

## **Possible complication after Total Knee Arthroplasty TKA**

Every medical intervention and operation holds potential dangers and complications. Possible risks may appear before, during or after the operation.

Beside the risk that comes along with anesthesia (“anesthetic risk”), different “general surgical risks” are existing with every operation, as well as “specific risks after TKA” that are associated with a Total Knee Arthroplasty (TKA). Furthermore every patient bears an individual risk, depending on sex, age, genetic disposition and medical history.

Concerning the “anesthetic risk” you will be handled out a “**questionnaire and patients information sheet**” and informed personally within a separate meeting with one of the staff-members of the department of anesthesia.

Further information about the anesthetic “questionnaire and patients information sheet” are available online as well. More information’s about the Department of Anesthesia in the Spital Oberengadin, under direction of Dr. Mark Brouwer and with the collaboration of Dr. Floris Tichler and Dr. Michael Stephan, are available at [www.spital-oberengadin.ch](http://www.spital-oberengadin.ch).

The following information therefore mainly contains “**General surgical risks**” (Chapter I) and “**Specific risks after TKA**” (Chapter II) associated with Total Knee Arthroplasty (TKA).

### **Chapter I. “General surgical risks”:**

Preliminary, accompanying or subsequent procedures are not entirely free of risks. Infusions or injections can occasionally cause local soft tissue damages (necrosis), abscesses and/ or vascular irritations/ inflammations as well as temporary or in very rare cases also permanent nerve damages (pain, paralysis).

Despite all care with which allogenic blood bottles, plasma derivates and other blood products are manufactured, residual risks still remain during the transfer and/ or application. Especially infections, e.g. rarely caused by hepatitis viruses (liver inflammation), extremely rarely by Human Immunodeficiency Virus (HIV/ AIDS) as well as pathogenic agents of BSE, a new variant of Creutzfeld-Jakob-Disease or so far unknown pathogenic agents.

Superficial wound healing disorders and soft tissue infections are usually controlled easily. Due to wound healing disorders or individual disposition, painful and/ or aesthetically disturbing scar proliferation with skin discoloration (keloid) may appear; scar- or capsule contraction can lead to limited movement. With conservative treatment (e.g. ointments, massage) and/ or corrective surgery one can try to improve such developments. A feeling of numbness of the skin in the area of the surgical scar may remain. Soft tissue calcification in

the area of the operated joint can cause pain and movement restrictions, in extreme cases lead to joint stiffness. A surgical procedure to remove the calcifications may be necessary. If a medicamentous and/ or physical prevention can be considered, we will previously discuss it with you.

Despite all care during the operation blood vessels, adjacent tendons, muscles or nerves might rarely be injured. Traumas of larger vascular structures, e.g. in the hollow of the knee, generally require an immediate surgical hemostasis, under certain circumstances reconstructive surgical interventions. Swelling, bleeding and major haematoma in the area of operation are not uncommon. Normally, the routinely inserted wound drainages, eliminate blood and secretion. In particular cases, a large haematoma must be removed surgically and/ or a new drainage must be placed. If a nerve is injured, temporary or rarely persisting paresthesia, miss sensations, dysesthesia, pain of the nerve (neuralgia) or paralysis of the leg (e.g. weakness of the foot extensors) may occur. In case of a transaction of a nerve, suturing of the nerve cannot restore the complete function in every case. Damages to nerves or soft tissues caused by physical pressure with consecutive sensory disturbances and, rarely, paralysis of limbs and skin as well as tissue damage caused by creeping current, heat (e.g. heating mats) and/ or disinfectants normally degenerates themselves. In single cases they might require a protracted treatment. A complete restoration of the nerve function does not always succeed and permanent scars can remain. Often the operation is performed with a “blood pressure cuff” to achieve blood arrest. This may, in rare cases, lead to skin damages or extremely rarely to nerve damages with consecutive paralysis.

Like after every surgical procedure, blood clots (thrombosis) can form in larger vessels and subsequently be displaced and in some cases cause a vascular obliteration (embolism). As preventive procedure, among other things, the application of anticoagulant medication (mostly subcutaneous injections, sometimes orally or intravenous application) has proved of value. This medication increases “bleeding tendencies” and can rarely cause a severe coagulation disorder (coagulopathy).

Also small parts of the bone cement or tissue- and fat particles can seal a blood vessel. If this leads to a pulmonary embolism, an intensive care treatment might be necessary.

In case of allergic reactions or hypersensitivity (e.g. analgetic or narcotic medication, other drugs, disinfectants, bone cement, metal alloy, latex) temporary swelling, itching, sneezing, skin rash, dizziness or vomiting, and similar reactions can occur.

For smokers, it is not uncommon to suffer from extensive disorders of tissue and/ or wound healing. Serious complications in vital functions (heart, circulatory, respiratory or renal system) and permanent damage (such as organ failure, paralysis) are very rare.

