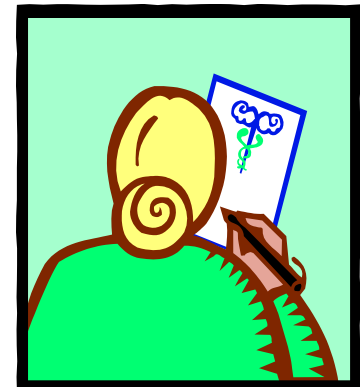


Contraindications to Manipulation



Therapist factors

- Subjective assessment
- Inadequate information
- Failure to discuss treatment options
- Consent
- Insufficient biomechanical examination
- Physical limitation
- Lack of confidence
- Equipment
- Incompetence



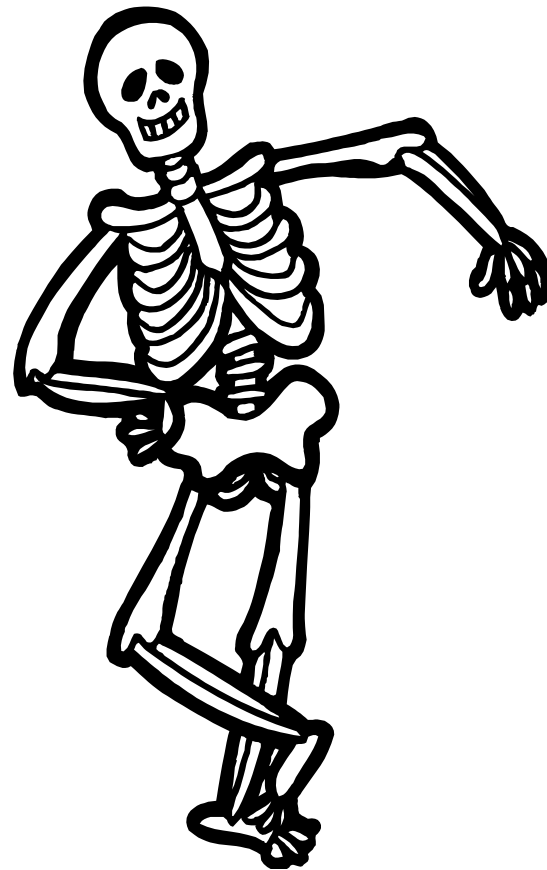
Patient factors

- Lack of consent
- Mental status
- Obsession with manipulation
- Inability to communicate
- Unable to relax
- Pain
- Intoxicated/heavily medicated
- Inappropriate end feel
- Instability



Bony elements

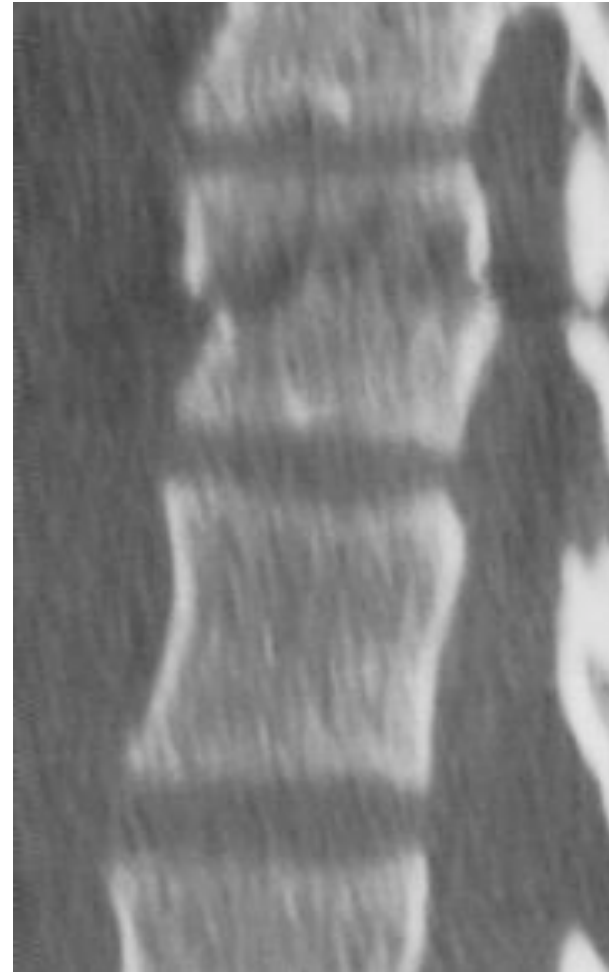
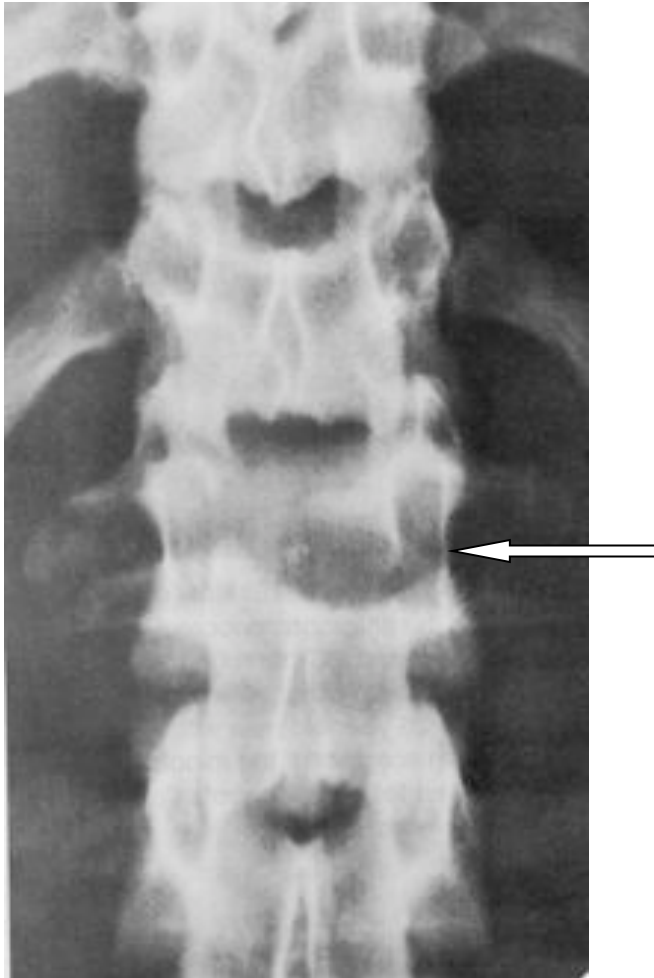
- Fractures –
presently healing
- Dislocations -
presently healing



Wedge Compression Fracture



Chance Fracture or Seat Belt Fracture



Bony elements

- Active infection – osteomyelitis, tuberculosis
- Congenital anomalies
- Gross foraminal or spinal canal encroachment on x-ray





