

# Vertebral Fractures

## Problems of Elderly Trauma

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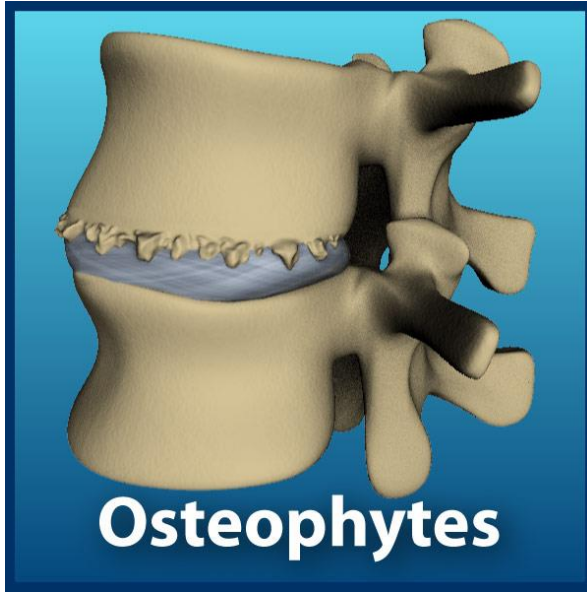
Unit Training Lead and SAC QA Lead

FIA Trauma Surgeon

# Introduction

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- Back pain and red flags
- Thoracolumbar Fractures
  - Identification
  - Classification
  - Pathological Fractures
- Conservative Management
  - Bracing
- Cementoplasty vs Internal Fixation



# BACK PAIN



- Most common disability in <45yrs
  - Accounts for 15% all sick leave from work
- 85% have no specific diagnosis
  - Only 1% have nerve-root symptoms
  - 24% asymptomatic patients have disc prolapses
- 89-90% improve within 1 month without treatment

# Red Flags

Condition	Red Flags
Cancer	<20yrs or >50yrs
	Weight loss (unexplained)
	Previous history of cancer
	Back pain not relieved by rest
Cauda equina	Progressive lower limb weakness
	Urinary retention or overflow incontinence
	Faecal incontinence
	Saddle anaesthesia
Fractures	>70yrs
	Significant trauma
	Steroids (prolonged use)



# THORACOLUMBAR FRACTURES

# Identification

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1. Age >70y
2. Known case of osteoporosis
3. Known case of cancer
4. Recent trauma
5. Prolonged steroid use
6. Repeated presentation



- Referral for specialist advice
  1. Spinal surgeon
  2. FLS
- Consider treatment for osteoporosis
- Consider further imaging modalities



# Further Imaging

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- CT scan (BASS guidelines)
  - All identified fractures should be further assessed
  - All equivocal X-rays should be re-assessed
- MRI scan
  - If neurological deficits
  - If on-going pain despite good analgesia
  - If concerned about stability
  - To determine the age of the fracture

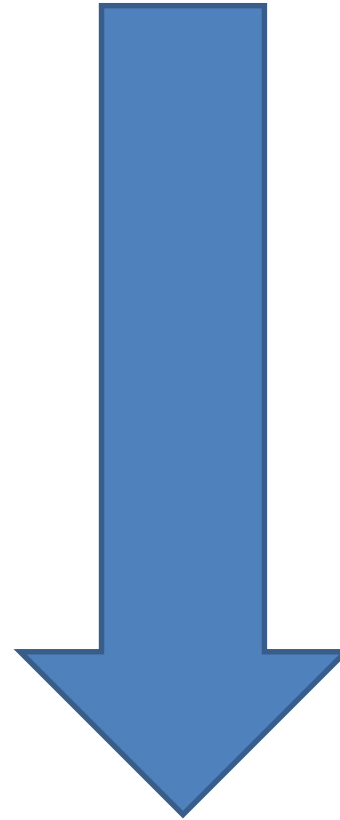
- Punjabi and White definition

“The ability of the spine, under normal physiological loads, to maintain alignment without injury to the bone, ligamentous and neural structures”

