

ORTHO.GENT

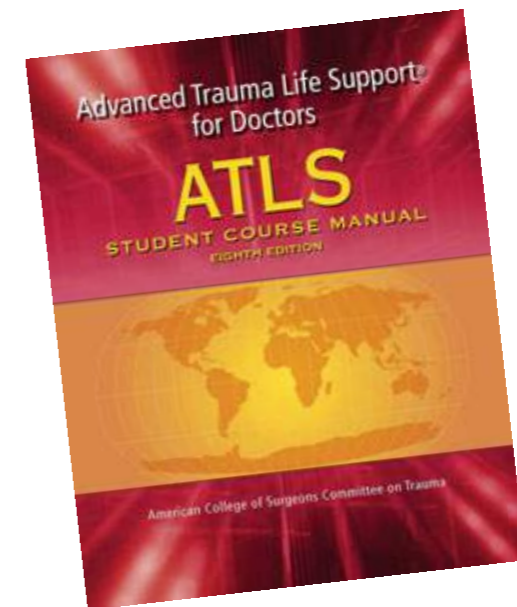
ORTHOPEDIE & TRAUMATOLOGIE

INSTABILITEIT bij WERVELFRACTUREN

Dr. Johan Van Lerbeirghe



Stabiliteit in de WERVELTRAUMATOLOGIE



- PRIMAIRE EVALUATIE
- TRANSPORT
- SECUNDAIRE EVALUATIE (ZH en behandeling)
- STABILISATIE (chirurgie en/of immobilisatie)

Primaire Evaluatie

A = **Airway** en controle cervicale WZ

B = **Breathing** en ventilatie

C = **Circulation** en controle bloeding, orthosymp, vullen!

D = **Disability** (neurologisch onderzoek, bewusteloos, GCS)

E = **Exposure** (hypothermie)

Primaire Evaluatie



Airway



Immobilisatie van de cervicale wervelkolom



Primaire Evaluatie

Breathing

- **Boven C3 : apnoe**
- **C3-C5 : hypoventilatie, respiratoire insuff.**
- **C5 : diaphragmatic breathing**
- **Indicatie intubatie : bewusteloosheid, hoog cervicaal trauma**

Primaire Evaluatie

Circulatie

- **Externe bloeding** → **Directe druk**
- **Neurogene shock** ↔ **haemorrhagische shock**
- **Neurogene shock** ↔ **spinale shock**

Transport



Transport van de patient

Log-roll technique

Lift-and-slide technique



More spinal motion
Indication : prone position

Less spinal motion
Indication : face-up position

Secundaire Evaluatie Ziekenhuis

- NEUROLOGISCHE EVALUATIE (ASIA score)
- CLASSIFICATIE STABILITEIT VAN DE FRACTUUR



STANDARD NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY

MOTOR

KEY MUSCLES

	R	L
C2		
C3		
C4		
C5		
C6		
C7		
C8		
T1		
T2		
T3		
T4		
T5		
T6		
T7		
T8		
T9		
T10		
T11		
T12		
L1		
L2		
L3		
L4		
L5		
S1		
S2		
S3		
S4-5		

Elbow flexors
Wrist extensors
Elbow extensors
Finger flexors (distal phalanx of middle finger)
Finger abductors (little finger)

0 = total paralysis
1 = palpable or visible contraction
2 = active movement, gravity eliminated
3 = active movement, against gravity
4 = active movement, against some resistance
5 = active movement, against full resistance
NT = not testable

Hip flexors
Knee extensors
Ankle dorsiflexors
Long toe extensors
Ankle plantar flexors

Voluntary anal contraction (Yes/No)

TOTALS + = MOTOR SCORE
(MAXIMUM) (50) (50) (100)

SENSORY

KEY SENSORY POINTS

	LIGHT TOUCH		PIN PRICK	
	R	L	R	L
C2				
C3				
C4				
C5				
C6				
C7				
C8				
T1				
T2				
T3				
T4				
T5				
T6				
T7				
T8				
T9				
T10				
T11				
T12				
L1				
L2				
L3				
L4				
L5				
S1				
S2				
S3				
S4-5				

