

DISORDER: VERTEBRAL COMPRESSION FRACTURE

SURGERY: VERTEBROPLASTY, KYPHOPLASTY (Fractured vertebrae filled with cement, stabilization)

Your diagnostic tests as well as the physical examinations have shown that you are suffering from compression fracture of one or more dorsal or lumbar vertebrae.

Before you undergo surgery, it is important that you familiarize yourself with your illness, the surgical procedure and what you, yourself, may do in order to help decrease your pain. It is important for us, that we provide you with enough information so that, when we ask for your consent to surgery at the end of this document, you will be able to make your decision responsibly. Please read this material carefully and consult with your treating doctor should you have any questions.

WHAT IS COMPRESSION FRACTURE?

The spinal column is made up of vertebrae and intervertebral discs. The anterior part of the vertebra is called the vertebral body. Compression injury occurs when the vertebral body either becomes fractured or collapses. This is, generally, caused by osteoporosis or, more seldom, to tumors. The normal and the diseased vertebra react differently to force. The normal vertebra requires great force to fracture and is more likely to cause compression to the nerve elements while the diseased vertebra compresses on its own with the process occurring at minimal force.



Normal vertebral body



Abnormal vertebral body

WHAT ARE THE CONSEQUENCES OF VERTEBRAL FRACTURE?

As a result of compression fracture, the spinal column becomes shorter and bends forward. This results in a forward bending posture (kyphosis) that overloads the remainder of the vertebral bodies and places them under greater risk of fracture. At the same time, the spine's stability is also lost at the segment involved causing the developing pain.

WHAT ARE THE SYMPTOMS OF COMPRESSION FRACTURE?

- Chronic, strong localized pain that decreased while lying down
- Abnormal posture (spine deformity) causing a hunchback
- Breathing difficulties
- Loss appetite
- Sleeping difficulties
- Depression
- While lower extremity symptoms such as pain, numb or clumsy lower extremities and weakness is found or similar pain radiating round the chest or stomach, neither vertebroplasty nor kyphoplasty may be performed.

DIAGNOSTIC IMAGING PERFORMED DURING EXAMINATION

- Conventional x-rays (in standing position). This is the most suitable examination procedure for evaluating the spine and statics and analyzing abnormalities of form.
- Magnetic resonance imaging (MRI) helps determine, unequivocally, whether oedema is still present in the fractured vertebral body that could be the source of pain. Only vertebral bodies still containing oedema are worth operating.
- Computer tomography (CT) helps analyze the condition of the posterior (the spinal canal side) wall of the fractured vertebral body. On this basis can we decide whether the surgery can be performed safely.
- Isotope examination can help in the isolation of metastases, if required.

WHAT ARE THE TREATMENT POSSIBILITIES?

Basically, there are two treatment possibilities.

1. Non-surgical (conservative) treatment:

Advised in cases where the patient is able to walk, the weight bearing capacity is maintained, or the pain is easily controlled with medication, treatments, the vertebra is not compressed and the spine is not significantly deformed and its stability can be reestablished with physiotherapy.

Goal:

- To alleviate pain
- To reestablish the spine column's stability and develop the muscle girdle.
- To stop spine deformity.
- Medication treatment of osteoporosis with regular checkups.

Conservative treatment tools:

- Initially, bed rest (3-4 days).
- Medication, other physiotherapy and alternative treatment methods.
- In the early phase, a girdle or rigid corset may correct the spine's stability, weight bearing capacity, help return to normal life and, at the same time, reduce loading on the fractured vertebra. The rigid corset is the only one worth using in the first 6-8 weeks. Many doctors, however, have found that patients suffering from osteoporosis consider the corsets too tight, too hot and, especially, too heavy and hard to bear. For this reason, they often cannot be used.

In the long term:

- Life style changes: decrease/stop alcohol intake and smoking, change dietary habits, lose weight, reduce stress, etc.
- Sleep and other related psychosomatic disorders should be treated (i.e., chronic gynecological and cardiovascular diseases, as soon as possible).
- Restore physical and emotional state.
- Increase activities: regular exercise, followed by, physical training.

