

# Scoliosis

# Scoliosis

- an abnormal curvature of the spine in frontal plane

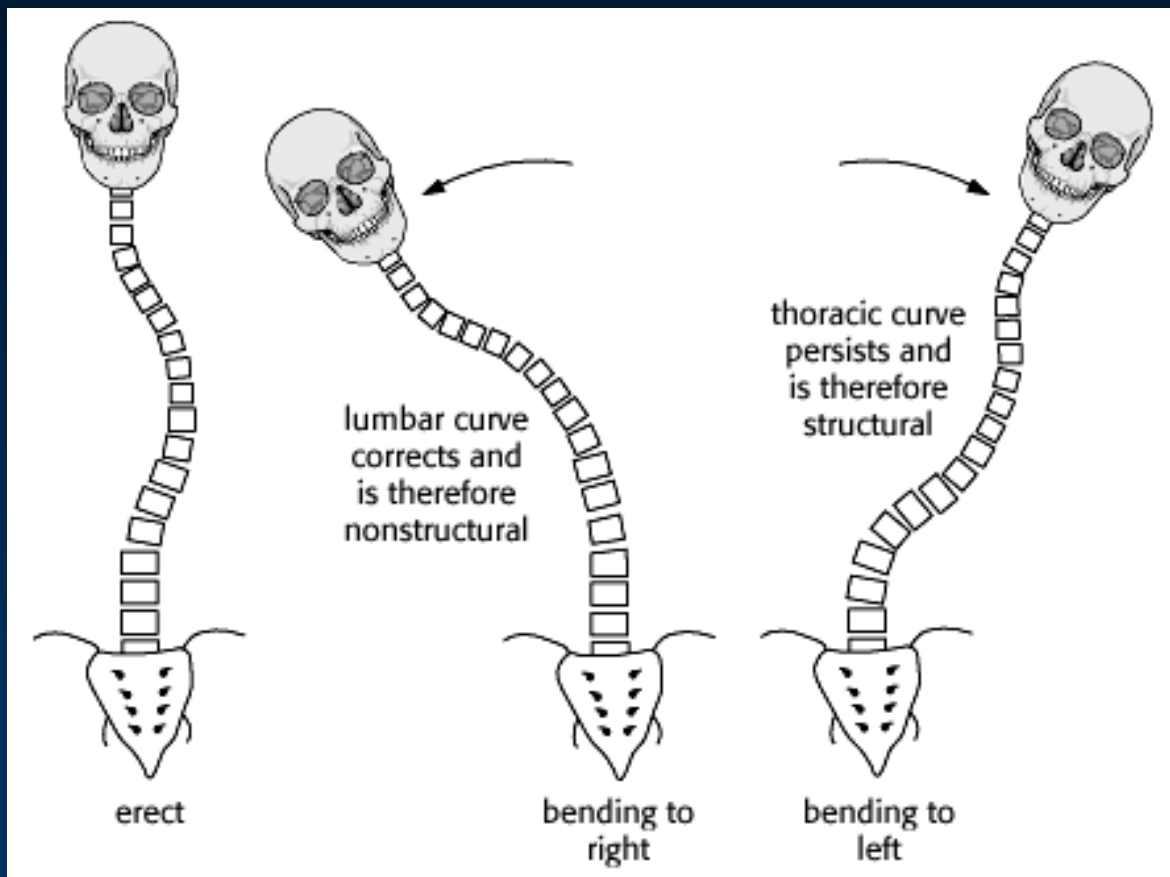


# Classification

1. Nonstructural scoliosis
2. Transient structural scoliosis
3. Structural scoliosis

1. Congenital
2. Idiopathic
3. Neuromuscular
4. Neurofibromatosis
5. Secondary





lateral bending films to differentiate structural from nonstructural curves

## Nonstructural scoliosis

- postural scoliosis
- compensatory scoliosis

## Transient structural scoliosis

- sciatic scoliosis
- hysterical scoliosis
- inflammatory scoliosis



## Structural scoliosis

- idiopathic (70 - 80 % of all cases)
- congenital
- neuromuscular (*polio, cerebral palsy, syringomyelia, muscular dystrophy, amyotonia congenita, Friedreich's ataxia*)
- neurofibromatosis
- mesenchymal disorders (*Marfan's syndrome, rheumatoid arthritis, osteogenesis imperfecta*)
- trauma (*fractures, irradiation, surgery*)

