Avicenna Clinic

International Spinal, Joint and Neurosurgery Clinic

For a pain-free future

In medicine, we should know the causes of disease and health.

Avicenna (980 - 1037)

Foreword

Dear Readers,

Our bodies represent a complex series of interacting systems. Here at the Avicenna Clinic one of our focuses is on the musculoskeletal system – or to put it another way, the spine and joints – while the other is the body's most important control centre: the brain.

Specialising in the spine and joints, we tackle the many complaints and conditions that can affect these areas. Back pain in particular has become an incredibly widespread condition: around 80 per cent of the population suffer at least once in their life from back pain - and as much as a third suffer it constantly. As time progresses, the symptoms become unpleasant and can diminish the sufferer's quality of life. Back pain can cause tension, limited movement, stress and depression. The treatments we offer range from conservative therapies to minimally invasive treatments to surgical interventions. Early diagnosis and correctly targeted interdisciplinary use of complete therapeutic approaches are vital here.

In our neurosurgery department we deal with detection, treatment and aftercare of diseases of the central nervous system. According to the Federal Ministry for Education and Research, around 450 million people worldwide suffer from brain disease. This includes everything from cysts to aneurysms to tumours, whether benign or malignant. It can cause pain and frequently also results in dizziness, numbness and disruption to speech, vision and movement. Modern treatment methods, however, mean that operations on the delicate head area can be carried out far more gently than in the past. We have over 20 years' experience in conducting such highly specialised operations.

No matter whether it involves the spine, joints or brain, a variety of factors determine the right treatment for each individual. This is why we explore the cause in detail in our radiology department and work with you to create your personalised treatment plan.

Over the next few pages, we invite you to take a look at our work and the possible disease patterns and treatments we deal with.

Dr. Mustler Sabarini

Director Avicenna Clinic

Spotlight on the intervertebral disc

Over the course of everyday life, the spine is subjected to various stresses and loads. The bulk of the load is borne by the intervertebral discs, which are made up of a soft, jelly core and a stronger, outer ring of fibre that acts like a small shock absorber between the individual vertebrae. In certain circumstances – as a result of stresses, repeated injury or genetic conditions, for example – the discs lose elasticity, water content and healthy cells, and stop working properly. Cracks appear. If the pressure on the discs increases further, tissue protrudes into the spinal canal.

Protrusion means that the tissue remains within the fibrous ring and presses indirectly on the ligament behind or on the nerve root. We speak of a prolapse where there is a middling-sized slipped disc which still lies between the ring of fibre and the longitudinal disc. In the case of a free sequestrum, the prolapse is displaced into the nervous channel through a tear in the longitudinal disc. The symptoms patients feel depend on the location of the slipped disc. In the lumbar spine it can cause back pain as well as, for example, pain in the legs, tingling, feeling numb, loss of strength, limitation of mobility, urination disorders or atrophy of the leg muscles. Slipped discs in the cervical vertebrae can result in complaints including (but not limited to): pain in the neck, arm or the back of the head, migraine-type pain, prickling, numbness, disruption to fine motor skills, dizziness, sight problems, short attention span, stiffness or paralysis. In the thoracic spine, some patients feel circular waves of pain through the chest or abdomen. These complaints can sometimes resemble a heart condition. Any of these symptoms may appear individually or in combination. Loss of function in an intervertebral disc also puts greater pressure on the next disc and the vertebral joints and can therefore lead to instability.

Typical back problems

Spinal canal stenosis (narrowed spinal canal)

In spinal canal stenosis – also known as „window-shoppers' disease" – the spinal canal narrows as a result of deposits or bony formations. The nerves that run through the canal subsequently get trapped. This usually results in pain on walking that often radiates into the leg. Bending forward or sitting down relieves the pain, since these movements temporarily re-open the spinal canal. Spinal canal stenosis usually develops after many years of wear and tear or as a result of spondylolisthesis and vertebral disc protrusions or prolapses.

Spondylolisthesis

In a complex arrangement, the spinal column forms an S-shaped structure into which the individual elements fit precisely. In the case of spondylolisthesis, one or more vertebrae slip out of their original position. Only in an advanced stage do patients experience pain, which sometimes radiates to other parts of the body. Congenital deformations of the spinal column are one of the most common causes of sliding vertebra. But natural wear and tear processes, early bone loss or fractures can also cause instability of the spinal column. In advanced cases, there is often constant pain, weakness, a feeling of numbness and rarely bladder emptying disturbances.

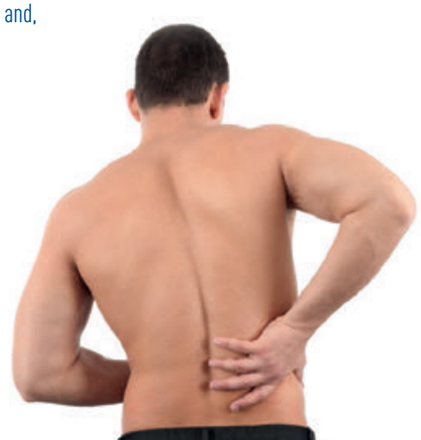
Osteoporosis / osteoporotic spinal fractures

Osteoporosis is one of the most common bone diseases there are, occurring mainly in old age and mostly affecting women. In osteoporosis, the structure and density of the bones change, causing them to become porous. As a result, the risk of fractures and breaks increases. The disease can affect the entire skeleton as well as individual bones - such as the vertebral bodies. A variety of factors can contribute to the cause. These include a lack of calcium and vitamin D, for example, hormone disturbances and lack of exercise.

