Congenital scoliosis

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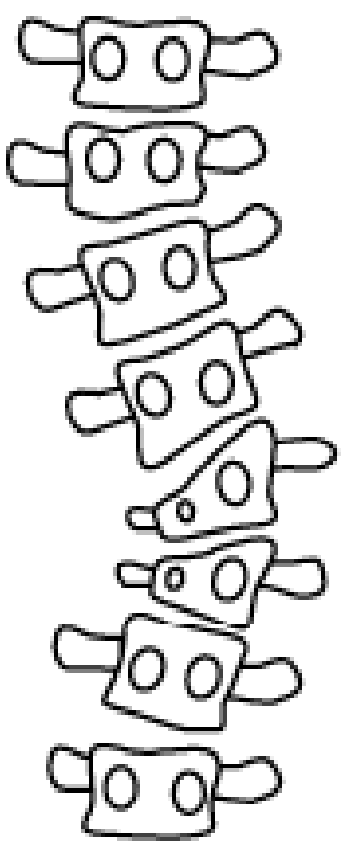
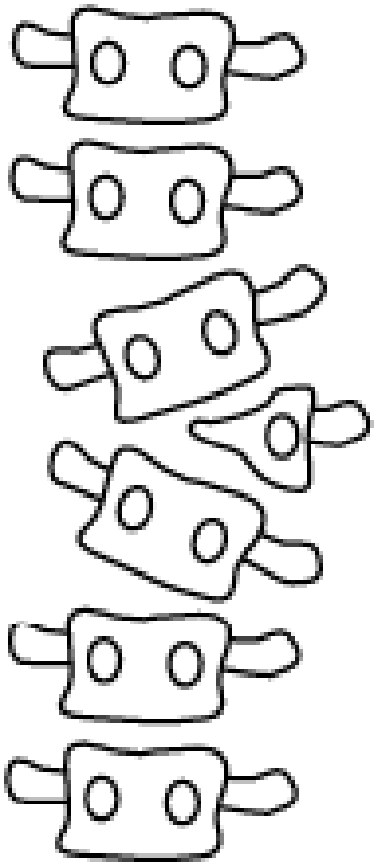
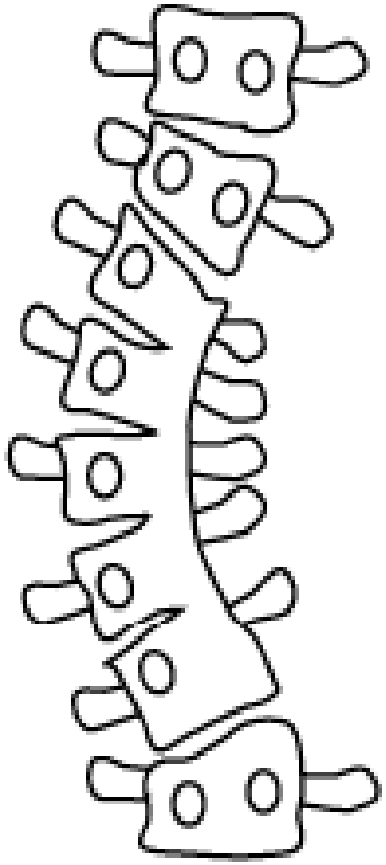


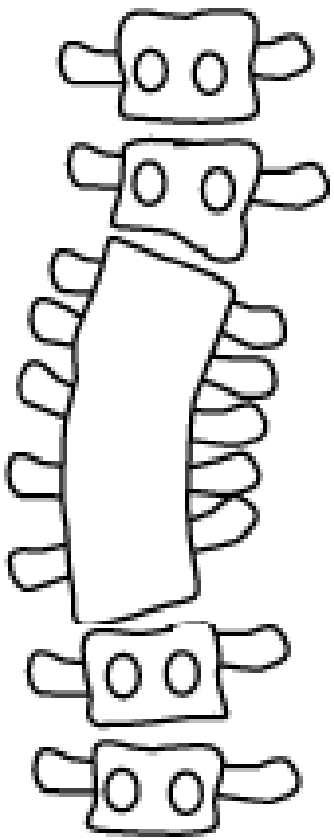
partial unilateral failure of formation (wedge vertebrae)



complete unilateral failure of formation (hemivertebra)



unilateral failure of segmentation (congenital bar)

