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## PATIENT GUIDE TO ARTIFICIAL JOINT REPLACEMENT



# Dr. Samih Tarabichi

Consultant Orthopedic Surgeon  
Chairman of center for joint care  
Canadian orthopedic board certified since 1988  
American orthopedic board certified since 1990  
Founder and Chairman of the International congress for joint reconstruction ME (ICJR ME)  
Obtained 7 Global patents so far, from the United States and the European Union, in the field of joint surgery

Dr. Samih Tarabichi was born in Damascus, the city of Jasmine. He studied and graduated from the Faculty of Medicine in Damascus in 1978. He then decided to travel to the United States to specialize in orthopedic and scientific research, with the University of Illinois being his first stop for training in 1979, where he began his specialization and medical research. He then moved to Ohio University and later to McGill University, where he graduated in 1987. After his graduation, he began practicing medicine in the state of Florida, where he worked for ten years, focusing mainly on treating joint pain and performing knee and hip replacement surgeries.

In 1998, Dr. Tarabichi decided to return to the Middle East, specifically to the United Arab Emirates, Dubai, to settle and establish the Tarabichi Center for Joint Care. Within a few years, it became the most renowned center in the Middle East for knee replacement surgery. This success is attributed to Dr. Tarabichi's development of a full range of motion joint, allowing patients to regain the ability to fully flex the knee after surgery.

In 1999, Dr. Tarabichi founded the first joint surgery database bank in the Middle East, linking it to the University of Dundee in Scotland for several years, and later to various research institutions in Europe and the United Arab Emirates. Based on this data, he was able to develop several patented surgical devices, techniques and implants.

## The Godfather of Joint Surgery and the Father of full flexion Knee implant.

These are some of the titles that his patients like to use when referring to Dr. Samih Tarabichi, after he began performing knee replacement surgeries using the full range of motion joint, which he personally developed with a group of renowned international doctors through the American company Zimmer, the world's largest manufacturer of artificial joints. This innovation sparked a revolution and brought a fundamental change in the field of joint surgery.

The story began when Dr. Tarabichi started performing these surgeries in the United States for patients from the Middle East, who wished to continue sitting on the floor. The reason for this was that existing artificial joints at that period did not offer this feature, as the focus was solely on Western patients, tailoring the joints to their measurements and lifestyle.

After moving to the Middle East in the late 19 century, Dr. Tarabichi observed growing concerns among patients regarding the existing joints of that time. He took it upon himself to address these concerns and began discussing them at prestigious international medical forums. This was met with a degree of indifference from most global manufacturers, who believed that the existing product was suitable for everyone. **This prompted Dr. Tarabichi to persist in developing a joint that would suit the lifestyle and anatomy of Middle Eastern patients and allow for full flexion capability, then knee joint implant evolved remarkably and became the most used worldwide,**

## It was named (Persona knee implant by Zimmer)

It is worth noting the significant advancement in this procedure over the current decade, as **Dr. Samih Tarabichi received his seventh patent in his career from the United States and Europe in 2021 for developing the Persona Knee Revision System by Zimmer. This system is considered as the latest in the world and allows surgeons to address any issues with artificial knee joints.**

**The United Arab Emirates is the only country outside the United States to have received this system worldwide due to Dr. Tarabichi's patent for it.**

## Scientific Research and Conferences:

Dr. Tarabichi founded and has been presiding over the International Congress for Joint Reconstruction in the Middle East since 2012. This conference is the largest and most attended in the Middle East, focusing on the latest and most significant advancements in joint surgery.

He has delivered over 1,000 lectures at medical conferences and is invited monthly to lecture around the world in his field of expertise.

To date, he has authored more than 38 research papers and scientific books, published in American and European medical journals and books. These publications have led over 500 scientific studies worldwide based on their results.

