

PATIENT INFORMATION SHEET

Custom Total Knee Replacement

Introduction

Knee pain caused by osteoarthritis, rheumatoid arthritis, or other degenerative joint conditions can severely affect our quality of life. When conservative treatments like medications, physical therapy, and lifestyle changes fail to provide relief, a knee replacement may be necessary. **Custom Total Knee Replacement** offers a tailored, patient-specific approach to help restore mobility and relieve pain, designed specifically for your unique knee anatomy. Having worked closely with his patients for over 20 years to offer personalised solutions for knee, hip and shoulder arthritis, Dr Sunil Reddy will discuss if a Custom Total Knee Replacement would be a good option for your knee osteoarthritis.

What is Custom Total Knee Replacement?

Custom Total Knee Replacement is a personalized implant solution designed to match the unique structure of your knee. It is also called CIM-TKR, Customised individually made (CIM) implant for total knee replacement (TKR). Traditional knee replacements are available in standard sizes, which may not provide the ideal fit for every patient. In contrast, the Symbios Origin uses 3D imaging and precise modeling to create a knee implant that mirrors your natural anatomy, enhancing outcome, function and comfort after surgery.

Key Benefits of Custom Knee Replacement

1. **Better Fit:** Because the implant is custom-made, it fits your knee anatomy perfectly, resulting in greater comfort and a more natural feel.
2. **Improved Alignment:** With accurate pre-surgical planning, the implant can be positioned more precisely, which can lead to improved joint stability and reduced wear. Patient-specific jigs or instruments specific to your knee are manufactured using CT based 3D imaging to implant the custom knee replacement.
3. **Potential for Faster Recovery:** A customized fit can reduce pain after surgery and promote faster recovery by enhancing the overall function of the joint.
4. **Longevity:** A properly aligned and custom-fitted implant may have reduced implant wear and a longer lifespan, potentially reducing the need for future revision surgeries.

How Does It Work?

Step 1: Pre-Surgical Imaging: The procedure begins with a comprehensive 3D CT scan of the patient's knee, which is processed by a team of biomedical engineers in Switzerland. This imaging allows for a comprehensive view of your joint structure, which is then used to create a 3D model.

Step 2: Custom Design: Using the 3D model, advanced software designs a knee implant that perfectly matches your bone structure. This custom implant is tailored to your unique anatomy, ensuring a precise fit. Along with the custom-knee-implant, patient-specific guides are also designed that allow for accurate and precise bone cuts.

Step 3: Precision Manufacturing: The implant is then manufactured to the exact specifications of your 3D model, ensuring it matches your knee's anatomy.

Step 4: Surgical Planning: The detailed imaging and 3D model also allow your surgeon to plan the procedure accurately, optimizing the placement and alignment of the custom implant. Instruments specific to your knee are also manufactured using 3D technology to implant the prosthesis in best possible position and alignment.

What to Expect During the Procedure

The custom knee replacement surgery follows a similar process to traditional knee replacement but with greater precision due to the customized implant and pre-surgical planning. Here is what to expect:

1. **Anaesthesia:** The surgery will be performed under general or spinal anesthesia.
2. **Incision:** An incision is made over the knee joint. Patient-specific jigs allow for smaller incisions and less invasive surgery.
3. **Bone Preparation:** Damaged cartilage and bone are carefully removed, making space for the custom implant.
4. **Implant Placement:** The custom-made implant is inserted and fixed to the bone, ensuring optimal alignment and stability.
5. **Closure:** The incision is closed, and a dressing is applied.

Recovery and Rehabilitation

Post-surgery, you will begin a structured rehabilitation program designed to help you regain mobility and strength. At the Joint Replacement Clinic, we follow Enhanced Recovery pathway for TKR that allows for day of surgery mobilisation, better pain control, blood loss minimisation, early recovery and overall improved outcomes for you. Here is what you can expect during recovery:

1. **Hospital Stay:** You will likely stay in the hospital for 2-3 days after surgery.
 2. **Physical Therapy:** Physical therapy typically starts within a day after surgery. Your therapist will guide you through exercises to improve range of motion and strengthen the muscles around your knee.
 3. **Pain Management:** Pain after surgery is managed in a multi-modality fashion tailored to your needs.
 4. **Returning to Activities:** Most patients can return to low-impact activities, such as walking and swimming, within 6 weeks. Full recovery can take up to 6-8 months, depending on individual factors.
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Some more Frequently Asked Questions

How long will the custom knee replacement last?

Most knee implants last 15-20 years or more, depending on your activity level and other factors. The custom fit may help prolong the life of the implant.

Will I notice a difference between a custom knee and a standard implant?

Many patients report that a custom implant feels more natural due to the personalized fit and optimized alignment. Published medical literature has shown better Patient-reported

How long does recovery take?

While you may return to everyday activities within 6-8 weeks, full recovery typically takes 3-6 months.

Are there restrictions on activities after surgery?

Once fully recovered, many patients can return to low-impact activities such as walking, swimming, and cycling. High-impact activities, like running, may not be recommended to prolong the life of the implant.

Contact Us

If you have any additional questions or would like to schedule a consultation, please contact Dr Sunil Reddy's Practice by calling 08 8232 8899 or request appointment online [here](#).