POZNAN UNIVERSITY OF MEDICAL SCIENCES
W. DEGA UNIVERSITY HOSPITAL

Th12 traumatic fracture

CASE PRESENTATION

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Case presentation

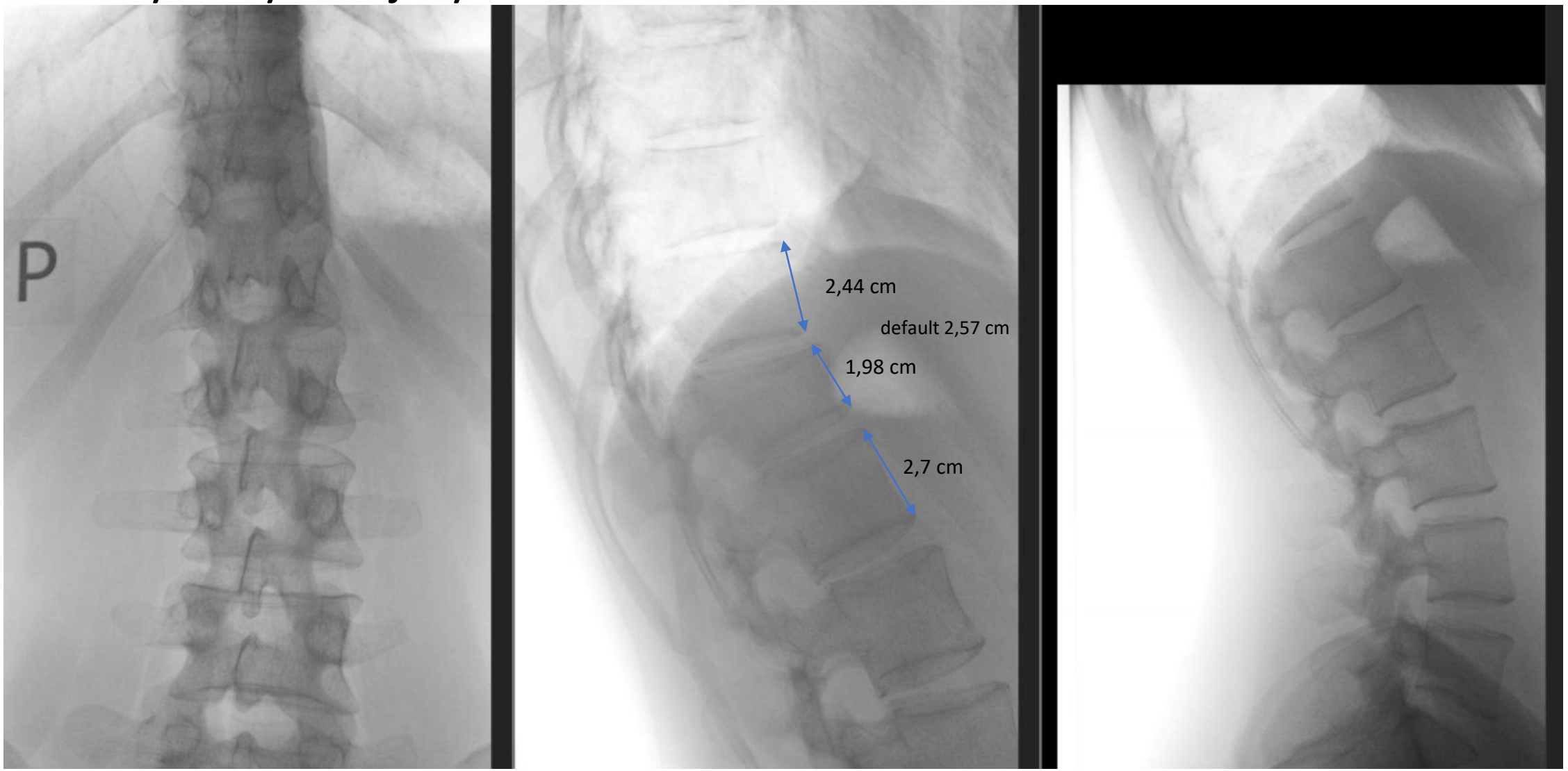
- 27yo women
- A fall from the horse 2 weeks before admission to our hospital.

- No loss of consciousness after the injury.

- Symptoms:
  - severe pain in the thoracic-lumbar junction.
  - no or transient neurological deficit

