



GLOBUS MEDICAL

MIS Thoracolumbar Trauma

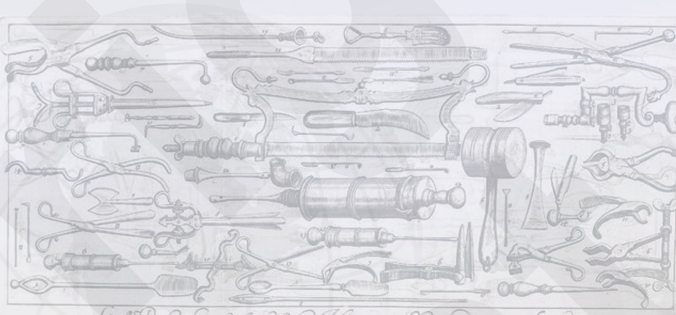
Mr M J H McCarthy
Consultant Spinal Surgeon

Fusion Portfolio Minimally Invasive Surgery Biomaterials Motion Preservation

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Armamentarium



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Indications for Surgery

- What are you trying to achieve?
- MISS is a Tool in Surgical Armamentarium
 - Use when appropriate to achieve your goals
 - Non-maleficence - "first, do no harm" (primum non nocere).

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Indications for Surgery - DRS

- Decompression
 - Spinal cord / nerve roots
- Realignment
 - Correct deformity
- Stabilisation
 - Prevent / Treat
 - Neurological deficit / deformity / pain
 - (Non fusion technology form of "stabilisation")

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Table 2

Thoracolumbar Injury Classification and Severity Score

Injury Characteristic	Qualifier	Points	
Injury morphology	—	1	
	Burst	+1	
Rotation/translation	—	3	
Distraction	—	4	
Neurologic status	Intact	0	
	Nerve root	2	
	Spinal cord, conus medullaris	Incomplete	3
		Complete	2
Cauda equina	—	3	
Posterior ligamentous complex integrity	Intact	0	
	Suspected/Indeterminate	2	
	Disrupted	—	3

+ = 1 additional point given to the morphology

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Load-sharing classification

McCormack, Gaines et al (Spine 1994) **28 pts**

COMMINUTION	APPOSITION	KYPHOSIS
 1. Little < 30% comminution	 1. Minimal minimal spread	 1. Little < 4° correction
 2. More 30-60% comminution	 2. Spread < 2mm of < 50%	 2. More 4-9° correction
 3. Gross > 60% comminution on sagittal CT	 3. Wide > 2mm of > 50% on axial CT	 3. Most > 9° correction on lateral x-ray – POST OP

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New AO Classification

Spine SPINE Volume 36, Number 23, pp 2028-2037
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DIAGNOSTICS

AOSpine Thoracolumbar Spine Injury Classification System

Fracture Description, Neurological Status, and Key Modifiers

1. Morphologic classification of the fracture
2. Neurological status
3. Clinical modifiers

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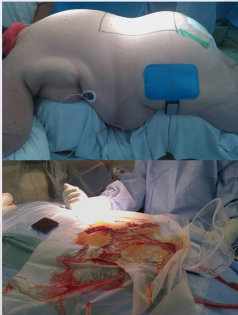
Which Types

- A1 – conservative (!)
- A2, A3
- A4
 - may require longer posterior construct / anterior column reconstruction / anterior decompression
- Bony B Type
 - not pure soft tissue chance
 - reduce and fuse
- C type
 - Translational / rotational deformity / dislocations
 - Likely to require open procedure to reduce / realign / fuse

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The Personalities

- **Personality of the patient**
 - Age
 - Comorbidity
 - Bone stock
 - Energy of injury / other injuries
 - Time since injury



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The Personalities

- **Personality of the fracture**
 - Canal compromise
 - Neurologic compromise
 - Kyphosis
 - Anterior collapse
 - Progression



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The Personalities

- **Personality of the surgeon**



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Goals for Surgery

Neurology

- clearance of canal compromise
- maintenance of neurological deficit

Biomechanics

- Decompress
- Realign
- Stabilize
- Prevent Late Pain / Deformity



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- Posterior
 - Realign
 - Restore Tension Band
 - Ligamentotaxis
 - Indirect Canal Decompression
- Anterior
 - Column support
 - Decompression
- Posterior Qs
 - Short or long
 - +/- Fracture screws
 - +/- Cross Links
 - Decompression
 - Fuse
- Anterior Qs
 - Structural Allograft
 - Cage Autograft
 - Expandable Cage
 - Rods or Plate

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AO Principles

- Anatomic Reduction
- Stable Internal Fixation
- Atraumatic Technique
- Early Active Mobilisation