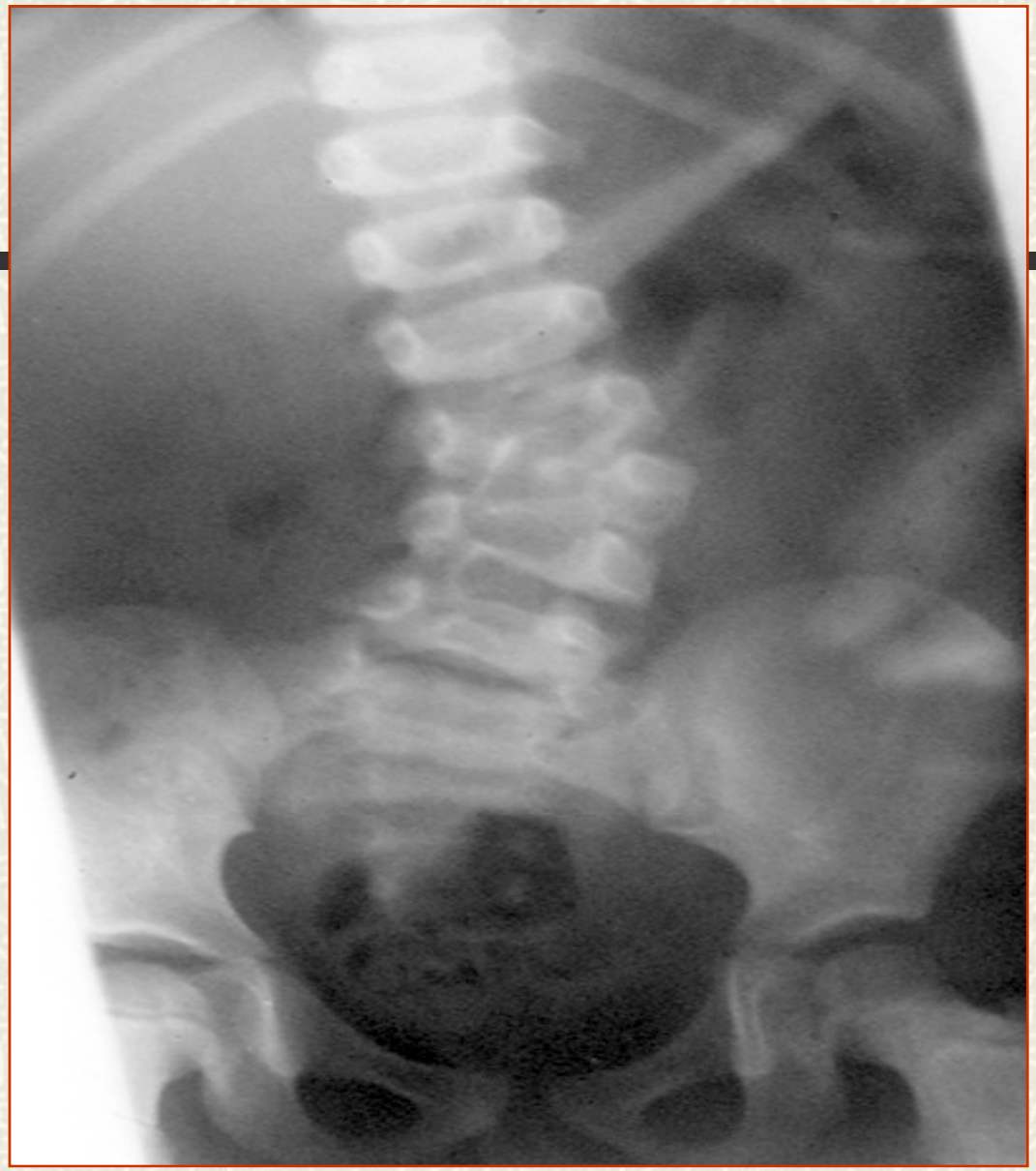


bilateral failure of segmentation (block vertebra)

Congenital Scoliosis Classification:

According to the area of the spine affected

- Cervical, cervico-thoracic,
- Thoracic
- Lumbar
- Lumbo-sacral spine



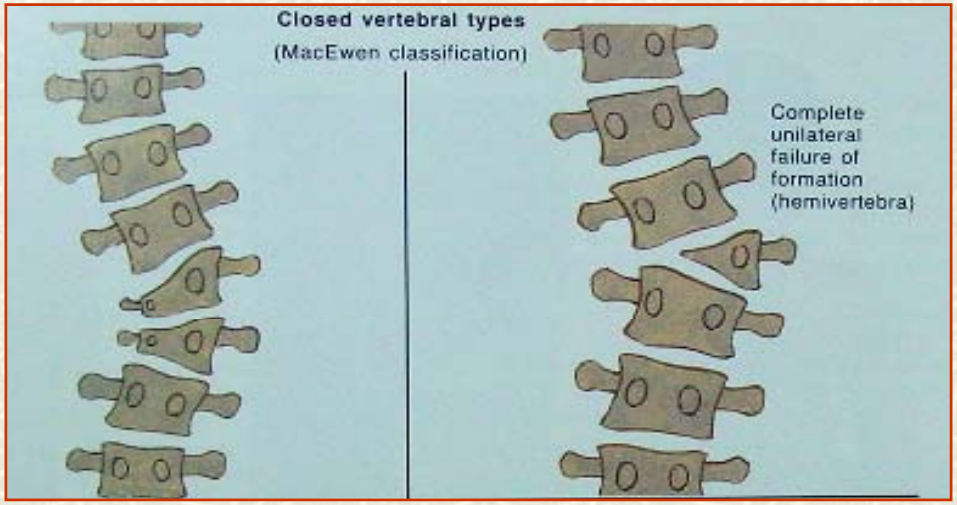
According to the pattern of deformity

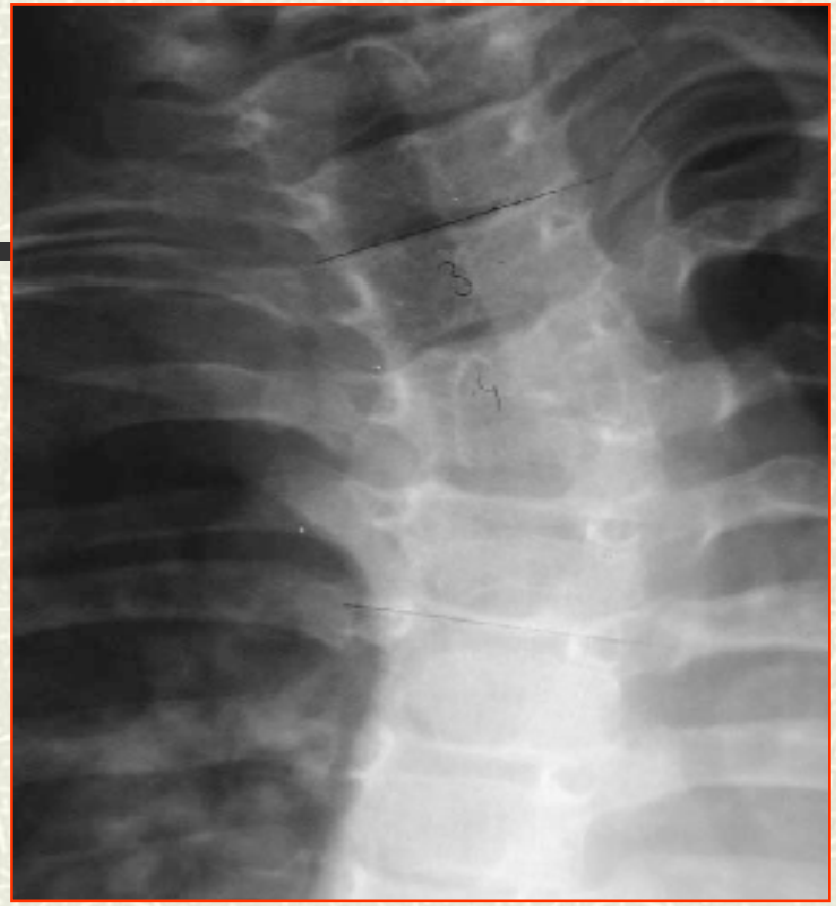
- Kyphoscoliosis,
- Lordoscoliosis

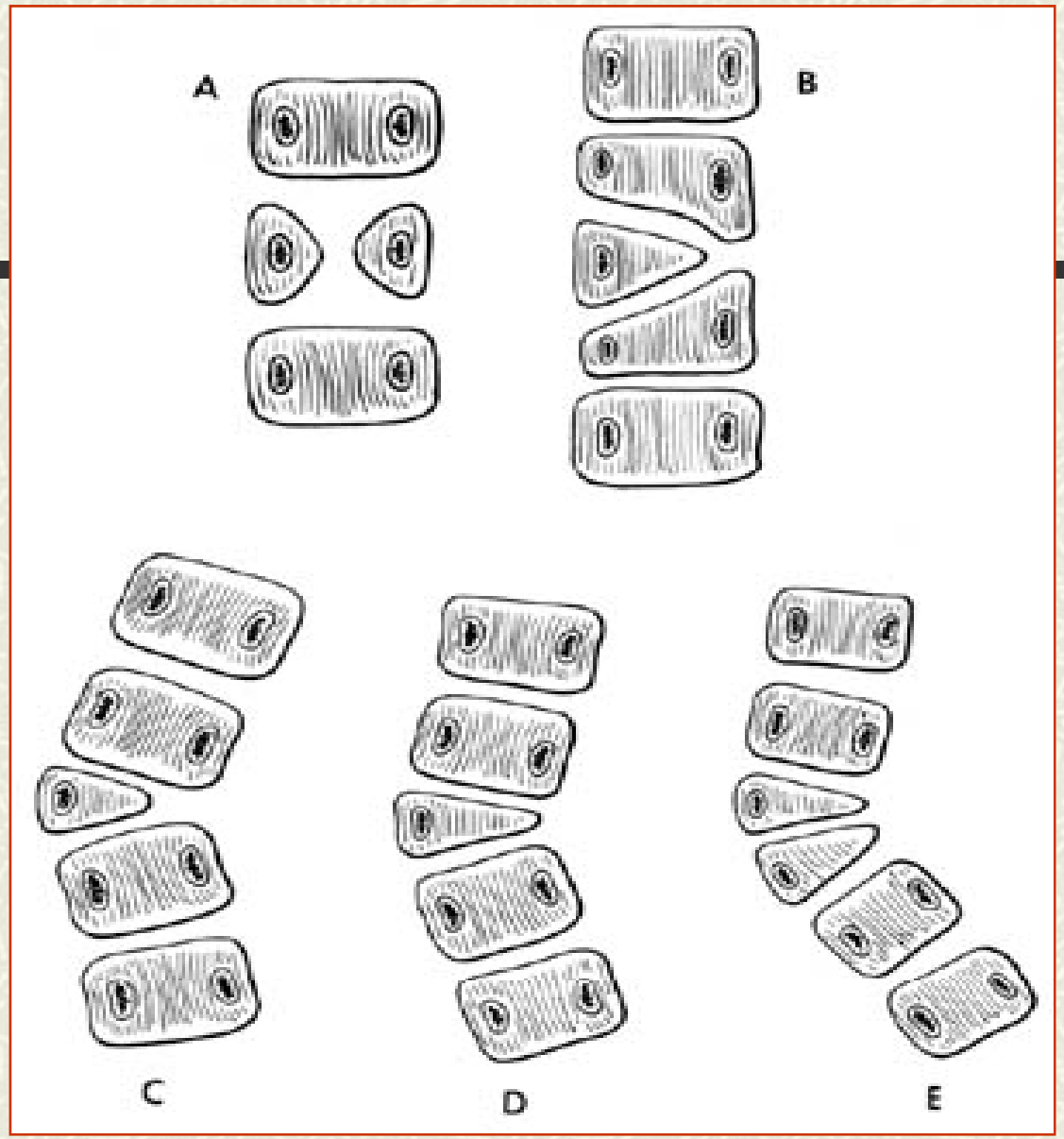
According to the basic type of malformation

