SHOULDER JOINT REPLACEMENT
Information for Patients

WHAT IS SHOULDER JOINT REPLACEMENT

The shoulder joint is the most mobile ball and socket joint in the human body and is the most important joint of the shoulder girdle. It is formed by the head of the humerus (upper arm bone), which articulates with the scapula (shoulder blade), and it allows movement in several directions. Its stability and mobility depend on the joint capsule with the ligaments and, above all, on the function of the internal shoulder muscles.

Total shoulder replacement is a surgical procedure during which the shoulder joint is replaced with an artificial socket and an artificial upper part of the humerus.

The most common causes of joint destruction are degenerative changes (osteoarthritis), massive rupture of the rotator cuff muscle, and aseptic necrosis of the head of the humerus, while less frequent causes are inflammatory arthritis (rheumatoid or psoriatic arthritis), previous injuries to the shoulder (dislocation or fracture), and bacterial infection.

The patients' main symptoms are pain, restricted movement, and catching in the shoulder.

Replacement surgery is undertaken when all conservative and other surgical treatment options have been exhausted. Since the replaced parts of the joint can wear out over time, we generally advise patients to put off the operation as long as possible.

WHAT ARE THE EXPECTED BENEFITS OF SHOULDER REPLACEMENT SURGERY?

The operation is expected to reduce pain in the affected shoulder and improve movement. Most patients cannot do heavy physical work after this operation, but they can return to their usual everyday activities 3 to 6 months after surgery. Patients are advised against lifting heavy loads or doing work that requires raising their arms above shoulder level. Intensive and strenuous activities (running, tennis, alpine skiing, riding, contact sports, football or basketball) must be avoided, but the usual daily activities and swimming are encouraged.
Most patients are very satisfied with the outcome of surgery and are able to maintain adequate pain-free mobility in the operated shoulder for at least 10 years or longer.

**WHAT ARE THE RISKS OF SHOULDER REPLACEMENT SURGERY?**

Serious complications after total shoulder replacement are uncommon. In most patients, the benefits of the procedure outweigh its risks. However, complications can occur during the operation, during the hospital stay, or several years after the operation. Before deciding on surgery, you must be aware of possible risks.

- Bone fracture and damage to nerves (axillary nerve) or blood vessels can occur during the procedure. Most of these complications are successfully treated directly after their occurrence.

- Blood loss during and after the operation usually does not exceed 500ml. Greater blood loss requires replacement by transfusion.

- Operations on the shoulder slightly increase the risk of blood clot formation (deep vein thrombosis, pulmonary embolism). With preventive measures (medication, early mobilisation), blood clots occur in only about 1% of patients.

- Bacterial infection of a total shoulder prosthesis is a rare complication with serious consequences. It can develop several years after surgery as a result of spreading through the bloodstream from a distant site. Infections are prevented with the use of antibiotics during and sometimes after the operation. Infection is treated with antibiotics given through a drip, and it often requires additional surgery.

- Dislocation of the prosthesis is a possible complication, especially in cases where the shoulder muscles are poorly preserved or torn. In most cases, the surgeon can put the humeral head back into its proper place with the patient under mild general anaesthetic. Occasionally, reoperation is required, and parts of the prosthesis must be replaced. To keep the artificial joint from dislocating, the patient must observe special precautions during movement.

- Loosening of the prosthesis is a consequence of wear or infection of its components several years after implantation.
- Fracture of a bone or part of the prosthesis can occur as a result of fragility of the bone or reduced endurance of the prosthesis, usually several years after surgery. It is most often the consequence of a fall on the operated extremity.
- Stiffness in the shoulder after the operation can be a consequence of contracted muscles and tendons around the joint or, less frequently, bone formation within soft tissues (heterotopic ossification). Some patients need to be referred to a rehabilitation centre 4 to 5 weeks after surgery.

**ARE THERE ANY ALTERNATIVES TO SURGERY?**

If you decide against surgery, you can expect the pain and loss of motion in your shoulder to grow worse over time, which means that you will eventually have a constant need for pain medication. Your refusal to undergo the proposed operation can have no life-threatening consequences. Non-surgical treatment for osteoarthritis of the shoulder includes physiotherapy, painkillers, anti-inflammatory drugs, and injections of drugs into the painful joint. Patients with rheumatic diseases (e.g. rheumatoid arthritis) also receive special antirheumatic drugs.

**HOW SHOULD YOU PREPARE FOR ADMISSION TO HOSPITAL?**

While you are waiting at home for the replacement operation, it is advisable that you regularly perform stretching and range-of-motion exercises for the affected shoulder. With stronger muscles, you will make faster progress in your rehabilitation after surgery. Prepare for your return home after the operation in advance, for instance by changing the position of your bed, or reorganising your kitchen and wardrobe so as to provide easy access to the shelves. Heavy physical work and excessive strain on the shoulder must be avoided after the operation.
WHAT HAPPENS ON THE DAY OF SURGERY?