0 = absent
1 = impaired
2 = normal
NT = not testable

TOTALS { + = PIN PRICK SCORE (max: 112)
 + = LIGHT TOUCH SCORE (max: 112)

(MAXIMUM) (56)(56) (56)(56)

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NEUROLOGICAL LEVEL <i>The most caudal segment with normal function</i>	<table style="width: 100%; text-align: center;"> <tr><td></td><td>R</td><td>L</td></tr> <tr><td>SENSORY</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>MOTOR</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> </table>		R	L	SENSORY	<input type="checkbox"/>	<input type="checkbox"/>	MOTOR	<input type="checkbox"/>	<input type="checkbox"/>	COMPLETE OR INCOMPLETE? <input type="checkbox"/> <i>Incomplete = Any sensory or motor function in S4-S5</i>	ZONE OF PARTIAL PRESERVATION <i>Caudal extent of partially innervated segments</i>	<table style="width: 100%; text-align: center;"> <tr><td></td><td>R</td><td>L</td></tr> <tr><td>SENSORY</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> <tr><td>MOTOR</td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr> </table>		R	L	SENSORY	<input type="checkbox"/>	<input type="checkbox"/>	MOTOR	<input type="checkbox"/>	<input type="checkbox"/>
	R	L																				
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ASIA IMPAIRMENT SCALE <input type="checkbox"/>																						

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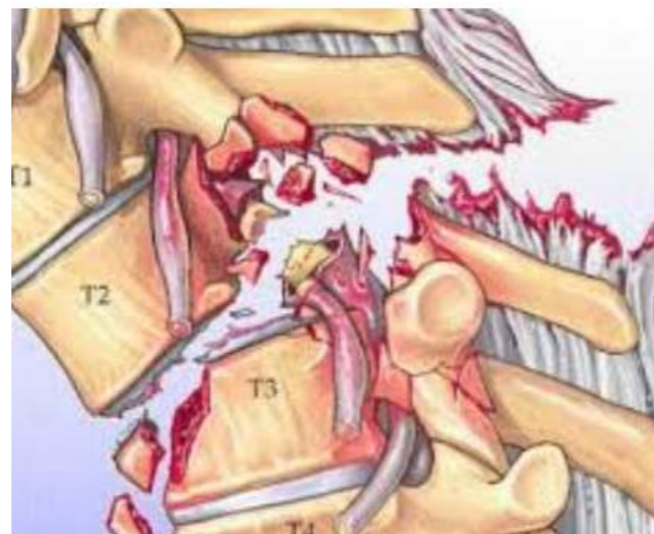
ORTHOPÉDIE & TRAUMATOLOGIE

Classificatie CT-scan

- C0-C1-C2
- Subaxiale Cervicale Wervelkolom
- Thoracolumbale wervelkolom
- Sacrumfracturen.