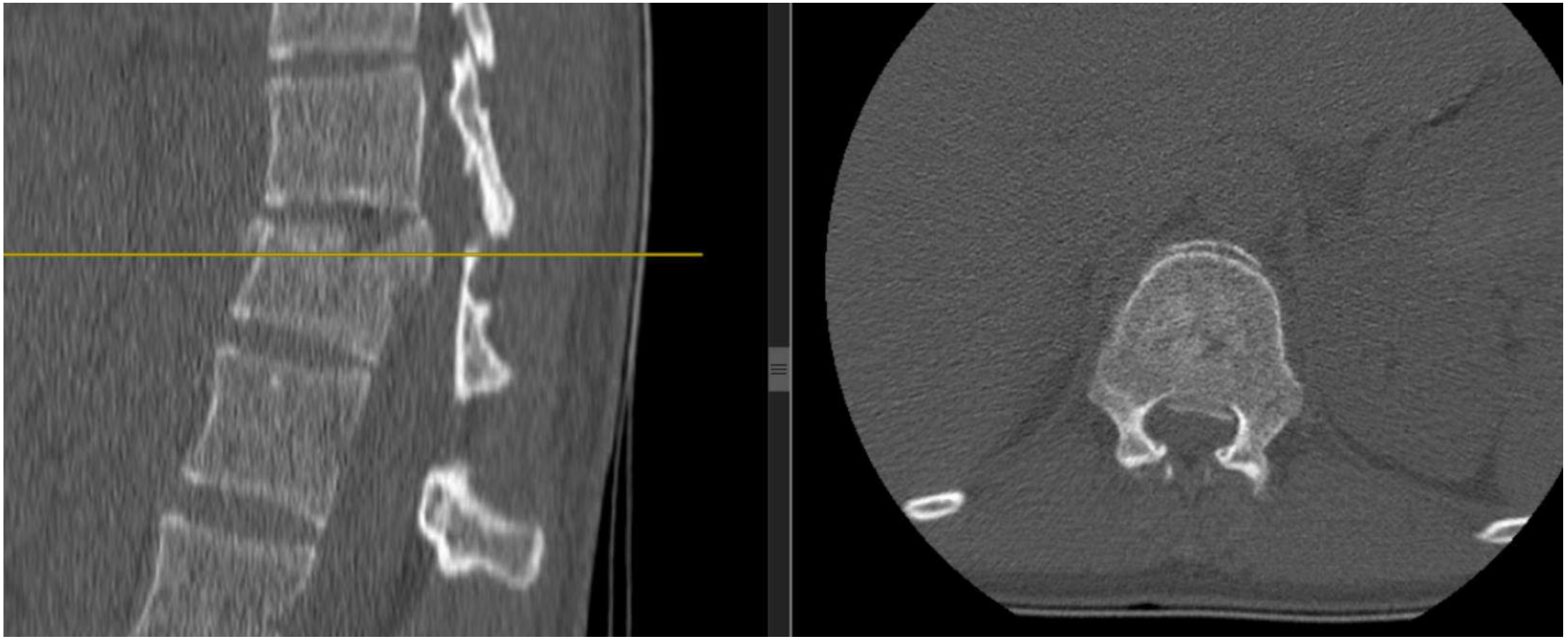
Imaging diagnostic

- X-ray - day of injury



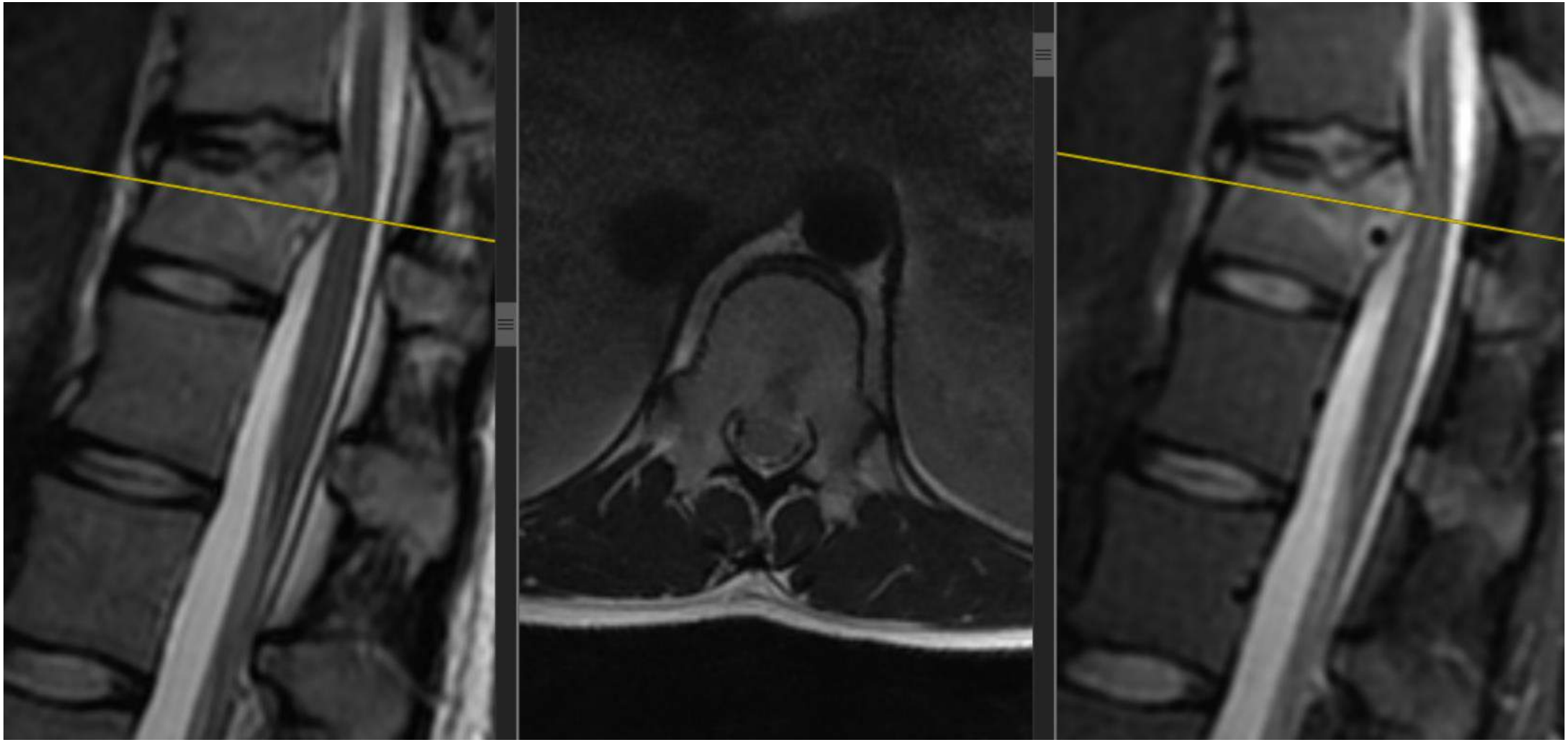
Imaging diagnostic

- CT - one week after the injury

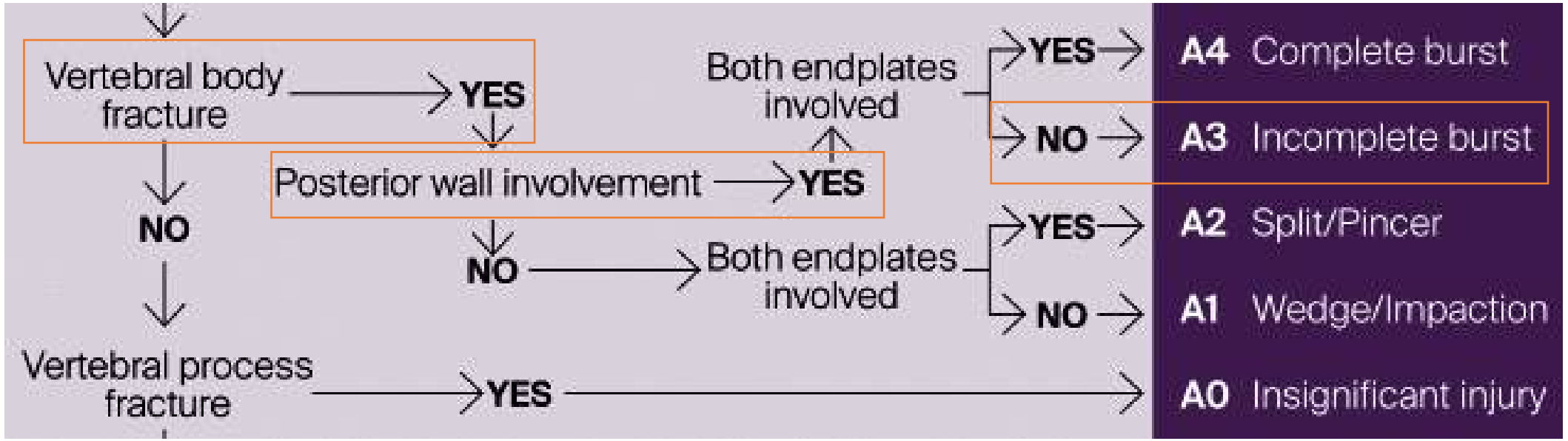


Imaging diagnostic

- MRI



AO Spine



Cheng J, Liu P, Sun D, Qin T, Ma Z, Liu J. Reliability and reproducibility analysis of the AOSpine thoracolumbar spine injury classification system by Chinese spinal surgeons. Eur Spine J. 2017 May;26(5):1477-1482. doi: 10.1007/s00586-016-4842-4. Epub 2016 Nov 2. PubMed PMID: 27807778.

AO Spine

Neurology

Type	Neurological
N0	Neurology intact
N1	Transient neurologic deficit
N2	Radicular symptoms
N3	Incomplete spinal cord injury or any degree of cauda equina injury
N4	Complete spinal cord injury
NX	Cannot be examined
+	Continued spinal cord compression