### **In summary, here are some distinguishing features of Dr. Samih Tarabichi in performing knee or hip replacement surgeries:**

- 1- Over 35 years of experience in treating and performing surgeries on knee and hip joints
- 2- Seven global patents registered in joint surgery
- 3- Performed more than 25,000 knee/hip replacement surgeries for patients from around the world, majority from the Middle East
- 4- Conducting minimally invasive surgery with no exposure to muscles and ligaments for over 20 years
- 5- Designer and developer of the full range of motion artificial knee joint which allows sitting on the floor after surgery
- 6- Providing the best and most advanced artificial joint systems to meet all patient needs with precise details
- 7- Utilizing artificial intelligence and robotics in treatment planning
- 8- A personalized rehabilitation plan that tailor individual needs and functional goals before and after surgery at our advanced physical therapy center



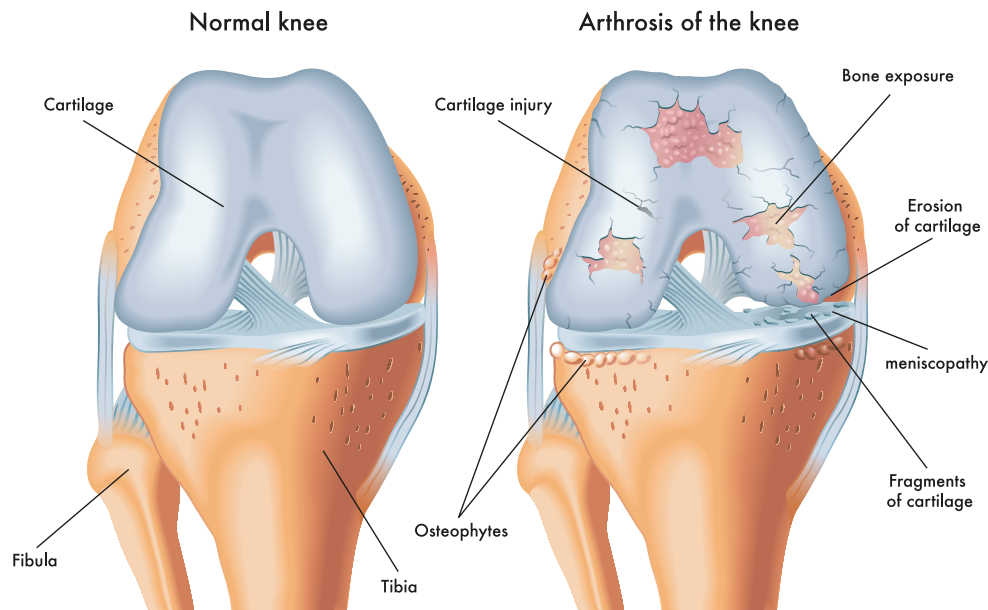
## General Information about Joint Replacement Surgery:

Joint replacement surgeries are successful and common procedures in the West, with a %98 success rate. In the United States, statistics estimate that over 500,000 artificial joint replacements are performed annually. Most of these procedures are for the hip, knee, and shoulder joints. Joint replacement surgeries have also become common in the United Arab Emirates, where they are performed almost daily.

## The Natural Joint:

Here, we will review the components of a natural joint and the changes that occur in these joints in pathological conditions, which may require joint surgery after other treatment methods have failed.

A natural joint consists of the ends of two bones and a surrounding capsule. The ends of the bones are covered with cartilage, which forms smooth and flexible surfaces, allowing the joint to move easily. This cartilage slides over each other without friction, aided by the presence of a viscous fluid within the capsule surrounding the bone ends. Additionally, the cartilage works as a shock absorber.