# AO Classification

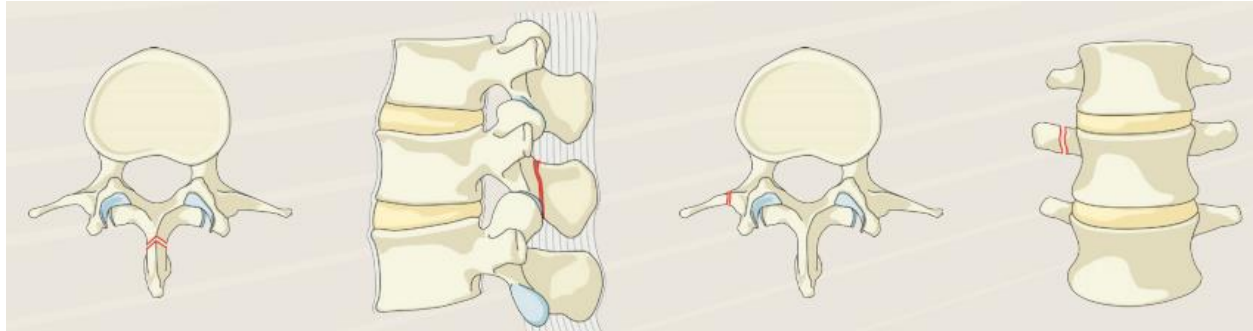
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- Type A – compression
- Type B – distraction
- Type C - translation