Back problems: an overview

Back pain is not always a result of the „usual suspects" such as a slipped disc or narrowed spinal canal. The causes can be as varied as the manifestations. In our clinic we specialise in diagnosing and treating a wide variety of back problems. These include:

- **Chronic pain**
  Pain that lasts over six months, as a result of serious wear and tear to the spine, adhesions after operations, phantom pains, arterial occlusive disease, etc.
- **Intervertebral disc degeneration**
  Reduced elasticity, height and water content in the disc
- **Facet syndrome (Arthrosis of the vertebral joints)**
  Wear and deterioration to the small vertebral joints which causes localised pain in the spine at the neck, chest or lumbar region
- **Sacroiliac joint pain (SI Joint Pain)**
  Discomfort at the joint between the sacrum and the ileum (in the pelvis) as a result of trauma, wear and tear or inflammation
- **Coccyx pain**
  Often a result of inflammation of the bone's outer surface, injury, contusions or difficult childbirth
- **Post-nucleotomy syndrome**
  Recurrent post-operative pain
- **Tumours of the spinal column**
  Subdivided into benign or malignant tumours and metastases (transmigration of tumours from other parts of the body)
- **Myelopathy**
  Permanent damage to the nerve tissue in the spinal column of the cervical or thoracic spine as a result of trauma, slipped disc, constriction or disturbed blood circulation
- **Syringomyelia**
  A hollow space filled with liquid forms in the spinal marrow. This cavity contains no nerve cells.
- **Vertebral fracture**
  Results from injuries, osteoporosis or after inflammation. Linked to severe pain and, frequently, to neurological failure.
- **Scheuermann's disease**
- **Spondylitis ankylosans**
- **Thickening of ligaments (ossification of the posterior longitudinal ligament OPLL)**
- **Vascular deformities (angiomas, hemangiomas)**
- **Spinal cysts**



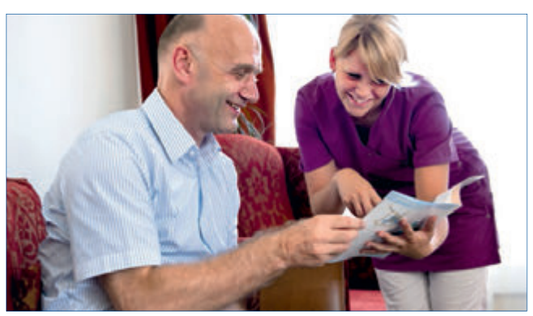
High quality meeting individual needs

Spinal therapy

Every illness and every patient needs individualised treatment. The cornerstones of our work are conservative procedures such as physiotherapy, massage and injections. Should these methods not achieve the desired effect, we can then use other approaches to eliminate symptoms.

Detailed diagnosis to establish the appropriate therapy in each specific case is required before any treatment, however. Once the causes of your symptoms have been established, we will begin an individually targeted therapeutic programme. There are no all-purpose treatments for back pain. We develop an individual treatment plan for each individual patient after detailed consultations, examinations and diagnosis. Your active participation is always required. Even the best operations cannot help if patients do nothing for themselves.

Early diagnosis and therapy, interdisciplinary work, using a variety of methods, continued post-treatment care, and developing future preventative programmes are key elements of our work.
In the following pages we will introduce a range of potential therapies. We would be happy to discuss in person which of these methods is most appropriate for you, their potential prospects and risks, and any other alternatives there may be.



Pain treatment

Pain therapies are conservative treatment methods to eliminate acute and chronic pain without surgical interventions. Besides medication, these could include injections, physiotherapy or electrotherapy.

Injections / infiltrations

During injection treatment, we inject medication against pain and inflammation directly into the relevant nerve roots, thus influencing the source of pain without burdening the whole body with medication. Screen displays, CT or MRI can be used to target the injections more precisely in the affected nerve root in the lumbar, cervical or thoracic spine. We use conservative therapies of this kind after full diagnosis and predominantly for moderate pain or slight spinal anomalies.
They can be used in combination with other conservative therapies to alleviate pain.