Metastases

- Past and present

- Breast, bronchus, prostate, thyroid, kidney, bowel, lymphoma

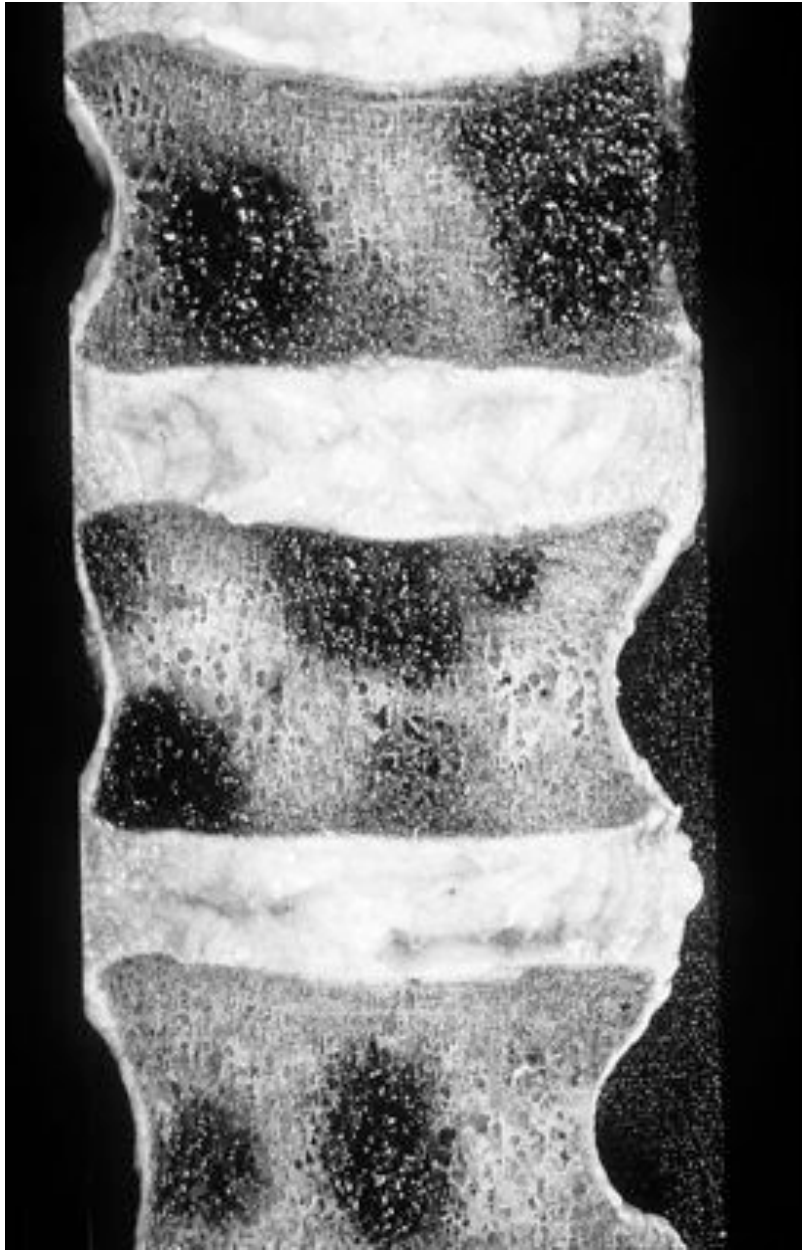




Anteroposterior
aspect of a R
bronchogenic

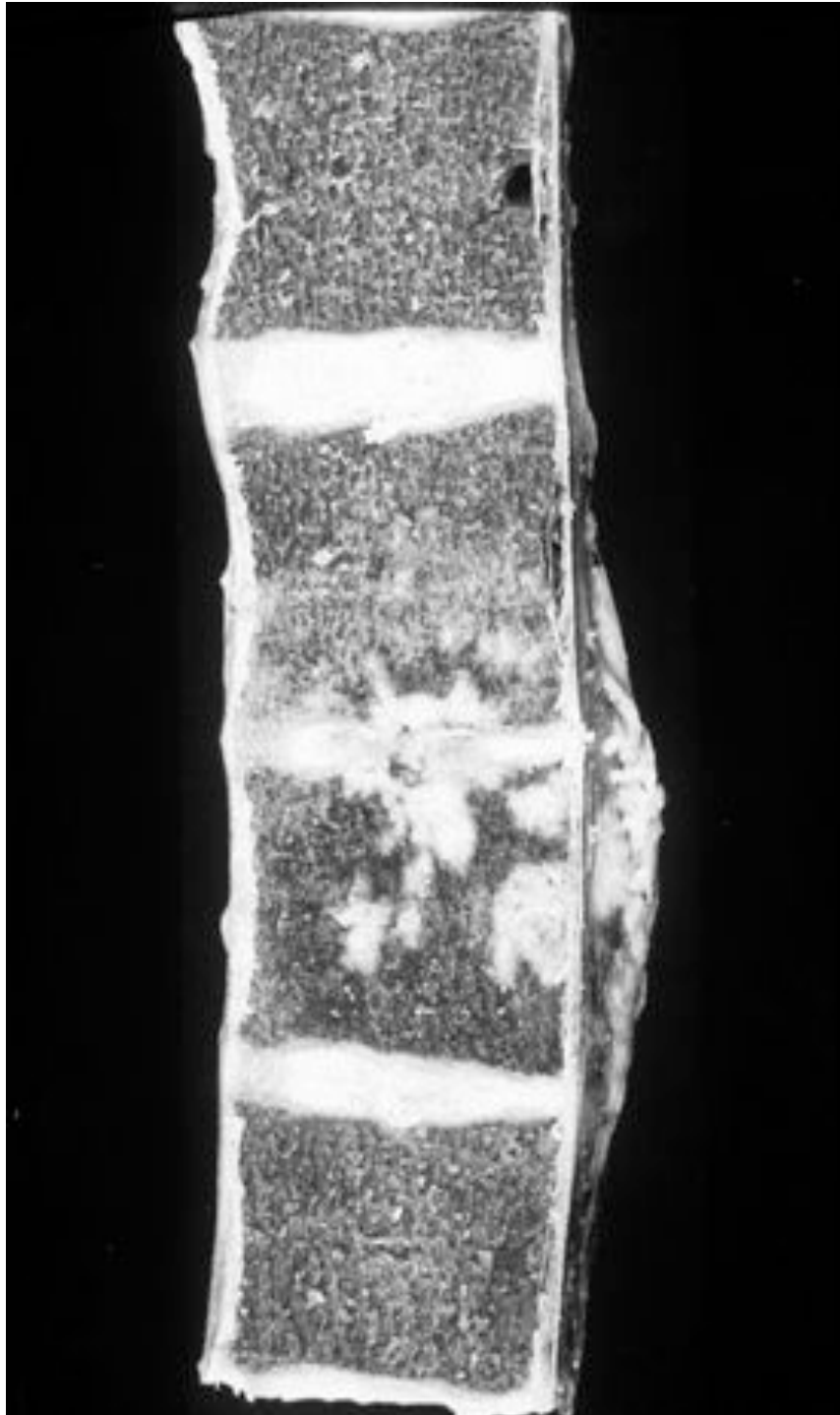
(Pancoast)
carcinoma in the
apex of the lung of a
middle-aged man