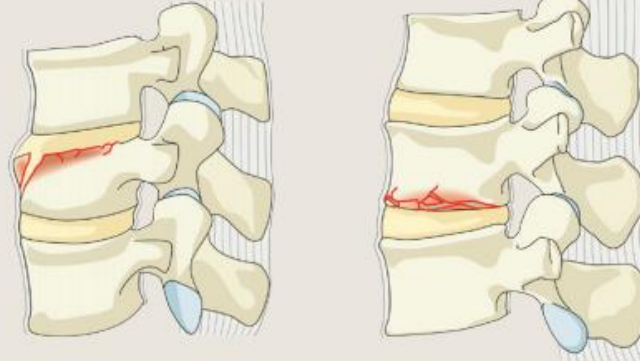
Increasing  
instability

# Type A Fractures

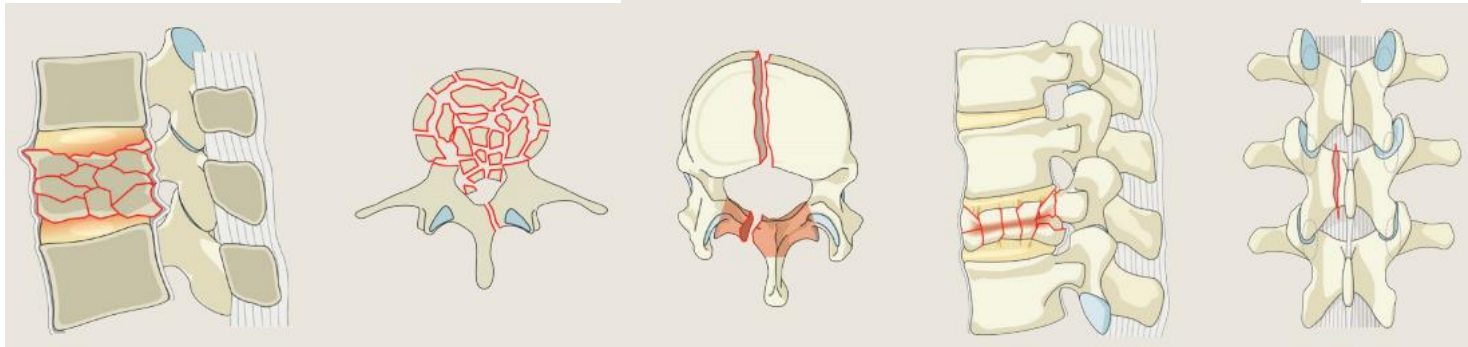


TP and  
SP#

Endplate#



Burst#



# Type A Fractures

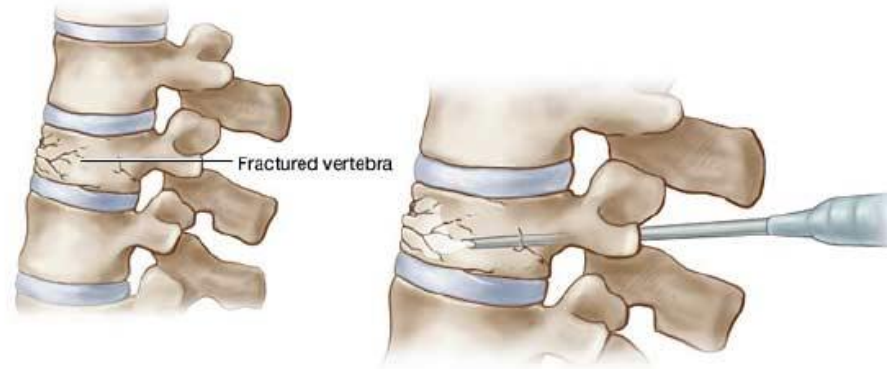
- Compression Fractures
  - Due to axial loading
- Fracture of endplates only = stable
- Analgesia + mobilisation
- Follow-up with standing X-rays (6 and 12 weeks)



- MRI is useful if:
  1. Unable to determine age of fracture clinically
  2. On-going pain and considering cementoplasty



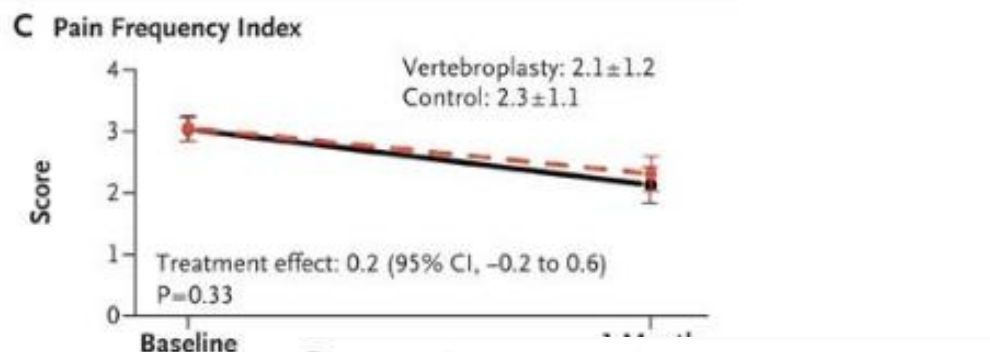
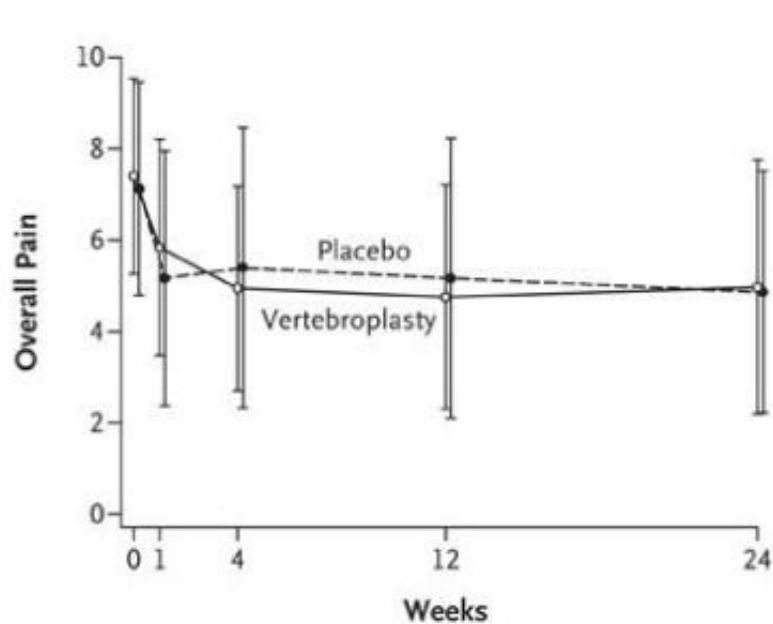
# Cementoplasty