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Choice of treatment

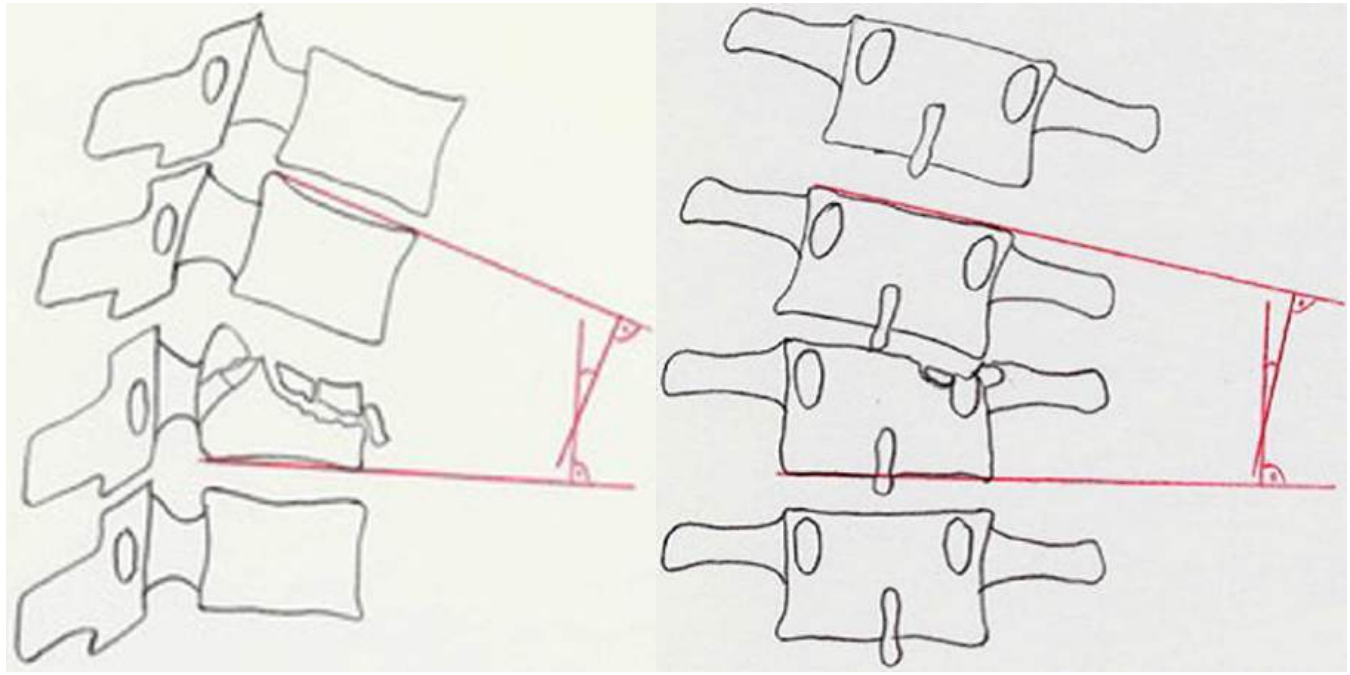
- Have you had a similar case ?
- What treatment would you choose?

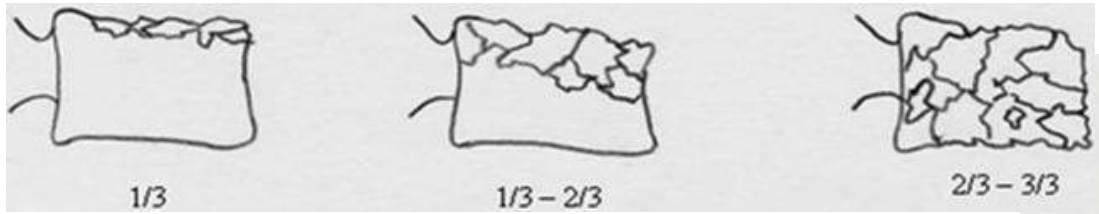
Conservative Therapy

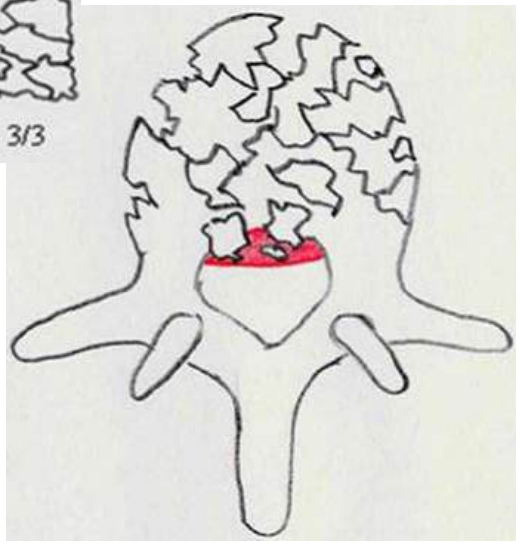
Operative Treatment

AO Spine
Morphological modifiers

- 1 : disorder in the physiological alignment of the vertebral column:
  - Mono-/bisegmental endplate angle (EPA).
  - scoliosis angle
- 2 : comminution of the vertebral body.
- 3 : stenosis of the spinal canal







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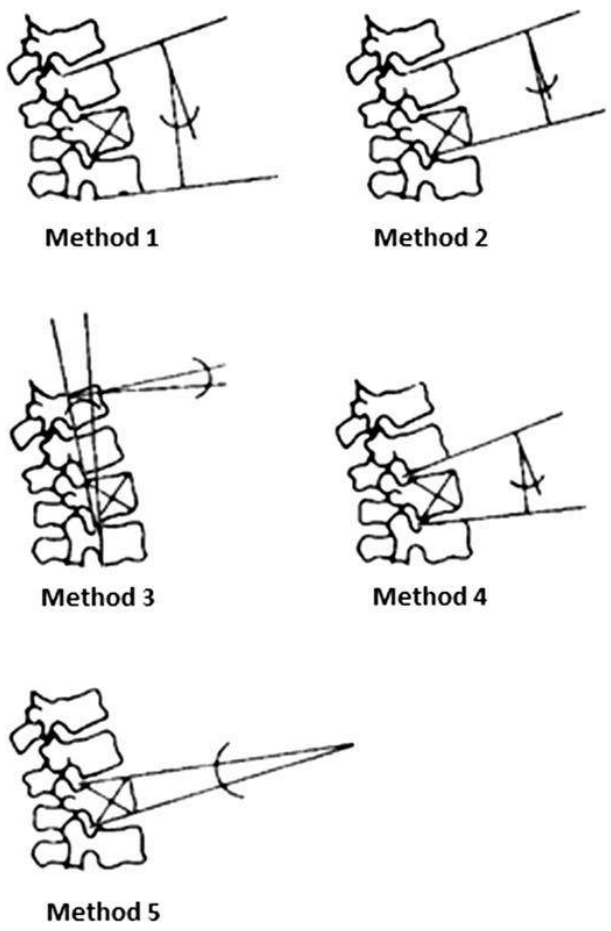
Surveyed measurement techniques kyphosis