Malignant
metastatic
melanoma



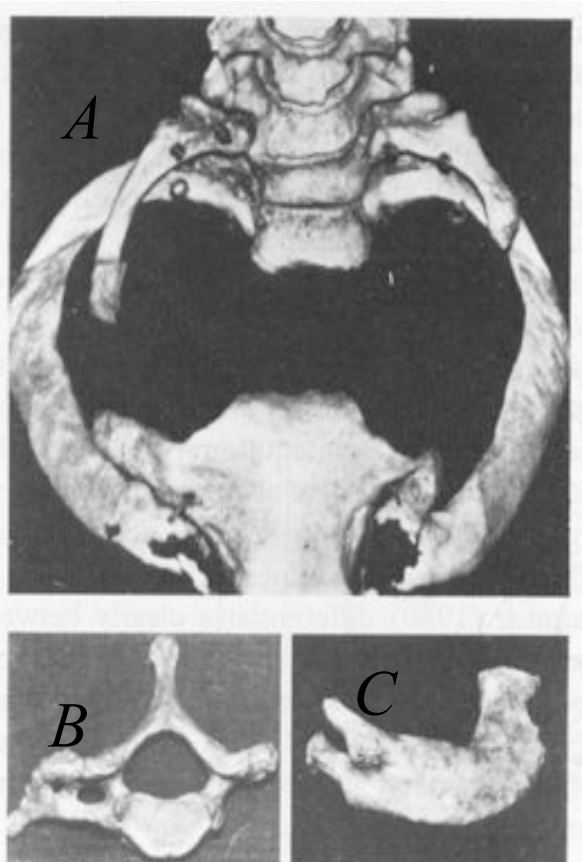


Active infection

Tuberculosis



Congenital Anomalies



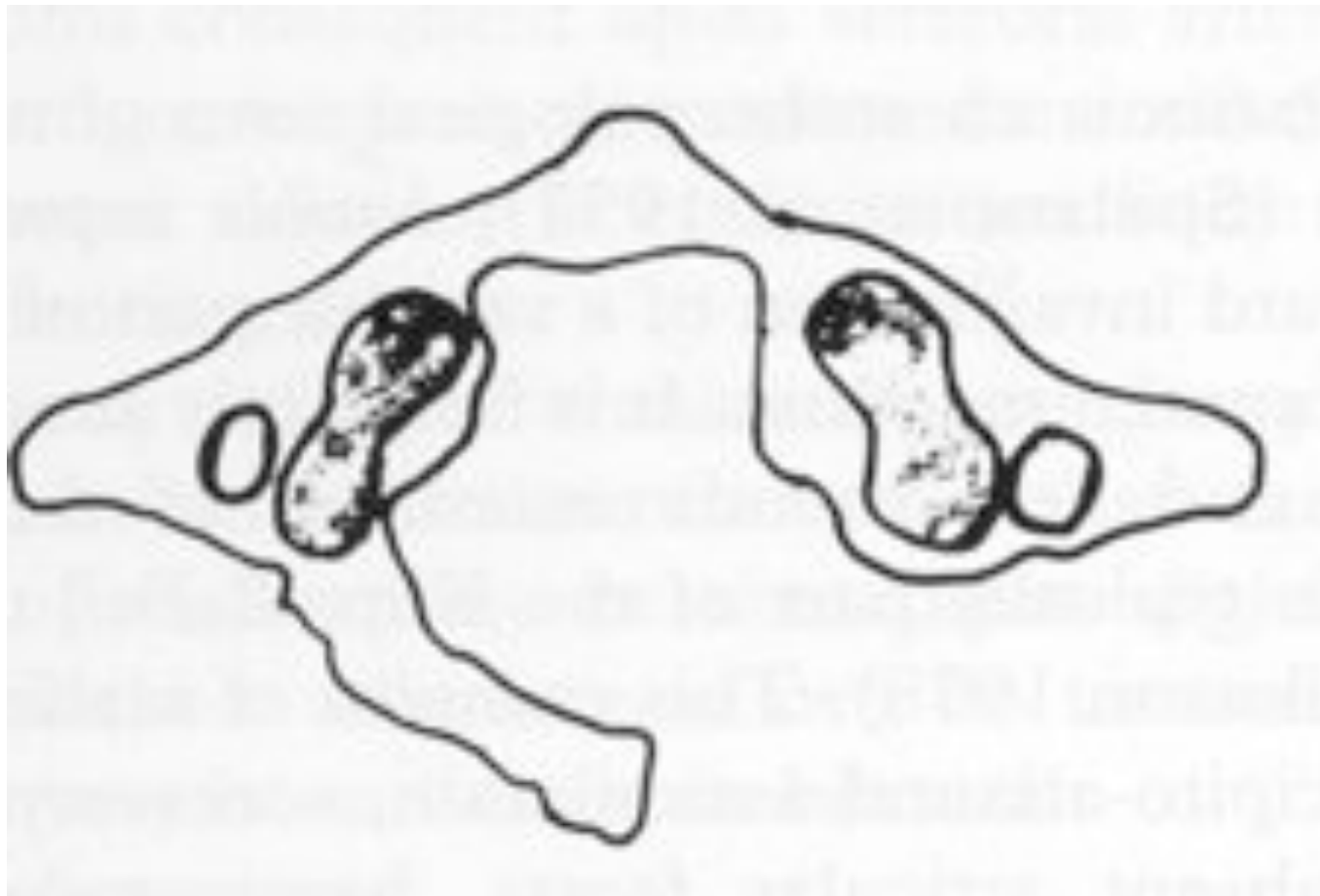
A: Bilateral
Asymmetrical
cervical ribs

B: First rib
fused with the
first thoracic
vertebrae

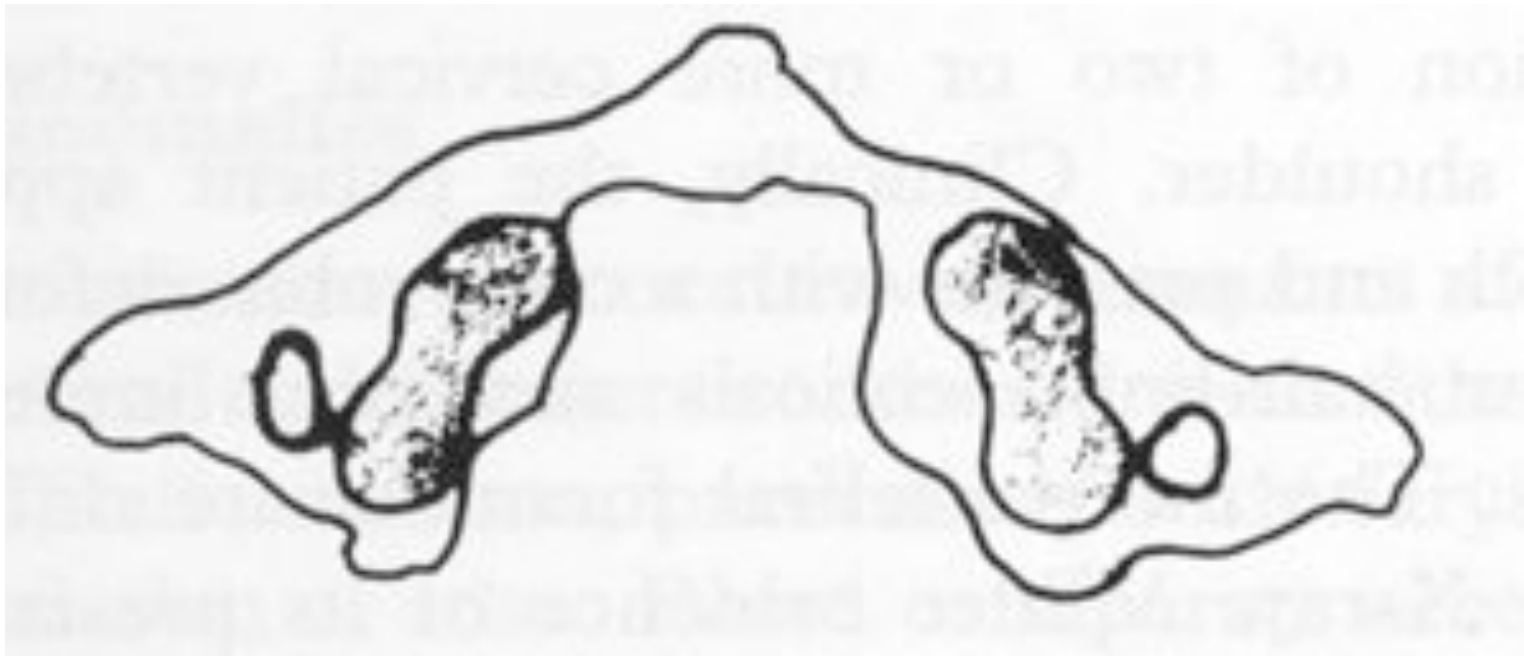
C: Cervical rib
fused with the
first thoracic
rib