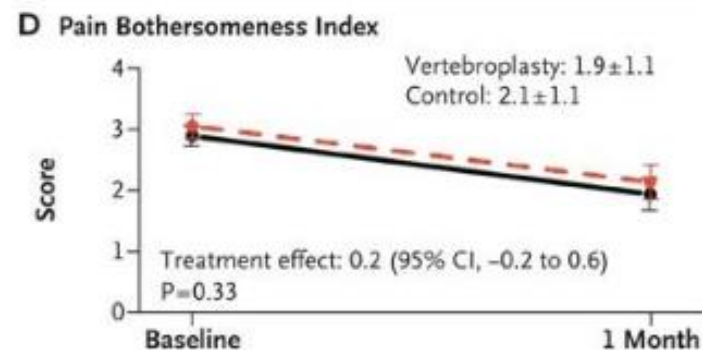
ORIGINAL ARTICLE

## A Randomized Trial of Vertebroplasty for Osteoporotic Spinal Fractures

David F. Kallmes, M.D., Bryan A. Comstock, M.S., Patrick J. Heagerty, Ph.D., Judith A. Turner, Ph.D., David J. Wilson, F.R.C.R., Terry H. Diamond, F.R.A.C.P., Richard Edwards, F.R.C.R., Leigh A. Gray, M.S., Lydia Stout, B.S., Sara Owen, M.Sc., William Hollingworth, Ph.D., Basavaraj Ghdoke, M.D., et al.



ORIGINAL ARTICLE



## A Randomized Trial of Vertebroplasty for Painful Osteoporotic Vertebral Fractures

Rachelle Buchbinder, Ph.D., Richard H. Osborne, Ph.D., Peter R. Ebeling, M.D., John D. Wark, Ph.D., Peter Mitchell, M.Med., Chris Wriedt, M.B., B.S., Stephen Graves, D. Phil., Margaret P. Staples, Ph.D., and Bridie Murphy, B.Sc.



# Cementoplasty

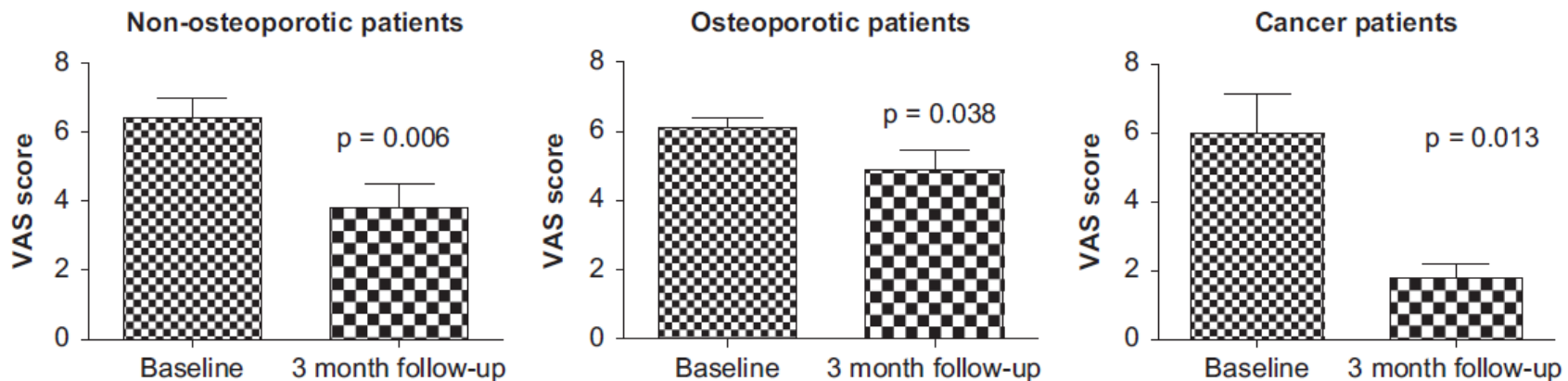
Randomized controlled trial of percutaneous vertebroplasty versus optimal medical management for the relief of pain and disability in acute osteoporotic vertebral compression fractures