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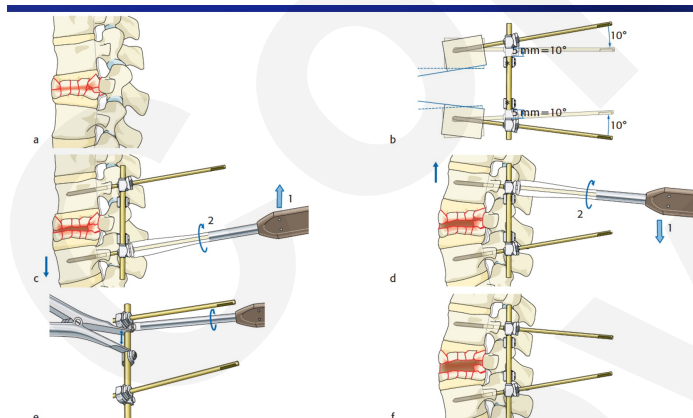
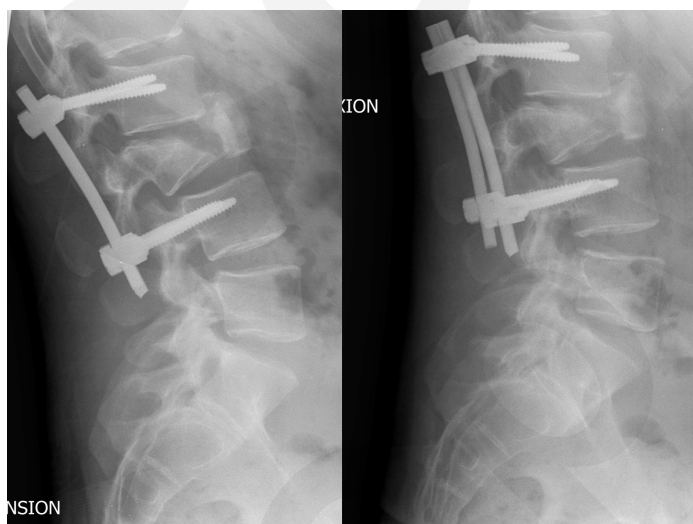
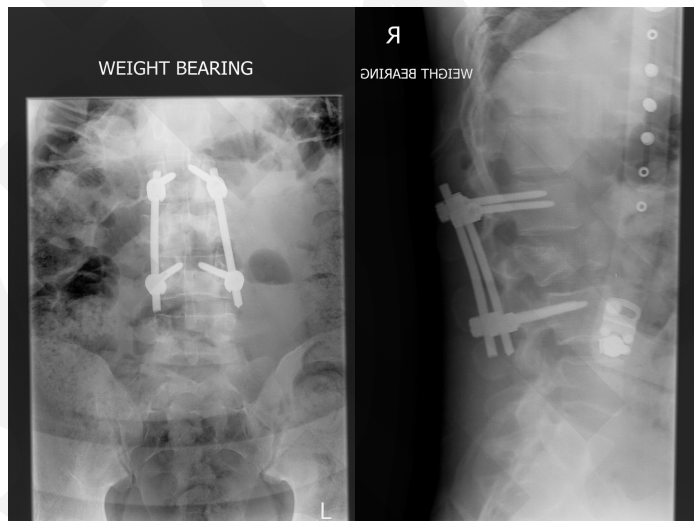
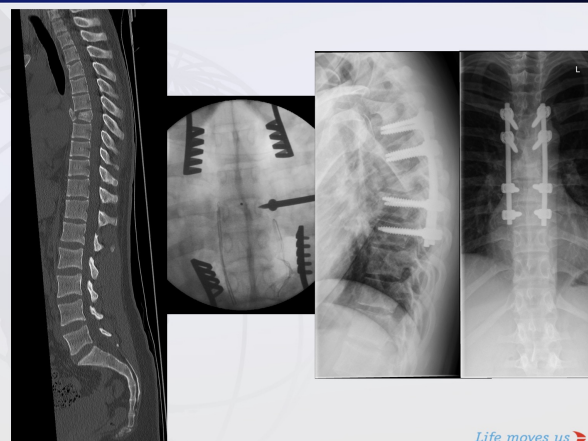


Fig 7.3.2-8a-f
a Type A3 burst fracture (with fractured posterior wall).
b Half rings (asterisks) are mounted on the rods. For each 10° of kyphosis correction, a 5 mm distance between the half ring and the clamp is needed.

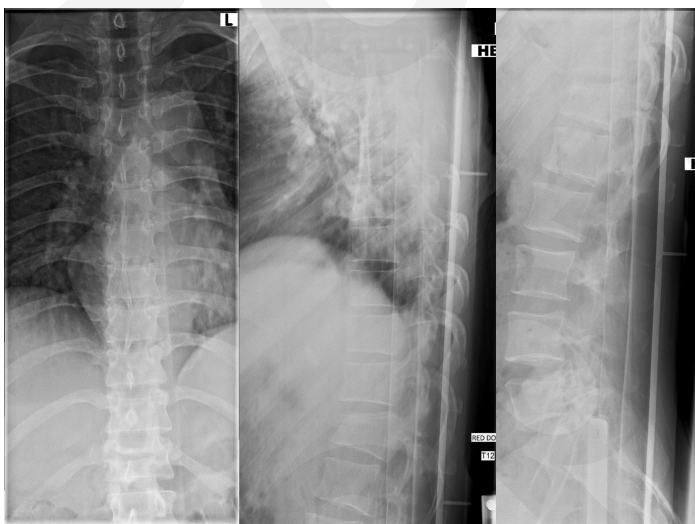
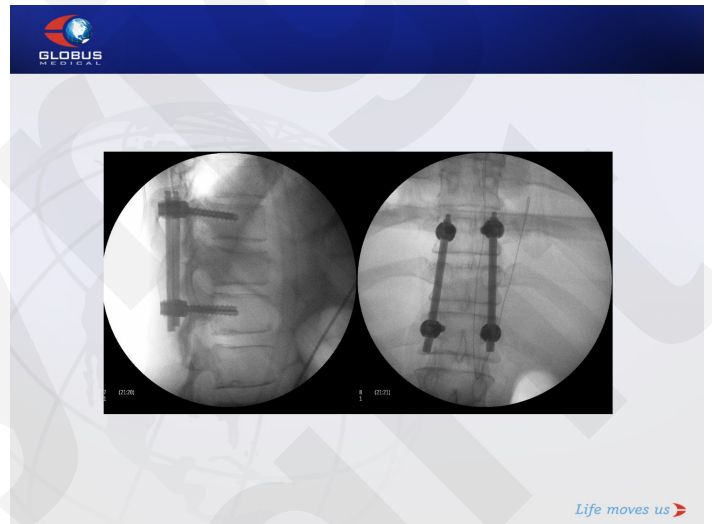
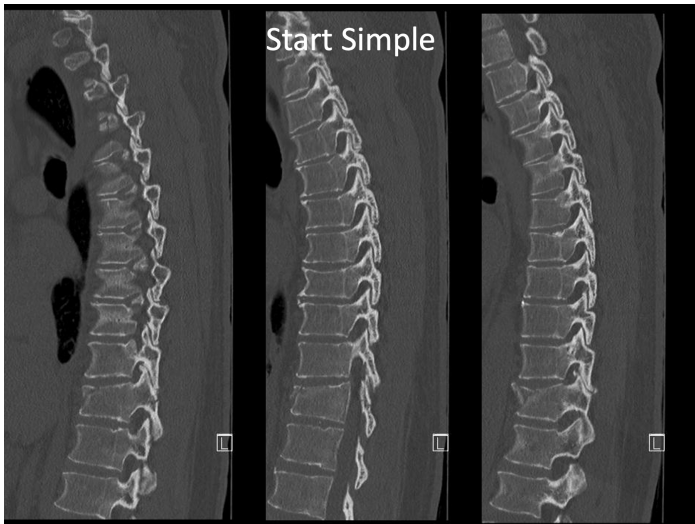
c-d Using the cannulated socket wrench (1), the caudal and the cranial nuts are tightened (2) to secure the correction.
e-f Distraction is applied with the spreader forces and final correction is achieved.