Spinal cord stimulation

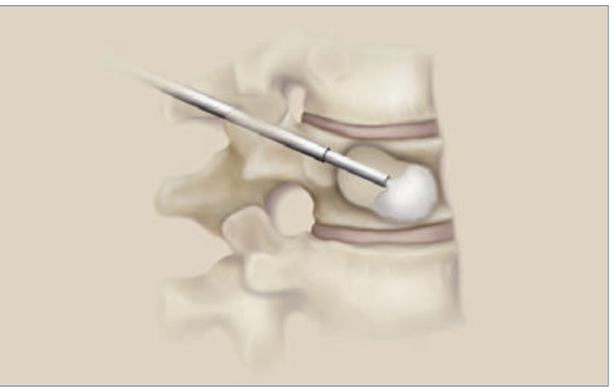
Pain pacemakers, as they are known, use gentle impulses to inhibit the transmission of pain signals to the brain. This method is particularly used in cases of phantom pain or where symptoms are chronic. Under local anaesthetic, we position a fine electrode in the spinal cord. The electrode functions like an impulse generator, interrupting the transmission of pain signals to the brain. Patients subsequently only experience a weak tingling. This method is also suitable for postoperative pain (post-nucleotomy syndrome), polyneuropathy, pain caused by arterial occlusion, angina pectoris, migraine, occipital headache, complex regional pain syndrome and for patients who have not gained any benefit from conservative therapies and in whom the test stimulation was successful.

Denervation

The deliberate deactivation of irritated nerves using cold or heat - a process known as denervation - relieves well-localised pain in the cervical, lumbar and thoracic spines as well as in the iliosacral joints and symptoms in the coccyx area. It can also be used for conditions caused by wear and tear, facet joint syndrome or ankylosing spondylitis. Following local or general anaesthesia, we introduce a fine needle under fluoroscopic and neurostimulator guidance and deactivate the nerves using heat or cold. This stops pain impulses from being transmitted and the symptoms are significantly relieved. We usually treat several areas at the same time. In some cases, the procedure is repeated after around a year.

Spinal microsurgery

Microsurgery is used in disc prolapses, spinal canal stenoses, tumours and syringomyelia. Using a probe, we use a special microscope that guarantees precision and micro-instruments that are just one to two millimetres thick. These can be used to remove prolapses or tumours, eliminate stenoses by widening the spinal canal, and remove cysts or treat them using a window procedure.



Kyphoplasty

When the density of the bone in the spine diminishes - for example due to osteoporosis - fractures are a common occurrence. Kyphoplasty is used to restore and stabilise diseased and fractured vertebral bodies. This involves guiding a balloon into the vertebra to reinflate collapsed tissue. Special bone cement is then used to fill this area. The procedure results in a significant reduction in pain and prevents further collapse of the already-damaged vertebral body as well as any further deterioration in the static equilibrium of the spine. Sometimes, we combine this treatment with stabilisation.

Fixation

In order to stabilise loose sections of the spinal column or injured spinal canals, we often carry out stabilisation procedures on the spine. Under general anaesthesia, our doctors use titanium elements to fix unstable sections in place. After a few months, spinal blocks integrate into the surrounding tissue and natural rigidity occurs. By doing this, we eliminate the instability of the spine, bringing significant pain relief and yet maintaining mobility almost completely. The procedure is used for instability, spondylolisthesis, tumours with involvement of the bony structures, osteoporotic vertebral body fractures and density instability.

Vertebral body replacement

Where there are severe vertebral body fractures as a result of osteoporosis, trauma or tumours, there are often instabilities, narrowings of the entire spinal canal and pain which occurs with virtually every movement. To relieve the spinal canal, we remove the entire vertebral body and replace it with titanium. If the fracture is located in the thoracic spine, the procedure is performed through the lateral rib cage.

Intervertebral disc replacements

Prosthetic discs

Where there is severe wear and tear of the discs combined with prolapse or protrusion, and where conservative or minimally invasive treatments will not achieve the desired effects, we can replace diseased sections with a prosthetic disc. In contrast to a spinal fusion surgery, the spine's mobility will be preserved. Under general anaesthetic, we first remove the worn disc. The vertebra is then restored to its original position and the prosthesis is inserted into the space that has now been created. There it acts as a placeholder and mobile segment. Two metal plates - connected with a mobile piece of plastic - now act as a buffer and integrate into the surrounding tissue. Disc prostheses are frequently used in the cervical and lumbar spines.

Disc cultivation

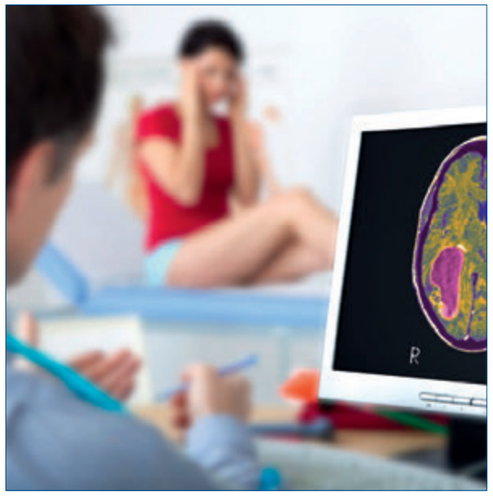
Disc cultivation is a modern method used to replace worn-out tissue with living, autologous disc material. To do this, we give the patient a local anaesthetic and remove disc tissue using an image converter for guidance, as well as taking a blood sample. In a specialist laboratory, experts isolate and cultivate healthy material. In patients who are due in any case to have a prolapse surgically removed, the material for cultivation is extracted during this procedure. After a few weeks, we introduce the newly-cultivated cells back into the core of the vertebral disc. Shock-absorbing tissue then forms between the vertebral bodies. This increases the elasticity of the disc and preserves its height. In this way, we treat not only the acute symptoms, but also the actual underlying cause.
As we only use the patient's own cells, no allergic immune rejection reactions are triggered.