## General Information about Joint Replacement Surgery:

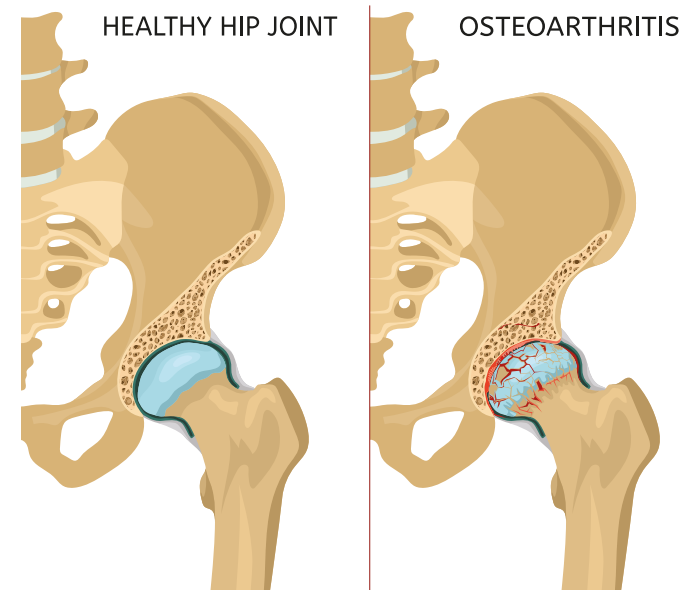
The cartilage in joints has very limited regenerative capacity. Unlike skin, which can heal and regenerate well after an injury, lost cartilage does not regenerate or return to its natural state. In advanced cases of arthritis, the joint loses the cartilage that covers the bone, leading to limited and painful joint movement.

Upon examining the joint, the cartilage appears rough, and the bone in some areas becomes exposed. Due to continuous movement, the bone ends themselves may become worn out in pressure areas, altering the shape of the bone ends and deforming the joint.

Such deformities lead to changes in the shape of the leg. For instance, in the knee, bone wear can cause the leg to become bowed. This deterioration of cartilage usually accompanies changes in the joint itself. The joint capsule becomes thickened due to inflammation and shows many scars.

These changes occur gradually and vary in severity depending on the extent of the disease. They typically become more pronounced in advanced stages and are clearly visible in radiology images.

## Osteoarthritis of the Hip



## Indications for Joint Replacement Surgery:

The primary reason for the surgery is severe pain that does not respond to conservative treatments such as medication and physical therapy. This intolerable pain affects the patient's lifestyle and can sometimes prevent them from walking and performing daily activities.

To benefit from such a procedure, clinical examinations and imaging must confirm that the pain is due to cartilage wear in the joint and that it is not caused by other issues such as poor circulation or nerve inflammation.

## Artificial Joints:

An artificial joint consists of components that copy the natural joint. For example, in an artificial knee, the joint is made up of two metal components: one covers the end of the thigh bone and conforms to its shape, while the other covers the end of the shin bone and conforms to its shape. Between these metal surfaces, a disc made of special plastic material (polyethylene) is typically placed to prevent friction between the metal surfaces.

During the surgical procedure, the surgeon removes a thin layer of the worn bone surface. This removal is carefully measured to fit the artificial metal surfaces. In other words, the surgeon replaces the damaged surface with a metal surface covering the end of the bone. Then, a flexible disc is placed between the metal surfaces to reduce friction and ensure smooth, pain-free movement of the joint.



## The full range of motion knee implant:

The inability to fully flex the knee after a joint replacement surgery has been a significant issue for the patients. Full knee flexion is crucial for many aspects of daily life, especially for those in Middle Eastern cultures where sitting on the floor is common.

Previously, it was known that patients who underwent knee replacement surgery could not fully flex the knee joints with an implant. However, due to advancements in implant design, patients can now achieve full knee flexion after surgery. Notably, Dr. Tarabichi was part of the medical team that contributed to the development of this advanced implant (Patented).





## Minimally Invasive Knee Replacement Surgery for Rapid Recovery:

Key steps for performing minimally invasive knee replacement surgery are as follows:

**Access through a small incision (10 cm):** The procedure begins with a small incision to reach the knee joint surfaces.

