a very minimal blood loss, said Dr Kumar, the head of computer-assisted (navigated) joint replacement

centre at Belle Vue. He further said, the transplant costs a little more than Rs 1 lakh and can last for several years. “The treatment is of immense help to those who are at the peak of their professional lives and look for early recovery. They can resume normal life within a few days of surgery.”

## THE ASIAN AGE

21 November, 2013

### Advanced knee surgery raises patients' hopes

AGE CORRESPONDENT  
 KOLKATA, NOV. 20

For the first time in eastern India, Minimally Invasive Computer-Assisted Total Knee Arthroplasty (MICA-TKA) surgery was performed on three patients on Wednesday. The knee surgery reduces recovery time for patients.

The surgeries were performed at Belle Vue Clinic under the supervision of Dr Santosh Kumar. Interestingly, the live surgery performed on the knee of 72-year-old Chhaya

Chatterjee was shown on a giant screen at the clinic. It was a unique way to introduce one of the best medical advancements.

This latest (MICA-TKA) procedure enables patients to stand up on his feet on the same day of the surgery, climb the stairs on the second day and are released on the third day. While the conventional procedure takes at least seven days' time for the knee of a patient to function properly.

According to Dr Kumar, the knee transplant is use-

ful for professionals who need a high performing knee.

The surgery results in fantastic tackling of knee cap bone which leads to improved and full knee bending.

“With this knee transplant, people now will be able to use public transport, indulge in sports activities and lead a normal life,” said Dr Santosh Kumar, who is also the head of the clinic's Computer-Assisted (Navigated) Joint Replacement Centre.

## THE ASIAN AGE

29th January, 2013

### KNEE JOINT REPLACEMENT MACHINE UNVEILED

AGE CORRESPONDENT  
 KOLKATA, JAN. 28

The world's most modern and advanced knee joint replacement navigation machine, OrthoPilot, an innovation to make knee and hip surgeries accurate and mathematical was unveiled on Monday at Belle Vue Clinic.

Made in Germany, the

fourth generation machine is said to be the first of its kind in eastern India. Consultant orthopaedic surgeon and head of KIMS, Hyderabad, Dr Krishna Kiran said: “It's the precision which has enhanced with OrthoPilot. It is more accurate as machine allows error-free surgery.”

## hindustantimes

29th January, 2013

### NOW, COMPUTERS AID IN JOINT REPLACEMENT SURGERY IN CITY

HT Correspondent  
 letters@hindustantimes.com

**KOLKATA:** Belle Vue Clinic installed ‘orthopilot’ on Monday, the fourth generation navigation system that helps doctors eliminates human errors in hip and knee replacement and corrective surgeries.

“The machine's efficiency is much higher than the devices normally used for knee and hip replacement surgeries. Orthopilot is a hi-tech machine for enhancing precision during surgeries,” Dr Krishna Kiran, director, Institute of Computer Assisted Joint Replacement Centre, Hyderabad, said during the launch of the German-manufactured device.

“Prior to computer-assisted devices, we couldn't be certain that an implant would be placed in the optimal position. It allows easy minimally invasive surgery, decreasing recovery time and post-operative pain,” he said.

The increased accuracy also help increase the life of the implants, while causing less blood loss in the patient. In fact, most patients are able to walk one day after the surgery.

Stating that Orthopilot is a powerful surgical tool that combines dedicated software with superior instrument design, knee

surgeon, said Dr Santosh Kumar, head of the institute of Computer-assisted (navigated) joint replacement centre at the clinic.

“It guides a surgeon to make precise cuts in the joints and remove deformities, by using infrared camera. It gives patient specific information during surgery while virtually eliminating expensive and radiation intensive CT and MRI scans before the surgery,” Dr Kumar added.