- (1) ‘Cobb angle’, from the superior endplate of the adjacent cranial vertebral body to the inferior endplate of the adjacent caudal body (bisegmental angle);
- (2) ‘Gardner’s method’, using the superior endplate of the vertebral body above and inferior endplate of the fractured vertebral body (monosegmental angle);
- (3) ‘posterior walls angle’, measuring the angle between the posterior walls of the vertebral bodies above and below the injured vertebra;
- (4) ‘adjacent endplates method’, from the inferior endplate of the vertebra above and the superior endplate of the vertebra below the fracture; and
- (5) ‘wedge angle’, measuring from the superior endplate to the inferior of the injured vertebra.

A3: Incomplete Burst MM1

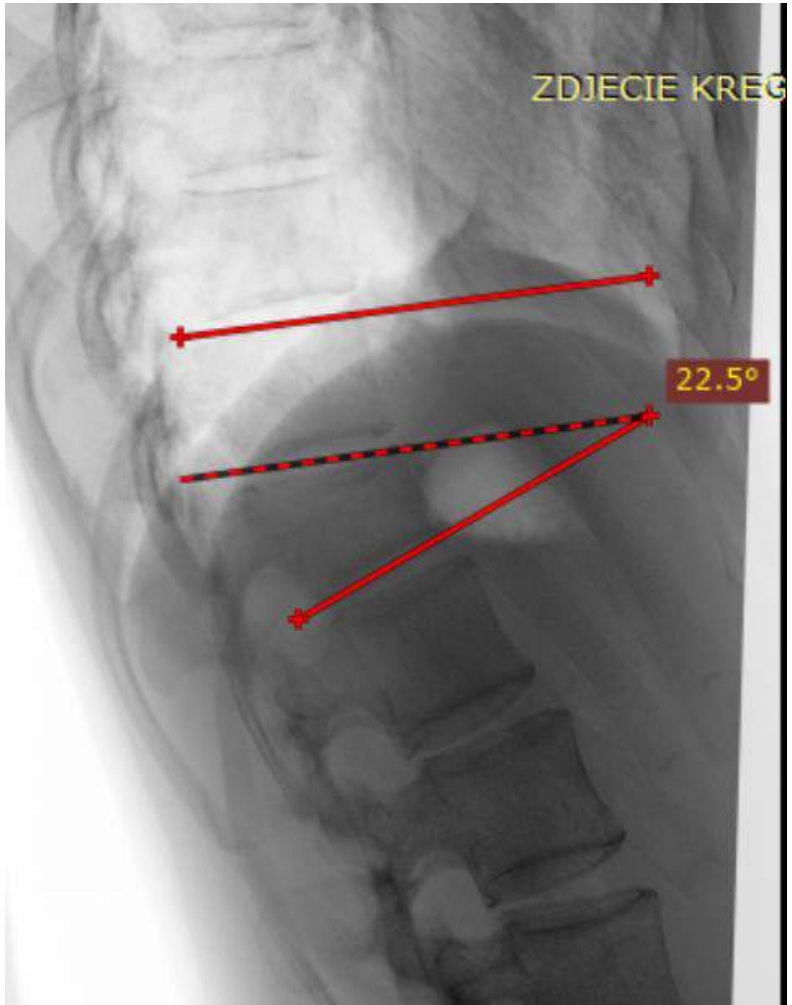
- δEPA <15° and/or scoliosis <10° - conservative therapy.
- δEPA **>15°** and/or scoliosis >10° - **operative treatment**.

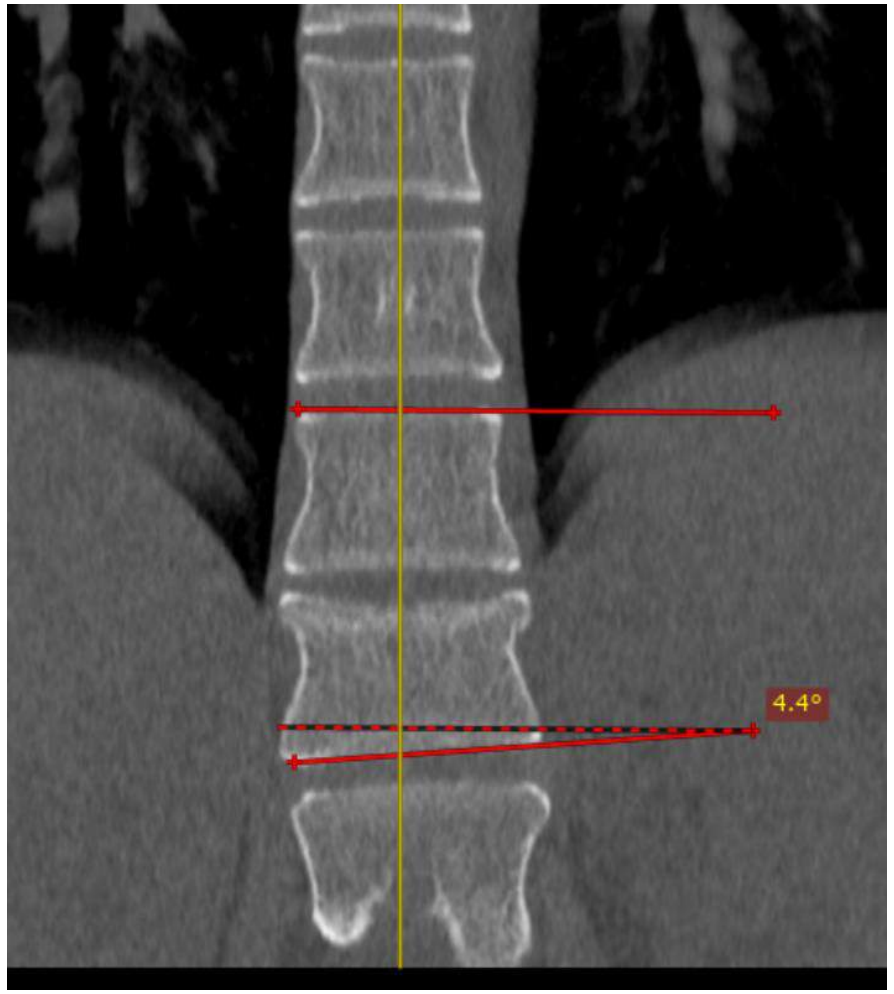
- Anterior reconstruction should be performed depending on δEPA and destruction of the vertebral body.
- **For vertebral body destruction <1/3 anterior reconstruction is optional**,
- Destruction 1/3 to 2/3 monosegmental reconstruction is recommended.
- Separation of the fragments and critical narrowing of the spinal canal is a further indication for surgical treatment.