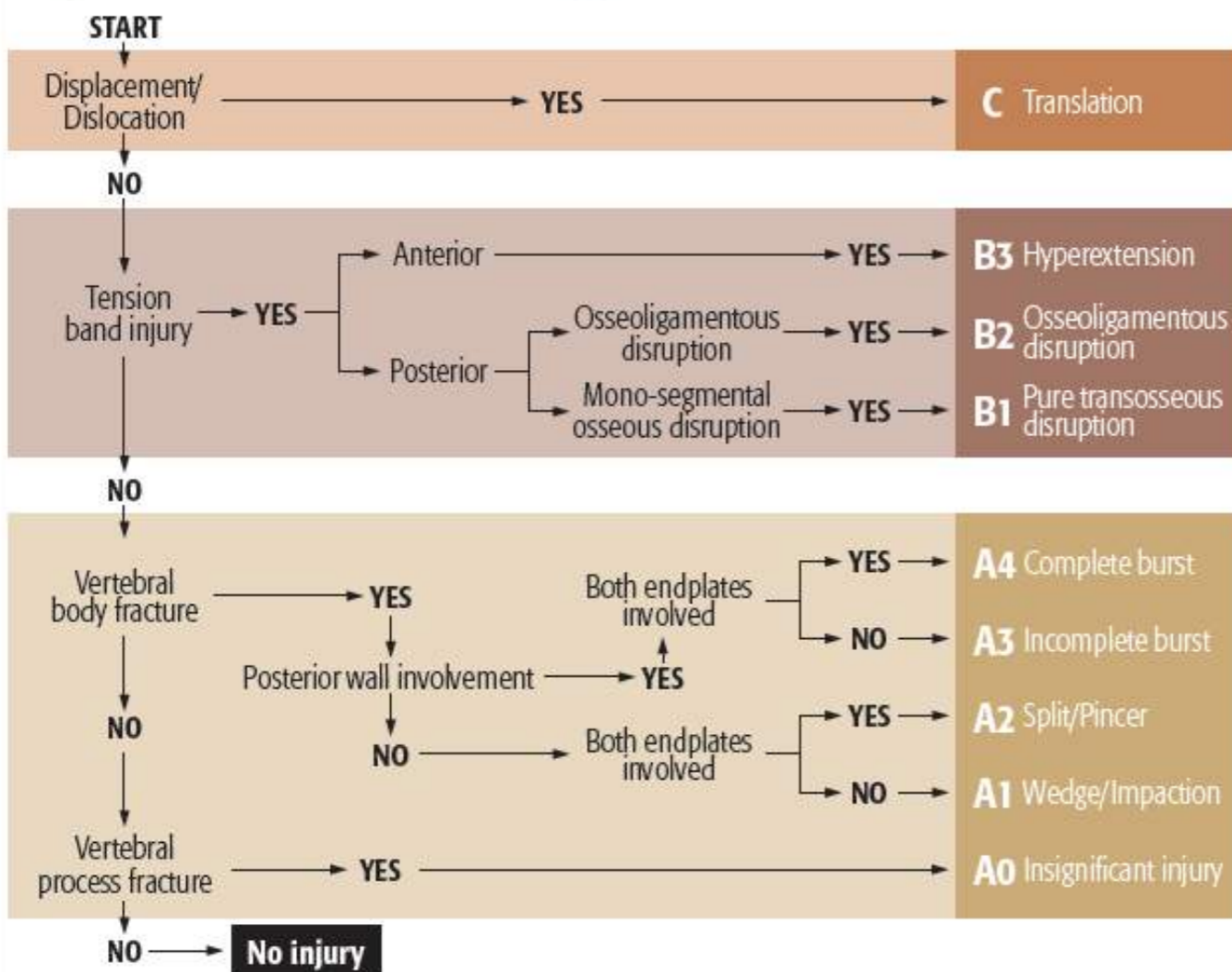
Intact of beschadigd posterieur tension band systeem

- A types met een intact posterieur TB systeem
- B en C types met een beschadigd posterieur TB systeem.



AOSpine Thoracolumbar Classification System

Algorithm for Morphologic Classification



Fracture Types



C.

Type C.
Translation Injuries

Failure of all elements leading to dislocation or displacement.



B.

Type B.
Distraction Injuries

Failure of the posterior or anterior tension band.



A.

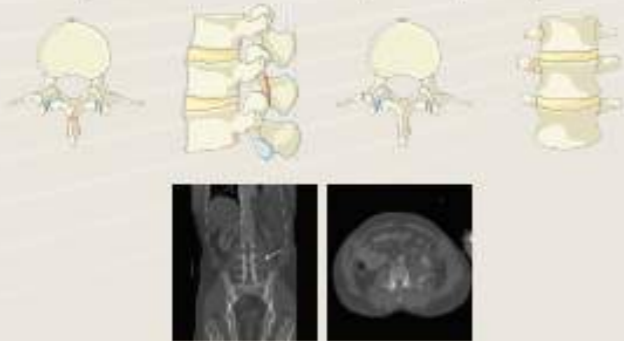
Type A.
Compression Injuries

Failure of anterior structures under compression.