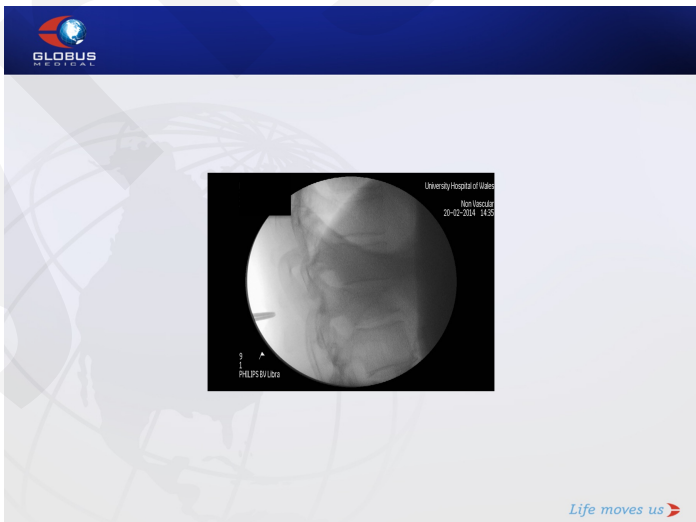
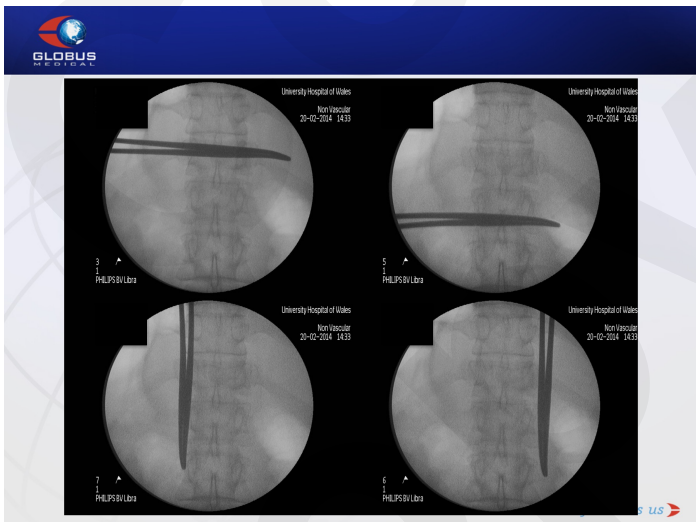
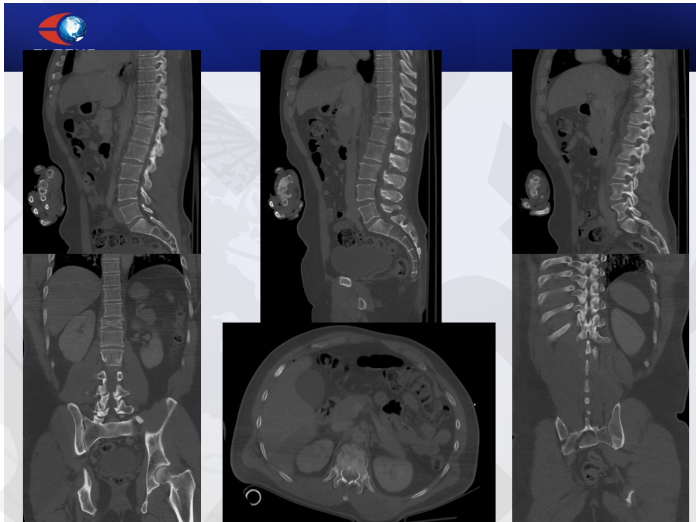
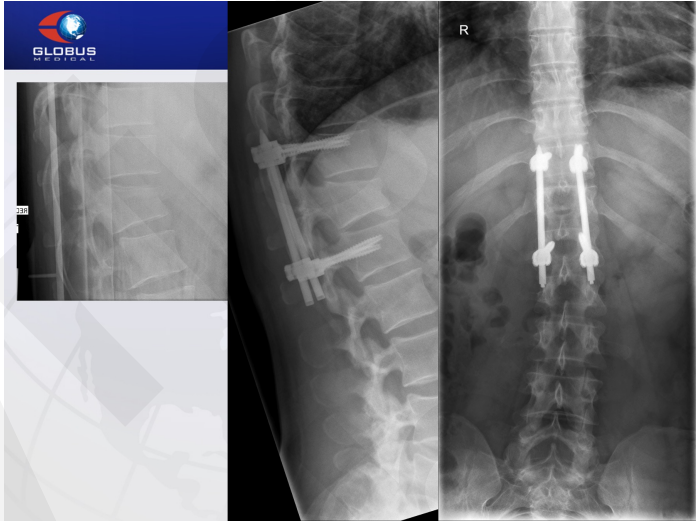
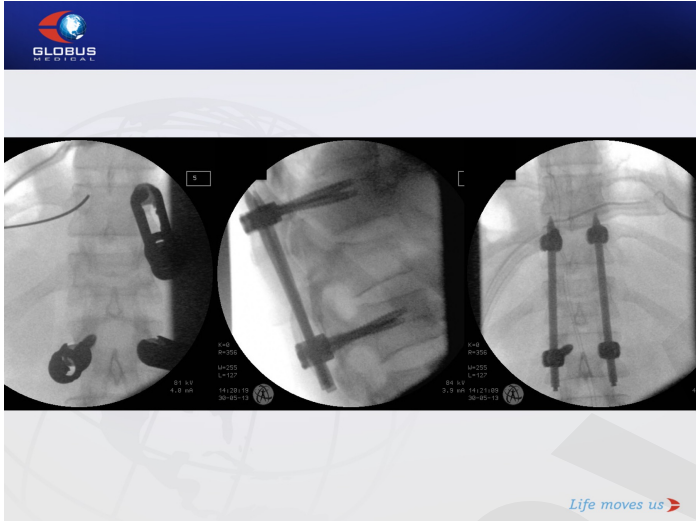