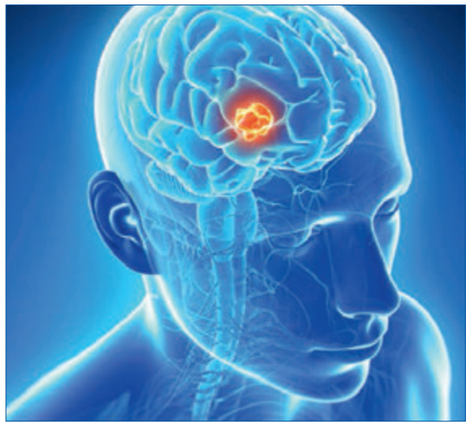
Neurosurgical conditions

The central nervous system is at the heart of neurosurgery. The stimuli for pain and movement alike are directed from this part of the brain. Damage, injury or malformation of the tissue located there leads to serious negative impacts on the lives of those affected. Common neurosurgical disease patterns include:

Tumours and metastases

The term "tumour" is used to describe a lump formed by the body's own cells proliferating independently and continuing to grow. We distinguish between benign and malignant changes. Brain tumours are formed from cells of the brain or the cerebral membrane. Those affected generally have no symptoms at first, but the further the disease advances, the more indications appear. They can range from mild headaches to epileptic fits to motor disorders, but every case develops differently. Tumours can be divided into various groups according to their shape, how pronounced they are and their location. There are 130 varieties in total, including meningeomas, acoustic neuromas, gliomas and pituitary adenomas. When cancerous cells spread to the brain from tumours elsewhere in the body – the lungs or skin, for example – via the blood, lymph or cerebrospinal fluid, we call these metastases.



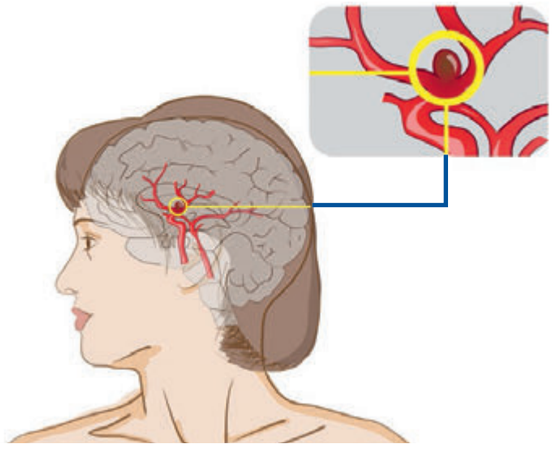


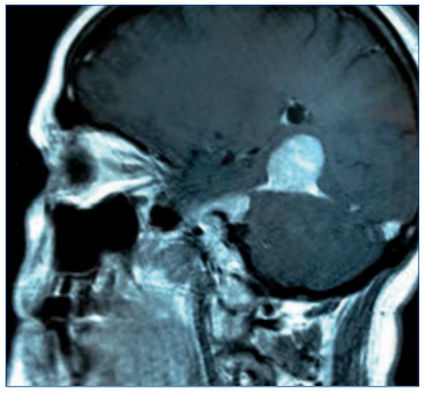
Angiomas

Angiomas are also known as strawberry naevi. These are malformations of blood vessels in which fine arteries and veins combine. They often occur on the skin but can also be found inside the brain. Generally speaking, angiomas exist from birth, however they can also develop over time and cause symptoms. Depending on the size and position of the angioma, mechanical irritation or lack of oxygen can trigger seizures.
Changes to blood flow can also lead to sight or speech problems, paralysis or changes in personality. Angiomas can often also cause bleeding on the brain.

Aneurysms

Brain aneurysms are bulges in the blood vessels supplying the brain. They are generally caused by arterial calcification (arteriosclerosis) or a congenital weakness of the blood vessel walls. The walls of an aneurysm of this kind are made up of considerably thinner tissue than that of normal blood vessels.
Should the weakened wall rupture, blood seeps into the surrounding regions of the brain, which can lead to sight problems or facial paralysis and can, in the worst case, prove fatal.





Meningeomas

About 15 per cent of all brain tumours are what are known as meningeomas. These are generally benign, slowly-growing tumours, which can appear both in the brain and along the spinal canal. Only 1.7 per cent of cases develop into malignant mutations.
Meningeomas frequently form some time before symptoms appear; this is due to their slow growth and the brain's adaptability. Patients in advanced stages can experience symptoms such as headaches, nausea, vomiting, sight problems, smell or sensitivity disorders, loss of strength, seizures or even epilepsy.

Cysts

This term covers hollow, fluid-filled cavities in tissue. Problems with blood flow in the brain can lead to inflammation or the formation of cysts. They often cause disturbances between the layers of the cerebral membrane, and this can sometimes remain without a discernible cause. Cysts can sometimes also be caused by parasites such as tapeworms. Symptoms range from nausea to epileptic fits.

