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Short Version of the S2k clinical guideline

Injuries to the thoracolumbar spine

of the

German Society for Orthopaedics and Trauma Surgery e.V.

and the German Spine Society



and

Spine Section of the DGOU (co-lead)

Professional Association for Orthopedics and Trauma Surgery (BVOU)

German Society for Musculoskeletal Radiology (DGMSR)

German Society for Neurosurgery (DGNC)

German Society for Neurorehabilitation (DGiNR)

German Society for Physical and Rehabilitative Medicine (DGPRM)

German Society for Physiotherapy Science (DGPTW)

German Radiological Society, Society for Medical Radiology (DRG) (DRG)

German Association for Occupational Therapy (DVE)

Austrian Society for Trauma Surgery (ÖGU)

Physio Deutschland – German Association for Physiotherapy

Accident Victims Bavaria (Unfall-Opfer-Bayern e.V.)



DEUTSCHE GESELLSCHAFT FÜR
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First version of the guideline dated July 22, 2018, valid until July 21, 2023, lead authors: Prof. Akhil P. Verheyden, MD, Prof. Ulrich Spiegl, MD, and Alexander Hölzl, MD, S1. The previous version can be requested from the DGOU guideline secretariat.

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Recommendations at a glance

The recommendations of the guideline are listed below. Strong recommendations are highlighted in bold.

No.	Text of recommendation
1	We recommend transporting the patient as soon as possible to the nearest suitable hospital capable of diagnosing and treating spinal injuries, preferably a trauma center/spinal center.
2	We recommend an accurate documentation of clinical findings, particularly neurological deficits at the scene of the accident. This allows the severity of the injury to be better assessed, even if evaluation is limited due to analgesic sedation.
3	When taking the patient's medical history, we suggest recording the mechanism of accident as accurately as possible, at the onset of emergency care.
4	We suggest radiological diagnostics at least using conventional X-ray diagnostics in two planes. We suggest imaging of the presumed injured region in the central beam.
5	If a fracture is detected or suspected in a conventional X-ray, we suggest a CT or MRI scan. If symptoms are present in multiple regions of the spine, we suggest including the entire spine in the imaging.
6	If the initial diagnosis was made with the patient lying down and the fracture is stable, we suggest performance of a plain X-ray with the patient standing, following mobilization.
7	In unconscious patients or patients with impaired consciousness and polytrauma patients, as well as after accidents involving high energy impact, we recommend the indication for CT diagnostics generously.
8	An MRI scan may also be performed for further diagnosis in cases of recent traumatic injury.
9	In the event of neurological symptoms, we suggest a MRI scan. In particular, if acute paraplegic symptoms are present that cannot be adequately explained by a CT scan, we recommend a emergency MRI scan.
10	We suggest a pain therapy in accordance with the WHO step-by-step scheme to achieve a pain level below 5 on the numerical rating scale (NRS).

11	We recommend the prevention of deep vein thrombosis (DVT) and pulmonary embolism (PE) in accordance with the AWMF's S3 guideline on PE prevention, reg. no. 003-001.
12	We suggest adjusting the timing of surgery based on the severity of the injury, the location of the fracture, and the presence of severe accompanying injuries.
13	We recommend that patients with acute fracture-related neurological deficits be treated as early as possible, but within 24 hours, provided their health condition allows.
14	If the base plate of the injured vertebral body is also involved, we suggest to use the bisegmental kyphosis or scoliosis angle.
15	Whenever possible, we suggest radiological images with the patient standing. If a highly unstable fracture is suspected, we do not recommend initial images with the patient standing.
16	If a δ -GDW greater than 15° - 20° is present at the start of therapy, we suggest ruling out injury to the dorsal ligament complex. Under functional therapy, even without injury to the posterior column, a further increase in the misalignment to values requiring correction may be possible. We suggest surgical treatment or at least close monitoring.
17	If, at the start of therapy, there is an injury-related scoliosis angle greater than 10° , functional therapy may cause a further increase in the deviation from the individual profile of the spine to values that require correction. We suggest surgical treatment or at least close monitoring.
18	We suggest the AO Spine classification as the preferred system to classify traumatic fractures of the thoracic and lumbar spine.
19	We recommend conservative treatment of stable fractures that are expected to heal in anatomical position and allow mobilization.
20	a) Stable fractures in which increasing malalignment is likely but healing without clinically relevant malalignment is expected due to the fracture morphology, fracture location, and patient's constitution can be treated conservatively in the first instance.

	b) However, we recommend close clinical and radiological follow-up checks during primary conservative treatment.
21	We suggest inpatient conservative treatment, where possible, in facilities that have the personnel, technical equipment, and space required for the treatment of spinal injuries.
22	We suggest aiming for an early functional mobilization with appropriate analgesia.
23	a) We suggest outpatient clinical check-ups by a specialist with sufficient experience in the treatment of vertebral fractures. b) Depending on the clinic and initial fracture morphology, accompanying radiological check-ups can be carried out in a standing position if possible.
24	Dorsal instrumentation can be performed for type A fractures. The use of monoaxial pedicle screws can contribute to a reduction in postoperative loss of correction compared to treatment with polyaxial screws.
25	We suggest preferring percutaneous dorsal instrumentation over open surgery whenever possible, as long as there is no compromise in terms of reduction and decompression.
26	We suggest aiming a short-term dorsal stabilization at the thoracolumbar junction and the lumbar spine. Stability can be significantly improved by using index screws.
27	We suggest generous stabilization of fractures of the middle thoracic spine over a long distance, involving two vertebral bodies above and below the fractured vertebral body.
28	In cases of unstable thoracolumbar burst fractures, ventral stabilization can be achieved using titanium or PEEK implants or autologous iliac crest bone. Taking into account the risks of complications, we suggest preferring implants over autologous iliac bone wherever possible.
29	Tranexamic acid (TXA) can effectively reduce intraoperative blood loss. Tranexamic acid may be administered in cases of intraoperative bleeding and in the absence of contraindications.
30	We suggest a careful preoperative planning, particularly taking into account the preoperative CT scan, in order to reduce the duration of the operation and achieve more precise screw placement.
31	Material removal from the dorsal fixator to release segments of motion can be performed once fracture consolidation has been confirmed. In this case, partial material removal with shortening of the dorsal stabilization may also be an option for releasing segments of motion.

32	For rehabilitation after injuries to the thoracolumbar spine, we recommend individually tailored physiotherapeutic interventions, designed to reflect everyday activities, combined with educational elements to promote an adequate understanding of spine-protective behavior.
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The AWMF records and publishes the guidelines of the specialist societies with the greatest possible care - nevertheless, the AWMF cannot accept any responsibility for the accuracy of the content. **The manufacturer's instructions must always be observed, particularly with regard to dosage information!**

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