Ski Injuries Affecting the Spine

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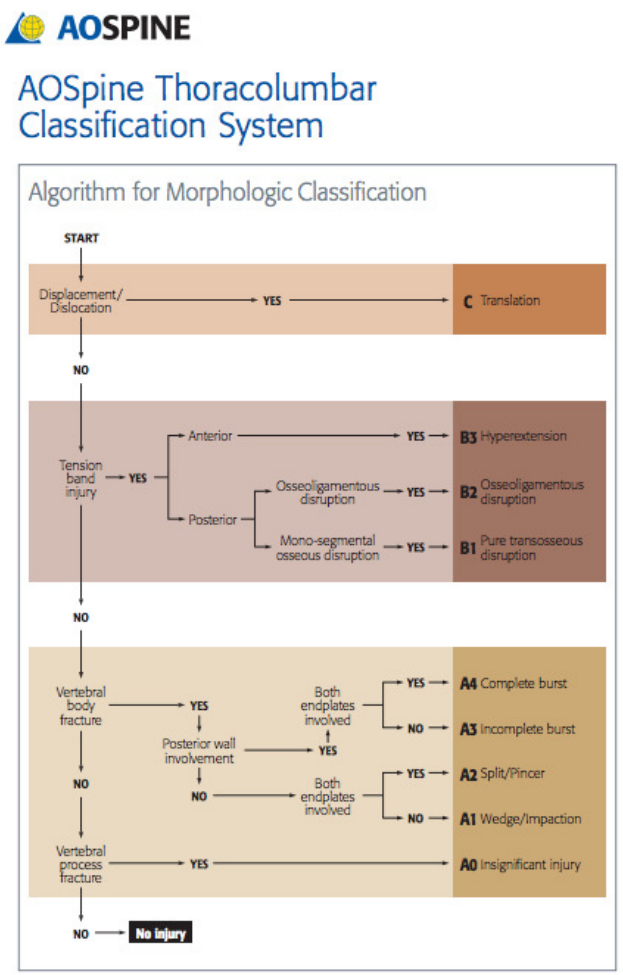
Introduction

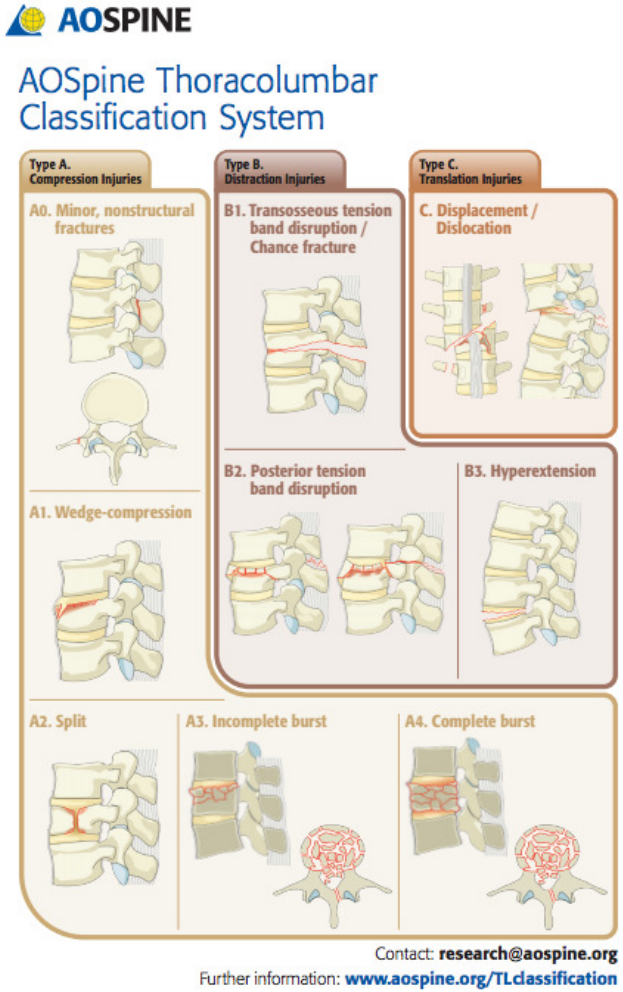
- Skiing and snowboarding injuries have increased with increased popularity of these sports.
- Spinal cord injuries are rare but serious cause of morbidity in these patients.
- Different patterns of injury between skiers and snowboarders.
- Early recognition and treatment important to avoid long term morbidity.
- Case Discussion