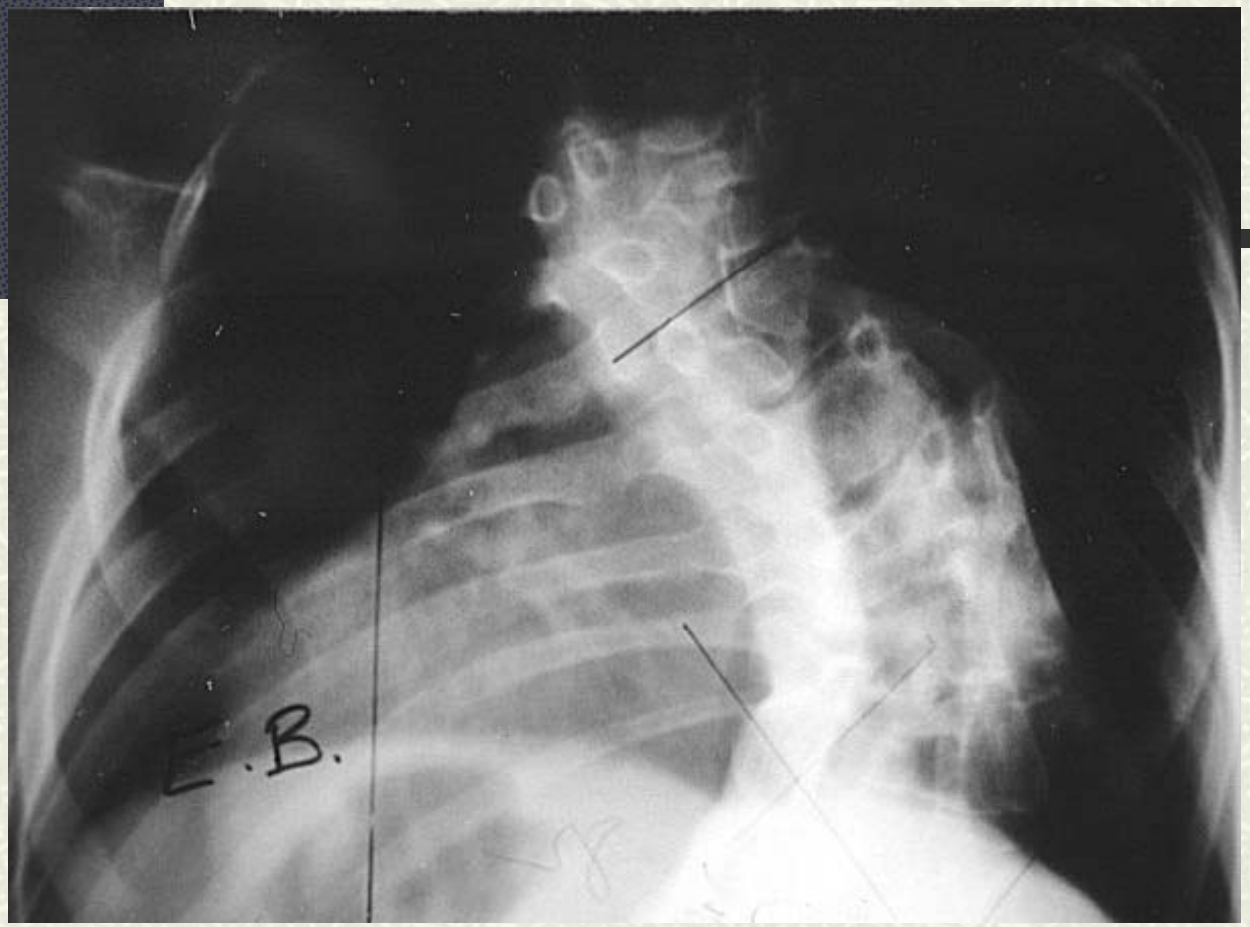
- Failure of formation
- Failure of segmentation
- Combination of the above (scramble eggs)