Wendt, K., Nau, C., Jug, M. *et al.* ESTES recommendation on thoracolumbar spine fractures. *Eur J Trauma Emerg Surg* (2023). doi: 10.1007/s00068-023-02247-3
Cheng J, Liu P, Sun D, Qin T, Ma Z, Liu J. Reliability and reproducibility analysis of the AOSpine thoracolumbar spine injury classification system by Chinese spinal surgeons. Eur Spine J. 2017 May;26(5):1477-1482. doi: 10.1007/s00586-016-4842-4. Epub 2016 Nov 2. PubMed PMID: 27807778.
Verheyden AP et al. Treatment of Fractures of the Thoracolumbar Spine: Recommendations of the Spine Section of the German Society for Orthopaedics and Trauma (DGOU). Global Spine J. 2018 Sep;8(2 Suppl):34S-45S. doi: 10.1177/2192568218771668.

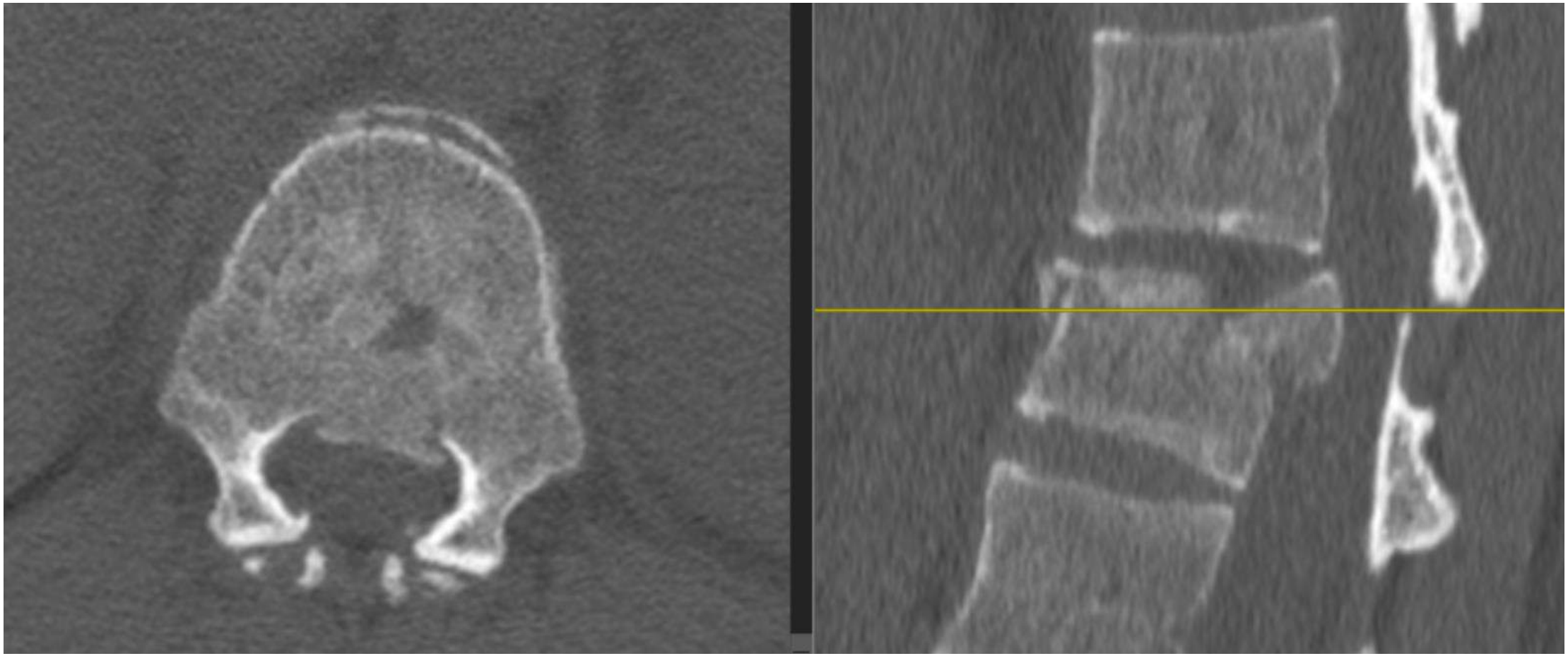
A3: Incomplete Burst MM1, MM2

- δ-EPA 22.5°, scoliosis angle 4.4°,
- comminution of the vertebral body - 1/3

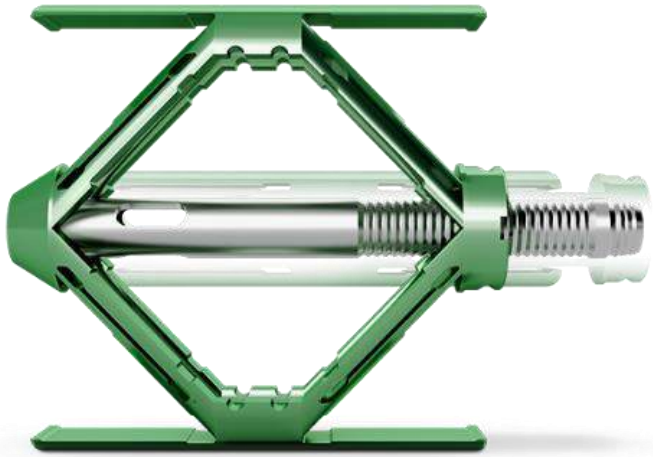




A3: Incomplete Burst MM3 - Stenosis of the spinal canal



SpineJack® system



The SpineJack implant expands in a craniocaudal direction.

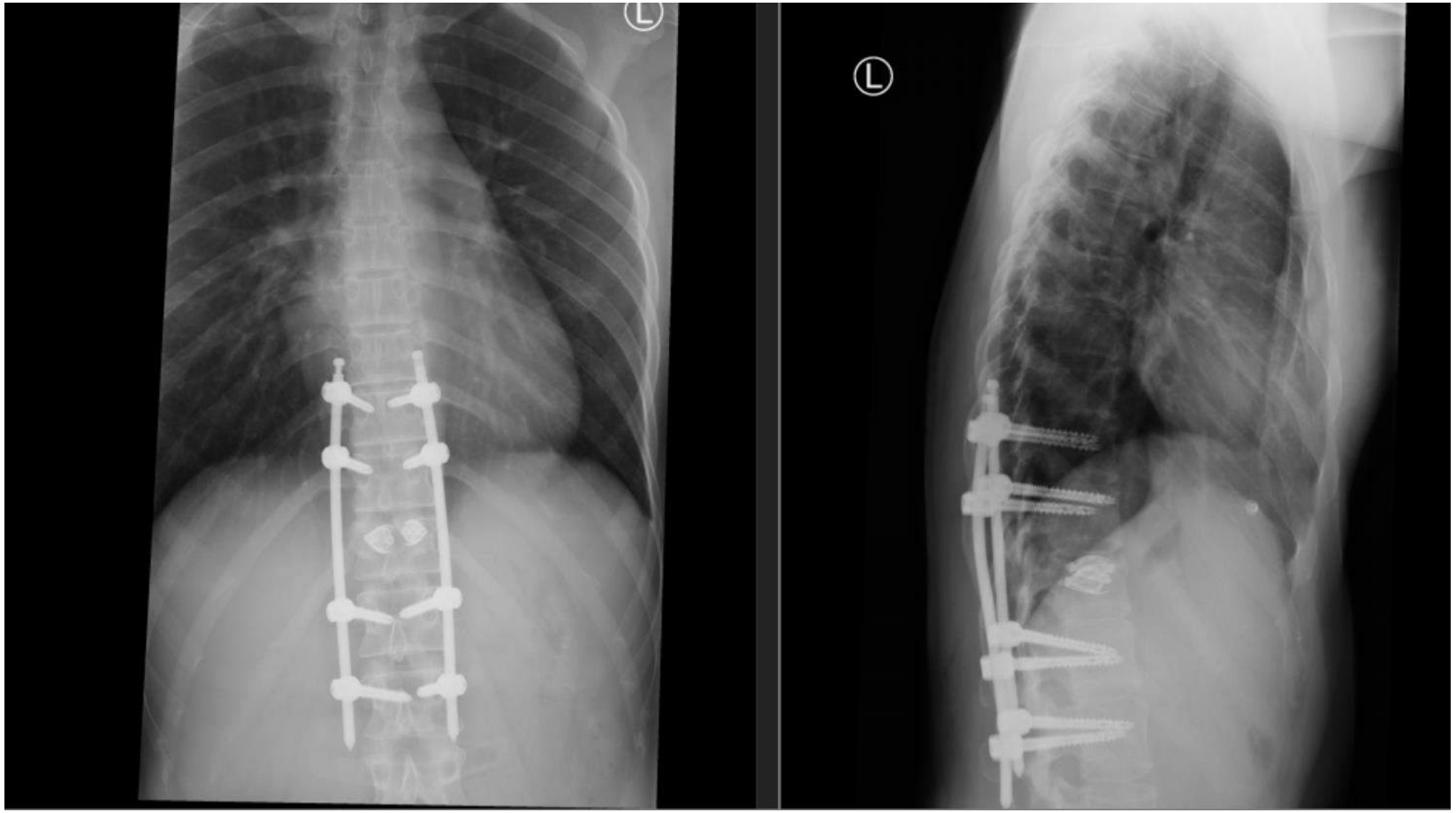
Augmentation

- Cement augmentation with PMMA (polymethyl methacrylate) cement is a useful tool in patients with reduced bone quality.
- It is generally not recommended in young patients with a healthy bone