Neurosurgical therapies

New approaches to therapy for a pain-free life

In our clinic we offer a wide range of therapeutic approaches to neurosurgery covering the whole spectrum from minimally invasive procedures to traditional open surgery. We offer detailed advice and information so as to tailor our solutions to the individual.

Microsurgery

Our clinic aims to carry out all surgical interventions as gently as possible using small incisions. When working around the head, it is particularly important to minimise the impact on the tissue. One procedure for treating tumours, metastases and cysts is known as craniotomy. Here, the most delicate instruments are used to avoid unnecessary damage to blood vessels. Operations carried out under general anaesthetic are supervised using a technique called neuromonitoring. Patients affected by speech impairments must be conscious during an operation. Here too, our aim is to make the procedure as comfortable as possible for the patient.

Clipping

For aneurysms, our doctors can use special clips to isolate the enlarged arteries from the rest of the body. This is an example of a microsurgical procedure. The operation can last between two and three hours, depending on the type of tissue damage.

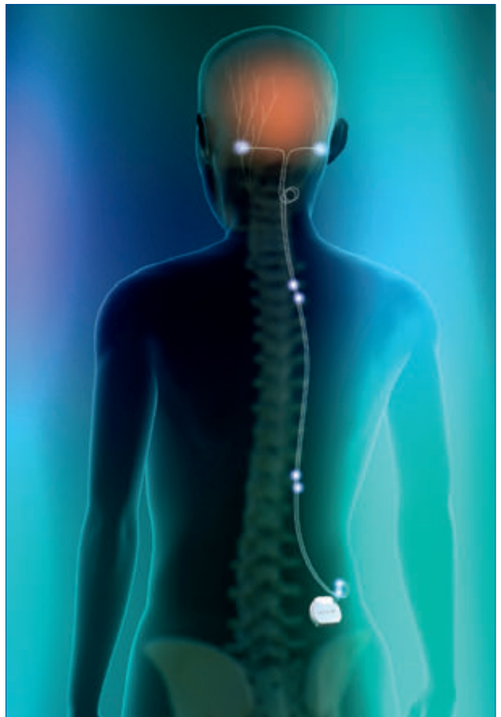
Shunts

Shunts are valves that can be used to drain brain fluid (liquor) from within the skull, in patients with hydrocephalus or increased cerebral pressure as a result of tumours, for example. With the patient under general anaesthetic, the doctor implants a thin tube system. The liquor drains through a valve which can also be used to control the flow rate for each individual patient. Here too, a minimally invasive process means that ever-smaller cuts are needed. The tube may end in the abdomen, for example, or in a vein in or near the neck, where the body naturally reabsorbs the liquor. This results in reduced pressure on the brain.

Migraine: symptoms and treatment

igraine is a neurological condition that affects around 10 per cent of the population. A typical symptom of the condition is a one-sided, throbbing headache that returns at periodic intervals. It affects about three times as many women as men. Patients often also suffer from nausea, vomiting and sensitivity to light. In some cases, i.e. for around 10 per cent of sufferers, the actual migraine attack is preceded by what is known as an aura. In this phase, patients complain particularly of neurological symptoms such as changes in visual perception or paralysis.

Patients often withdraw at the onset of an attack, as well as taking painkillers. In the worst case, however, the intensity of migraine attacks increases all the same. Experts then call this chronic migraine. During acute attacks, patients are helped by total rest, ideally in a darkened room with no loud noises. Cold compresses and relaxation exercises also often help to alleviate symptoms.



Peripheral neurostimulation

Alternative treatments such as acupuncture can be used alongside drug therapy. If patients suffer attacks for four hours a day on 15 or more days per month and the usual medications show no effect, doctors call this refractory chronic migraine. Even in these cases, however, there is a treatment that promises relief: "Peripheral Neurostimulation" (PNS). With this treatment, the physician places a microelectrode system directly under the skin on the nerve triggering the pain – known as the occipital nerve. This transmits individually programmed impulses, thus inhibiting the transmission of pain signals to the brain. This procedure not only reduces the number of attacks but also the intensity of the headache. Patients can get back to everyday life very soon after the procedure, the costs of which can be covered by health insurance companies on request.

Joint disease: overview

Whenever we move, whether we are walking, bending or turning, we are using our joints. They suffer from a huge range of stresses and strains throughout our lives, resulting in age-related wear and tear. Symptoms can also often be the result of injuries to the skeleton. A brief overview of the most common complaints:

- **Rheumatic diseases**
  In the narrow sense of the term, rheumatism is characterised by joint inflammations, the induced chronic disease of multiple joints – known as inflammatory rheumatism or, more commonly, as joint rheumatism.
- **Arthritis**
  Inflammation of the joints, associated with swelling and redness.
- **Sprained / torn ligaments**
  Sudden movements that go beyond the normal radius of the joint lead to sprains or tears to the connective tissue.
- **Tendon injury**
  Damage to tendons may be caused by overloading or due to injuries
- **Meniscus damage**
  Either sudden force or chronic overload can result in tears to the menisci (cartilage-based fibrous rings in the knee)
- **Cartilage damage**
  Most damage to the articular cartilage is caused by injuries, but where the legs are not correctly aligned, the resulting unequal stress can cause chronic cartilage damage.
- **Problems with limb alignment**
  Skeletal disease, rickets, metabolic and endocrine disorders, obesity, and injury or ligament weakness can alter the alignment of a limb. This may result in the hip, knee or ankle joints being incorrectly positioned.
- **Trigger finger**
  The cause of trigger finger is a thickening of the flexor tendon which prevents the tendon from sliding past under a retaining ligament in the palm.