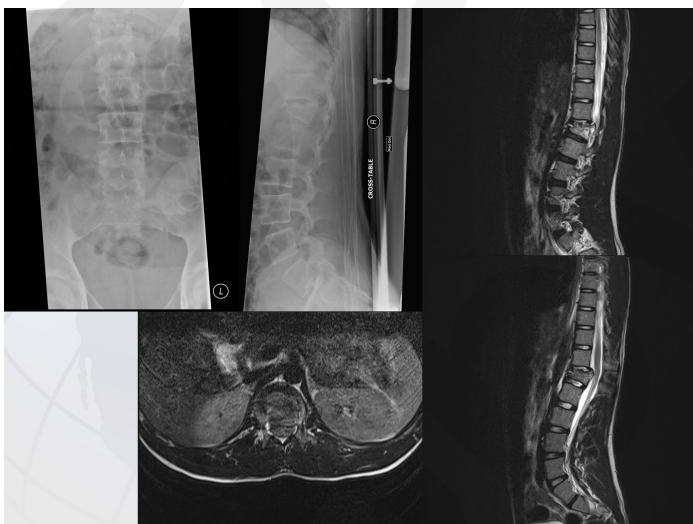
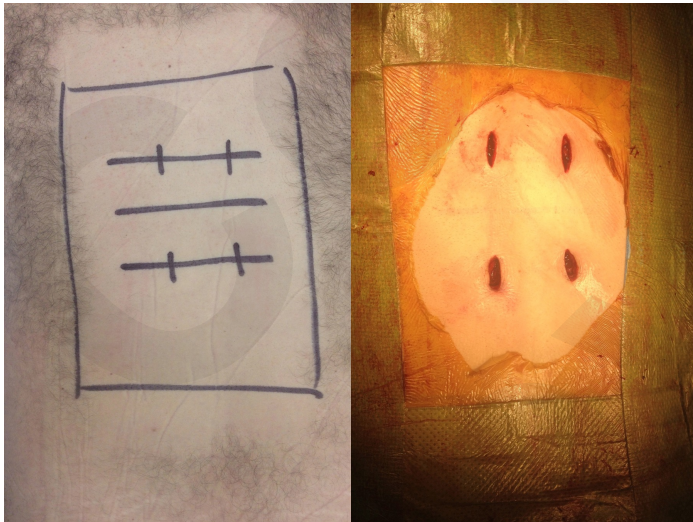
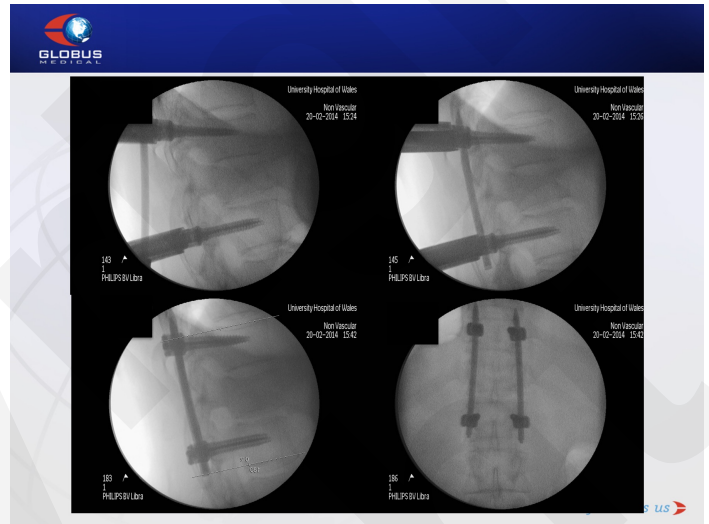
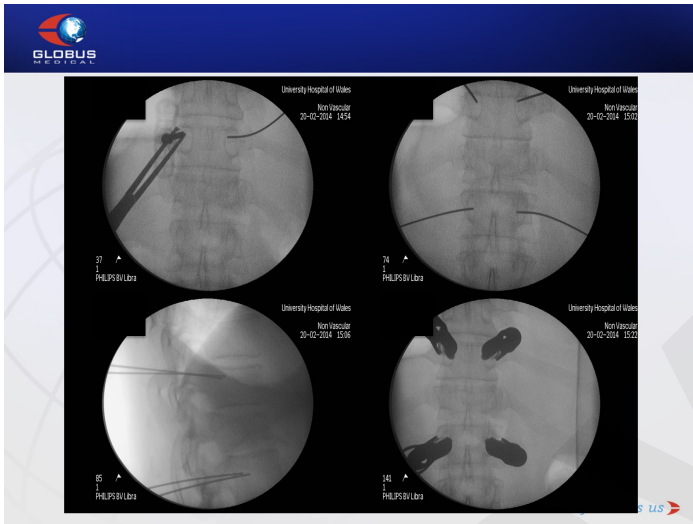
T7 Fracture