Type A. Compression Injuries

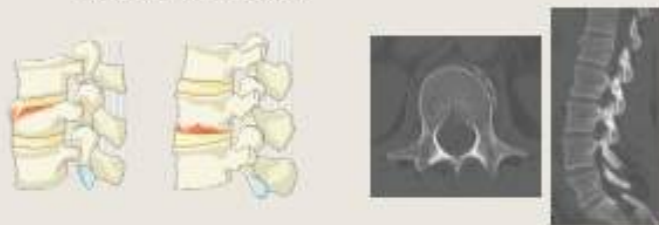
A0. Minor, nonstructural fractures

Fractures, which do not compromise the structural integrity of the spinal column such as transverse process or spinous process fractures.



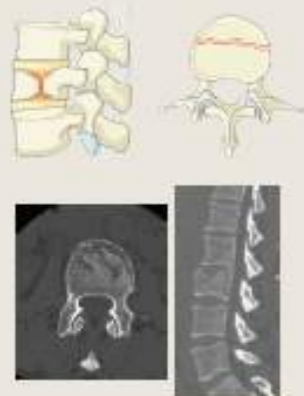
A1. Wedge-compression

Fracture of a single endplate without involvement of the posterior wall of the vertebral body.



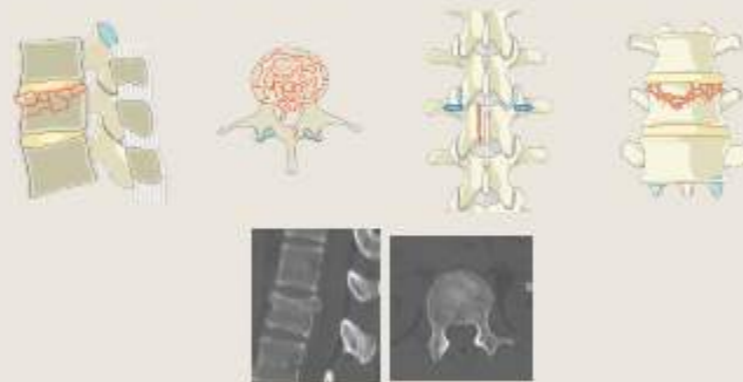
A2. Split

Fracture of both endplates without involvement of the posterior wall of the vertebral body.



A3. Incomplete burst

Fracture with any involvement of the posterior wall; only a single endplate fractured. Vertical fracture of the lamina is usually present and does not constitute a tension band failure.



A4. Complete burst

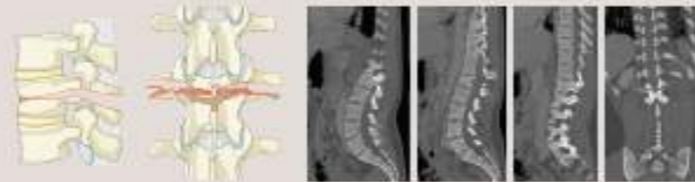
Fracture with any involvement of the posterior wall and both endplates. Vertical fracture of the lamina is usually present and does not constitute a tension band failure.



Type B. Distraction Injuries

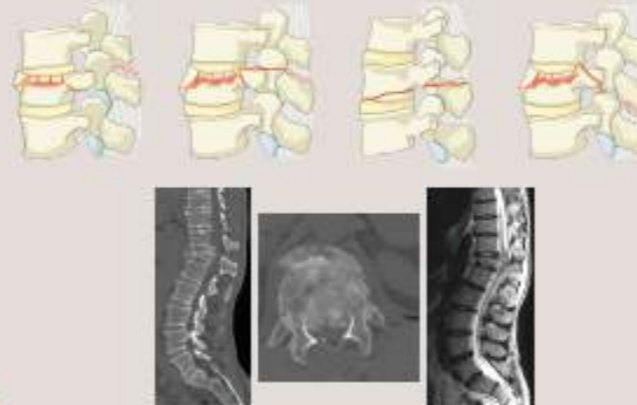
B1. Transosseous tension band disruption Chance fracture

Monosegmental pure osseous failure of the posterior tension band. The classical Chance fracture.