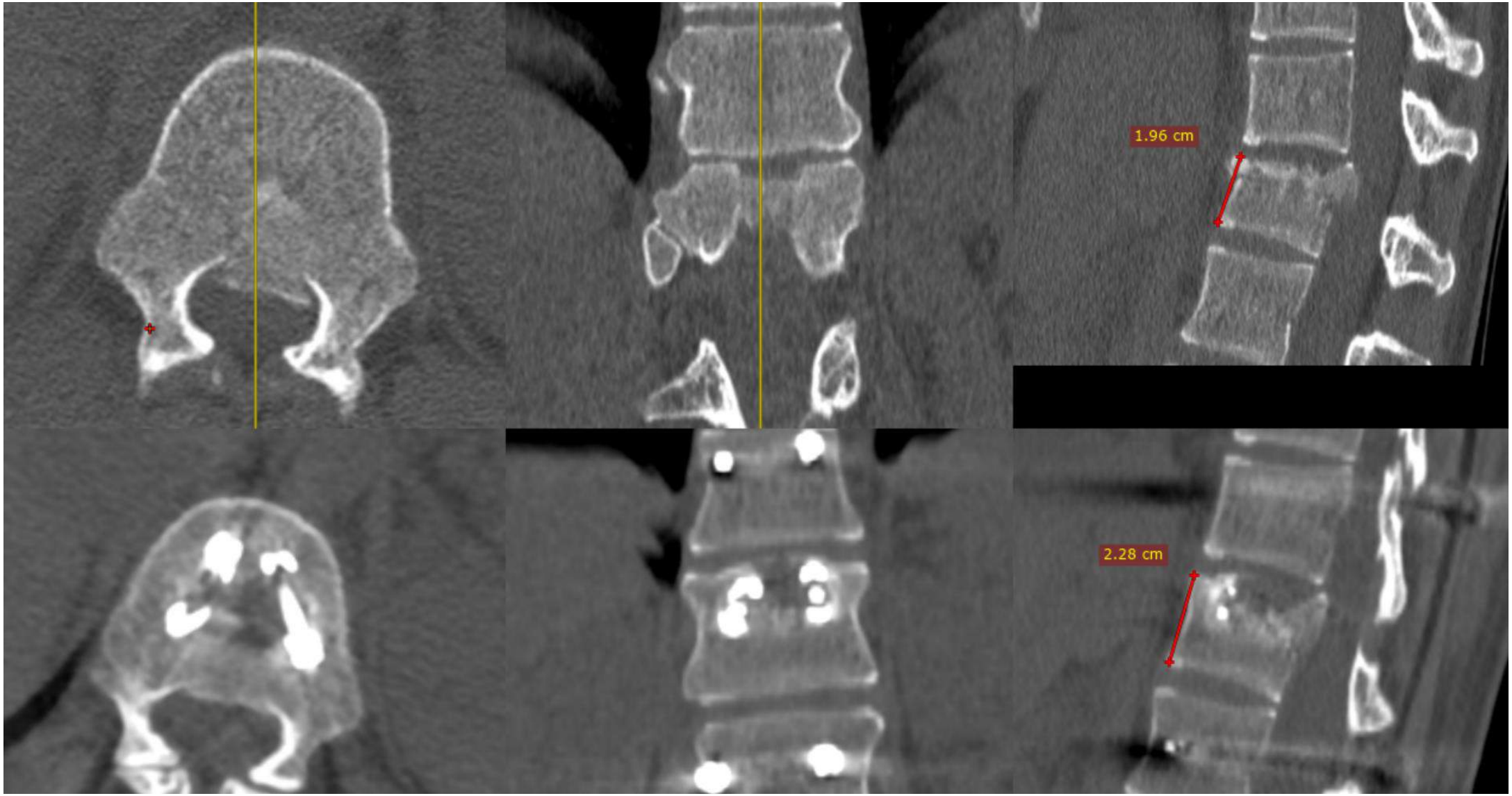
- At least monosegmental posterior instrumentation has to be considered.
- A monosegmental posterior fusion is possible.
- A standalone anterior or posterior reconstruction is possible in selected cases.

Wendt, K., Nau, C., Jug, M. *et al.* ESTES recommendation on thoracolumbar spine fractures. *Eur J Trauma Emerg Surg* (2023). doi: 10.1007/s00068-023-02247-3

X-ray after surgery



Follow-up



Follow-up

- The objectives of the operation have been met.
  - restoring the height of the vertebra,
  - restoration and union of the posterior wall fragment - reduction of stenosis of the spinal canal
  - restoration of the angle of kyphosis
- However, we have one unfulfilled goal
  - bone loss between SpineJack implants
  - Cerament has not rebuilt
  - There may be a problem with the IVD involvment
- There are no pain symptoms
- We plan to remove the screws in a few months