## THE TIMES OF INDIA

29th January, 2013

### Orthopilot for accurate joint surgery

**Kolkata:** Have someone in your family who needs to undergo a hip or knee joint replacement surgery? Yes, these surgeries are common in the city now but precision levels depend on the surgeon's eyes. Hence, many patients complain of problems post surgery as the replaced knee is misaligned. So, those asked to go under the scalpel may harbour apprehension after hearing tales of misalignment.

But help is at hand in the form of a computer-guided orthopilot. The fourth generation hip and knee joint replacement navigation machine was inaugurated at the Belle Vue Clinic on Monday. Housed in the hospital's Institute of Computer Assisted (navigation) Joint Replacement Centre, the orthopilot is the first in eastern India.

The institute's head, Dr Santosh Kumar, said: “Orthopilot eliminates uncertainty and enhances precision. It also enhances long term results as deviation from goals during surgery is eliminated and the implants survive 1.5 to two times longer.” According to him, a replaced knee under conventional surgery lasts 8-10 years, while one implanted with an orthopilot stays intact for 15-20 years. The costs under both techniques remain around the same — Rs 1.80 lakh. The same surgery costs Rs 15 lakh in Indian currency in the UK, he said.

**News About Dr.Santosh Kumar, About Ortho Pilot & Advanced Procedures Done By Him**





# Patients' Experiences [ All Ortho Procedures ]



**Maya Ghosh, 66 years  
Kolkata**

"I had been suffering from knee pain for last one year. It was difficult to walk. I heard of Dr. Santosh Kumar from my friend and got my knee operated. I now can walk. My friend too is well now. Thanks to Dr. Kumar".



**Mr Das, Ulta Danga, Kolkata**

Operated for Rheumatoid Arthritis of knee. Total knee replacement done in may 2012. Retired but socially very active, was crippled and home bound, till he started moving out after knee replacement. He says, " it feels as if my age has reduced by 20 years".



**Prem Lakhani, 75 years, Kolkata**

"I had long knee problem . I consulted Dr. Santosh Kumar. I was operated on 7 Jan, 14, detained in hospital for 4 days and started walking within 4 days. No pain and I am walking almost normally. I am back to normal work. Thanks to Dr"



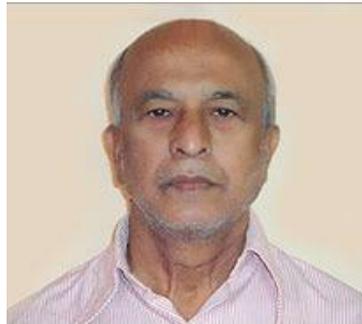
**Parbati Roy, 67 years, Kolkata**

"I am 67 year. I have been suffering since 2005 and was under medication. In Oct 2013, I was almost crippled. At this stage, one of my cousins suggested for Dr. Santosh Kumar. He operated my right knee and my left knee was operated in next July. Am fine now"



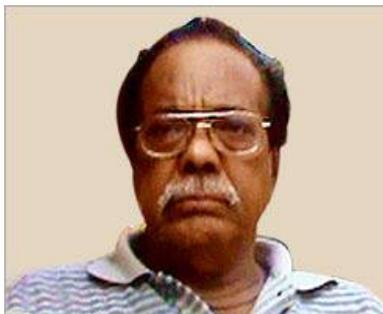
**Sister Jaya, Belle Vue Clinic**

"Working as in-charge nurse had become so painful till I saw some operated cases by Dr Kumar and their results at our hospital. I decided to go for Knee Arthroplasty( replacement). Am happy that within a month I joined back my work with confidence."



**Mr Banerjee, Beliaghata, Kolkata**

An retired footballer says, "knee pain and stiffness had crippled my life in sharp distinction to the joy of playing football in my early age, actually I had suffered from ACL injury which accelerated osteoarthritis. I am happy that the joy of movement has been restored".



**Arun Kumar Jana, 71 years**

"I have been suffering from knee pain since 2005. I got Dr. Santosh Kumar's contact through internet. He advised for knee replacement. Although I was scared by many, yet Dr. Kumar explained all in details and operated. He and his team had been cooperative".