If, in spite of conservative treatment, there is no improvement in the pain level or the repeat x-rays show progressive deformity of the fractured vertebra, then surgery will be necessary.

2. Surgical Treatment:

Goal:

- To stabilize the fractured vertebra and cause immediate pain relief.
- To partially reestablish the fractured vertebra's height.
- To correct the spine's deformity (correct posture).

Thereby, decreasing the possibility of a new fracture and improving the quality of life.

The percutaneous cement filling of the vertebrae is not advised in the following cases:

- Should the MRI verify that a fracture is healed, surgery does not make much sense, however, if the deformity is accompanied with serious symptoms, open corrective surgery may be performed.
- Should the cement filling have technical (local) contraindications, such as a missing posterior wall of the vertebral body or a spinal canal that is too narrow, there is danger of a surgical intervention exacerbating the problem, etc.
- When the patient is not suitable for anaesthesia: general condition is not good, has hemophilia, anemia, etc.
- When the fractured vertebra would actually be suitable for surgery, but neurological compression signs indicate the possibility of narrowing of the spinal canal. In such cases, open surgical techniques should be used, if possible.

PRIOR TO SURGERY

1. Preparations prior to surgery:

- General medical preparation – when required.

- Anesthesiological examination with laboratory, x-ray, ECG and ultrasound results. The Patient may be transferred to surgery only after approval by anaesthesiologist.
- In our experience, no blood transfusion is necessary in percutaneous vertebra cementing since, generally, there is only a minimal blood loss (a few drops in all).

2. Reminders (definitely consult with your doctor)!

- Non-emergency surgery may be performed only after 3-6 weeks following upper respiratory inflammation, urinary tract infection or other infections.
- Anticoagulants should not be taken for a few days before the planned surgery. Syncumar, Warfarin and Clopidogrel must be stopped for 10 days and ASA, Aspirin protect, etc. medications stopped for 5-6 days, or rather, substituted by Heparin derivative injections.

3. Inhospital Preparation

- The afternoon prior to surgery, you will be given an anti-thrombotic injection and sedatives the night before.
- The day of surgery:
 - disinfectant bath,
 - removal of dentures,
 - removal of nail polish,
 - anti-embolism support stockings or bandages applied,
 - regular medications taken with **one swallow** of water as discussed with the anaesthesiologist beforehand,
 - presurgery injection (premedication)
 - infusion begun – as indicated by doctor
- **Do not drink anything besides the liquid needed for your medications, do not eat and do not smoke!**

WHAT HAPPENS IN THE OPERATING ROOM?

Two techniques are available in the percutaneous (under the skin) approach to stabilization of vertebral compression fractures with bone cement – Kyphoplasty and Vertebroplasty. In Kyphoplasty, a small balloon is used creating a cavity (space) within the vertebral body which is then filled with bone cement. In Vertebroplasty, bone cement is placed directly into the fractured vertebra without the help of a balloon. The doctor will determine the best technique for each individual case.

THE SURGICAL PROCEDURE:

An incision is made on the skin (approx. 1 cm) through which a narrow pathway is made into the fractured bone with a hollow instrument. In the Vertebroplasty procedure no balloon is used – the cement is placed directly into the fractured vertebral body.

- The surgery is performed under anaesthesia
- You will be lying face down on the operating table with the anaesthesiologist standing by your head controlling the anaesthesia.

- The surgical site is cleansed several times with an antiseptic and isolated with a sterile sheet.
- The surgeon makes two small (max. 1 cm) incisions at the proper spine segment above the fractured vertebral body.
- A narrow pathway is made into the fractured bone with a hollow instrument.
- A small balloon is then guided through the instrument into the vertebral body.



- Next, the balloon is carefully inflated restoring the original height of the fractured vertebra. Once the vertebral body is in the correct position, the balloon is deflated and removed.



- The cavity is filled with thick bone cement to stabilize the fracture. The bone cement dries quickly and forms an internal cast that holds the vertebral body in place.



This procedure is performed for each vertebra, as necessary.

WHAT HAPPENS AFTER SURGERY?