MAJID REZA FARROKHI, M.D.,<sup>1,2</sup> EHSANALI ALIBAI, M.D.,<sup>1,2</sup> AND ZOHRE MAGHAMI<sup>2</sup>

Outcome Measure	PV Group	OMT Group	Mean Difference, Treatment Effect (95% CI)	p Value
<b>VAS for pain</b>				
baseline	8.4 ± 1.6	7.2 ± 1.7		
1 wk	3.3 ± 1.5	6.4 ± 2.1	-3.1 (-3.72 to -2.28)	<0.001
2 mos	3.2 ± 2.2	6.1 ± 2.1	-2.9 (-4.9 to -0.82)	<0.011
6 mos	2.2 ± 2.1	4.1 ± 1.5	-1.9 (-3.25 to -0.55)	<0.021

## Single centre prospective study of the efficacy of percutaneous cement augmentation in the treatment of vertebral compression fractures

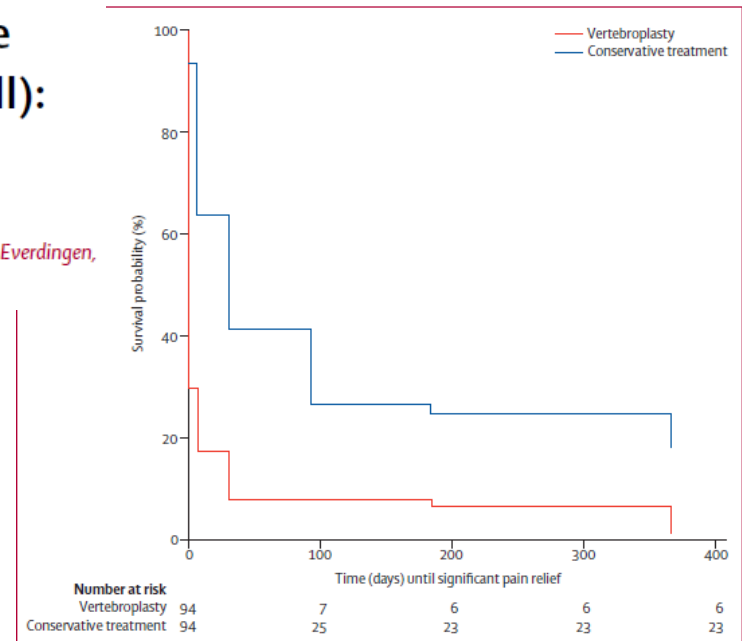
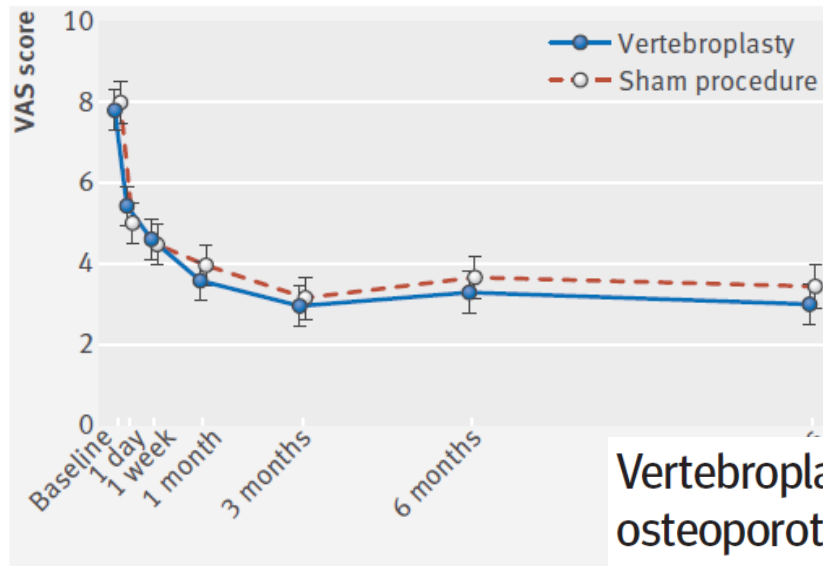
R. N. Joseph<sup>1</sup>, A. J. Swift<sup>1,2</sup> & P. J. Maliakal<sup>1</sup>