Osteoarthritis

The cartilage lining of the joint is diminished by premature joint degeneration due to injuries, chronic stress or poor quality tissue. As a result, the bone surfaces rub together painfully when the patient moves. Initial symptoms are a feeling of stiffness and tension in the affected joints which gradually increase to pain. Compensating postures adopted to avoid this can cause restricted mobility and shorten muscles.

Bottleneck syndromes (Carpal tunnel syndrome)

This is an umbrella term for conditions caused by constricted nerves – mostly at the joints. The problem appears most frequently in the carpal tunnel: when a ligament thickens, or even after wrist fractures, the median nerve can be constricted here. As a result, the transmission of signals via the nerve is slowed down. Patients first notice tingling in the fingers, followed later by pains in the hand at night. The hand generally becomes weaker over time.

There are thousands of diseases but health is unique

Arthur Schopenhauer

Joint therapies: overview

Every joint in the human body fulfils a specific function. Their potential injuries and treatments are just as diverse as the joints themselves. We would now like to introduce the options available.

- **Conservative therapies**
  The starting point for consideration when treating joint problems is conservative therapies. These include physiotherapy, massage, electrotherapy and applying heat or cold.
- **Hand surgery**
  Various surgical procedures can be used to treat injuries and diseases of the hand. These can be performed on an outpatient basis and with the blood supply cut off, to reveal the delicate nerves and blood vessels.
- **Tendon suture**
  A tendon suture or transplant is used where the ends of a torn tendon are so far apart that they can no longer grow together naturally.
- **Syndesmoplasty**
  Surgery after a torn ligament which uses the patient's own tissue to replace a ligament, stabilize the muscles and enable the joint to sustain high levels of stress once more.
- **Foot surgery**
  Any surgical procedure to treat injury or diseases of the foot.
- **Cartilage transplantation**
  Used to replace cartilage damaged as a result of injury.
- **Osteosynthesis**
  Surgery to restore badly broken bones to their natural position by means of implanted screws and plates.
- **Joint stiffening**
  A measure to relieve pain in the case of joint instability or severe osteoarthritis.

Arthroscopy

Arthroscopy (endoscopy) is performed either under a general or local anaesthetic. We insert a small camera into a 5-10-millimeter incision, run it up to the area in question and fill the joint with fluid. A small hook is inserted via a second incision; this can be used to examine the joint structure, remove inflammations and torn structures, and to sew up damaged tissue. The gentle approach makes it possible to carry the operation out on an outpatient basis.

Joint replacement

Osteoarthritis or rheumatic disease can seriously limit mobility, often with a negative impact on the patient's quality of life. Pain can nowadays be reduced using individually selected prosthetics to replace the joints, most frequently the hips and knees. Detailed consultation and timely planning of pre- and post-treatment care
mean patients will soon be independently back on their feet. Most interventions can be carried out by minimally invasive means, which are much gentler on the patient. This is followed by pain management therapy so that the artificial joint can be moved and stressed as early as possible.

Corrective osteotomy

Surgery to correct poorly aligned limbs requires careful planning based on X-rays or computer-tomography images. These can be used to set the desired degree of correction, because sometimes pronounced bow legs need to be overcorrected, creating slight knock knee, to take the pressure off the damaged surfaces of the joint. We cut through the bone and fix it in the desired position with screws and plates. Modern surgical techniques make it possible to (at least partly) stress the leg again within a few days.


Illness reveals the value of health
Heraklit

Diagnosis / radiology

Extensive consultation, neurological investigations and a precise diagnosis are absolutely vital before any treatment. Our clinic uses the very latest diagnostic imaging equipment. Decades of experience and standardised examination procedures guarantee the best possible conditions. All our machines are as comfortable as possible to avoid discomfort for the patient from the outset. This includes personal support from our doctors during the initial examination. As well as imaging procedures, we focus on detailed discussions with patients, carefully weighing up the results and taking risks, social and professional considerations, age and general health into consideration.

MRI

MRI (magnetic resonance imaging) uses absolutely no radiation. A strong magnetic field and radio waves are used to produce images which can reveal even the tiniest of changes. The device generates multiple sectional images of the body tissue being examined, especially of non-bony structures. On conventional scanners, the patient lies in a narrow tunnel. This can be quite alarming, especially for patients who suffer from claustrophobia. Our clinic uses an open MRI scanner to make our patients as comfortable as possible. We use the latest – and so far in Europe the only – middle-field MRI technology, which covers all of the diagnostic possibilities that this process offers.