- You will stay in the operating room for a time after surgery for observation
- Depending on your condition, you will be taken either to the Recovery Room or the ICU. If your condition allows, you may even be returned to your own room.
- The anaesthesia will gradually wear off in a few hours, whereupon, you will be given an injection or pills to lessen your pain.
- It is important that you begin, in spite of pain, breathing and vascular exercises as well as physical exercise routines soon after.
- Anti-thrombotic injections are routinely given.

- It is important that you drink plenty of fluids such as fruit juice, tea, soup and non-carbonated mineral water.
- You will, generally, be able to get out of bed the day after surgery with the physiotherapist's assistance. X-rays as well as a CT scan are taken to check on the cement.
- You will, usually, be able to get around without help the day after surgery and need only minimal pain medication.
- It is important that you heed your physiotherapist!
- You may be discharged in 2-3 days after surgery, if no problems arise.
- At discharge:
 1. You will be given your Hospital Discharge Summary papers.
 2. Please consult your treating doctor for any questions!
- Please strictly keep the wound away from water.
- Suture removal should be 6-8 days after surgery, but not necessarily at this institution.
- The date of your first checkup (4-6 weeks post op), after the so-called period of convalescence, is found in your Hospital Discharge Summary papers. Follow-up x-rays will again be required at this time.
- Rehabilitation following surgery will be as discussed with the treating doctor and under the care of specialists.

WHAT HAPPENS IN THE EVENT THE SURGERY IS CANCELLED?

- Your condition may develop into chronic pain syndrome with the possibility that the weight bearing capacity of the spine will be ever shorter, accompanied by increasingly more pain.
- The quality of life will continue to decline.
- Surgery performed at a later date may be technically more difficult with a possible decreased success rate.

POSSIBLE SURGICAL COMPLICATIONS

- Nerve or dural sac damage that may be the result of leakage of the bone cement into the surrounding area.
- The cement leakage may occur in three ways:
 - The cement may leak out through the fractured vertebral body into the neighboring intervertebral body area or next to the vertebra. This is the most common but it usually has no symptoms, no significance.
 - The cement may leak into the spinal canal area or into the nerve root exit points, into the neuroforamina possibly causing nerve compression symptoms (irradiating pain to lower extremity, numbness, temporary or permanent, partial or complete palsy in certain muscle groups). This is a very rare complication that may require open surgery.
 - The cement may leak from the fractured vertebral body through the venous web into the vena cava leading to the heart and through it causing cement embolization in the lungs. This can be a life threatening dangerous condition requiring intensive care. In milder cases, temporary chest pain may appear a few hours following the intervention also, of course, requiring examination and treatment.

- Septic complication – occurs rarely, due to the small size of the wound.
- Thromboembolism - occurs rarely due to the thrombo prophylaxis prescribed patients and the early mobilization

The surgery is performed in a well-equipped surgical theatre under continual fluoroscopic x-ray guidance in order to avoid complications and minimize their effects.

WHY IS PHYSIOTHERAPY IMPORTANT?

The spine requires special attention and care even after successful surgery. As the result of surgery, the spine segment involved changes in structure, increasing the load on the neighboring spine segments. It is extremely important that the functional capacity of the operated spine segment be restored and the neighboring areas protected through special kinesitherapy. In order to avoid overloading the spine, correct posture change and workflow should be taught within the context of ergonomics as well as preparing the body for sports.

The healing period following surgery may be divided into several phases. In addition to the required medical care, for the spine to be completely restored, various movement programs are necessary together with ergonomic consultation. This is where physiotherapy can provide excellent care.

Phase 1. First 6 weeks after surgery

Targeted kinesitherapy and ergonomic life style consultation is started the day following surgery, as allowed by the Patient's condition.

The goal of the kinesitherapy is to regain, as soon as possible, the body functions necessary for self-sufficiency (turning in bed, sitting up, sitting, standing up, walking, etc.), to unburden and avoid unnecessary weight bearing on the operated spine segment as well as pain free posture and gait correction.