Epidemiology

- Skiers – 65% male, average age 40
- Snowboarders 80% male, average age 24
- 20% cervical fractures, 11% thoracic fractures and 6% lumbar fractures associated with SCI
- Cervical fractures more common in skiers
- Most common associated injury is a closed head injury

Fracture classification in the spine (AO)





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Fracture classification in the spine (TLICS)

TLICS	3 independent predictors			
1	**Morphology** immediate stability	- Compression - Burst - Translation/rotation - Distraction	1 2 3 4	- Radiographs - CT
2	**Integrity of PLC** longterm stability	- Intact - Suspected - Injured	0 2 3	- MRI
3	**Neurological status**	- Intact - Nerve root - Complete cord - Incomplete cord - Cauda equina	0 2 2 3 3	- Physical examination
Predicts		- **Need for surgery**	0 – 3 4 > 4	- nonsurgical - surgeon's choice - surgical

Cervical spine fracture classification (AO/ SLIC)

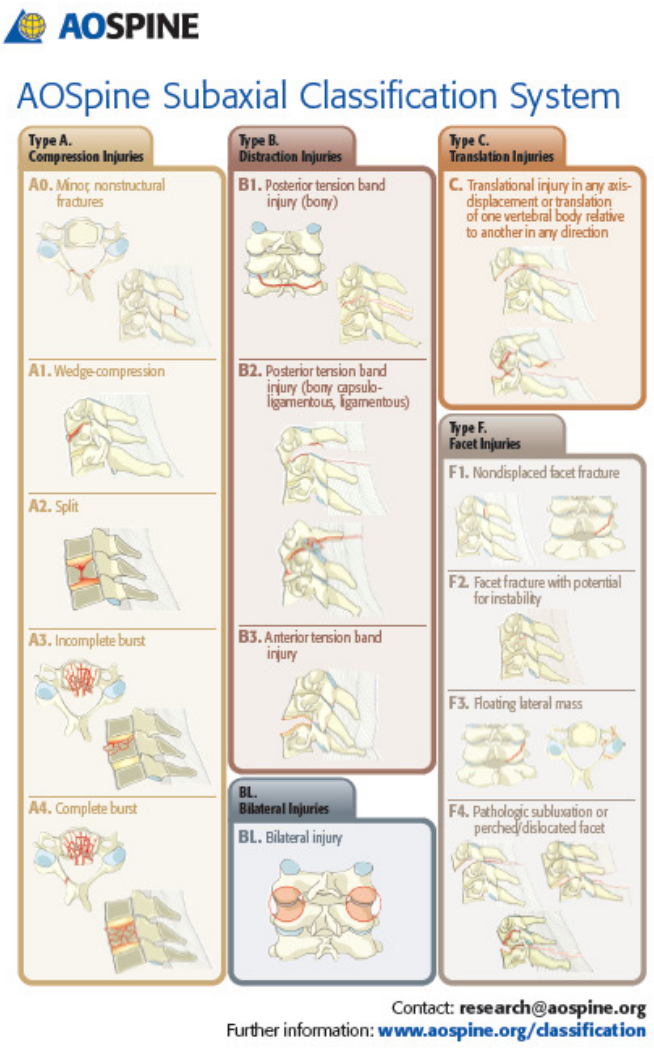


TABLE 1: SLIC Scale

Morphology		Points
	No Abnormality	0
	Compression Burst Distraction (e.g. facet perch, hyperextension)	1 +1 = 2 3
	Rotation / Translation (e.g. facet dislocation, unstable teardrop or advanced staged flexion compression injury)	4
Disco-ligamentous complex (DLC)		
	Intact	0
	Indeterminate (e.g. isolated interspinous widening, MRI signal change only)	1
	Disrupted (e.g. widening of disk space, facet perch or dislocation)	2
Neurological Status		
	Intact	0
	Root Injury	1
	Complete Cord Injury	2
	Incomplete Cord Injury	3
	Continuous Cord Compression in setting of neuro deficit (Neuro Modifier)	+1