**Prof. Malabika Deb**

After the knee replacement, I can climb up the stairs and walk. Feeling much better...



**A Patient rides a bicycle with ease after undergoing Knee Replacement by Dr. Santosh Kumar using Orthopilot, an advanced computer navigation procedure.**

**More Patients Experiences & Testimonials can be provided on request**



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**Almost All Insurance Companies & Majority of TPAs Accepted By Us**



# Consult the Doctor via Online or Video Conference

Dr. Santosh Kumar is available for video conference with the patients for better understanding between the patient and the doctor. What you need to do is to fill in the form in the website [ format given below ] and submit. You will be intimated duly over phone/through mail the date and time for video conference.



You need to have Skype ( free software for video conferencing ) downloaded in your computer. Now add Dr. Kumar in the contact with his ID, E-mail and Phone No that will be communicated to you. You should have a web camera attached to your computer. You can interact with the doctor at the pre appointed date and time.

* Name :	<input type="text"/>
* Address :	<input type="text"/>
* City :	<input type="text"/>
* Pincode :	<input type="text"/>
* Phone :	<input type="text"/>
* E-mail :	<input type="text"/>
* Why do you want to go for video conferencing with the doctor :	<input type="text"/>
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>



# For Outstation Patients

If you reside outside of Kolkata, you can contact us in either of these ways :



## Online Consult with Doctor.

Please check our website for details



## Video Conference with Doctor

Kindly go through the Video Conference page



## Tele Consult with Doctor

Please call the Helpline numbers



## Meet Doctor In Person.

Before surgery / procedure, do meet the Dr in person once.



## Patient's Suite / Room

Patient can choose either Suite or Normal room



## Treatment Centre Location

This is situated at the heart of Kolkata city



Guest Suite / Room [ Family members / Friends accompanying the Patient can choose to stay at this Star Hotel situated adjacent to the Treatment Centre : as per their budget / preference ]





# For Communities & Institutions

For The Kind  
Attention Of

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- Admin. Dept. / Committee Heads
- Medical Officers / Office Bearers / Volunteers Of :

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Or Email : [santdr@gmail.com](mailto:santdr@gmail.com)





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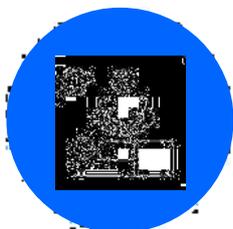
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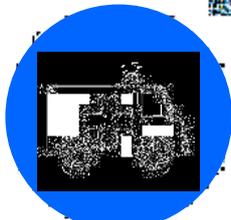
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International Patient Manager / Co-ordinator  
Or Email : santdr@gmail.com