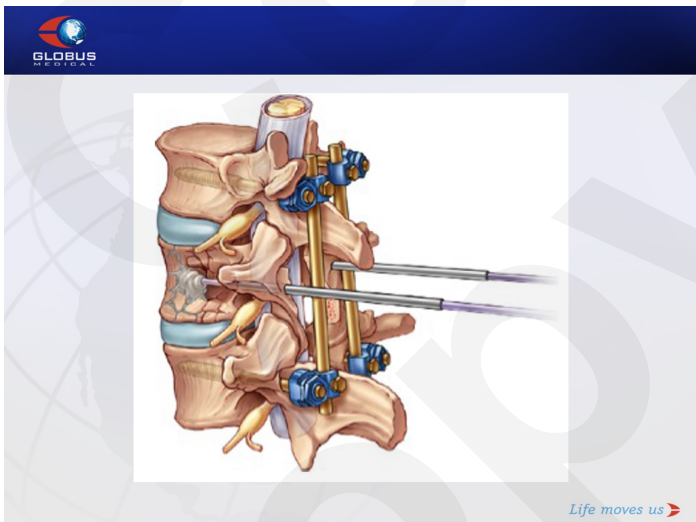
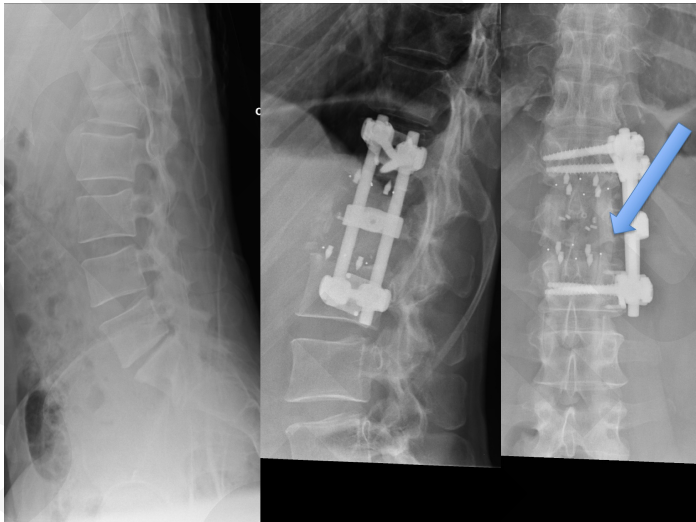


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Kuroki et al., J Spine 2013, 35
<http://dx.doi.org/10.4172/2165-7939.35-002>

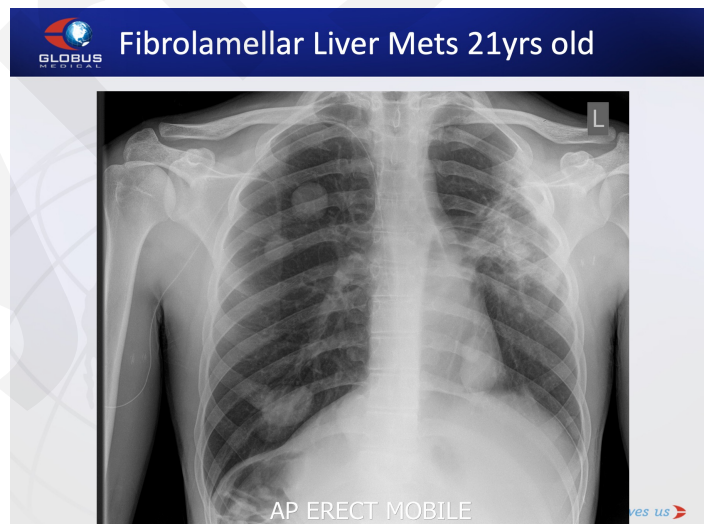
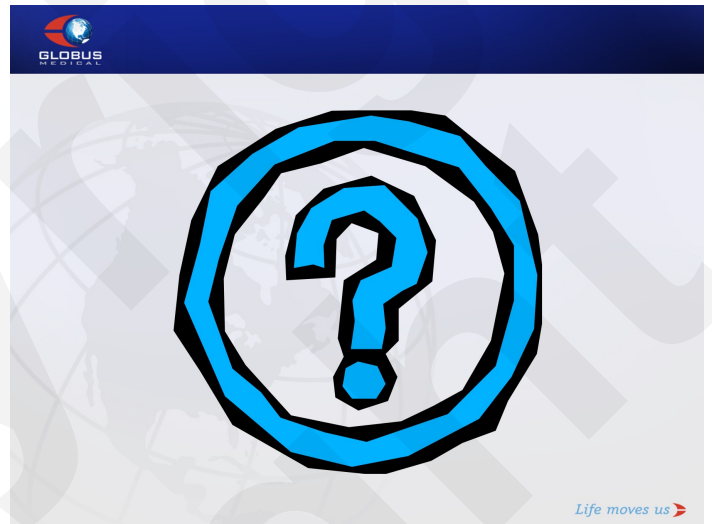
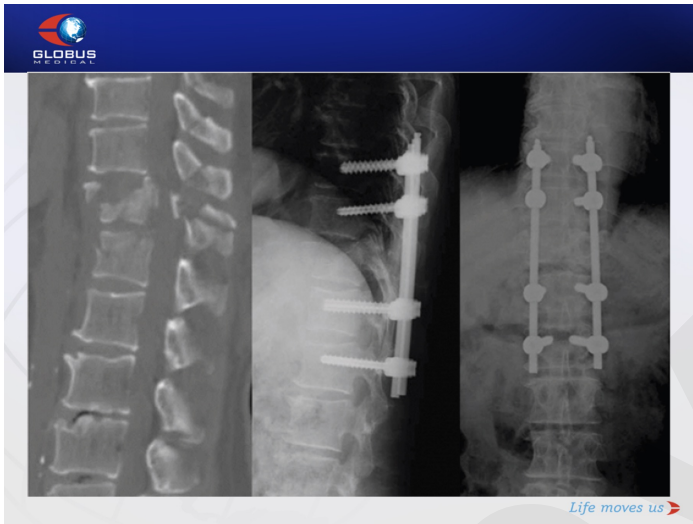
Research Article