Ergonomic consultation includes practicing the series of movements required for basic self-sufficiency while maintaining the physiologic curvature of the spine as well as determining precisely the extent to which the spine can be or should be loaded (the amount of time spent sitting, standing, walking, how much weight may be carried, etc.) during this phase.

You should avoid extreme movements of the spine that include forward bending, trunk twisting or sideways bending even while turning, sitting or standing up from bed.

Long periods of static sitting or standing should be avoided. Even individuals with hardened musculature will feel its tiring effects after 15 minutes and resulting in a stooped posture.

Walking, light work and physiotherapy may be increased a little every day.

Rest and activities should be a little but often.

Phase 2. The second 6 weeks after surgery (second stage of tissue healing)

The goal of the early rehabilitation phase is to return you to your everyday activities, to restore the functions and the reduced functional capacity (range of movement, strength, endurance) of the operated spine segment.

Within the framework of ergonomics, we will practice the daily used movement patterns (both at home and at work) while protecting the spine and, furthermore, will determine the spine's loading capacity.

Longer and longer walks and hikes on a variety of terrains.

Swimming and underwater exercise recommended.

Static loading (sitting, lolling about) may be increased until there is no pain.

The prevalent stooped posture will be replaced with other body postures (kneeling, squatting, down on all fours).

Phase 3. Three months after surgery.

The goal of the later rehabilitation phase is to establish realistic personal goals and create safe daily and sports activities.

The targeted movement program will help develop the trunk musculature and re-establish muscle balance to actively support and protect the spine from possible overloading.

Sports preparedness (sports specificity) will play a significant role in ergonomic consultation along with protection of the spine.

We offer six-week and three-month post-op outpatient group physiotherapy (max. 5 persons) sessions covered by public health insurance. Individual condition evaluation precedes the physiotherapy in all cases. The evaluation is by appointment which you may request by calling our dispatchers at (1) 887-7900. Following the evaluation, the physiotherapist will, based on professional aspects, decide which personal movement program to recommend and personally help you register for the group physiotherapy sessions. Doctor's referral is required for both the condition evaluation and the group physiotherapy. Should you prefer individual physiotherapy sessions, these are available privately. For details, please turn to the dispatchers.

Please bring your own ambulatory aids (walkers, elbow crutches, etc.) at the time of admission.



Thank you for choosing us!

PRE-SURGERY INFORMATION FROM THE PSYCHOTHERAPY DEPARTMENT

The Psychotherapy Department has been in partnership with the medical staff of the National Center for Spinal Disorders since its inception working closely together in caring for all your health care needs with our colleagues, psychologists and psychiatrists committed to the research and treatment of pain.

WHAT IS THE CONNECTION BETWEEN EMOTIONAL AND PHYSICAL PAIN?

When in distress, the body has a choice and prepares itself for a fight or flight. This ancient reflex tenses the muscles at the same time getting them ready to assault or flee. The result of the constant tension, however, is pain.

Stress ► Muscle Tension ► Pain

Pain may begin with an episode that is primarily a physical injury, but, when the pain persists for several months down the road, then it is very probable that the psychological stress and the physical drain have become permanent, at the same time. The acute injury has turned into chronic muscle tension which is now causing the pain.

The constant tense back muscles can further worsen the condition of the spine.

„I don't feel harassed – don't feel that this applies to me.”

People significantly differ from each other in the way they notice the signs of inner and outer stresses. Some cry easily and immediately feel even the smallest changes in their bodies, while others only notice these changes only when there is a problem and pain.

The latter is typical of those suffering from **chronic pain**. They tolerate much for a long time, and attempt not to dwell on it, to bear it. Yet, pain is stressful in and of itself – inner stress.

It may be that later, they begin to worry about their back pain which causes the back muscles to tense even further. This, of course, increases the pain. Soon, the devilish cycle begins wherein the pain causes emotional stress, causing the muscles to tense more, which then causes even stronger pain, causing more emotional stress, leading to even more pain.

Most chronic pain sufferers experience their indisposition, fear and hopelessness as bodily torments which others experience on an emotional level. This is why we often hear: “I don't need a psychologist or psychiatrist, my back hurts, that's all!” This, in reality, is a mistaken opinion. Chronic pain is both an emotional and a physical agony causing not only our physical but also our emotional condition to worsen.