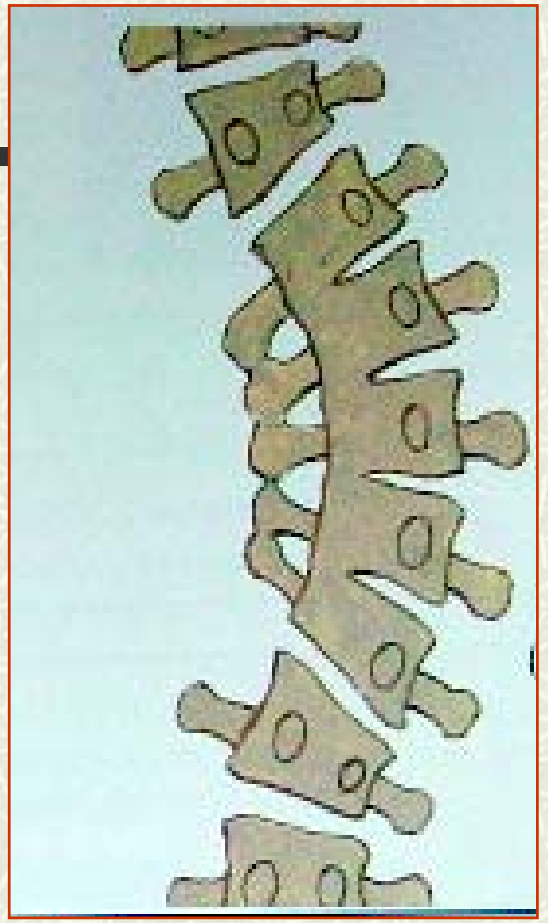
Failure of formation.