Bone density measurement

Bone density measurement establishes the bones' mineral content and thus their strength. This procedure provides general information on the likelihood of fractures. Otherwise known as osteodensitometry, it is used particularly in cases of suspected osteoporosis or osteopenia, an early stage of "brittle bone disease". The technique uses x-rays which pass through the bone. These rays are absorbed at different rates depending on the bone density.

Ultrasound

We use ultrasound for diagnostic purposes in a variety of different situations. This technology is also used for on-going monitoring and as a general investigative method, for example in the abdomen. Various parts of the body and organs can be easily and effectively imaged using ultrasonic waves. Duplex ultrasound is regarded as the pioneering technology in diagnosing blood circulation problems and characterising tumours. It uses colour-coded images of blood vessels to deliver precise information about the direction and speed of blood flow. This procedure is also used to examine the heart and aorta, to image veins and arteries, for renal imaging and in obstetrics.

X-ray

Despite modern developments in the field of diagnostic imaging, some baseline investigations still require X-ray technology. Digital X-rays allow us to closely investigate lungs and bones, in order to spot fractures, osteoporosis, tumours or joint diseases, for example. The latest developments now offer excellent image quality and the digital X-ray image produced is available to our clinicians immediately. Thanks to the faster treatment time, you feel less stressed and you no longer have to wait a long time for your results.

Electrophysiology

A subsection of neurology, electrophysiology is principally concerned with the transmission of signals between our nerves. Each movement of our bodies is created by sending nerve impulses. The brain or spinal cord transmits electrical stimuli and our nerves direct them to the relevant muscle which then contracts. In the case of muscle weakness or nerve damage, this transmission is often slowed down. We use electromyography, EMG for short, to identify glitches of this kind. It measures the electric activity in the muscles when they are moving and at rest. We can then establish whether the cause of a problem is in the muscle itself or the nerve that supplies it. This approach is used, for example, following lacerations or slipped discs that are associated with damage to the nerve roots.

Physiotherapy

Geared towards our patients' symptoms and limitations of movement, our physiotherapy department offers a variety of treatment options. Using state-of-the-art therapies, high-quality equipment and endless dedication, our highly trained professional physiotherapists offer a whole raft of support during your convalescence with advice on prevention, treatment and rehabilitation. For the treatments, we use various pressure, stretching and massage techniques, but also stimuli such as heat, cold or electric current. Following an in-depth diagnosis, we put together a programme that has been tailored especially to the patient. Our services include manual therapy and physiotherapy, medical training, lymphatic drainage, current therapy, magnetic field therapy, massage, fitness training, back care classes, pelvic floor training, mud therapy and shiatsu.

Medical gymnastics and fitness training

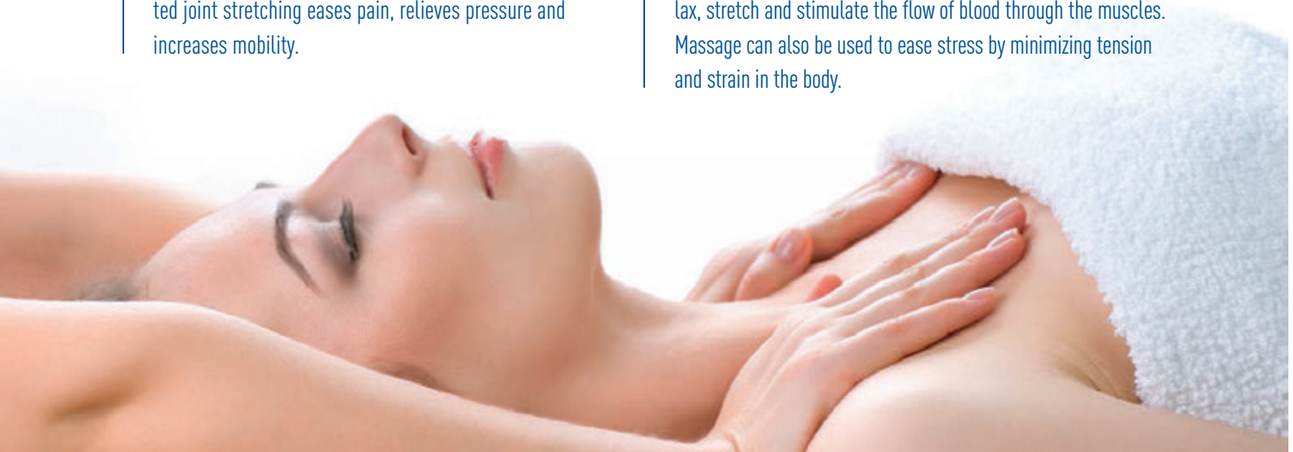
We use medical gymnastics to strengthen muscles damaged as a result of injury or excessive strain. The exercises can also be used to encourage rehabilitation after surgery. Targeted back exercises are used to stabilise the spine in the long term. In addition, fitness training is offered to protect against postural deformities and injuries.

Manual therapy

Using specialized manual techniques we are able to alleviate patients' pain and limited movement. Targeted joint stretching eases pain, relieves pressure and increases mobility.