You are now about to undergo an important first or repeat spine surgery. Your doctor has discussed with you the surgery necessary for changing the current anatomical condition of your spine. It is also important for you to know that your current state is affected not only by your physical injury and the changes your spine is undergoing but also by the chronic stress and its negative emotional consequences.

Surgery will “only” have an effect on your spine. It will have no influence on your emotional state, feelings, thoughts or life style. Thus, the increased tension (felt in the tightness of your back muscles), fear, depression and feelings of hopelessness that you might have felt so often, have experienced or are experiencing currently can only be changed with your cooperation.

In order to end this diabolic cycle, psychological and medication (psychopharmacological) treatment and consultation may be – and usually is – required.

Fifty percent of chronic pain sufferers definitely suffer from depression with the remainder living in a state of high stress and tension (resulting in sleep disorders and a variety of physical symptoms).

Thus, in order to best care for our patients, we ask that you fill out the “**Condition Evaluation**” form to provide us with information regarding your emotional state. Should the questions show that you are suffering from depression or anxiety, we will help you by personally conversing with you and having you undergo individualized tests.

It is natural and you should expect surgery to increase your emotional tensions for which reason you will need a period of convalescence (the postoperative period) in order to overcome the effects of surgery. Usually, it takes 4-6 weeks until you notice any signs of recovery.

Important! Do get enough sleep before and after surgery! If, for instance, you have sleeping difficulties, be it due to pain or other reasons, do let your treating doctor know since a sleeping disorder is the first sign of decreased psychic stability and emotional strength.

Once the diabolic cycle of pain has ended with your help, your quality of life will be greatly improved! In order to achieve it, professional medical intervention is necessary to make bodily recovery possible and your cooperation, to decrease your suffering. You will need patience, especially in the early period of convalescence, so that you may enjoy each day the small changes and to give yourself time for regeneration. You will need to accept the fact that your pain will change slowly, which is a sign for you to make changes in your life style and emotional state. Gradual increase in activity (our physiotherapists will offer detailed advice and instruction), proper stress regulating and mood elevating treatments (you may count on our psychologists and psychiatrists for assistance) and changes in life style (weight loss, increased activity) will lead you out of suffering into a FULL LIFE!

Our psychologists will be at your disposal during your hospital stay. Please let your treating doctor or nurse know should you wish to see them

Noémi Császár, PhD
University Professor
Head of Department of Psychiatry

DISORDER: VERTEBRAL COMPRESSION FRACTURE

**SURGERY: VERTEBROPLASTY, KYPHOPLASTY
(Fractured vertebrae filled with cement, stabilization)**

- I have carefully read the detailed information given to me by my treating doctor both verbally and in written form.
- I was informed regarding my disorder and the reason for my resulting complaints as well as the course my disorder might follow should I not choose surgery. Thus, I understand that, according to today's best medical knowledge, permanent improvement of my condition can only be attained through surgery. My questions regarding the surgery were answered extensively.
- I was informed regarding the advantages and possible disadvantages of surgery.
- I was given to understand the meaning of surgical risk.
- I was informed in detail regarding possible complications, their probability, nature and treatment as well as the temporary or enduring but seldom terminal condition deterioration as the result of surgery.
- I understand that I might have to wear an exterior fixation device for three months following surgery.
- I consent to a blood transfusion should it become necessary during the course of surgery.
- I was informed regarding postoperative treatments.
- The anaesthesiologist has informed me regarding the anaesthesia for which I give my consent separately.
- Having carefully considered all of the above facts and in order to treat my disorder, I request that the surgeon chosen by the Head of the Department perform the surgery to which I have given my consent.
- I have no further questions regarding the surgery.
- Having read the foregoing, I, the undersigned, being of sound of mind do, hereby, sign this Consent of my own free will and volition in the presence of two witnesses.

Budapest,

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Surgeon

.....
Patient or Legal Guardian

Witness (Name, Address):
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Witness (Name, Address):
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