



## **Minimally Invasive Knee Replacement**

As the term relates to knee replacement surgery, minimally invasive techniques, instruments and implants have been developed that use all the principles of minimally invasive surgery (shorter incisions, less tissue damage and quicker recovery). For patients with knee arthritis, there are 2 different types of surgery. The first is Unicompartmental knee replacement. This is often called a partial replacement. The second type is MIS total knee replacement surgery and is often called quads sparing knee replacement. The type of surgery appropriate for any given patient will be determined individually.

Unicompartmental knee replacement replaces only the area of the knee that is worn out. Patients who are candidates for this surgery include:

- Patients with arthritis limited to one area of the knee not the whole knee
- Patients who are not significantly overweight
- Patients who have good range of motion before surgery
- Patients who do not have any severe deformity or loss of bone
- Patients who are around 60 years of age (although this is changing)

Each patient has to be evaluated on an individual basis to see whether or not they would benefit from partial knee replacement. Those who qualify often see a great reduction in pain and improved quality of life. They tend to retain better motion of the knee compared to patients with total knee replacement, and they feel that the knee is more natural.

However, every patient is not a candidate and this needs to be discussed individually with the surgeon. Sometimes, the surgical procedure is modified once the degree of arthritis is fully appreciated at the time of surgery. MIS unicompartmental knee replacement is not a permanent cure for the knee. It may end up being an initial but not the final procedure for the knee. The factors that determine how long it will last include:

- Age of the patient
- Activity level of the patient
- Bone quality
- Degree of arthritis in other parts of the knee
- Weight of the patient

Knee joint with partial knee implants



Currently, the number of patients having this procedure is growing each year. The true success of the procedure is still not known. But the best estimates are that these procedures can give patients good relief of pain and improved function for about 10 years and then total knee replacement may need to be done. The recovery from MIS unicompartmental knee replacement is somewhat quicker than from traditional replacement. Patients stay in the hospital for about 2 days. You can walk on it right away. The risks of surgery and the complications for this procedure are much the same as those with total knee replacement and include; infection, stiffness, anesthesia risks, blood clots, subsidence of the prosthesis into the soft bone, progression of the arthritis in the other parts of the knee, wearing out of the plastic insert, continuation of pain and the need for further surgery.

## What is done at surgery?

The surgeon makes an incision that is much smaller than traditional knee surgery. The affected areas of the knee are exposed. They typically show the covering of the bone is all worn off. The bones are then shaped to accept the new surfaces, which are smooth metal on a hard durable plastic liner. The plastic sits on a metal tray. The arthritic part of the knee joint is exposed and confirms the diagnosis. Specially designed instruments and tools are used to shape the surface of the arthritic part of the bone. The shape conforms to the new parts that are to be used. The best size for each patient is determined. Different cuts and surface preparation is done on the femur (thigh bone) and the tibia (the shin bone) Once the new parts are cemented in place, they fit snugly and allow the patient to start their recovery right away.

Arthritic knee joint surfaces

## MIS Total Knee Replacement

For patients who have more extensive arthritis and are candidates for MIS knee surgery, this newer method of doing knee replacement can offer the patient several benefits such as a shorter incision, less immediate postoperative pain, quicker mobilization and a quicker return to work, driving etc. The results from this type of surgery are not superior to traditional knee replacement. But the attraction of shorter incision and quicker recovery makes this an exciting option for many patients. Patients who are candidates for this type of surgery include:

- Patients who are not significantly over weight.
- Patients who have not have numerous previous surgeries with scars
- Patients who do not have severe deformity such as bow leg or knock knee
- Patients who have good motion before surgery
- Patients who do not have any history of knee infection

The traditional incision used for knee replacement cuts into the tendon above the kneecap and goes higher up into the thigh, which is often necessary but will cause increased soreness in many patients. This can slow down progress in therapy and make bending the knee more painful. Most patients will get good motion in time but it does take a bit longer. The incision used for MIS Quads Sparing knee replacement surgery avoids the incision into the tendon above the knee. Specially designed instruments are used to perform the same surgery through a smaller and less painful surgery. Recovery can be quicker and motion better. The implanted parts look much the same as typical components used with traditional knee replacement. However, improvements in implant design allow for better bending in many patients. The risks of MIS Total Knee Replacement surgery are much the same as traditional incision surgery. The risks specific to doing this with smaller incisions include tearing of the skin or tissue, injury to adjacent structures due to the smaller incision and reduced surgical visualization.