# Cementoplasty

## Vertebroplasty versus conservative treatment in acute osteoporotic vertebral compression fractures (Vertos II): an open-label randomised trial

Caroline A H Klazen, Paul N M Lohle, Jolanda de Vries, Frits H Jansen, Alexander V Tielbeek, Marion C Blonk, Alexander Venmans, Willem Jan J van Rooij, Marinus C Schoemaker, Job R Juttman, Tjoen H Lo, Harald J J Verhaar, Yolanda van der Graaf, Kaspar J van Everdingen, Alex F Muller, Otto E H Elgersma, Dirk R Halkema, Hendrik Fransen, Xavier Janssens, Erik Buskens, Willem P Th M Mali



## Vertebroplasty versus sham procedure for painful acute osteoporotic vertebral compression fractures (VERTOS IV): randomised sham controlled clinical trial

Cristina E Firanesco,<sup>1</sup> Jolanda de Vries,<sup>1,2</sup> Paul Lodder,<sup>2</sup> Alexander Venmans,<sup>1</sup> Marinus C Schoemaker,<sup>1</sup> Albert J Smeet,<sup>1</sup> Esther Donga,<sup>1</sup> Job R Juttman,<sup>1</sup> Caroline A H Klazen<sup>3</sup> Otto E H Elgersma,<sup>4</sup> Frits H Jansen,<sup>5</sup> Alexander V Tielbeek,<sup>5</sup> Issam Boukrab,<sup>1</sup> Karen Schonenberg,<sup>1</sup> Willem Jan J van Rooij,<sup>1</sup> Joshua A Hirsch,<sup>6</sup> Paul N M Lohle<sup>1</sup>

# Cementoplasty Conclusion

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- Certainly should not be seen as the cure
- This should be performed within 6 weeks of injury
- MRI (STIR) to confirm on-going inflammation is a must

# Type A Fractures

- Compression Fractures
  - Due to axial loading
- Partial or complete burst = likely unstable