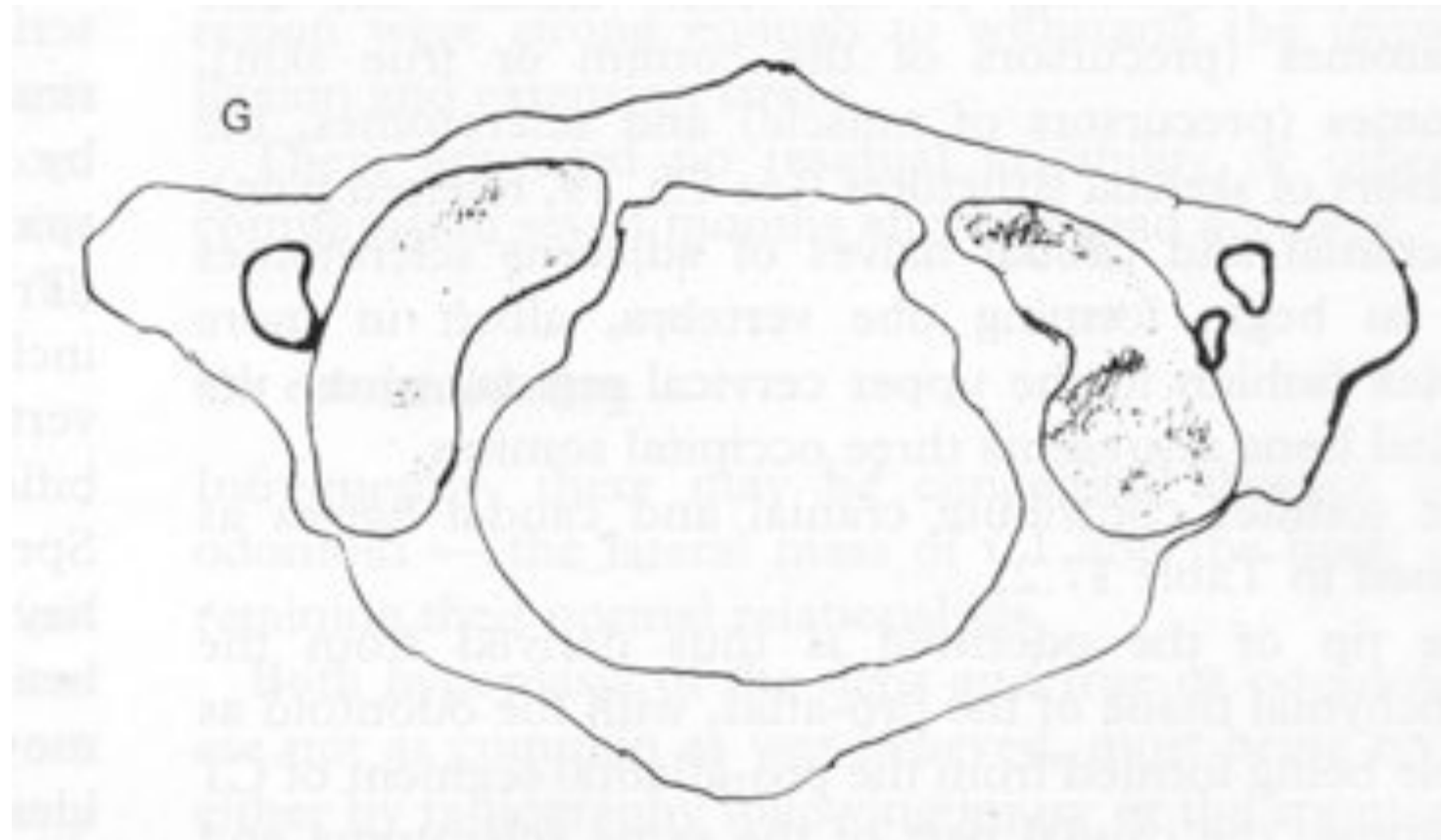


Spina Bifida Atlanto



Complete Aplasia of the Posterior Arch

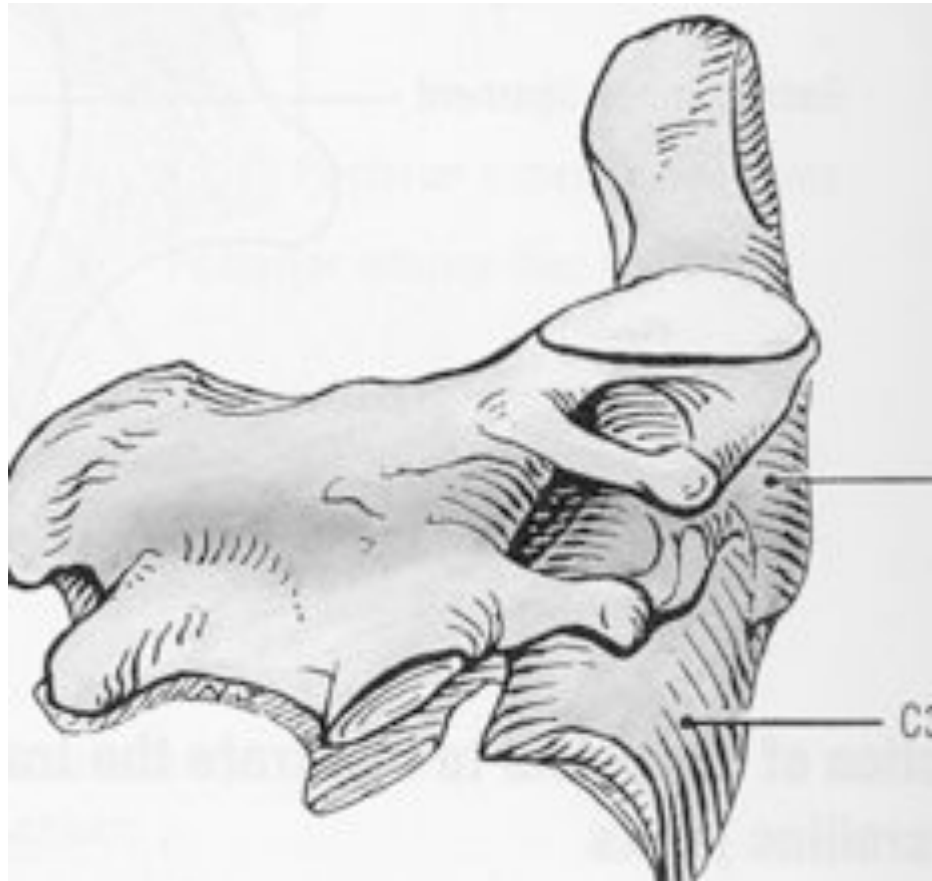


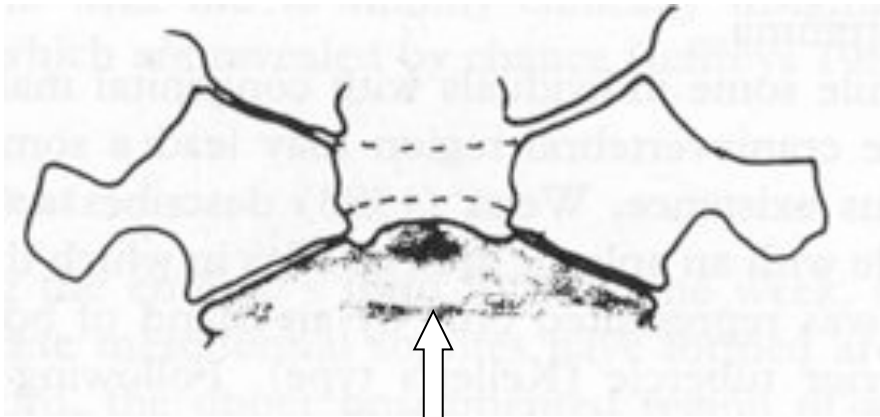


Asymmetry of the lateral dimensions of the Atlas. Note the decreased size of the transverse foramen