B2. Posterior tension band disruption

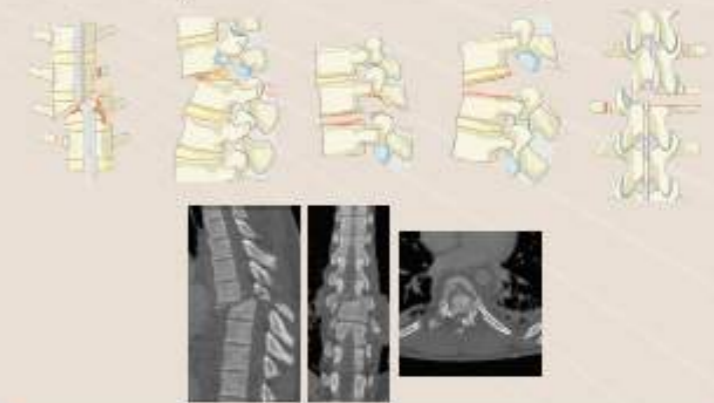
Bony and/or ligamentary failure of the posterior tension band together with a Type A fracture. Type A fracture should be classified separately.



Type C. Translation Injuries

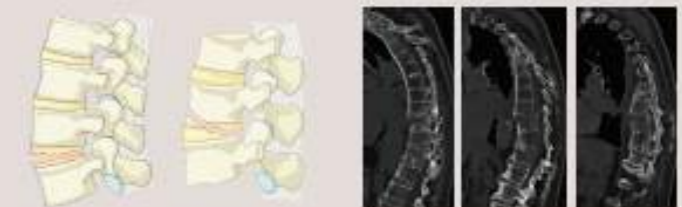
C. Displacement or dislocation

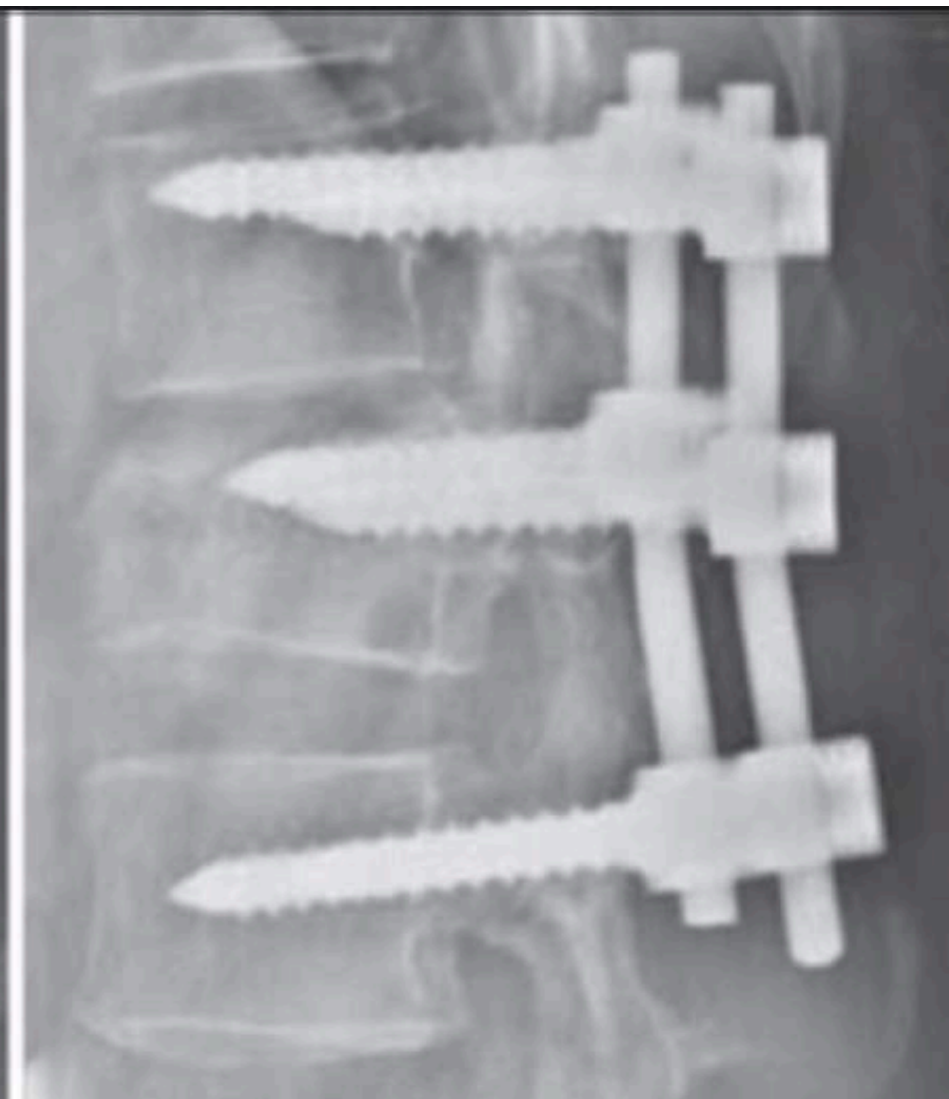
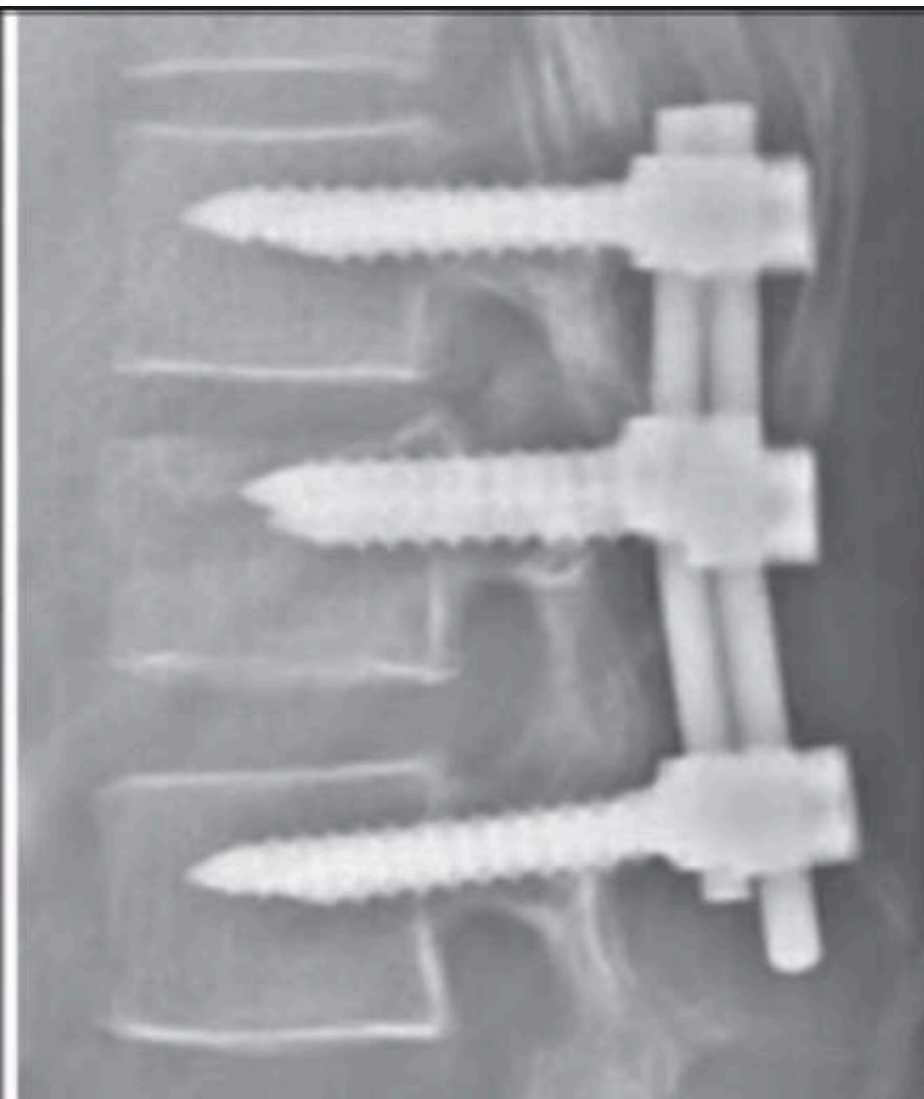
There are no subtypes because various configurations are possible due to dissociation/dislocation. Can be combined with subtypes of A or B.