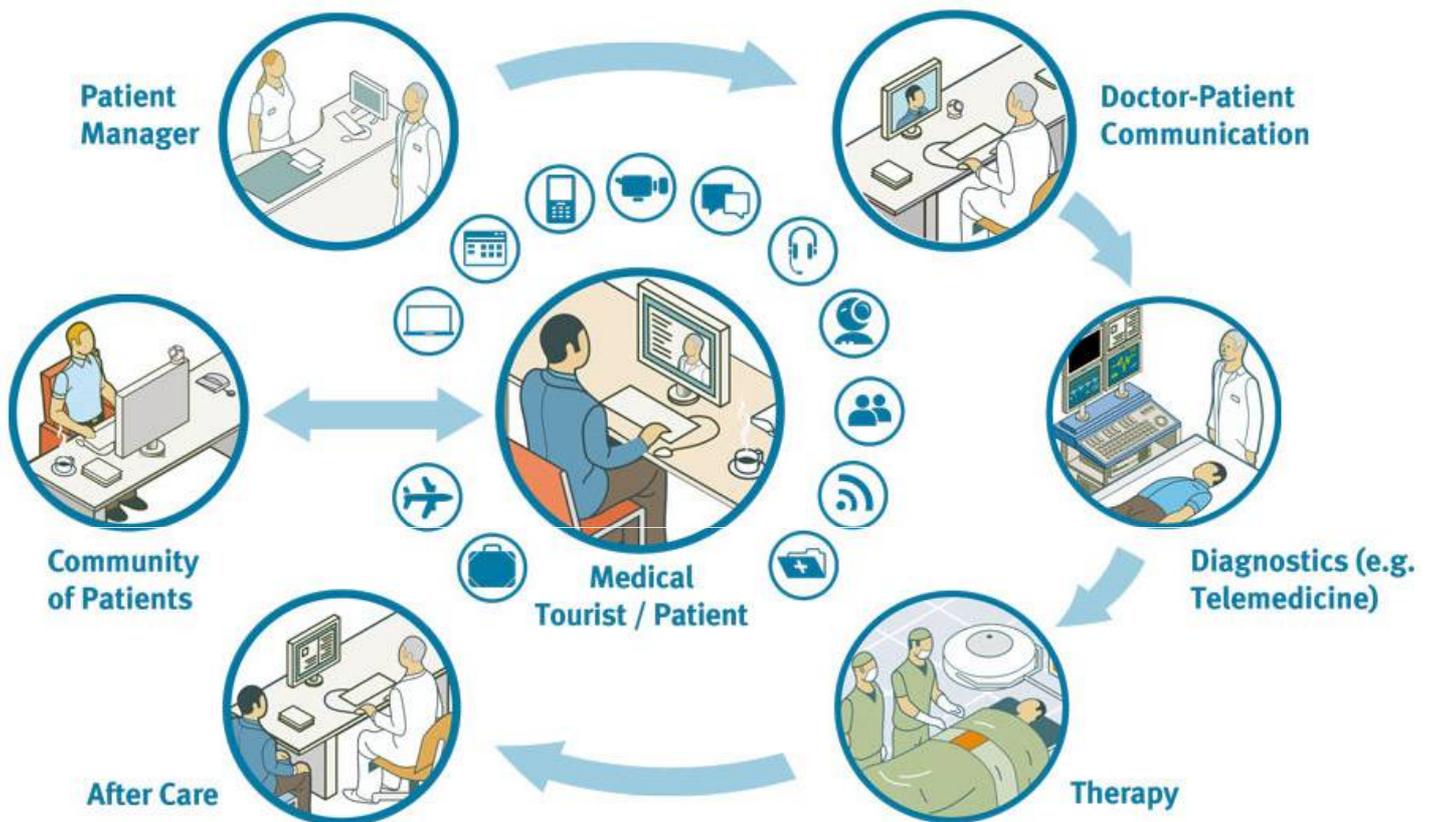


**POORVA ORTHOPAEDIC**



# For International Patients

If you reside outside India, you can contact our Patient Relation Manager who will guide you through these process to make your treatment comfortable.