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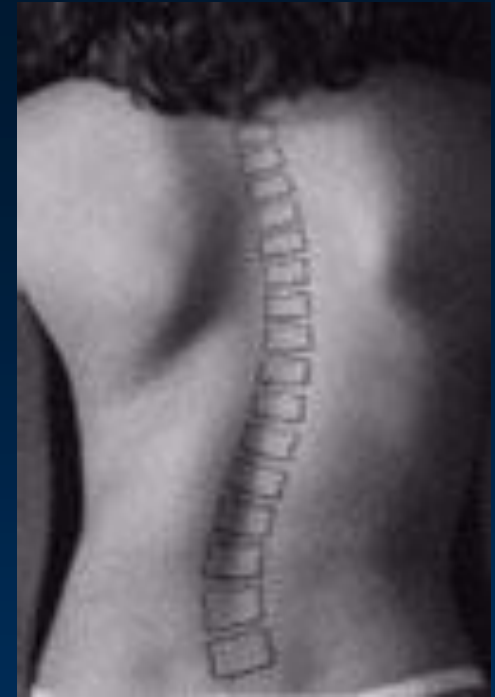
# Idiopathic scoliosis:

female predilection 3(7) : 1

infantile, juvenile and adolescent

rotation and torsion

non-structural  $\Rightarrow$  structural



Infantile: < 3 years, spontaneous correction

observation < 20°

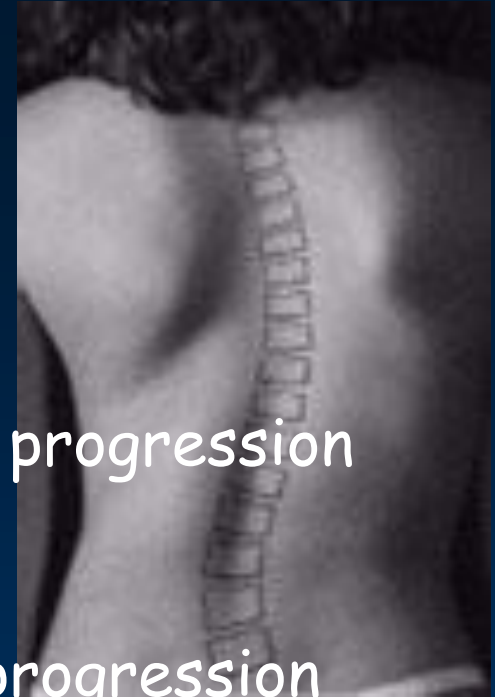
orthosis > 20°

surgery > 50°



# Idiopathic scoliosis:

Juvenile: 3 years to puberty, low progression  
observation  $< 20^\circ$   
orthosis  $> 20^\circ$  and progression  
surgery  $> 40^\circ$

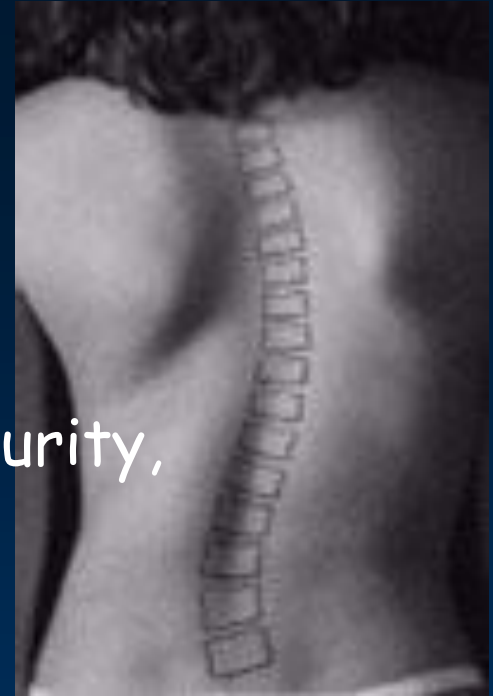


# Idiopathic scoliosis:

Adolescent: puberty to skeletal maturity,  
consider progression  
observation  $10^{\circ} - 20^{\circ}$