Range of presentations on return to the UK

- Fractures (proximal thoracic spine/ processes)
- Worsening of disc pathology
- Cauda equina syndrome

History

- Energy
- Onset, timing and pattern of pain
- Investigations performed at the time
- Neurological symptoms
- Distracting Injuries

Examination

- ABCDE
- Alignment
- Bruising
- Tenderness/ percussion pain
- What movements are painful?
- Neurological Examination

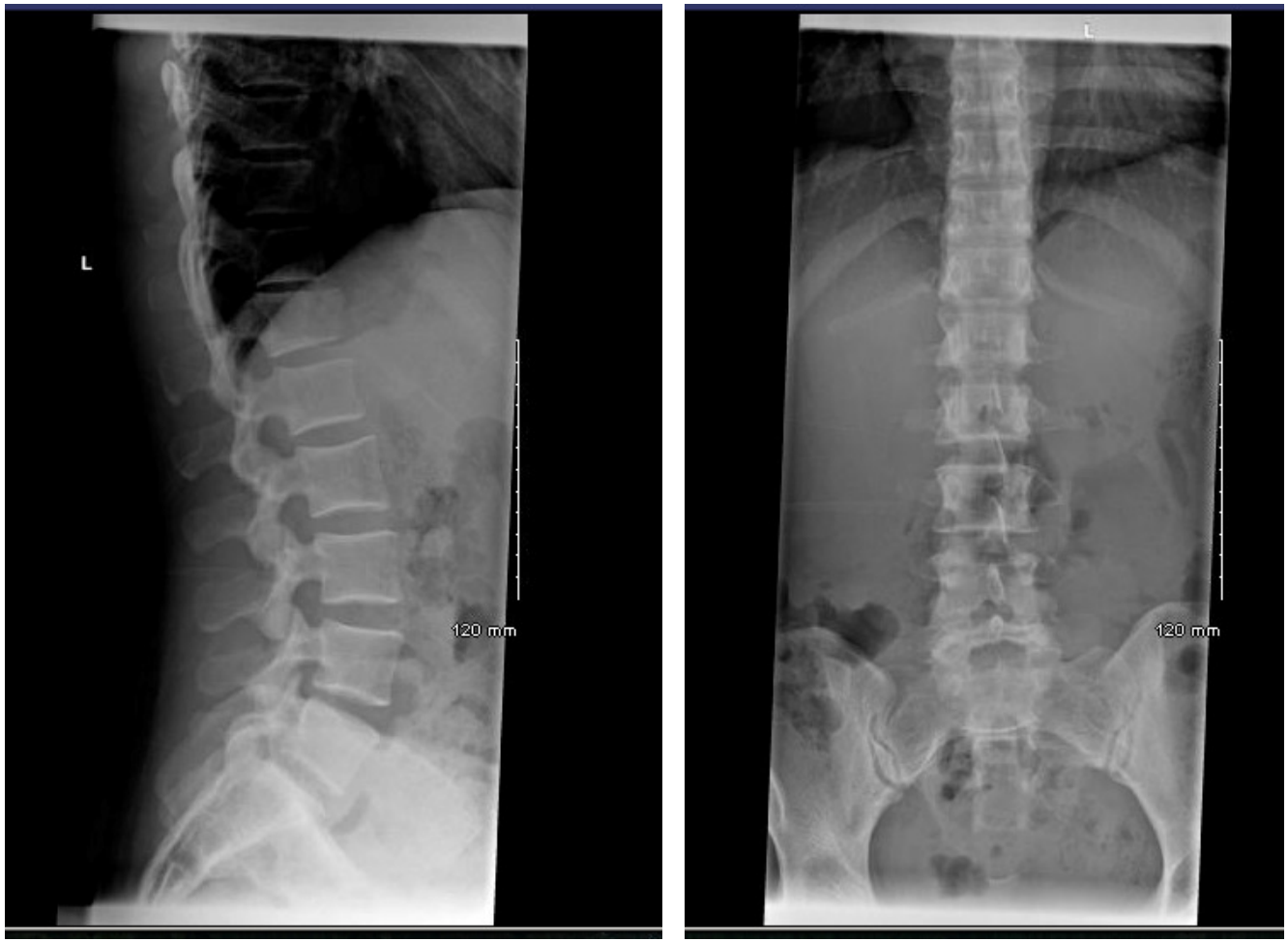
Management of spinal injuries

- If in doubt, immobilise the spine and seek specialist input
- Investigations:
  - X-rays
  - MRI
  - CT
- As for any other fracture
  - Reduction
  - Immobilisation
  - Rehabilitation
    - (In the shortest time possible)

When to consider a spinal fracture?