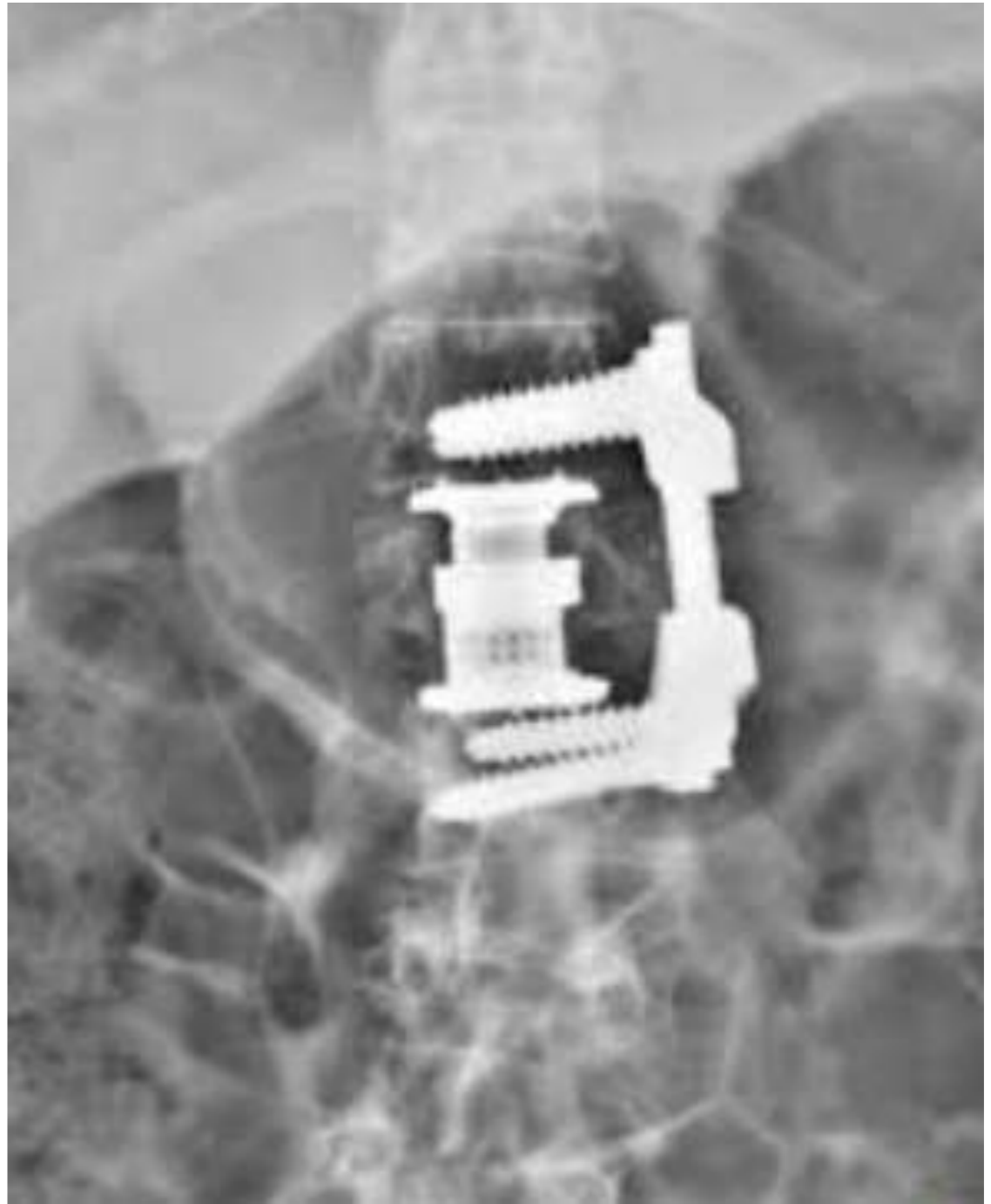


B3. Hyperextension

Injury through the disk or vertebral body leading to a hyperextended position of the spinal column. Commonly seen in ankylotic disorders. Anterior structures, especially the ALL are ruptured but there is a posterior hinge preventing further displacement.