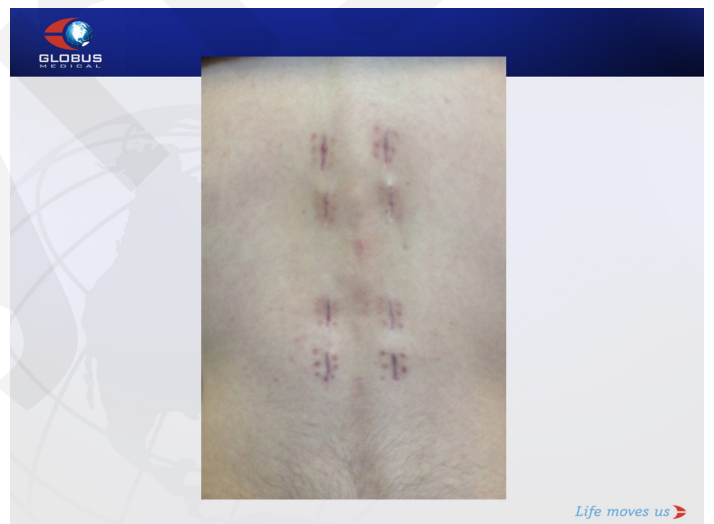
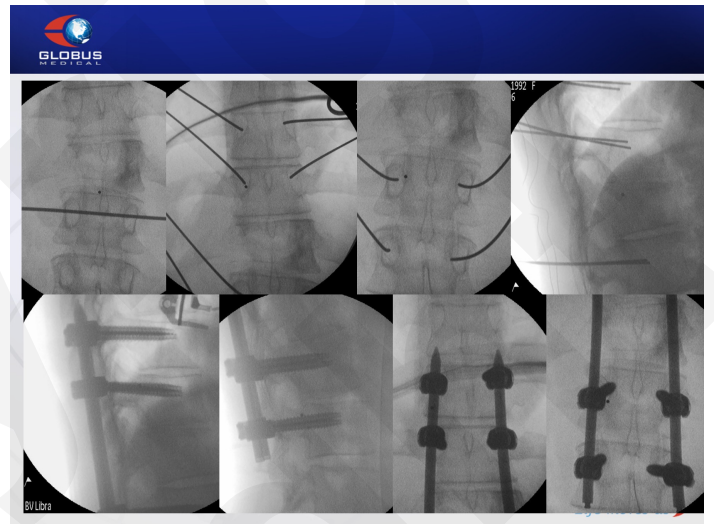
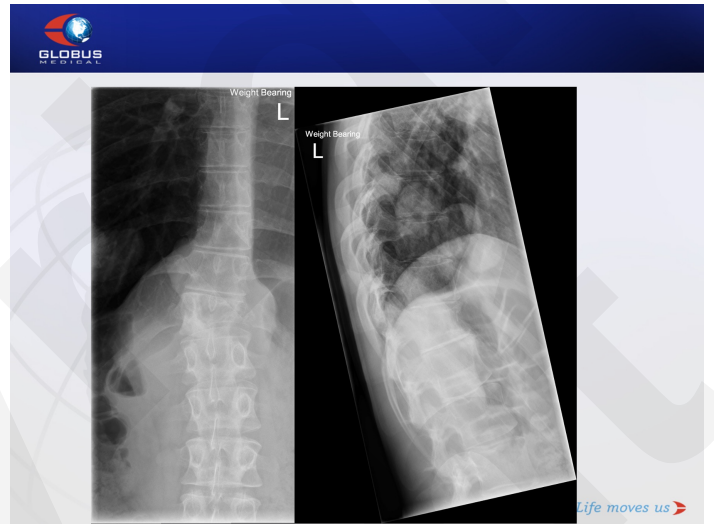
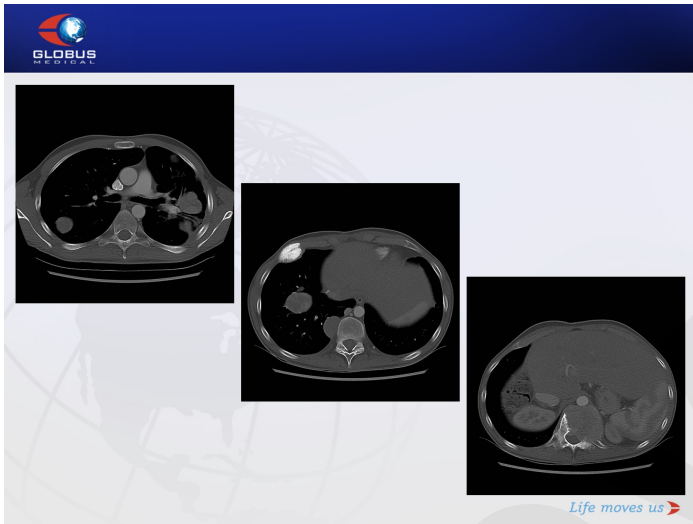
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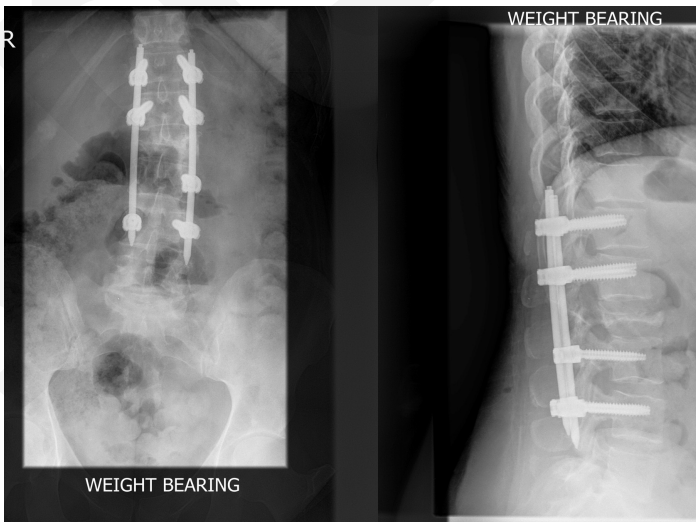
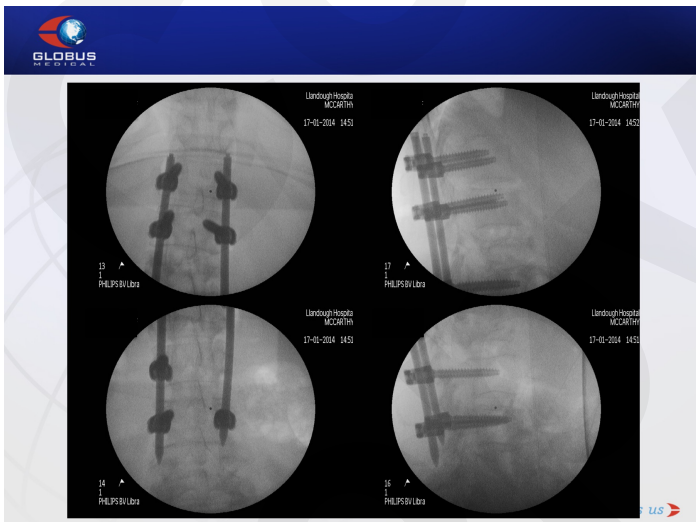
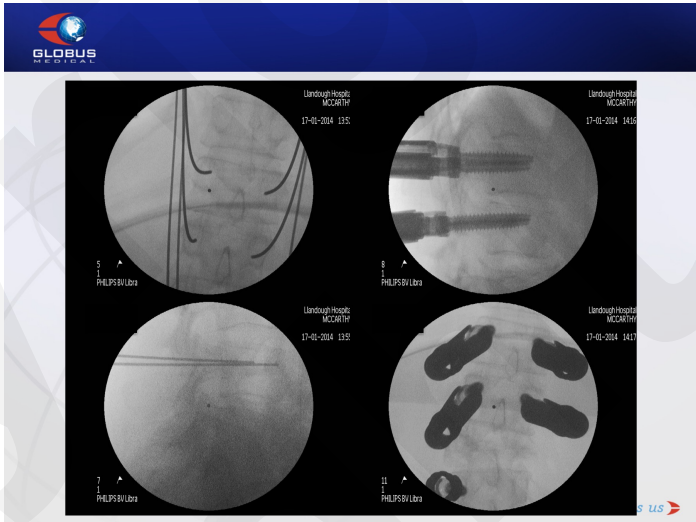
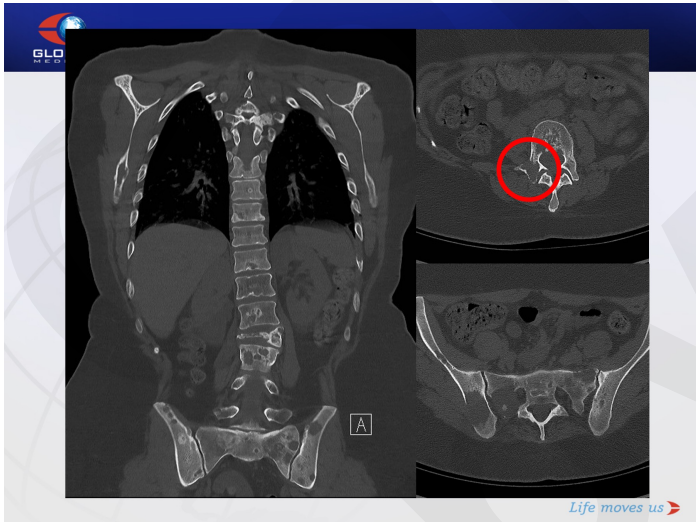
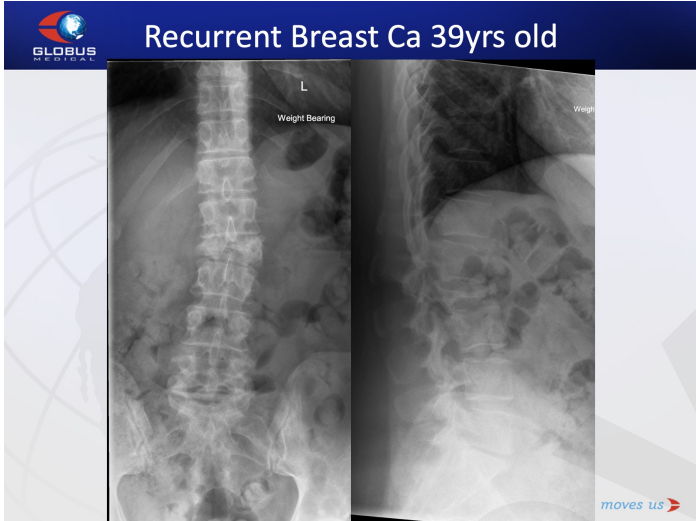
Long Thoracic and Lumbar Spinal Stabilization with a Minimally Invasive Spine Surgery Technique

