Department of Orthopedics and Trauma Surgery

Joint Surgery & Endoprosthesis

University Hospital Cologne offers all well-established diagnostic and treatment procedures for degenerative conditions and injuries to the lower extremities. We provide comprehensive medical treatment and care for all orthopedic and trauma surgery indications for the hip, knee and foot joints and place great value on delivering personalized advice and care as well as using state-of-the-art implants. As a university clinic, all of our medical care and treatment is delivered in line with the latest scientific evidence and modern treatment approaches.

All of our surgery is performed using cutting-edge technology such as operating microscopes and digital x-rays as well digital implant planning software. Our navigation computer and 3D image converter help our surgeons to accurately position and align implants, such as screws and prosthetic joints, during tumor resections and to protect critical structures such as nerves and blood vessels while simultaneously making sure that the required safety margins are observed.

Our strengths

Comprehensive treatment and care

Our department provides comprehensive treatment and care to patients with tumors, infections, complex fractures and deformities through cooperation with the University Hospital's other departments and clinics.

Multidisciplinary care

Our close collaboration with experts from other disciplines also allows us to treat patients with multiple internal disorders. Patients with severe heart and lung conditions, for example, are thoroughly assessed with regard to their personal risk regarding anesthesia and surgery, and are consulted regarding treatment options.

Extensive experience in joint replacement surgery

We are highly experienced in primary and revision endoprosthesis and perform more than 400 partial and full joint replacements a year. These surgical interventions are performed by leading surgeons who perform a minimum of 50 replacements every year.

Treatment of periprosthetic joint infection

Our department specializes in the treatment of joint replacement infections. This treatment is
delivered in collaboration with a multidisciplinary team of specialists that meet on a weekly basis to discuss complex cases and make treatment recommendations.

Treatment of tumor diseases

On occasion, the only viable treatment for a tumor affecting a major joint is to perform a full joint replacement. Acting as a Tumor Center in cooperation with the Center for Integrated Oncology (CIO) Köln Bonn, we have our own orthopedic-interdisciplinary tumor board and extensive experience in tumor surgery. In tumor disease, secondary treatment can, depending on the underlying diseases, be provided by the Hospital's Oncology and Radiotherapy Department.

State-of-the-art medical technologies

Our department is equipped with the full range of technologies required to perform even highly complex revision surgery and has its own surgical intensive care unit featuring the latest equipment.

Postoperative rehabilitation

Drawing on multimodal treatment options, we draw up individual, early post-operative mobilization plans that are designed to preserve and restore the affected joint's function to the greatest extent possible. For this reason, we closely collaborate with the internal Rehabilitation Department, which includes physiotherapy, manual and occupational therapy, and enables us to offer patients both in-patient and out-patient rehabilitation programs.

**Our treatment methods at a glance**

1. Minimally invasive hip, knee and ankle surgery
2. Joint-preserving surgery such as corrective surgery
3. Cartilage repair surgery (e.g., AMIC, OATS)
4. Endoprosthesis implants
5. Partial knee replacements (sled prosthesis)
6. Loose implant replacements
7. Infected implant replacements
8. Surgical treatment for patients with severe pre-existing conditions

**Joint Surgery Specializations**

This section contains information on some of the conditions that are most frequently treated at our department. In addition, we also offer other treatments and surgery for lower extremity joint conditions.

Degenerative conditions
University Hospital Cologne offers comprehensive treatment for degenerative conditions (arthritis) of the joints in the legs and feet, and our services include both joint preserving as well as joint replacement surgery.

In these degenerative joint disorders, the complex interactions between the cartilage, bone, joint capsule, synovial membrane, joint fluid as well as neural and arterial supply and the joint's alignment become impaired due to damage to muscles, tendons and ligaments. This, in turn, causes joints to become misaligned, painful and inflamed, and limits the joint's range of motion.

These kinds of degenerative changes predominantly affect the hip (coxarthrosis) and knee joints (gonarthrosis). Our department also offers treatment for the precursors of arthritis of the hip, which include femoroacetabular impingement and damage to cartilage and tissue in the hip socket (acetabular labrum). The degenerative changes encountered most frequently in the knee joint are damage to the meniscus and cartilage. However, we also regularly treat patients suffering from damage to the Achilles tendon (achillodynia) as well as from degenerative changes in the small bones in the hindfoot (chondromalacia) and the big toe joint (hallux rigidus), as well as forefoot deformities such as bunions (hallux valgus), hammer toe (digitus malleus) and claw toe (digitus flexus).

To diagnose these conditions, we use both clinical examination and imaging methods. Our basic diagnostic procedures include both standard and special x-ray images as well as diagnostic imaging using Computed Tomography (CT) or Magnetic Resonance Imaging (MRI). When required, we also use contrast agents and perform special Arthro CT or MRI scans to obtain more detailed information from diagnostic images and to detect even minor cartilage damage early on. We furthermore use state-of-the-art ultrasound units, electrophysiological studies and minimally invasive procedures such as arthroscopy (keyhole surgery) to support our diagnostic process.

Injuries

University Hospital Cologne offers all modern diagnostic and treatment methods for effectively treating bone and joint fractures. Some of the injuries patients most frequently present are fractures of the acetabulum, the femur, tibia and fibula; damage to cartilage, ligaments and meniscus; fractures in the back of the foot and metatarsal bones, as well as torn tendons. We furthermore specialize in the treatment of fractures of the ankle joint (medial malleolus, lateral malleolus, talus) and the entire foot.

Our top priorities in the provision of all of our treatments are to preserve or restore mobility as quickly as possible and to prevent secondary diseases such as arthritis. To do so, we offer patients both bone-preserving fracture stabilization and endoprosthetic joint replacements.

Our comprehensive diagnostic radiology procedures, which include the use of modern x-ray machines, CT and MRI scanners as well as ultrasound machines – which, if required, can also be used to produce dynamic and functional 3D cross-sectional images – provide an optimum basis for planning surgery. We furthermore use a special software program for our virtual surgery planning, which ensures that implants are fitted safely and with a high level of accuracy.
Endoprosthesis

In orthopedics and trauma surgery, endoprosthesis is a procedure for replacing a joint in the body that has lost its functionality either through injury or disease in part or whole with an implant. Common indicators for the use of endoprosthesis include degenerative joint conditions, fractures and tumors.

University Hospital Cologne offers the complete spectrum of artificial joint replacements. One of our main specializations is the treatment of severely ill patients with multiple pre-existing conditions or infections.

As a certified Center for Endoprosthetic Surgery, EndoCert®, we guarantee that prosthetic joints comply with the highest quality standards of the German Society for Orthopedics and Orthopedic Surgery (DGOOC). Most replacements comprise partial or full replacements of the major joints such as the hip TEPs and knee TEPs. Our Endoprosthetic Department furthermore takes part in the German Endoprosthesis Register in order to contribute to health care research and patient safety.

Prosthetic checkups

Following completion of the rehabilitation process – which generally continues for six weeks after discharge – patients with an endoprosthesis will be invited to University Hospital Cologne for their first checkup as a means to initiate the annual prosthetic checkups.

Our patients benefit from the comprehensive support provided during these checkups because they allow us to identify changes in an endoprosthesis early on. This means that unavoidable interventions can be dealt with before the underlying cause turns more severe.