You will be admitted the day prior to the operation. You should bring to the hospital your health insurance card and a referral note and findings received from your primary care doctor. You will be asked to sign a consent form for anaesthesia and surgery, and you will meet your surgeon, who will answer any questions you may have. The day before the operation, you will be given a laxative to cleanse your bowel. You will fast (have nothing to eat or drink) for at least 6 hours before the procedure. In the morning of the day of the operation, you will take only those of your regular medications that have been approved by your doctor. You will be asked to remove all jewellery, and you will take a bath or a shower. During the morning ward round, as a safety precaution, the doctor will mark the upper limb on which the operation is to be performed.

Before the operation, a physiotherapist will assess mobility in your upper extremities and show you basic exercises for the shoulder joint, which you will start doing soon after surgery. A nurse will take you to the operating suite and leave you with the anaesthesia team. An anaesthesiologist and a nurse anaesthetist will check your identity and prepare you for the operation. Shoulder replacement surgery is performed in the operating theatre under general anaesthetic, with the patient fast asleep.

HOW IS THE OPERATION PERFORMED?

The operation takes about 60 to 80 minutes. An incision is made on the front part of the shoulder; its length depends to a considerable extent on the thickness of the subcutaneous fatty tissue.

At the beginning of the procedure, the upper part of your arm bone with the ball (humeral head) and the damaged surface of the socket in your shoulder blade (glenoid) are removed. The humeral and the glenoid components of the prosthesis are then inserted into the prepared bones. The choice of the type of prosthesis depends on the biological condition of the patient and the shoulder joint, firmness of the bones, the patient’s age, and individual needs. Different types of shoulder prostheses are available. They are divided into cemented prostheses,
suitable for elderly patients and patients with osteoporosis, and uncemented prostheses, suitable for younger and more active patients. They are also divided into total and partial prostheses. Every type of prosthesis has its advantages and shortcomings. The selected prosthesis must give the optimal result for the patient.

**HOW LONG WILL I NEED TO STAY IN HOSPITAL?**

The length of the hospital stay depends on a number of factors. If there are no complications, most patients complete the rehabilitation programme in 5 to 7 days.

After the operation, you will spend a short time in the recovery room. From there you will be transferred into the intensive care unit (ICU), where you will start to receive infusions of fluids, pain medication, and occasionally an antibiotic to prevent infection. On the first day, you may be given a medicine to prevent blood clots from forming in your arms and lungs.

On the day of surgery, under the supervision of a physiotherapist, you will perform basic exercises to improve blood supply in your upper and lower extremities, and apply ice to the operated area. Your arm will be immobilised with a splint.

The following day, you will probably return to the ward and continue your rehabilitation. You will learn which shoulder movements are allowed and perform range-of-motion exercises. During the first three weeks, these will mainly be passive exercises carried out with the help of a physiotherapist or a special device, a CPM machine. Later, you will do active exercises and have training in activities of daily life (dressing, putting on shoes, combing hair, and brushing teeth). Whenever moving your shoulder, you must avoid external rotation (turning the arm outward), which can cause dislocation of the prosthesis.

During the hospital stay, your wound dressings will be changed regularly, and blood tests will be performed as required. You will receive medicines against blood clots, and you will be taught to administer the injections on your own.
WHAT SHOULD YOU DO AFTER DISCHARGE FROM HOSPITAL?

After discharge, your dressings will be changed every two to three days by your primary care doctor, who will also remove the sutures or clips from your wounds about 12 to 14 days after the operation. After returning to your home environment, until the end of the third week, you will attend the outpatient physiotherapy unit, where you will continue with passive exercises to maintain and increase mobility. In this period, you will be wearing a special support bandage (Desault). After three weeks, you will begin active exercises, and instead of the bandage you will wear only a sling. You should remain on anticoagulant therapy until the 14th postoperative day, and take your pain medication only when needed.

You will be asked to attend a follow-up examination 6 to 8 weeks after the operation. In case of inadequate range of motion in the shoulder, your surgeon may refer you to a rehabilitation centre.

At home, you are advised to continue with the exercises you have learned and avoid lifting heavy loads, raising your arms above shoulder level, and external rotation in the shoulder.

You can start driving once your muscles are strong enough to allow safe turning of the steering wheel and changing of gears – usually no sooner than 8 weeks after surgery. The same restriction applies to household chores, gardening, bowling and swimming. Ask your surgeon during your first follow-up visit when you can resume these activities.

WHO SHOULD I CONTACT IN CASE OF DIFFICULTIES AFTER DISCHARGE?

If you have any kind of difficulties after discharge from hospital, first consult your primary care doctor or, outside regular working hours, the doctor on duty at the community health centre. When seeing a doctor, always bring with you your discharge summary from the hospital. In case of a major complication, your doctor will arrange an urgent appointment with an orthopaedic surgeon.
Consult your doctor if you notice any signs of infection in the operated area, such as redness, heat and swelling or if your wound starts to leak fluid. If a bacterial infection is suspected, you **may not** take any antibiotics before seeing an orthopaedic surgeon.