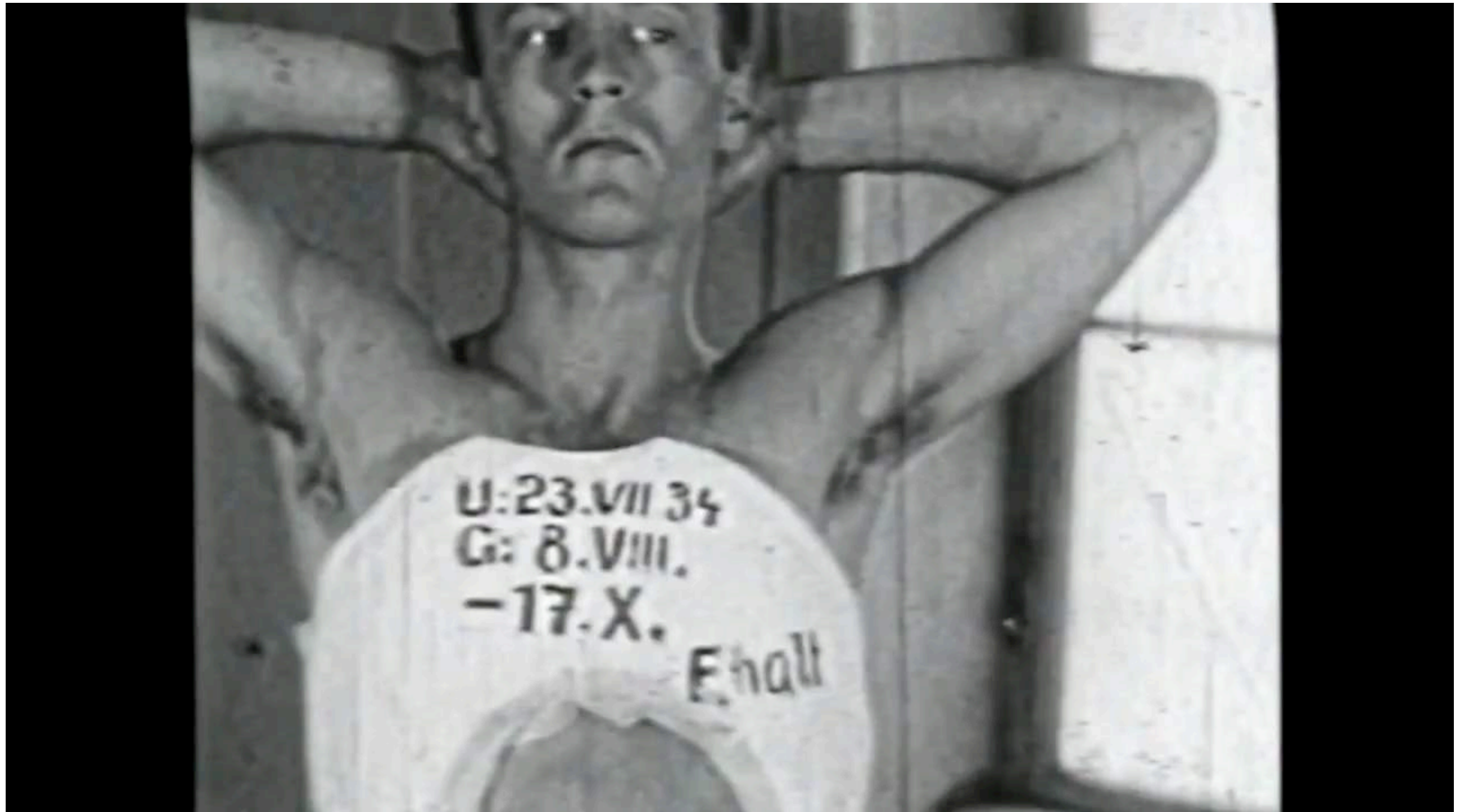








Lorenz Böhler 1934



THANK YOU



LUNCHTIME