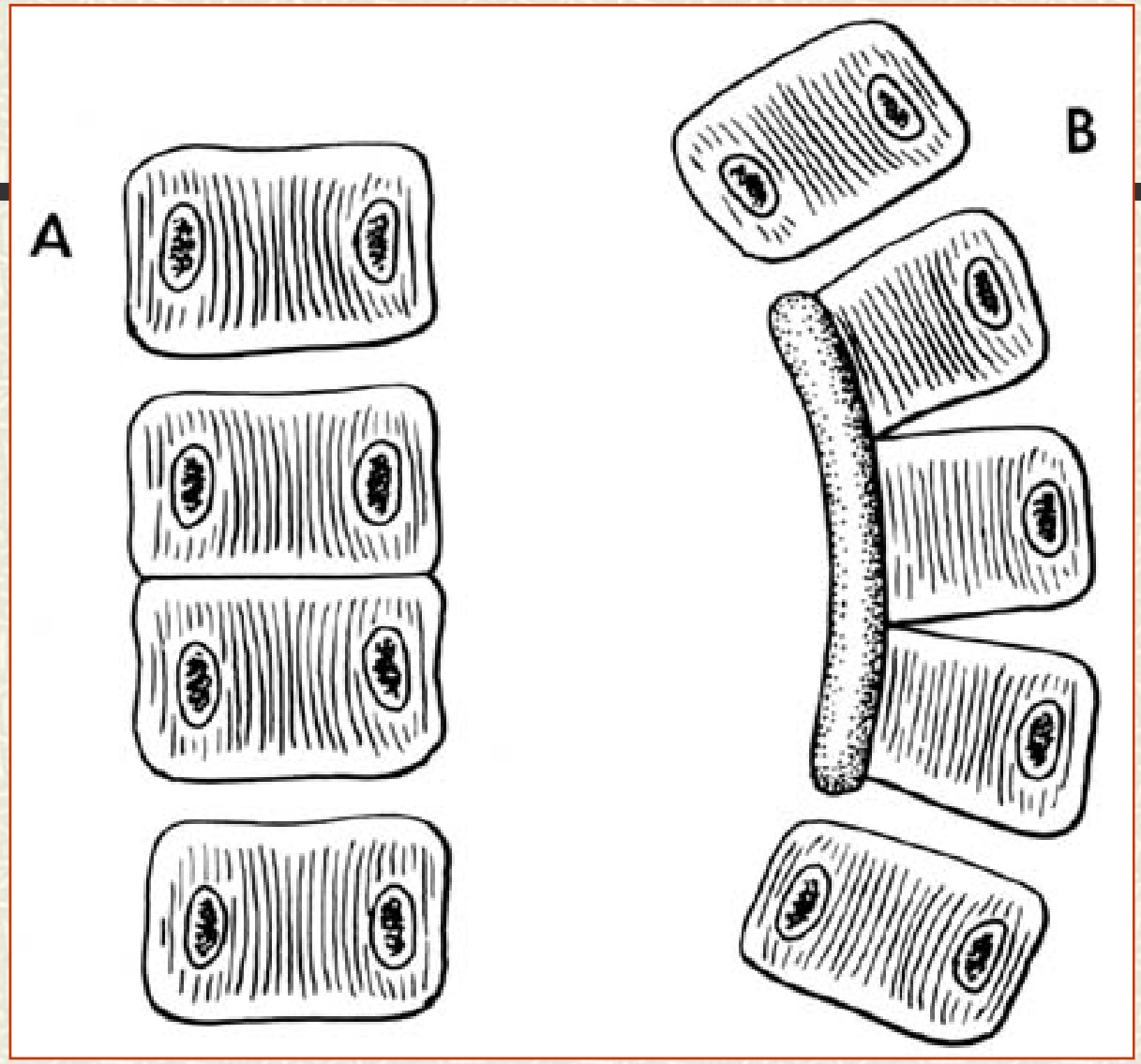



A
B
C
D
E





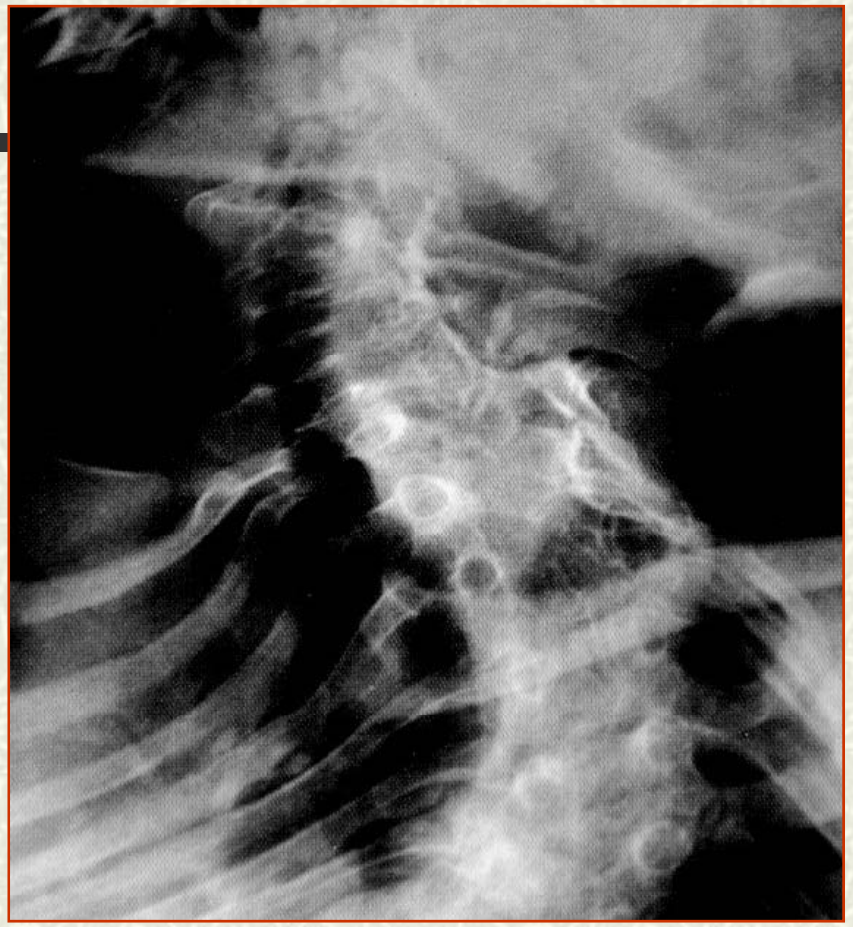
Failure of segmentation


A
B

Cervical spine

= Klipple-Feil Syn.

= Sprengel's def.



Scramble eggs

Questions

Is it hereditary?

No. Isolated hemivertebra carries no risk to subsequent siblings.

What is the best Treatment?

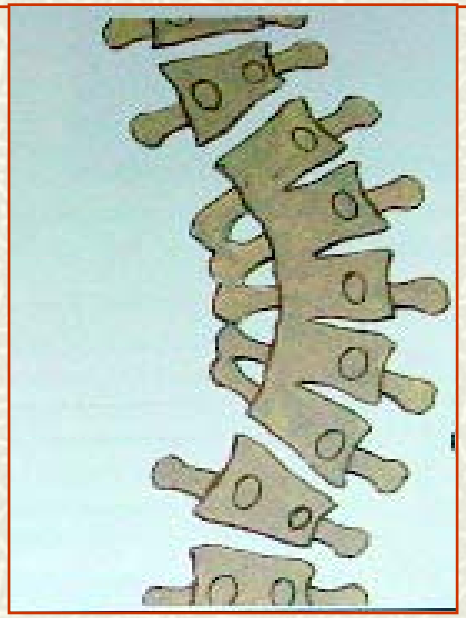
Early evaluation.

Early aggressive treatment.