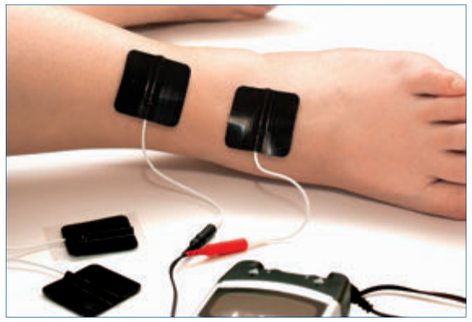
Massage

We offer our patients massage to regenerate muscle tissue and prevent further damage. Using different stimuli, massage can relax, stretch and stimulate the flow of blood through the muscles. Massage can also be used to ease stress by minimizing tension and strain in the body.



Shiatsu

As a whole-body treatment, traditional Chinese shiatsu uses gentle pressure, various stretching movements and massage involving the fingers, hands and elbows.
It stimulates the flow of energy, improves wellbeing and helps ward off illnesses. A treatment has a stabilising effect on the body and mind and can be helpful for a variety of complaints, such as musculoskeletal disorders, stress, insomnia, migraine, circulatory problems and back pain.



Current stimulation therapy

Current stimulation therapy is recommended for conditions of the musculoskeletal system, symptoms of paralysis and muscle weakness. The therapy comprises three different methods: low-frequency, medium-frequency and high-frequency therapy. Electric current is conducted at various frequencies through the body in order to stimulate the muscles. We also use this treatment to relieve pain and reduce inflammation.

Magnetic field therapy

This form of treatment supports the body's regeneration and healing processes and is used for degenerative conditions of the musculoskeletal system and the spine, as well as for bone fractures, delayed wound healing or migraines. During the treatment, we expose the patient to magnetic fields of varying frequencies which change the electrical field within the body. This stimulates cell metabolism and blood flow.

Back training

A weakened backbone causes damage to vertebral discs, tendons and ligaments. A stable back is therefore essential for preventing postural damage and pain. Back training is also aimed at offering tips and exercises to patients that they can use in everyday life. Targeted exercises are used to prevent problems or encourage regeneration. The training must be customised to the patient's needs.

Dietary supplements for the spine and joints

A well-chosen diet with the right nutrients will help promote a strong back and prevent potential ailments. Good nutrition is particularly important if the intervertebral discs, bones and joints are to withstand everyday wear and tear. One simple but effective tip: because the intervertebral discs need enough fluids to stay supple and elastic, you should drink two to three litres of water or unsweetened tea a day.

Minerals such as calcium and magnesium are vital to prevent osteoporosis – brittle bones. Dairy products, such as yoghurt, cheese or quark provide calcium, as do dark green vegetables, seeds and various low-sodium mineral waters. Vitamin D ensures that the calcium is absorbed from the gut into the bloodstream and then into the bones. As the vitamin is only found in a few foods, such as fish, avocado and eggs, the body also needs the sun to help to make it under the skin. 20 minutes out in the sunshine a day is enough to boost your vitamin levels. Magnesium-rich foods such as whole-grain products, pulses and nuts – especially walnuts – promote healthy muscles, relaxing them and easing the pressure on the spine.
In some cases – where there is an increased risk of osteoporosis, for example – it is advisable to take supplements to increase vitamin or mineral levels. Excessive doses can be harmful though, so you should always consult your doctor. He or she will assess your individual needs and check whether special tablets are required alongside a balanced diet.

As excessive weight puts considerable strain on the joints and back, high-calorie luxuries such as alcohol, sugar and fat should be avoided wherever possible, or only consumed in moderation. A healthy, balanced diet combined with sufficient exercise can really help prevent back and joint conditions, and you will feel good too.

We focus on you

Personal & Professional

At our facility, your needs are our number one priority. We respect your personal preferences, customs and religion and we set ourselves the goal of living up to the trust you have placed in us. Even if you have been promised no hope of improvement in the past, we promise to examine your problem with fresh eyes. Our conservative therapies offer the ultimate in medical safety.

International Environment

As a facility with international renown, we offer patients from all over the world state-of-the-art technical equipment and contemporary solutions for long-term rehabilitation. Our experience has taught us how much a pleasant, service-orientated environment can contribute towards this. Consequently, our employees speak numerous languages, including English, Arabic, Bulgarian, Russian, Polish and French - and we're always here for you when you need us, 24 hours a day.
The Avicenna Clinic is a member of the American Hospital Association and numerous other national and international associations and organisations. We also work with a number of partner clinics abroad, such as in the USA and the United Kingdom.

Expertise all in one place

Services

- Many years of international experience
- All innovative, patient-friendly treatments
- 24-hour service
- Outpatient and in-patient facilities
- Diagnosis, treatment, aftercare and prevention all under one roof
- Multidisciplinary team: spine surgery, neurosurgery, orthopaedic trauma surgery, radiology, pain management

24-hour service for acute pain

Always there for you

Our team will be happy to assist you should you have any questions, wish to arrange an appointment or simply have a chat to find out more. You can contact us as follows:

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If you're healthy, we've done well!

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