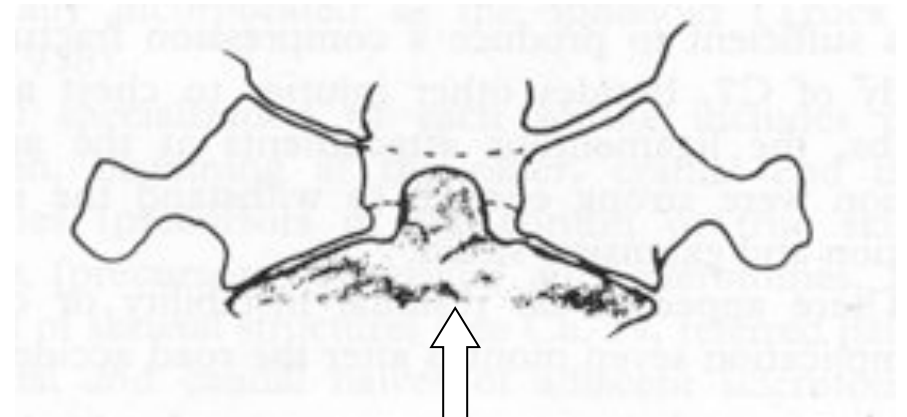


Congenital Fusion of C2-3



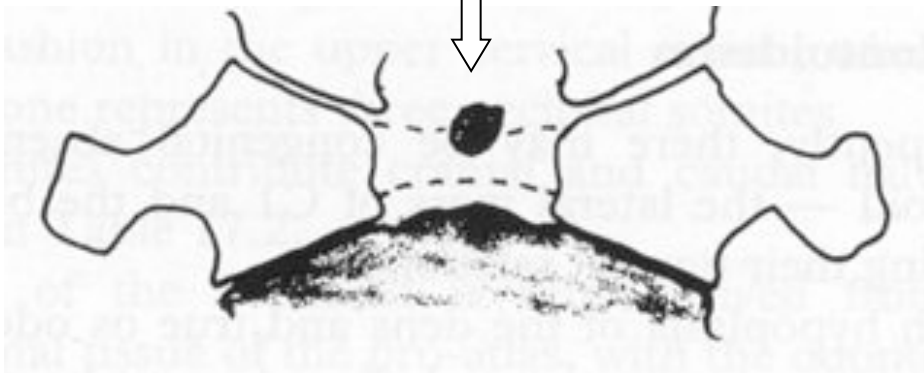


Absent Odontoid

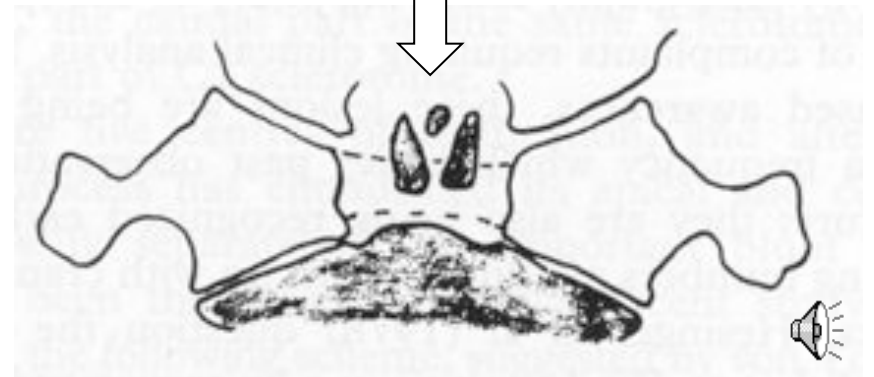


Hypoplastic Odontoid

Os Odontoideum



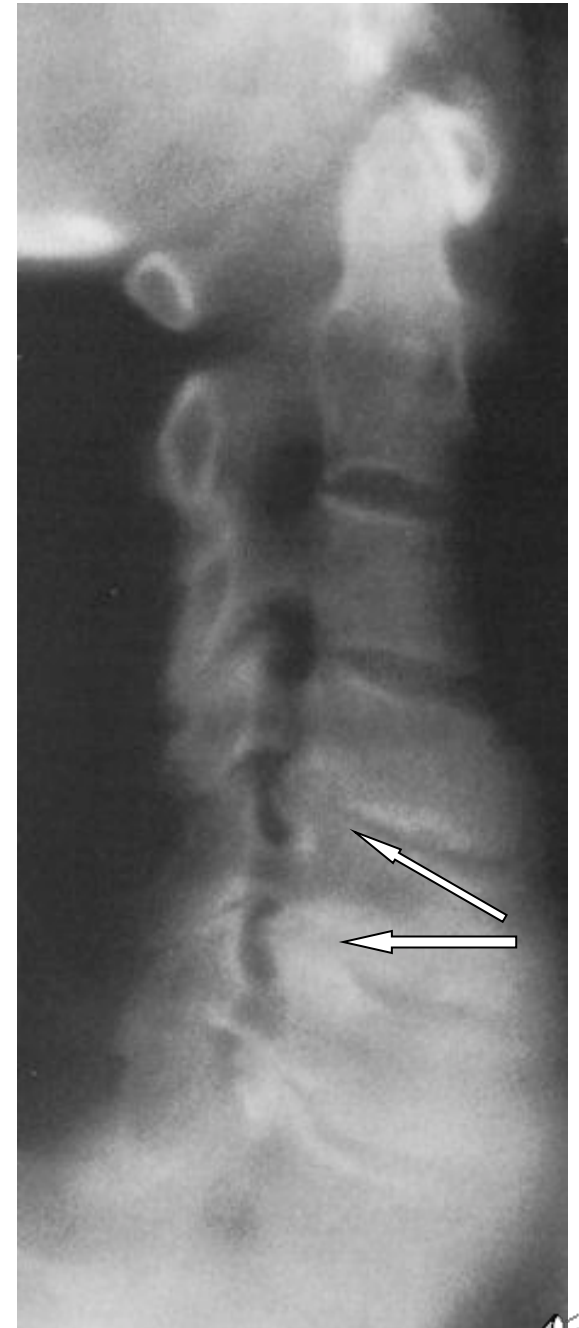
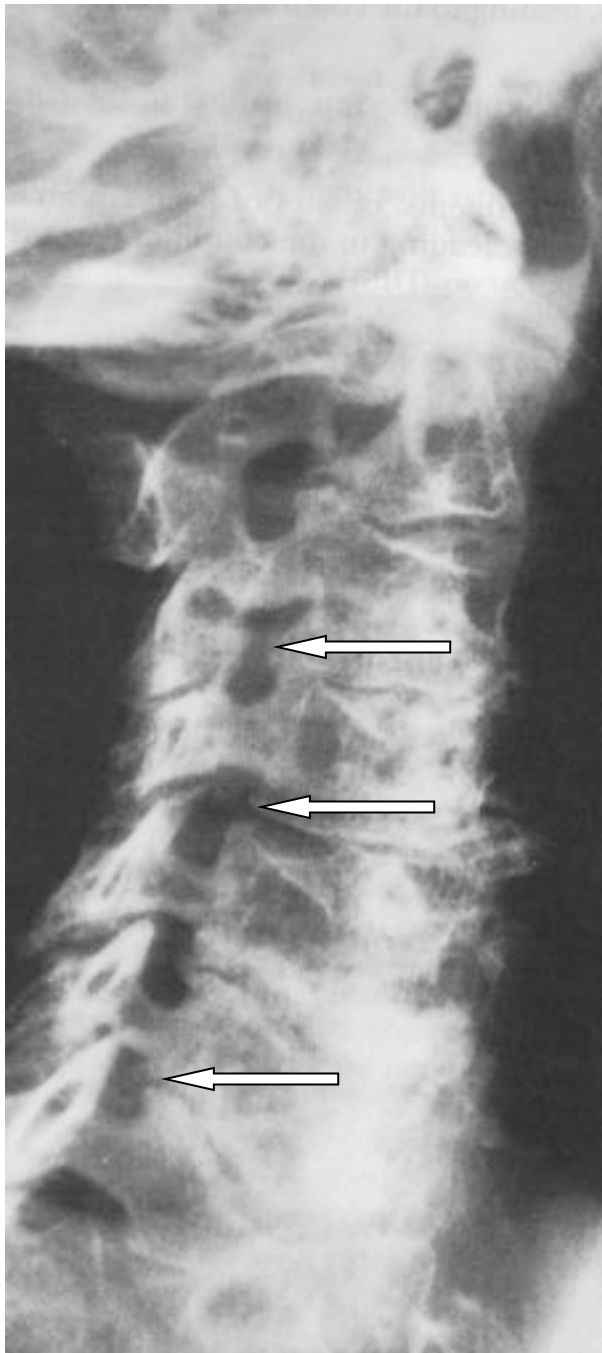
Tripartite Odontoid