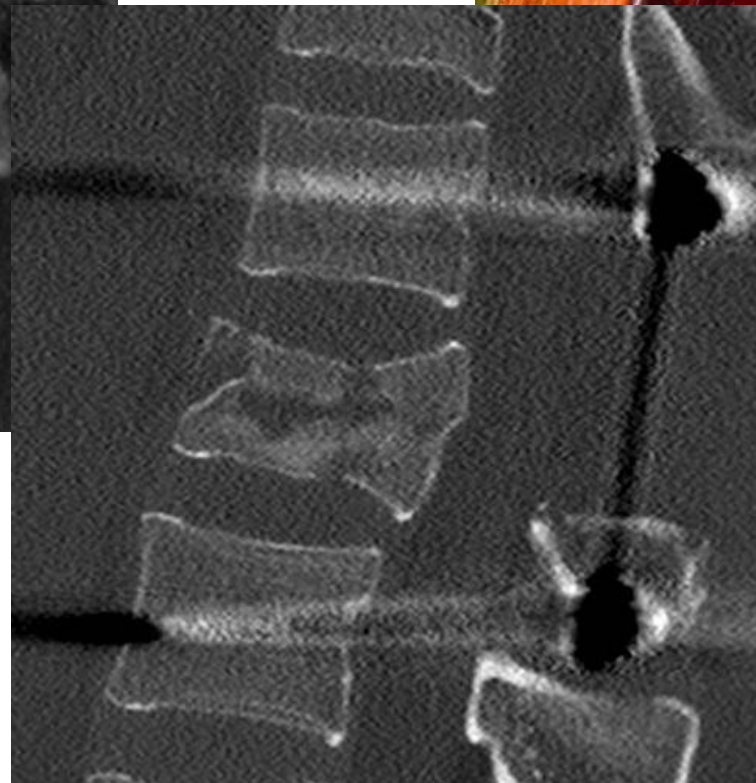


# TLSO Brace?

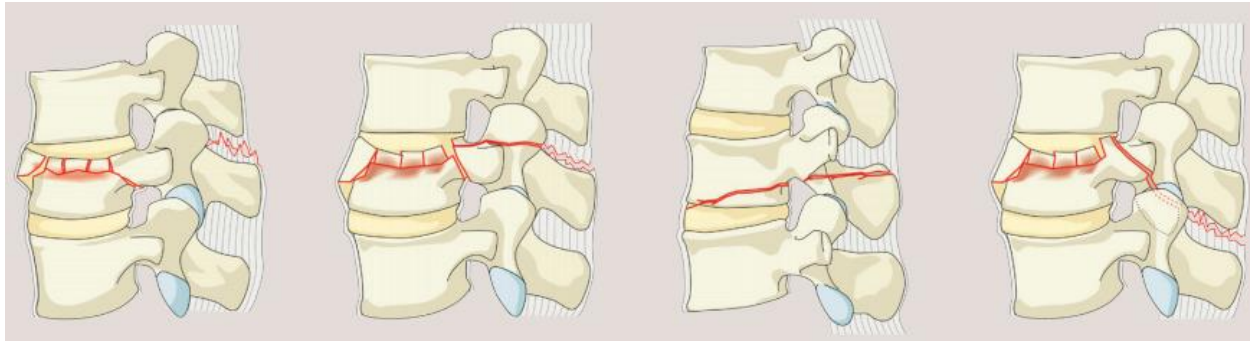
- Hypothesis – prevents flexion/extension
  - Helps to maintain spinal alignment
  - Provide support for paraspinal muscles
- Reality:
  - No evidence for any of the above (Giele et al systematic review 2009)
  - Long-standing use → wasting of paraspinal muscles



# Type A Fractures



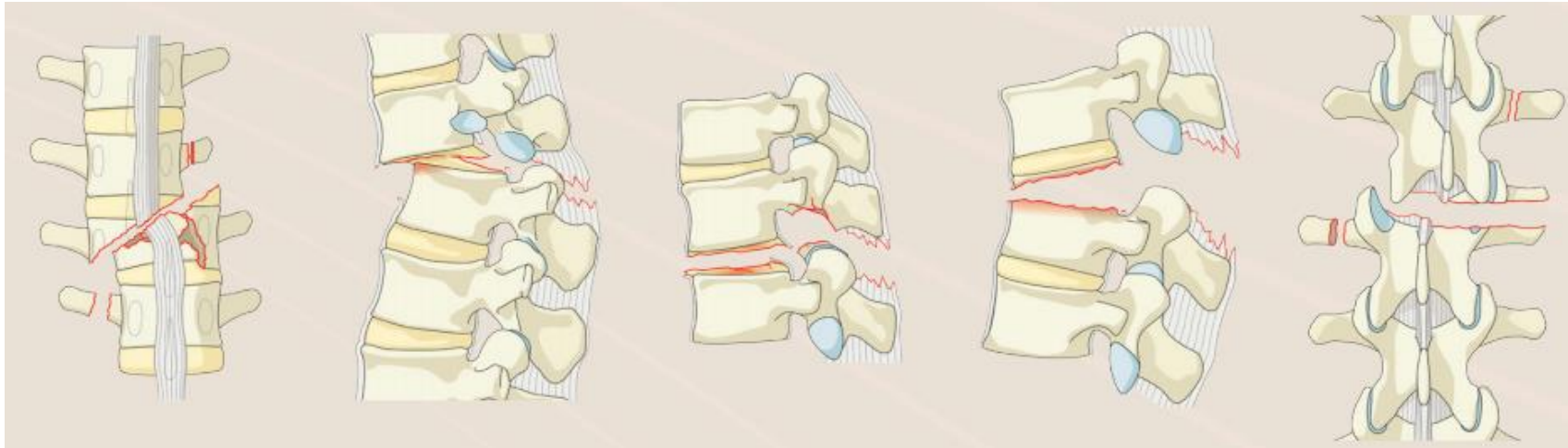
# Type B Fractures



- Hyperflexion or hyperextension injuries
- Unstable until proven otherwise



# Type C Fractures



- Translation or rotation injuries
- Completely unstable