**No Exposure of Muscles or Ligaments:** The technique, developed and taught by Dr. Tarabichi for over 20 years, avoids exposure of muscles and ligaments.

**Removal and Replacement of Worn Surfaces:** The damaged joint surfaces are removed with minimal thickness, replaced with new titanium metal surfaces, and a new artificial cartilage is inserted to restore natural movement and eliminate pain.

**Wound Closure for Rapid Recovery:** The incision is closed in a manner that facilitates rapid recovery.

### Artificial Knee Implant Systems Used:

Dr. Samih Tarabichi is committed to using the latest artificial knee joints available worldwide. These knee implants are made from biocompatible materials, with no reported cases of body rejection.

Several artificial knee joint systems have been developed globally to provide the most suitable joint for each patient, depending on the condition and degree of wear.

At Dr. Tarabichi's Center for Joint Care, we ensure that we offer all available options to provide the best care for patients. Examples of the surgical systems available include:

**Partial Knee Replacement System:** Designed for cases of partial wear in the knee joint. The worn part of the knee joint surface is covered with a metal shell to compensate for the damage and restore pain-free movement.

**Cementless Knee Replacement System:** Intended for patients under 50 years old with strong bone structure. This system is designed with a component that allows the bone to integrate and grow onto the implant back surface, ensuring proper stability and restoring natural pain free movement.

**Cemented Knee Replacement System:** Suitable for patients over 50 years with bone osteoporosis. The artificial joint is fixed using medical cement to restore natural pain free movement.

**Custom 3D Knee Replacement System:** The most advanced system currently available. It involves taking X-ray images of the natural joint according to a special protocol to precisely match the measurements of the patient's natural joint. These measurements are sent to a specialized manufacturer in Switzerland to create a custom-made artificial joint, which is then installed to restore natural pain free movement.

**All artificial knee implants available at our center are designed and manufactured to allow full flexion, similar to natural human joint.**

**Robotic and Artificial Intelligence Systems:** Available in the operating rooms, Dr. Tarabichi uses robotic and AI technology when needed or requested by the patient to assess ligament balance and measure degrees of flexion and extension.



## Minimally Invasive Hip Replacement Surgery for Rapid Recovery:

Key steps for performing minimally invasive hip replacement surgery are as follows:

**Access through a Small Incision (10 cm):** The procedure begins with a small incision made in the upper thigh to reach the hip joint surfaces.

**No Exposure of Muscles or Ligaments:** The technique, developed and taught by Dr. Tarabichi for over 20 years, avoids exposure of muscles and ligaments.

**Removal and Replacement of the Worn Joint:** The damaged hip joint is removed and replaced with a new joint made of titanium and medical-grade ceramic, along with the insertion of an artificial cartilage. This type of joint typically lasts longer than other artificial joints.

**Wound Closure for Rapid Recovery:** The incision is closed in a manner that facilitates quick recovery.

### Artificial Hip Implants Systems Used:

Dr. Samih Tarabichi ensures the use of the best artificial hip joints available globally. These joints are made from biocompatible materials, with no reported cases of body rejection.

Several artificial hip joint systems have been developed worldwide to provide the most suitable joint for each patient, depending on the condition and degree of wear.

At Dr. Tarabichi's center for joint care, we offer all available options to provide the best care for patients. Examples of the surgical systems available include:

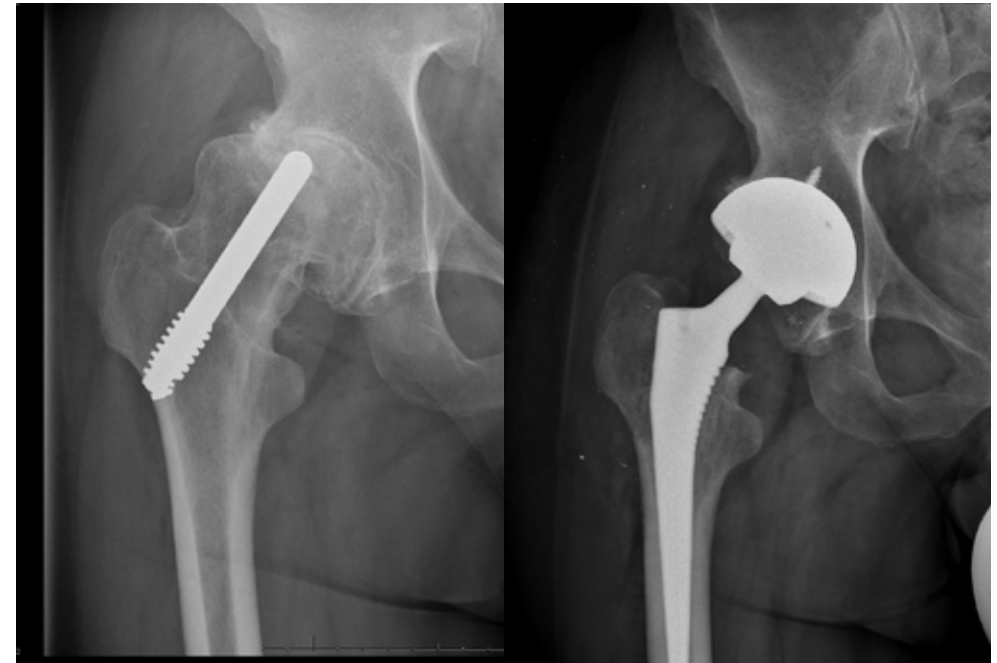
**Cementless Hip Replacement System:** Designed for patients with strong bone structure. This system is made from special materials that allow bone growth onto the implant, ensuring proper stability and restoring natural pain free movement.

**Cemented Hip Replacement System:** Suitable for patients with bone osteoporosis. The artificial joint is fixed using medical cement to restore natural pain free movement.

**Custom 3D Hip Replacement System:** The most advanced system currently available. It involves taking X-ray images of the natural joint according to a special protocol to accurately match the measurements of the patient's natural joint. These measurements are sent to a specialized manufacturer in Switzerland to create a custom artificial joint, which is then installed to restore natural movement.

**All artificial hip joints available at our center are designed and manufactured to closely mimic the natural human joint.**

**Robotic and Artificial Intelligence Systems:** Available in the operating rooms, Dr. Tarabichi uses robotic and AI technology as needed or as requested by the patient.



## Preparation for Surgical Procedure:

Before the surgical procedure, the patient undergoes a comprehensive assessment by a specialist in internal medicine and an anesthesiologist. Extensive laboratory tests are conducted to evaluate most of the body's vital functions to determine the feasibility of performing the surgery.

## Pain Management:

Pain is an inherent part of any surgical procedure, and its intensity varies among individuals. We are committed to managing pain effectively and safely, avoiding dependency while ensuring the patient's recovery is as swift as possible. Our approach includes:

### Before Surgery:

Based on the patient's medical history, the most appropriate pain medications are prescribed.

Cryotherapy is used several days before the surgery to target specific nerves around the knee responsible for pain. This non-invasive procedure involves cooling these areas to numb the pain receptors, thus alleviating pain during the recovery period.

### During Surgery:

The preferred method is spinal regional anesthesia. This is supplemented with sedatives to help the patient relax and sleep during the procedure. This option typically has lighter effects on the body upon waking up.

### After Surgery:

A small PCA (Patient-Controlled Analgesia) pump is connected to the patient's IV line, allowing them to control and administer the medication as needed.

The medical team closely monitors the patient and provides appropriate medications during their hospital stay. Upon discharge, the patient is given suitable pain medications to aid in their recovery and help them during physical therapy until full recovery.