orthosis  $20^{\circ} - 40^{\circ}$  and progression

surgery  $> 40^{\circ}$

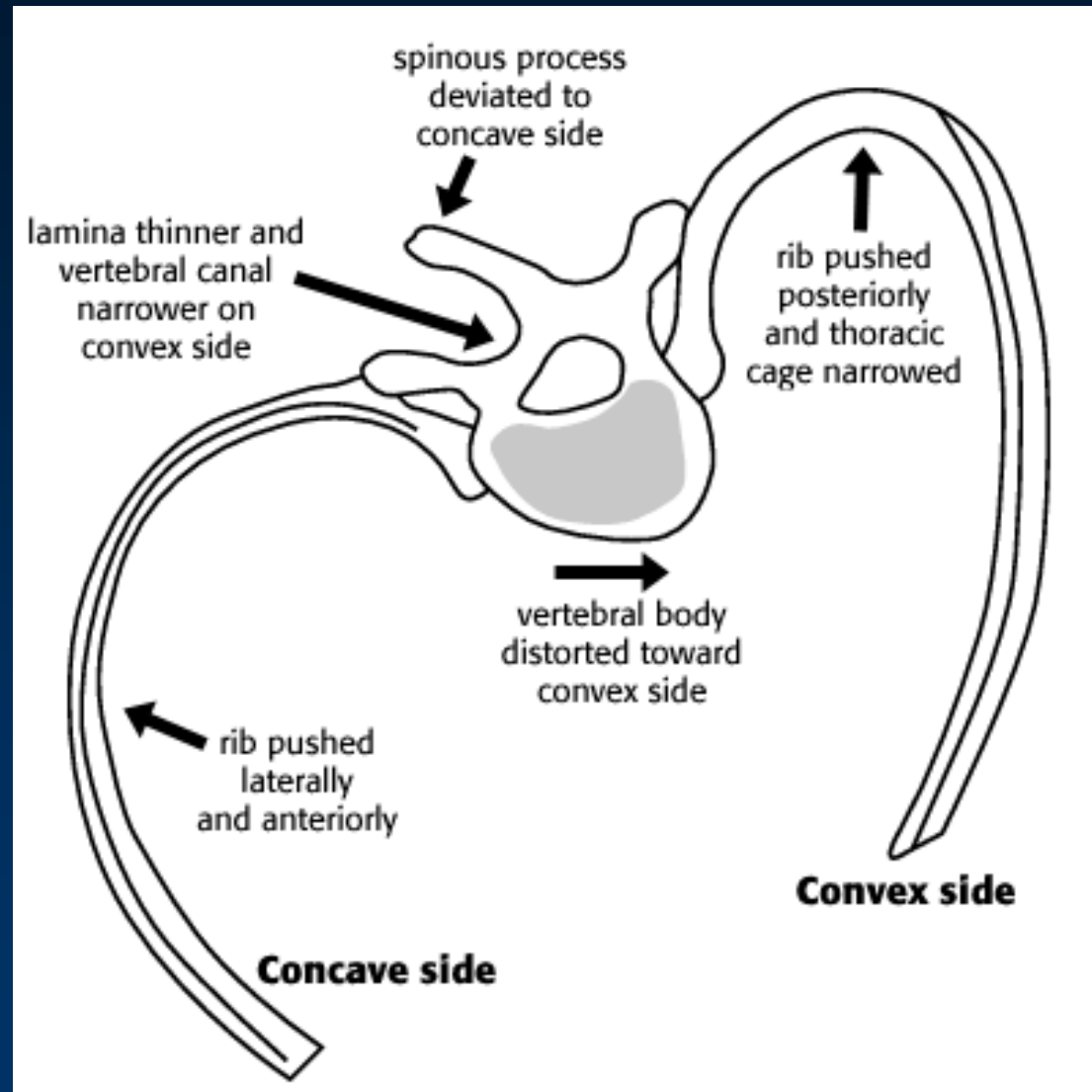


## diagnosis:

- Medical and family history
- Observe the patient standing (front and back)
  - abnormalities in the shoulders, rib cage, waist, pelvis, legs (humpback, hip higher than the other, leg length impariment)