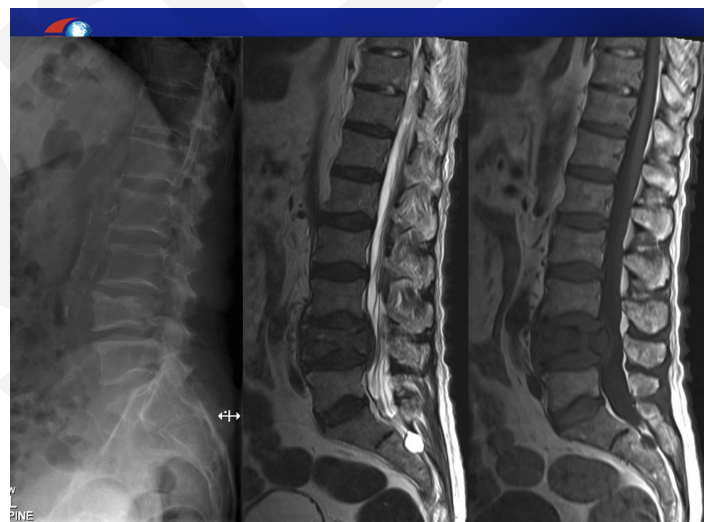
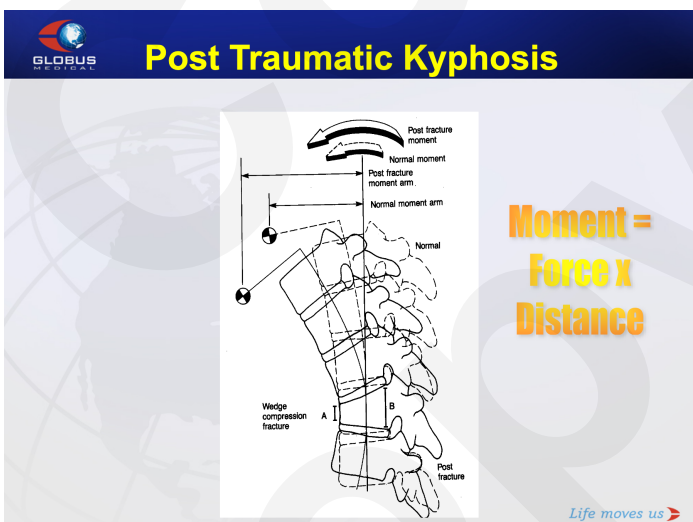
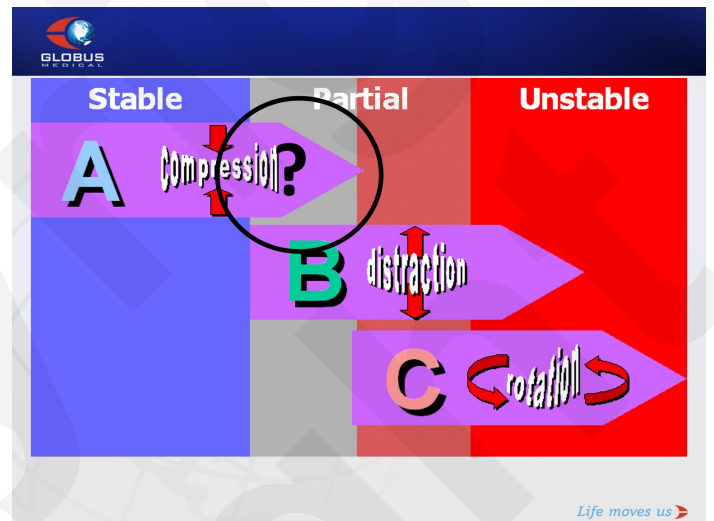
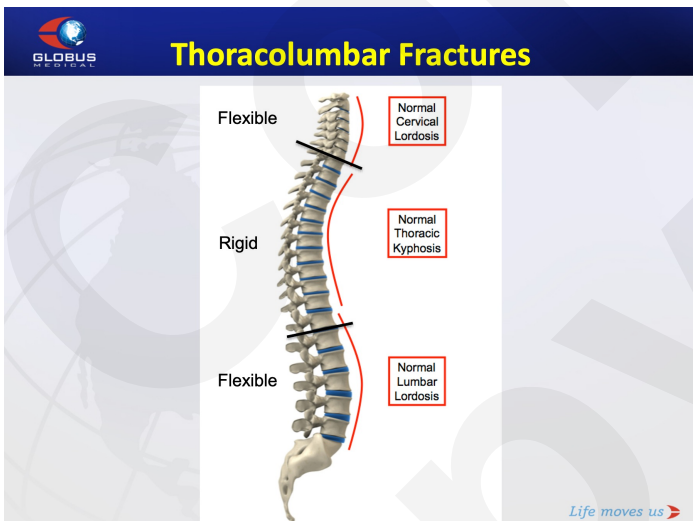
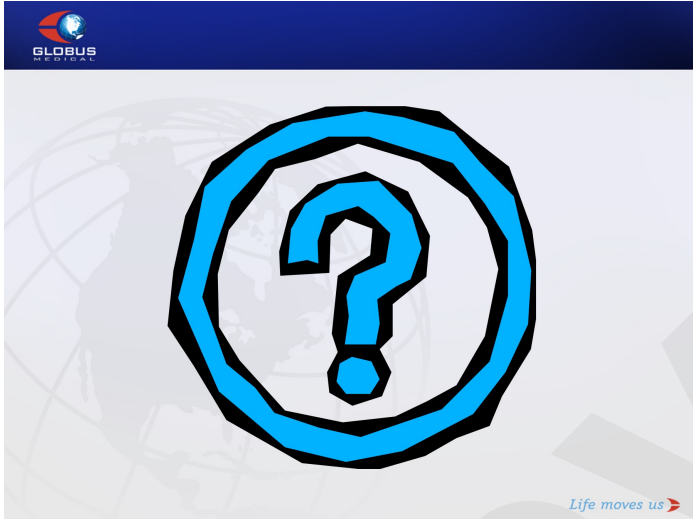
Hiroshi Kuroki*, Naoki Inomata, Hideaki Hamanaka and Etsuo Chosa