## Surgical Procedure and Recovery Period:

**The knee or hip replacement surgery typically takes about one hour.**

However, there is an additional preparation time in the operating room, which lasts approximately one hour. During the surgery, the latest equipment is used to ensure the procedure is performed safely. After the surgery, the patient is transferred to the recovery room, where they stay for about an hour before moving to their hospital room or, if needed, to the intensive care unit for closer monitoring throughout the day. On the second day, physical therapy begins and is conducted daily.

Patients usually start walking with the assistance of a walker the next day although some manage to walk just few hours after the surgery. The hospital stay generally ranges from four to seven days, depending on whether one or both joints are replaced. During this time, the patient is closely monitored to ensure their safety, and appropriate medications are prescribed based on the patient's condition.

Upon discharge, the patient receives specific instructions regarding wound care, follow up physiotherapy at our specialized center and home exercises. Patients can generally walk easily with the help of a walker after leaving the hospital.

## Follow-Up and Documentation:

Post-hospital care and follow-up are essential parts of the recovery process. In addition to the customized two-month physical therapy program, our center provides a comprehensive follow-up plan, including periodic visits. The schedule is as follows:

**One week after discharge:** The first follow-up visit.

**Monthly for three months:** Subsequent visits to monitor progress.

**Annually:** An annual check-up.

During these visits, a clinical examination is conducted to assess the patient's progress. The patient is questioned about their activities, such as walking, climbing stairs, sitting on the floor, and other daily tasks. X-rays are also taken to ensure that the new joint is functioning properly.

All information is recorded in confidential files, ensuring complete privacy for the patient. Additionally, for academic research purposes, these records are sent to a specialized center in the United States for documentation and comparison with results from other centers worldwide that use the same type of implants, totaling eight centers globally.



## One-day Knee Replacment Surgery Program for Rapid Recovery:

In this program, knee replacement surgery is performed using minimally invasive techniques, allowing the patient to be discharged from the hospital on the same day. This approach facilitates rapid recovery due to the minimal surgical intervention and a personalized physical therapy plan tailored to each patient's functional needs.

Key aspects of the program include:

### Pre-Surgical Pain Management:

Cryotherapy is used several days before the surgery to target specific nerves around the knee responsible for pain. This non-invasive procedure involves cooling these areas to numb the pain receptors, thus alleviating pain during the recovery period.

The knee replacement is carried out through an incision of 10 cm, without cutting through muscles or tendons. This ensures minimal pain and a swift recovery, enabling patients to walk and leave the hospital on the same day.

The one-day knee replacement surgery is suitable for patients of all age groups who suffer from chronic knee pain and have limited mobility, provided they meet certain medical criteria:

A thorough pre-surgical evaluation is crucial to determine the patient's suitability for this program. The surgery typically lasts about one hour, and with the appropriate design of the artificial joint, patients can begin walking immediately after waking up from sedation and can be discharged on the same day.

**Therefore, the medical evaluation before the surgery is the primary factor in determining the suitability for this program.**

## My Knee Program:

Just as each person's fingerprint is unique, so too is the anatomical structure of the knee. When joint replacement surgeries began 50 years ago, implants were only available in three sizes. As science advanced, it became evident that anatomical differences among patients were much more precise, necessitating implants in a greater variety of sizes, which eventually expanded to 21 sizes with a 2 mm difference.

Studies have shown that Asian and Arab knees differ from European knees. Dr. Samih Tarabichi's contributions to these studies highlighted that these subtle differences can affect implant performance. Therefore, it was essential to adjust the design to accommodate the anatomical differences found in Asians and Arabs.

With advancements in research and technology, we can now address worn surfaces in the knee more precisely through CT scans, which are used to manufacture implants with exact measurements using 3D printing technology. This allows for much more accurate surgeries, as the implants and all related components are custom-made specifically for the patient and are single-use.