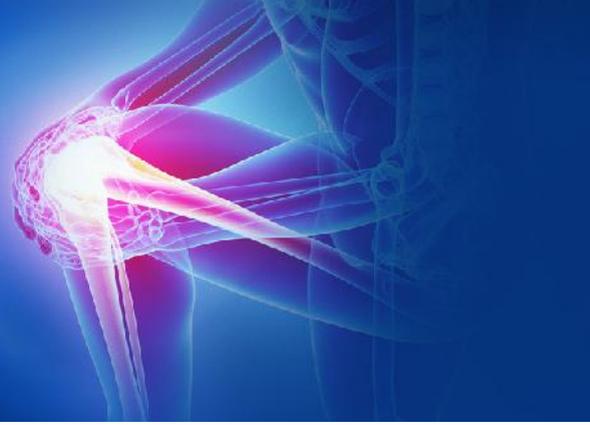
**Please Call :** +91 98363 65632

International Patient Manager / Co-ordinator

**Or Email :** [santdr@gmail.com](mailto:santdr@gmail.com)



# The Fees



For Consultation  
In Person / Visit

- **Rs 800 INR**
- **\$ 13 [ US Dollars ]**

For Consultation  
With Digital X-Ray

- **Rs 1,000 INR**
- **\$ 16 [ US Dollars ]**

For Video Conference  
With Doctor

- **Rs 600 INR**
- **\$ 10 [ US Dollars ]**

For Tele  
Consultation

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For Communities /  
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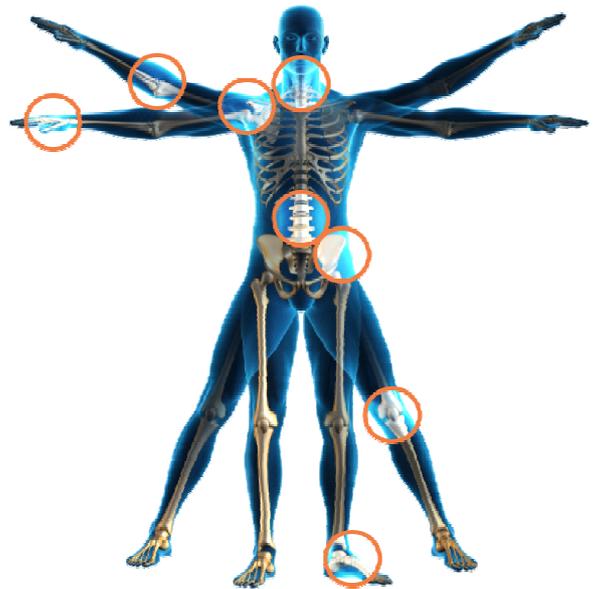
**Please Call : +91 98363 65632 [ Patient Relations Manager / Co-ordinator ]**  
Or Email : [santdr@gmail.com](mailto:santdr@gmail.com)



# About the Foundation

Poorva International Orthopaedic Foundation was created as a health charity dedicated solely to help people build, maintain and restore their bone and joint health. We do this by raising and allocating funds for the research, education, treatment and care that help patients to live and move independently - longer and stronger.

We invite you to help us in whatever capacity you can to fight against orthopaedic diseases & disorders. Your participation helps the tens of thousands of people living with pain, isolation, unhappiness and an inability to enjoy life due to bone and joint disorders such as arthritis, osteoporosis and injury.



Founded in 2014, Poorva Orthopaedic Foundation is a national registered charity powered by professional staff and network of volunteers. The Foundation is Kolkata's only health charity dedicated solely to helping people maintain and restore their bone and joint, or orthopaedic health.

## What we do

Poorva Orthopaedic Foundation raises money through the trustees' donations and invests those funds in programs to advance orthopaedic research, promote patient and public education, and improve community care.

The Foundation is committed to patient education and to providing patients and their families with accurate, up-to-date information that will make going through orthopaedic surgery a little easier and less frightening.

## Our Vision:

To be Patients' voice for bone and joint health.

## Our Mission:

To achieve excellence in bone and joint health, mobility and function for all patients through the advancement of research, education, and care.

## Our Values:

**People:** We work in the interest of orthopaedic patients, their families, and the professionals who treat them and for the future of any Individual who may require orthopaedic care.

**Making a Healthy Difference:** We contribute to the health of our communities and our nation by working with volunteers, patients, professionals, government and industry toward timely and quality access to bone and joint care.

**Good Governance:** We are committed to excellence in the governance of our organization and will do so ethically, morally, according to the law, and towards the achievement of our Mission.

**Help to keep people on the move!**





**POORVA INTERNATIONAL  
ORTHOPAEDIC FOUNDATION**



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### **Consult :**

Ortho Dept., Belle Vue Clinic,  
7 Loudon Street, Kolkata 700 017,  
West Bengal, India

Regd. Office : Beliaghata, Kolkata 700 010