Foraminal / Spinal Canal Encroachment

t

72 year old woman
with severe
degeneration in the
cervical spine. She
was complaining of
pain radiating from
the neck bilaterally
into both arms





Lateral Radiograph
of a 52 year old
woman with RA
demonstrating
erosive changes in
the facet joints



Neurological

- Extra segmental pain increase with passive neck flexion
- Bilateral or quadrilateral multisegmental paraesthesia
- Hyperreflexia
- +babinski, oppenheimer, hoffman
- Clonus
- Ataxia
- Neurological spasticity



Neurological

- Bladder and bowel dysfunction
- Nystagmus
- Dysphagia/dyshasia
- Wallenberg's syndrome (PICA)
- Other cranial nerve S/S

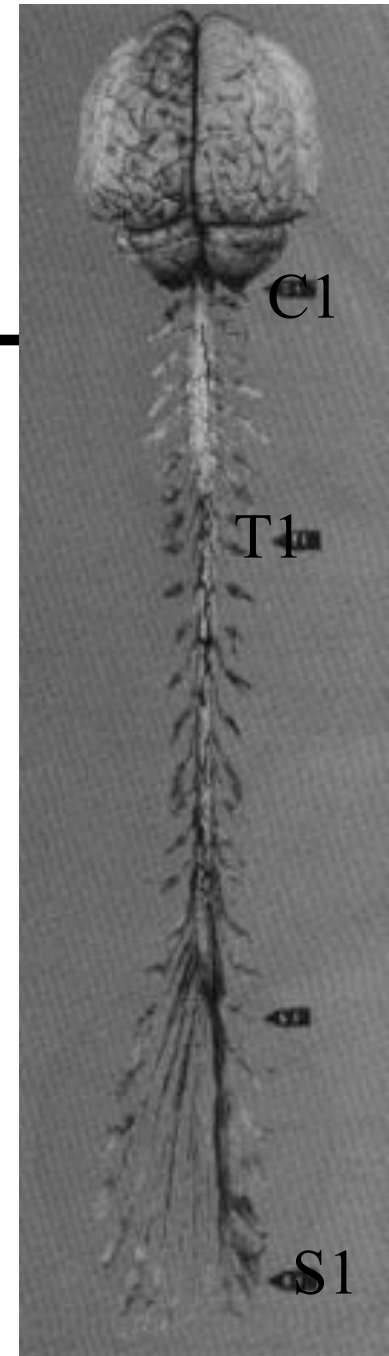
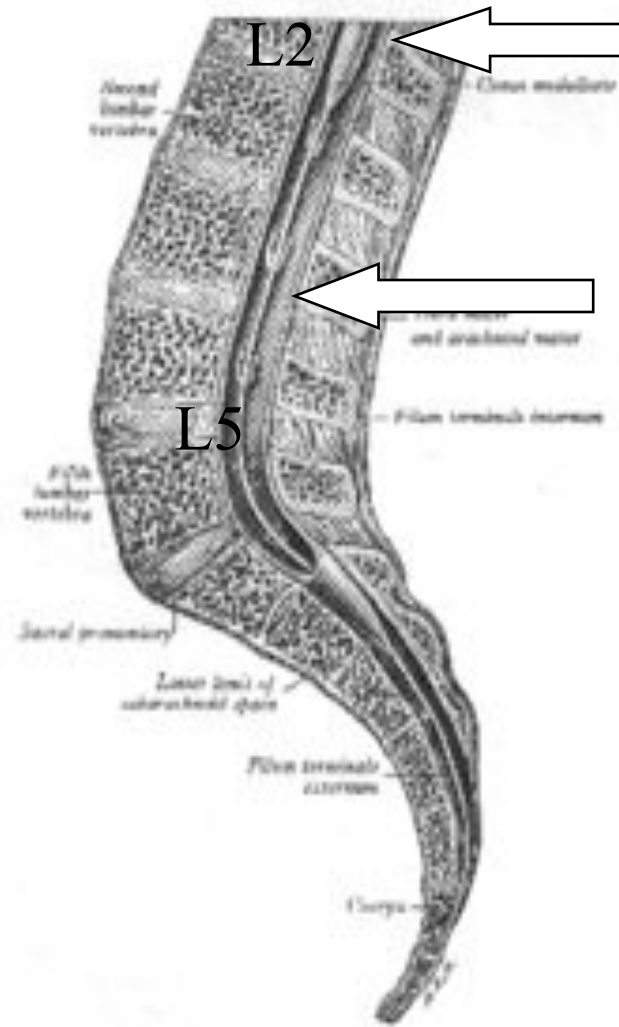


Spinal cord disease/ injury

- Extrasegmental pain BELOW level of lesion ↑ with PNF
- Bilateral , quadrilateral parasthesia, weakness, spasm hyperreflexia hyporeflexia below level of lesion
- Ataxia



Cauda equina S+S



Cauda equinae S+S

- Hypo reflexia or areflexia (bilateral and/or multisegmental)
- Bilateral and /or multisegmental paresthesia and pain
- Positive dural signs
- Initially bladder hyperactive (increased frequency and urgency) then paralyzed