# diagnosis:



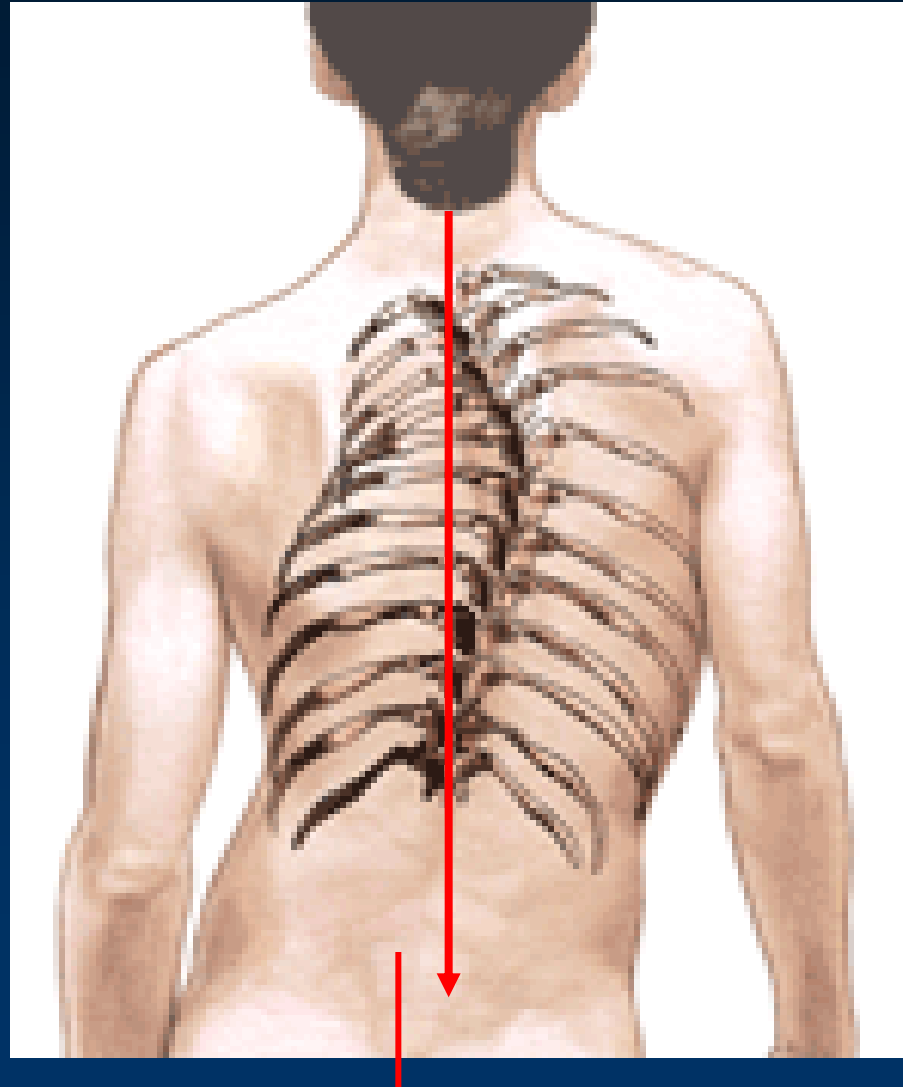
diagnosis:



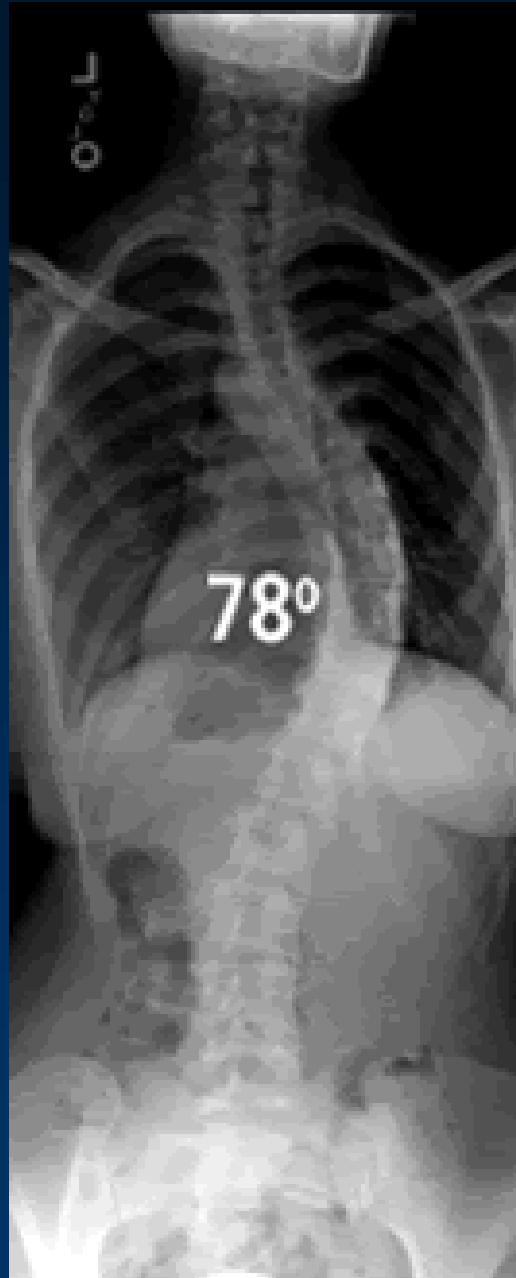
Adams forward-bending test

diagnosis:

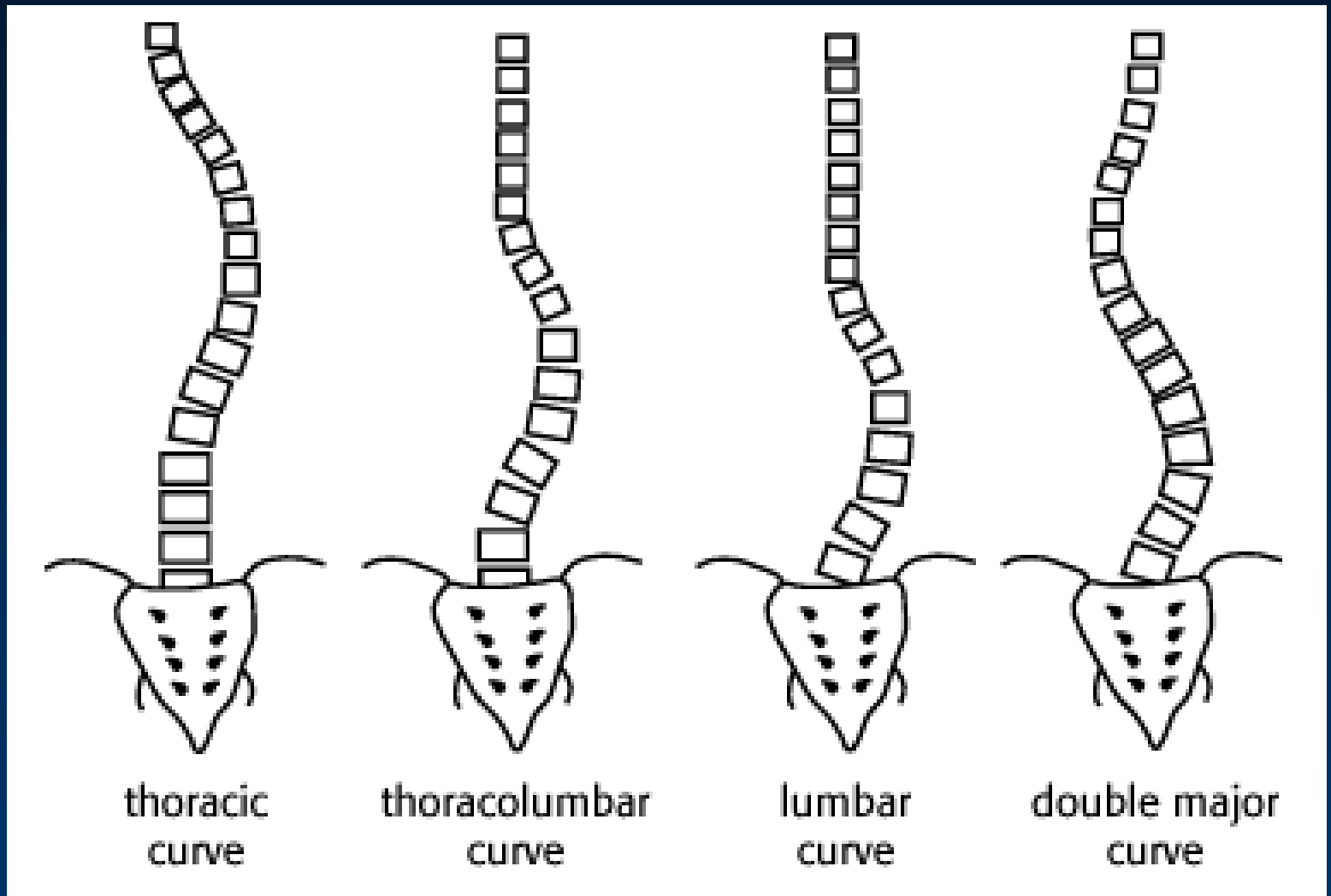
plumb line



diagnosis:



diagnosis:

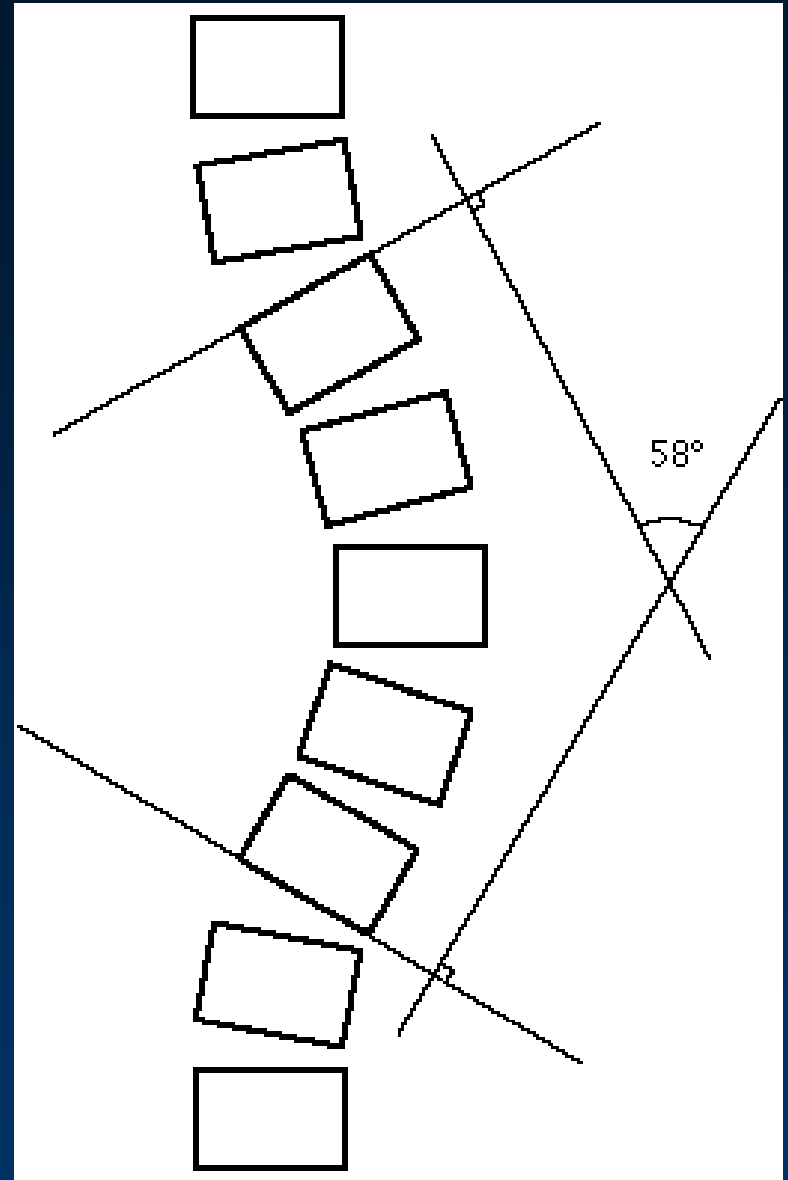


long format



diagnosis:

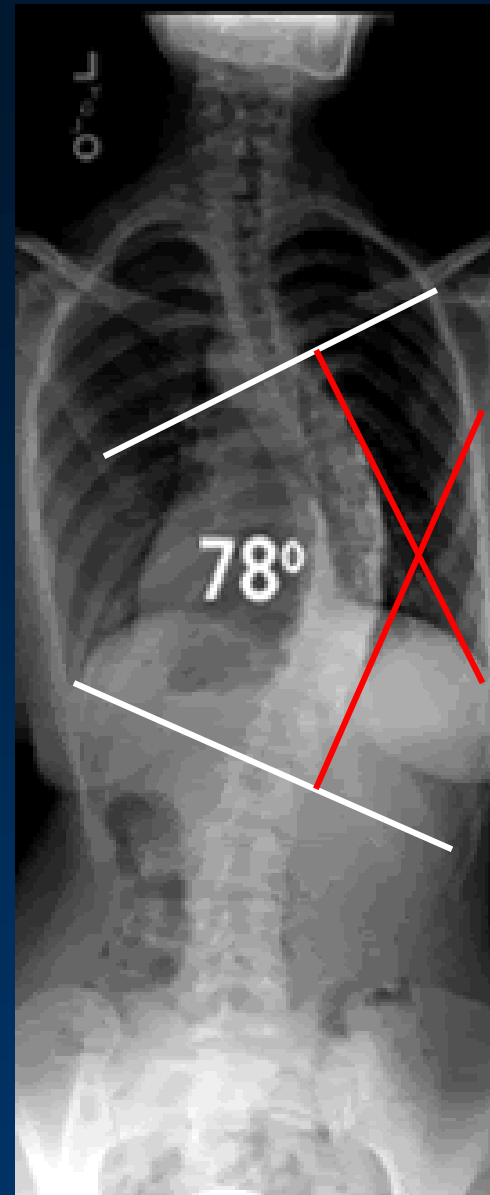
end-vertebrae definition



Cobb's angle

diagnosis:

end-vertebrae definition



Cobb's angle

# diagnosis:



0  
no rotation

+ 1  
pedicle  
toward  
midline

+ 2  
pedicle  
2/3 to  
midline

+ 3  
pedicle  
in  
midline

+ 4  
pedicle  
beyond  
midline

Nash and Moe

# diagnosis:



iliac crest ossification  
progressing posteromedially



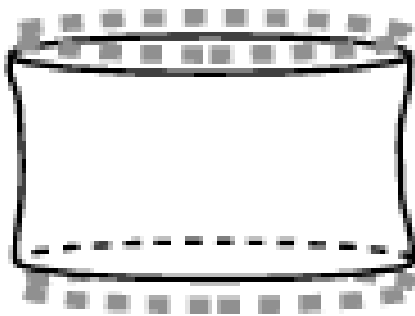
excursion complete



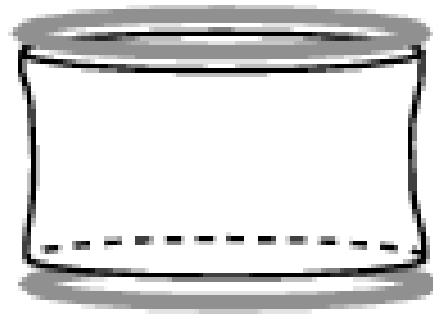
crest fused with ilium -  
maturation complete