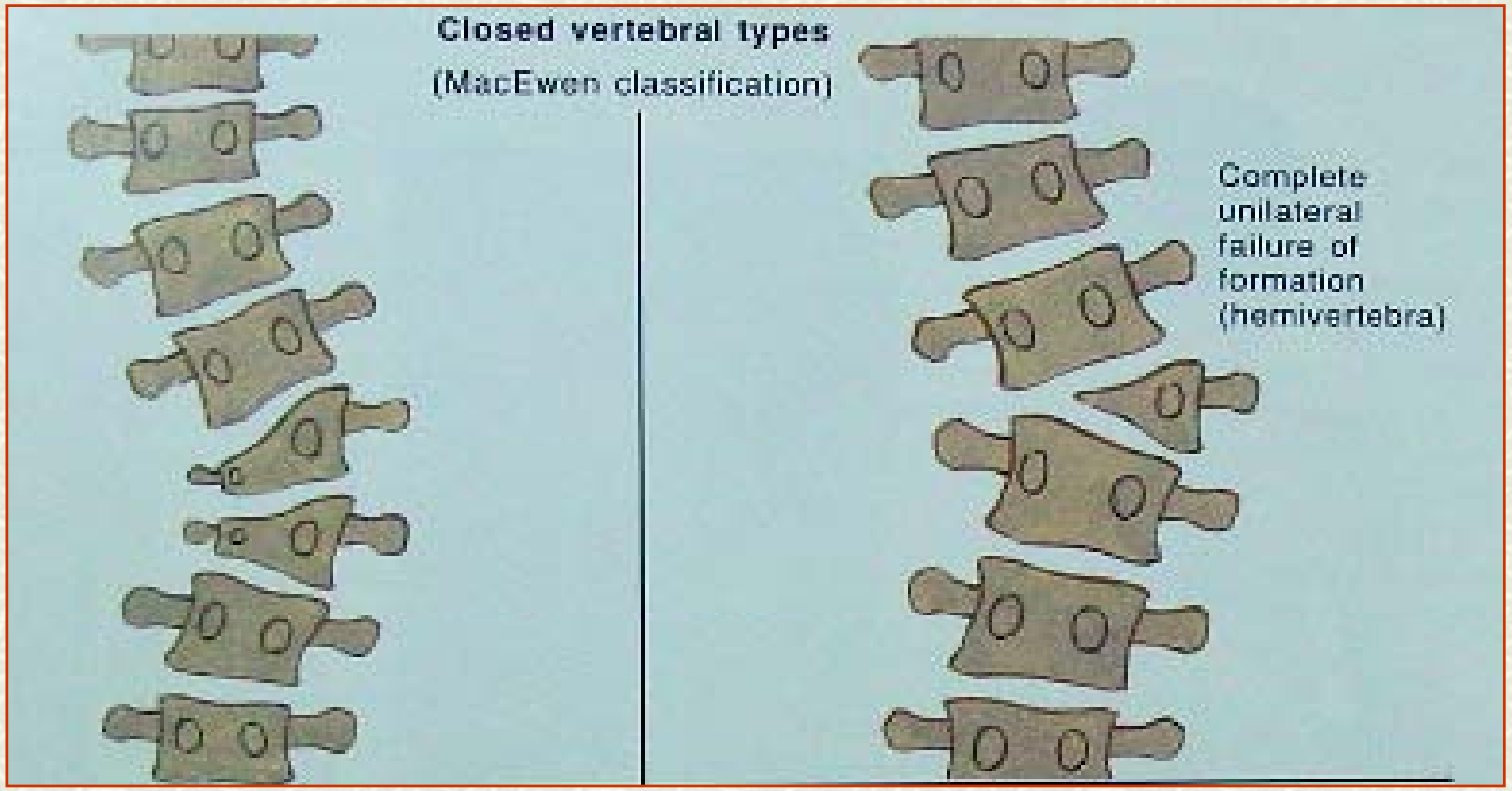
Factors affecting the progression

1- Specific anomalies.

A- unilateral unsegmented Bar.→ worst progression.



B- Single hemivertebra or double unbalanced Hemivertebra → Progress slowely.