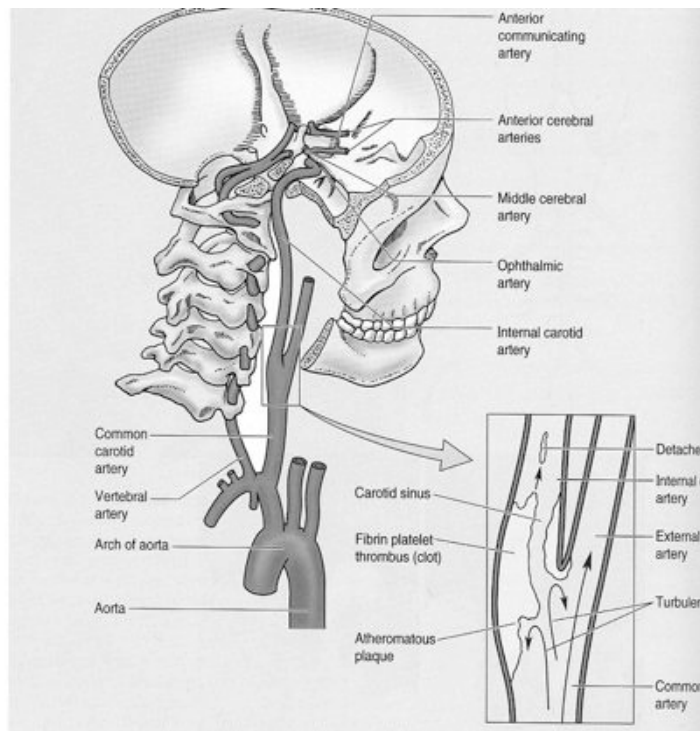


Cauda equinae S+S

- Fecal retention with impaction and fecal fluid overflow
- Loss of genital sensation
- Loss of reflex erections and ejaculations



Vascular considerations



- Vertebral artery
- Vascular disease
- Bleeding disorders
- Aortic graft



Soft tissue

- Collagen diseases
 - Ehler's –Danlos Syndrome
 - Marfan's Syndrome
 - Osteogenesis imperfecta
 - Achondroplasia
 - Benign Hypermobility (Caution)



Martan Syndrome

- Genetic disorder which affects the structure of fibrillin thereby weakening the connective tissue of the body
- Can result in ligamentous instability through out the body.
- May go undiagnosed from birth



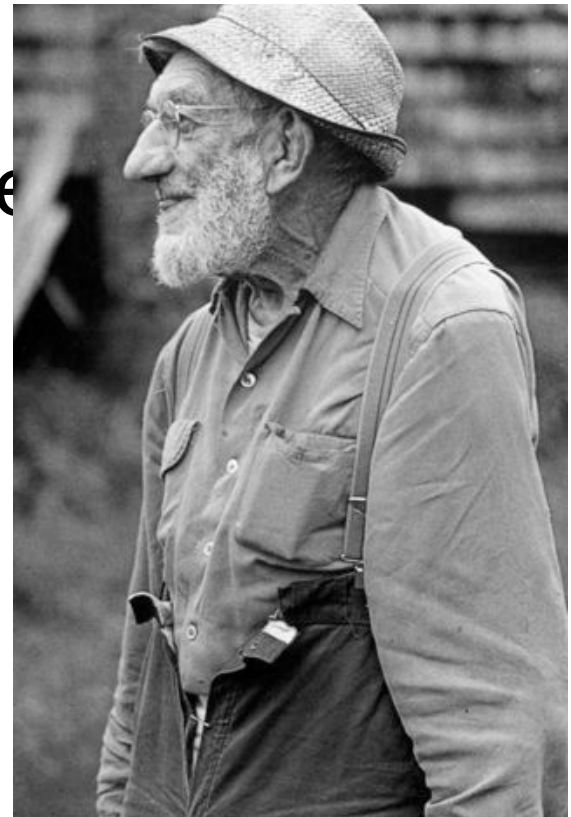
Connective Tissue

- Collagen tissue
- Trauma
- Grisel' s syndrome
- Down' s/congenital laxity transverse ligament
- Acute post traumatic stage
- Inappropriate end feel



Age

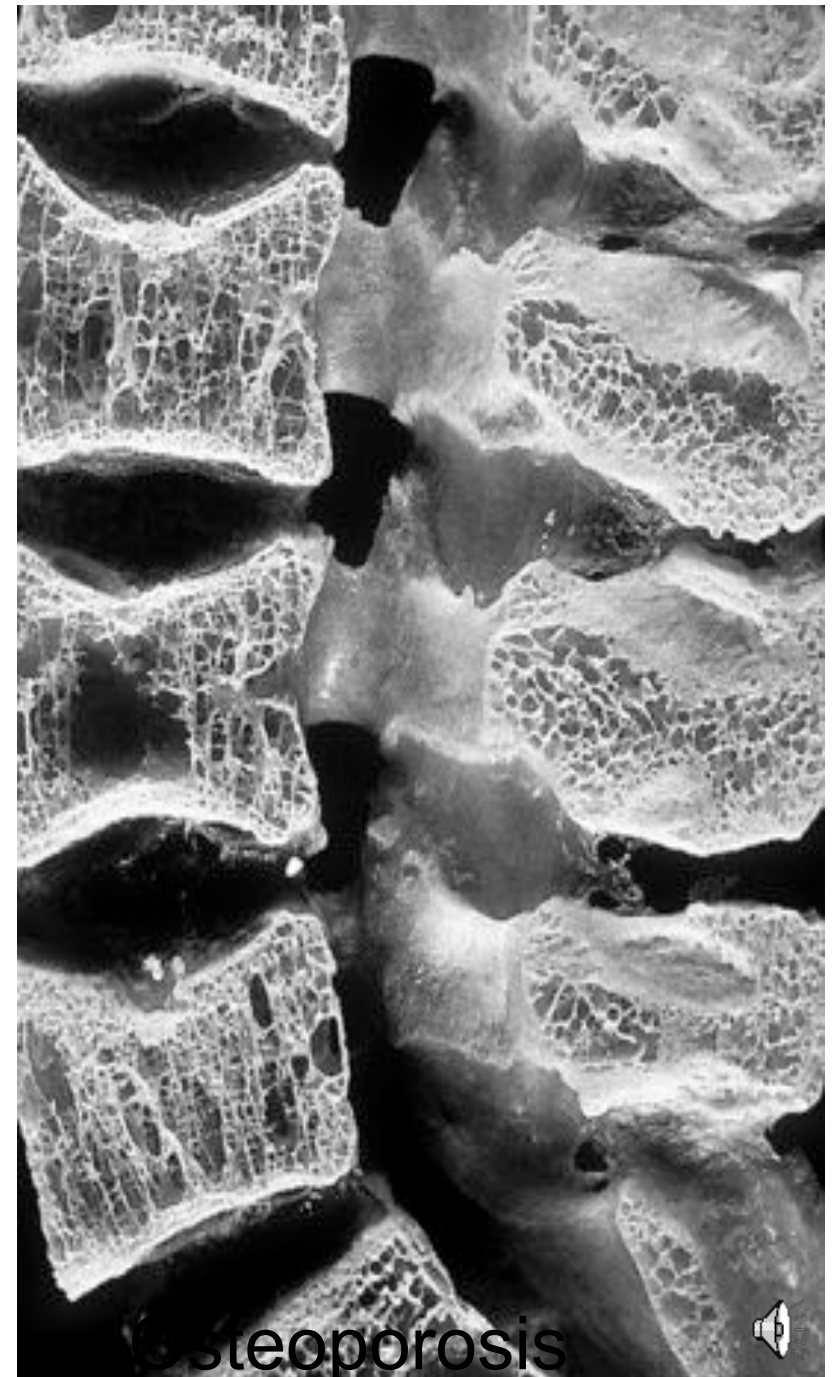
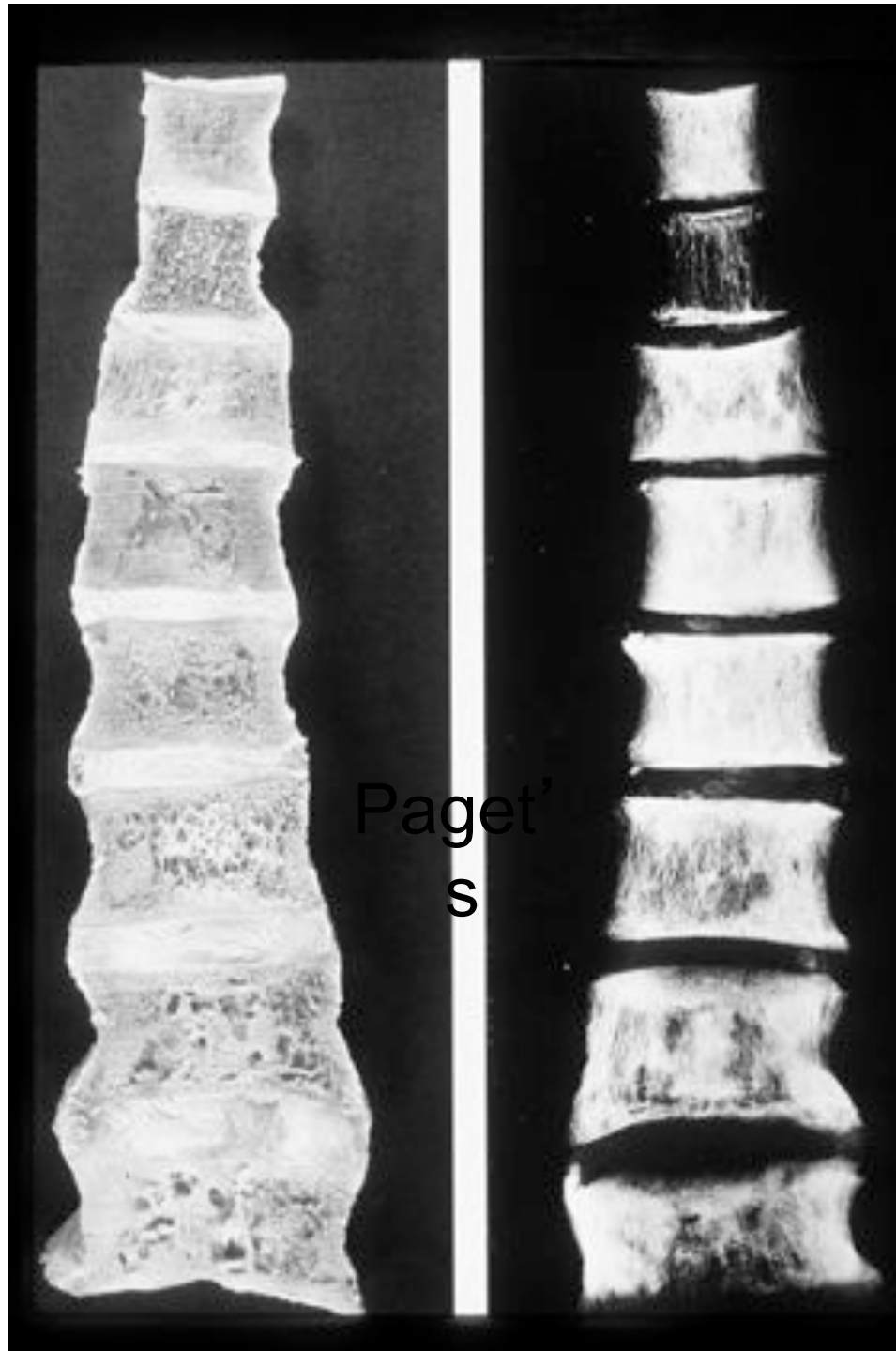
- Elderly – tissue health
- Children – consent , skeletal maturity