The following **risks** and **complications** are possible, but not every risk is equally likely:

- Wound healing disorders - scar and scar proliferation – abscess formation - tissue induration
- sensitivity disorders / numbness sensation (usually temporarily, rarely permanently) - circulatory shock - miss sensations - embolism - blood poisoning - blood loss / vascular injury
- nerve injury - thrombosis/ embolism - heart attack - pulmonary edema - pneumonia - renal failure – stroke (TIA/ PRIND) - pain - fractures - bruising / hematoma - Infection with HIV /

hepatitis through contaminated blood products provided (result of blood loss/ no autologous blood bottles are used) - Infectious Diseases - Bacterial infections - periarticular ossification (bone formation) - pain and movement restrictions due to periarticular ossification.

## **Chapter II. “Specific risks after TKA”:**

**Wound healing disorders:** Soft tissue swelling, knee effusion, wound secretion, wound necrosis (probable necessity for re-intervention). Rarely soft tissue infections can lead to a joint involvement.

**Malfunction of the “Patella tracking”** may cause "anterior knee pain", patellar instability ("Patellar Maltracking"), Patella fractures, loosening of Patella components, "Patellar clunk syndrome", rupture of vastus muscle, rupture of the quadriceps and/ or Patella tendons, and rupture and avulsion of the bony insertion of the patella tendon at the tibial tuberosity (probable necessity for re-intervention and/ or replacement). Corrective surgery on the kneecap, and especially patella surface replacement with prosthesis may cause bone nutrition disorder, which can lead to a fracture of the kneecap or early loosening of the patella implant. Due to uneven muscle or ligament tension the kneecap can subluxate or rarely dislocate of the knee joint. Sometimes a further intervention is required.

**Nervous injuries:** Lesions of the peroneal nerve (N. peroneus), tibial nerve (N. tibialis) and/ or sciatic nerve (N. Ischiadicus) are rare (probable necessity for re-intervention).

**Vascular injuries:** Lesions of the popliteal vein and/ or artery are rare (probable necessity for re-intervention).

**Infections:** Superficial infection of the soft tissue, deep infection involving the prosthetic components and possibly resulting in the loosening and the need to remove the prosthesis (partial/ complete) (probable necessity for re-intervention and/ or replacement). Very rarely this infection cannot be controlled and the preservation of the leg is in danger.

**Aseptic loosening of single prosthetic components:** If the prosthesis or single components loosen after a few years or a material damage occurs, it is usually possible to exchange them. This also applies to fatigue fractures of bone nearby the prostheses. Long term changes of the bone around the prosthesis, may require extensive interventions for refixation of the prosthesis (probable necessity for re-intervention and/ or replacement).

**Wear of the individual prosthetic components:** Development of wear particles, metal wear, polyethylen wear (probable necessity for re-intervention and/ or replacement).

**Malpositioning and/ or malalignment of prosthetic components** (probable necessity for re-intervention and/ or replacement).

**Instability of the prosthesis:** So-called “flexion instability”, so-called “global instability”, so-called “rotational instability” (probable necessity for re-intervention and/ or replacement).

**Decreased mobility (rigidity) of the prosthesis:** Movement restrictions (up to joint stiffness) cannot always be ruled out (possibly need for re-intervention with closed and/ or open mobilization, probable necessity for replacement).

**Mechanical problems** because of the **prosthetic components and/ or so-called "soft-tissue dysbalance"** (especially regarding mobility, strength and stability) may be caused for example by so-called "over- or undersized femoral component", "posterior placement of the Femoral component", "over- or undersized tibial component", "medial shift of tibial component", and so-called "lateral shift of patellar component". These mechanical problems may cause anterior knee pain, weakness, instability or rigidity of the prosthesis (probable necessity for re-intervention and/ or replacement).

**"Impingement" problems:** Hanging of the patella, peripatellar fibrosis, dysfunction of popliteal tendon, overhang of the prosthesis, frequent haemarthros (probable necessity for re-intervention and/ or replacement).

**"Periprosthetic" fractures:** "Notching" of the dorsal femoral cortical bone may cause a supracondylar femoral fracture (probable necessity for re-intervention and/ or replacement). Rarely a bone is fractured when inserting the prosthesis. The fragments have to be reattached using plates, screws and/ or wires or a stem-guided prosthesis has to be used. The proposed embedding method can thus change.

Occasionally there is an excessive bone resorption with severe inflammatory symptoms and severe pain (so-called "Sudeck's syndrome"). These consequences are mostly reformed by physiotherapy and/ or drug treatment.

The transient **stress-reduction** and the surgical trauma of the operated limbs weaken the muscles, the calcium content of bone is reduced and the adjacent joints lose their mobility.

Occasionally the post-operative leg-length may differ, especially if substantial destruction of the joint has necessitated removal of great amounts of bone. Mostly an artificial elevation of the shoe heel is sufficient to correct the difference.

**Material fatigue and fracture of the prosthesis** (probable necessity for re-intervention and/ or replacement).

**Allergic reaction to metal alloy** (probable necessity for replacement).

**Patient-related factors:** Inappropriate preferences, expectations and satisfaction of the patient.

Further information about the **computer-assisted, minimal invasive Total Knee Arthroplasty**, as performed routinely at the Department of Orthopedics, Spital Oberengadin can be found at [www.orthopaedie-samedan.ch](http://www.orthopaedie-samedan.ch)