The "My Knee" program at Dr. Tarabichi's Joint care Center focuses on the finest details and treats each patient individually, based on the unique structure of their knee, surrounding muscles, and ligaments. This care extends beyond just the knee joint, addressing each patient's specific needs and associated medical issues.

The exceptional medical care provided post-surgery significantly impacts the success of the operation, particularly with the personalized physical therapy tailored according to the patient's goals. Additionally, pre-surgical genetic tests guide us in selecting the best pain management and antibiotics for the patient and assessing the risk of potential blood clots in the leg, allowing us to choose appropriate preventive medications.

## Surgery Complications:

Although the success rate for joint replacement surgery is around %98, there remains a very small risk of complications, similar to any other surgical procedure. Potential complications include:

**Infections:** A minor risk of bacterial infections, which can usually be managed with antibiotics.

**Bleeding:** Potential for bleeding during or after surgery.

**Blood Clots:** Risk of thrombosis or clots forming in the veins.

Recent advancements in surgical techniques and preventive measures have significantly reduced these risks.

## Physical Therapy and Rehabilitation:

Physical therapy is the essential phase that complements the surgical procedures, aiming to rehabilitate patients to achieve full mobility, such as kneeling on the ground. This is done under the supervision of highly skilled therapists in this field. Therefore, we advise patients to pay significant attention and commitment to the physical therapy program, which is specifically designed to meet each patient's functional needs. To ensure the best possible recovery in the shortest time, we have provided the latest equipment in our physical therapy department. Our goal is to help patients regain muscle and ligament flexibility, strength and pain-free movements in the shortest period .

## Revision of Artificial Knee Joint Surgery:

Dr. Tarabichi's Center for Joint Care is among the few globally that offers all systems for artificial knee joint revision, catering to various reasons for initial failure, alongside a specialized medical team and the use of artificial intelligence and robotics. **A notable advancement in this field occurred in the current decade when Dr. Samih Tarabishi received his seventh patent in 2021 from the United States and Europe for developing the Persona Revision System from Zimmer. This system is the most advanced worldwide and allows surgeons to address issues in the artificial knee joint. UAE is the only country outside the United States that has access to this system due to Dr. Tarabichi's patent.** Such procedures extremely require high skill and expertise, with a deep understanding of the intricate details of the artificial joint, its function and the potential problems that can arise from replacing an initial joint. Issues can stem from poor quality of the primary joint, instability, incorrect positioning, or infections. Additionally, external factors such as fractures around the joint area during normal daily activities can also contribute to the failure of the initial procedure.

## Frequently Asked Questions

### Q. May a joint replacement surgery be performed for the two knees at the same time?

A. More than 70% of the patients have injuries in the two knees. As the problem will not be solved by replacing one joint, we make sure to perform the surgery for the two knees at the same time. The dual surgery results are excellent and save money, time and exposure to two surgeries. The only thing is that the patient stays in the operations room for another hour, and stays in the hospital for 7 days.

### Q. Are there any special precautions the patient has to follow after the surgery?

A. The patient has to pay attention to infections in the first year following the surgery. Any surgeries performed shall be accompanied with wide-range antibiotics before and after the surgery, even when it comes to dentistry. Also, the patient has to treat any infections in the first year with wide-range antibiotics, to avoid any infection that will spread to the joints.

### Q. May joint replacement be performed for elderly people?

A. Most patients are elderly, and many operations were performed for patients above 80 and 90 years successfully, while assuring their readiness to surgery before performance.

### Q. May joint replacement be performed for those who suffer from chronic diseases?

A. Most patients who suffer from chronic diseases such as diabetes & heart diseases have had surgeries performed successfully after referring them to the specialized physician for screening to obtain his approval for the surgery.

### Q. May joint replacement be performed for obese patients?

A. Obesity complicates surgery, yet surgeries were successfully performed for patients who are above 100-140kg. It is rather challenging to ask the patient to lose weight, as his/her weight may increase difficulties in movement and cause decreased activity after surgery.