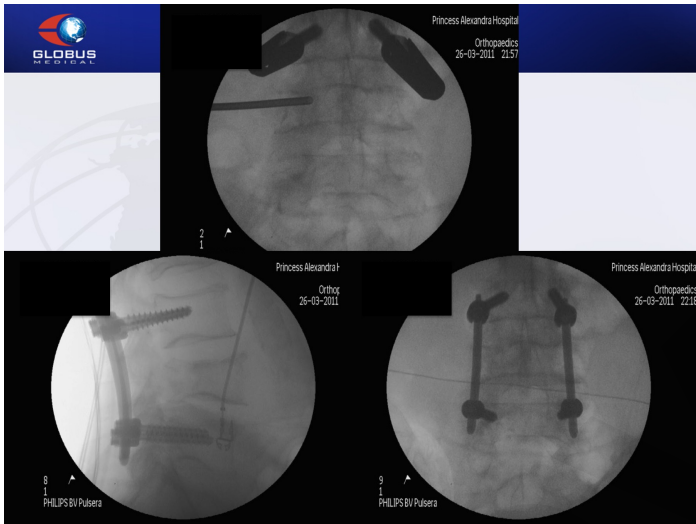
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Timing of Surgery

Eur Spine J (2013) 22:2157–2166
DOI 10.1007/s00586-012-2624-1

REVIEW ARTICLE

A methodological systematic review of early versus late stabilization of thoracolumbar spine fractures

Fix Early

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