Metabolic Disease

- Bone Disease
- Osteoporosis
- Paget's





Systemic Disease / Condition

- Diabetes (caution)
- Endocrine disorders (caution)
- Haemophilia
- Pregnancy



Inflammatory Diseases

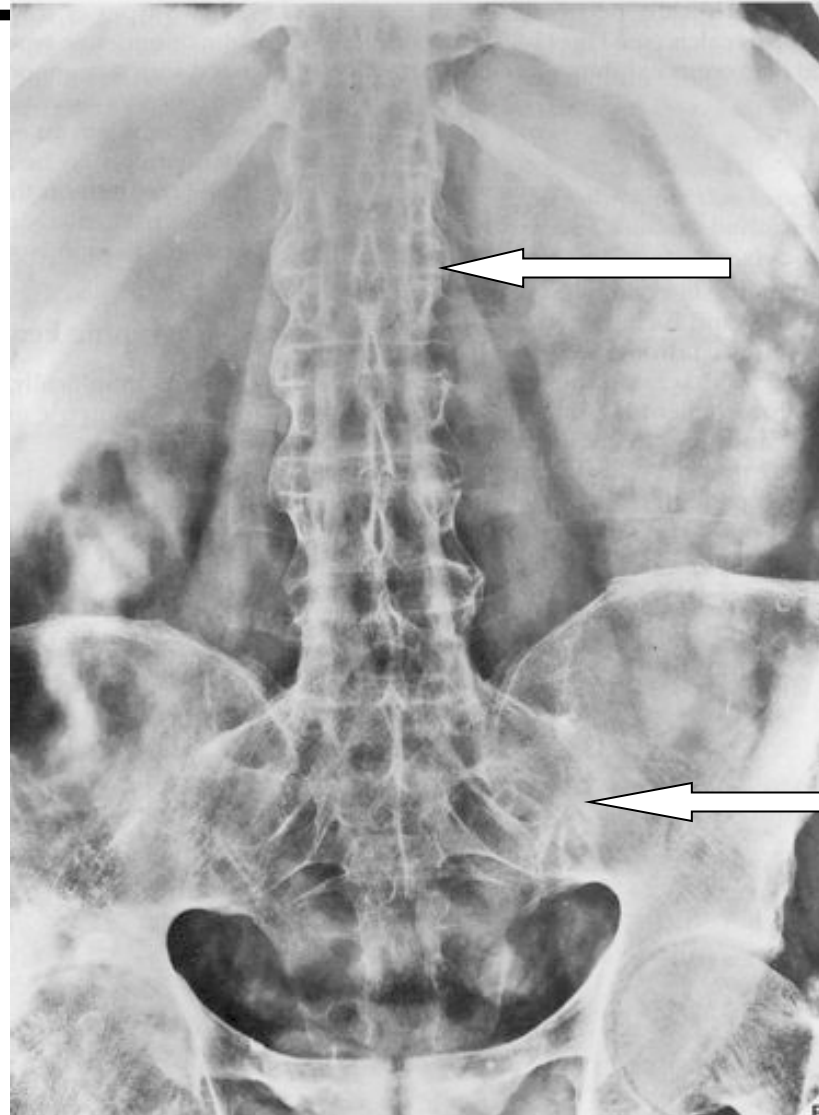
- Active inflammatory disease
- Rheumatoid Arthritis
- Ankylosing Spondylitis
- Psoriatic Arthritis
- Reiter's Inactive inflammatory Disease
(caution)





Radiologic findings- AKS

Square Vertebrae



Radiologic findings- AKS



Medication

- Anticoagulants
- Any med that effects collagen
eg corticosteroids, tamoxifen
- Med linked to osteoporosis
- Anti-depressants (caution)



References

- Greenspan, A., Orthopedic Radiology, Lippincott Williams & Wilkins, Philadelphia, 2000, 3rd edition
- Daffner, R., Clinical Radiology, 2nd edition, Lippincott Williams & Wilkins, 1999
- Grieve, G., Modern manual therapy, 2nd edition, Churchill and Livingstone, 1994
- Goodman & Boissonnault, Pathology; Implications for the physical therapist, W.B. Saunders company, 1998
- Level 2 upper manual, 2002
- A special thanks to Lenerdene Levesque and Scott Whitmore for the use of pathology slides