- Whenever a person has back pain sustained with a skiing/ snowboarding accident

Case 1



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Case 2

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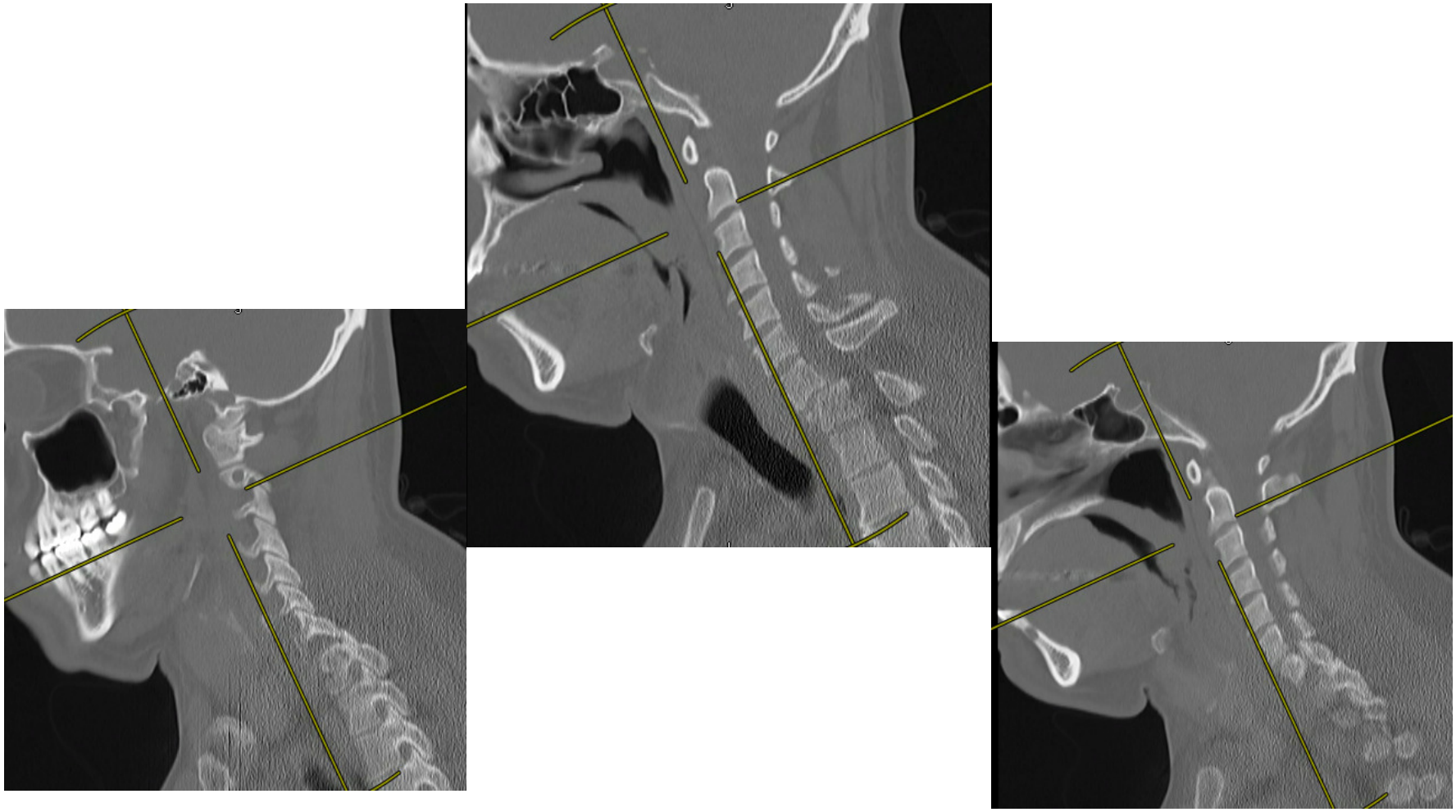
Case 3



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Questions