

## What Are the Potential Complications and Risks of the Operation?

The risk of serious complications from RIO Partial Knee Replacement is low. Common ones include:

- Heart attack, stroke, etc.
- Wound infection
- Excessive blood loss
- Deep venous thrombosis, pulmonary embolism and fat embolism
- Fracture
- Neurovascular damage
- Loosening of implants, etc.



Robotic Interactive Orthopaedic System (Makoplasty)

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Closed on Sundays and Public Holidays  
by Appointment



# Robotic Interactive Orthopaedic System for Partial Knee Replacement



For enquiries and appointments,  
please contact us

## Robotic Interactive Orthopaedic (RIO) System for Partial Knee Replacement

The knee joint is composed of three parts: patellofemoral joint, medial and lateral femorotibial joints. Due to different reasons, the knee joint may be totally or partially damaged. Total Knee Replacement can be performed if the whole joint is affected and other treatments have failed. Partial Knee Replacement can be considered as one form of treatments if part of the joint deteriorates.

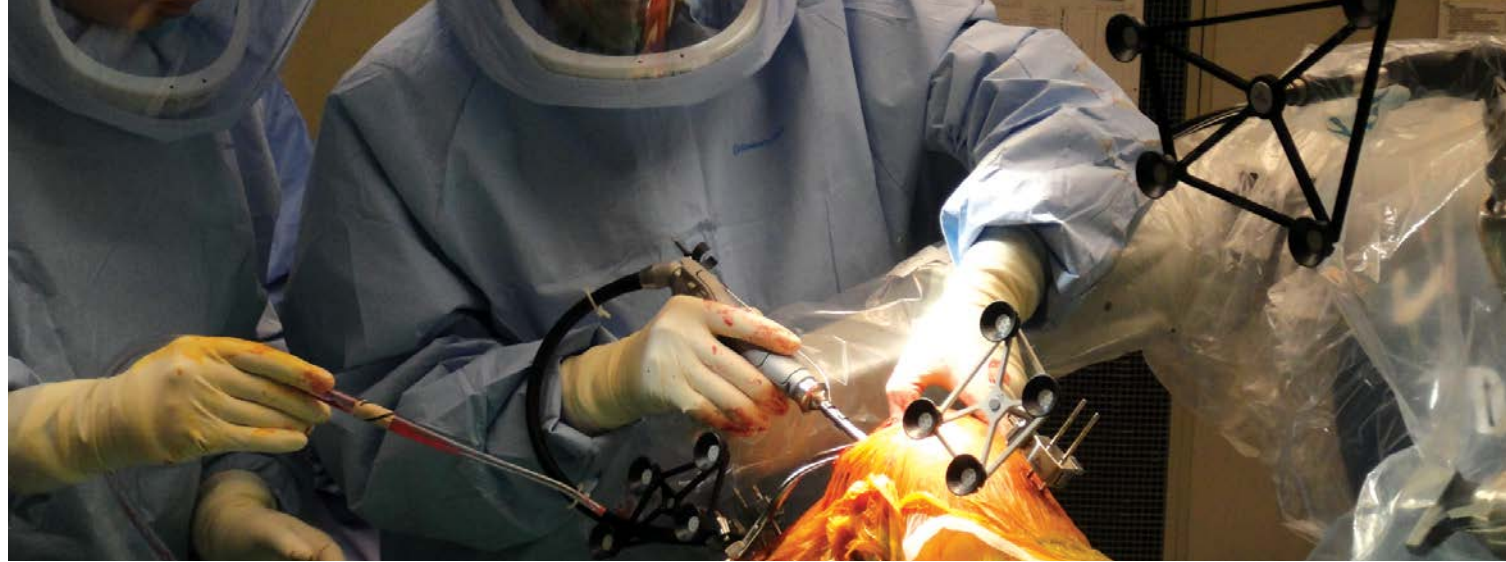
Computer-assisted navigation system (CANS) has been widely used in Total Knee Replacement for about 10 years with very good clinical results.

On the other hand, robotic surgery in medical science has undergone rapid development. Recently, Partial Knee Replacement has experienced a new breakthrough with the combination of CANS and robots.

In the past, Partial Knee Replacement was not widely practised by orthopaedic surgeons mainly because the positioning of implants is often suboptimal which may affect the long-term outcome of the operation. The Robotic Interactive Orthopaedic System (Makoplasty) synergises the advantages of both CANS and robots to achieve high precision and accuracy during surgery. The error in positioning assessment is less than 1 mm or 1 degree.

Before the Robotic Partial Knee Replacement, the patient has to perform a CT scan of the knee. The information is then analysed by special software in the system computer to generate a 3D model of the knee. Based on these data, surgeons can formulate pre-operative planning to ensure accurate positioning of implants.

With CANS, surgeons will assess the soft tissue tension of the knee joint during surgery, fine-tune the bone cuts required and achieve high precision in implants positioning. When everything is well planned, the surgeon then guides the robot to remove the damaged knee bone surfaces. Finally the implants will be cemented in position.



### What Are the Advantages of RIO Partial Knee Replacement?

1. It is relatively minimally invasive with a small wound, less pain and faster recovery
2. Less bone and soft tissues of the knee are removed, thus preserving function of the joint
3. Decrease the difficulty of a Total Knee Replacement if there is a need in future



X-Ray Images of the Knee before Robotic Unicompartment Knee Replacement

### What Are the Indications for RIO Partial Knee Replacement?

When the knee joint is partially damaged and other forms of treatment have failed, Robotic Interactive Partial Knee Replacement can be conducted. Common diseases causing partial knee joint damage include:

- Primary osteoarthritis of the knee
- Osteonecrosis of the femoral condyle
- Post-traumatic knee arthritis

With the RIO System, surgeons can replace just the patellofemoral joint, the medial or lateral femorotibial joint, or a combination of these joints.



X-Ray Images of the Knee after Robotic Unicompartment Knee Replacement