determination of skeletal maturity

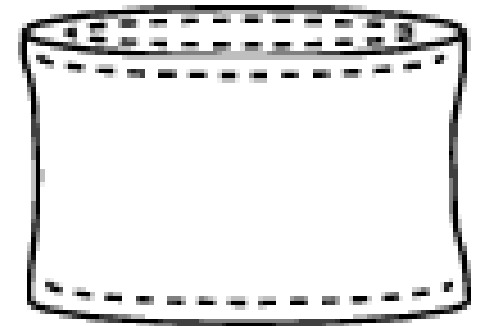
# diagnosis:



ring apophysis  
beginning to  
ossify



apophysis  
ossified but  
not united



apophysis  
united to body;  
vertebra is mature

determination of skeletal maturity

# treatment:

Conservative: growing spine - brace

(Milwaukee - CTLSO,

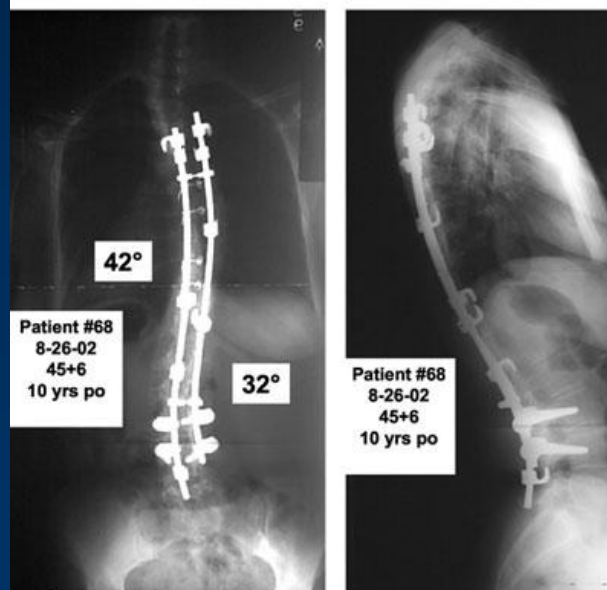
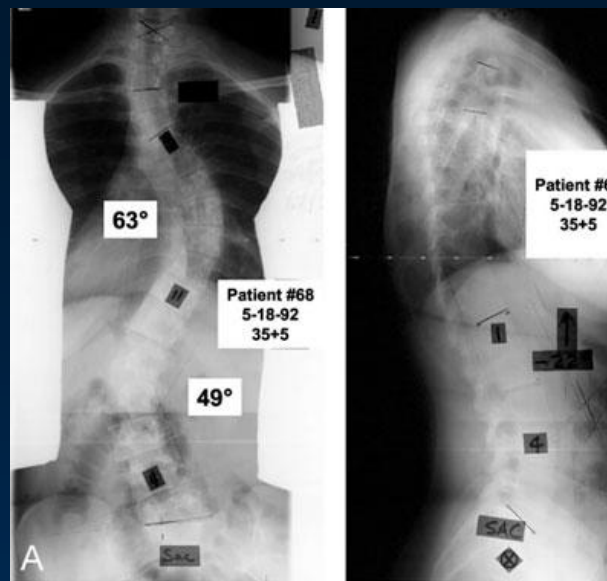
Boston - TLSO)



# treatment:

surgical: posterior, anterior, combined,  
correction of all components,  
instrumentation, grafting,  
light orthosis for 4 months

# treatment:





treatment:



# treatment:

Scoliosis centres: Brno, Karviná

CZ 2011:

• Congenital	10
• Idiopathic	127
• Neuromuscular	22
• Neurofibromatosis	2

Scoliosis (5)

M. Scheuermann (17)

Spondylosis, spondylarthrosis (27)

Trauma      C1 - 2

subaxial C

T - L

} (51)

Specific + non-specific inflammation (24, 26)