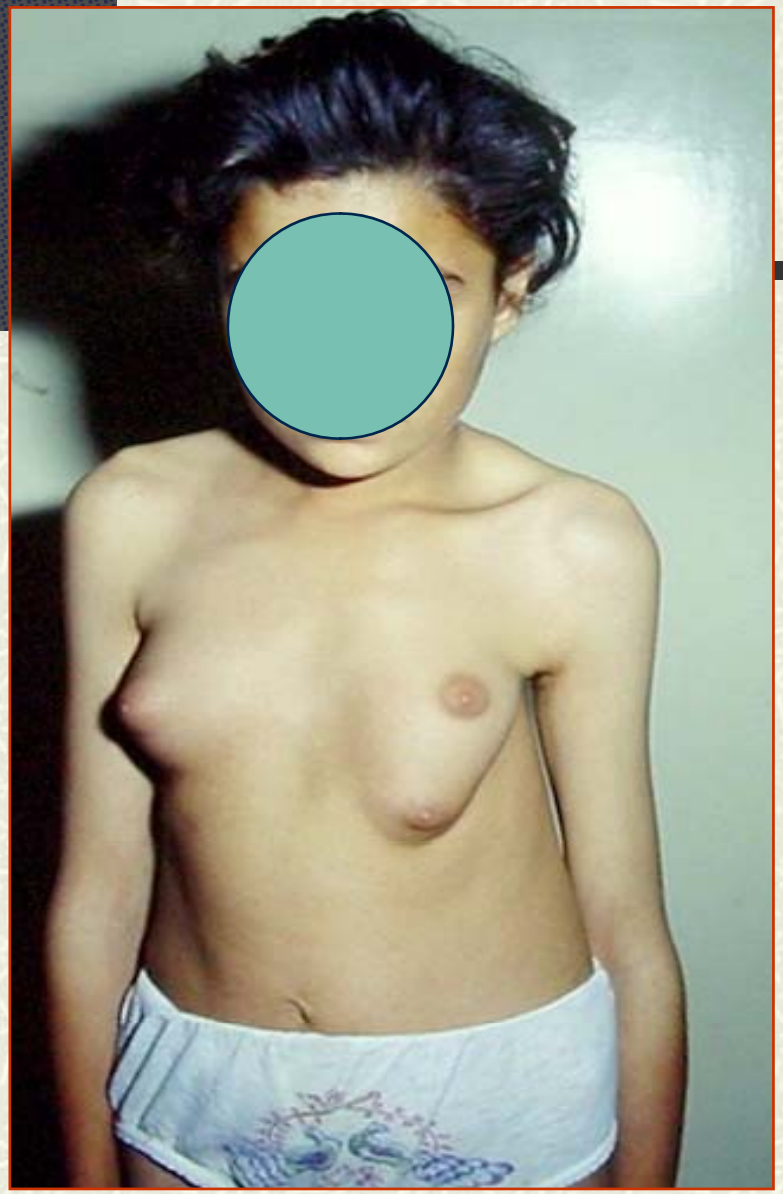


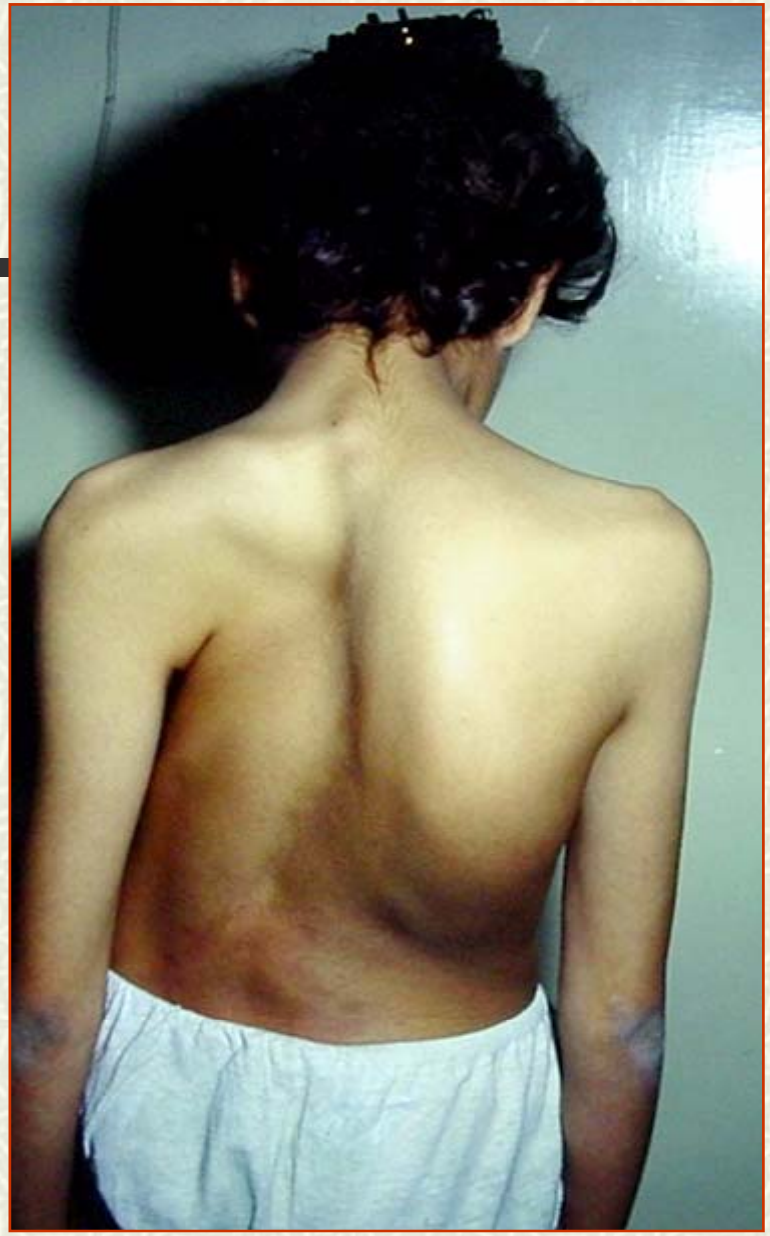
2-Area of affected spine

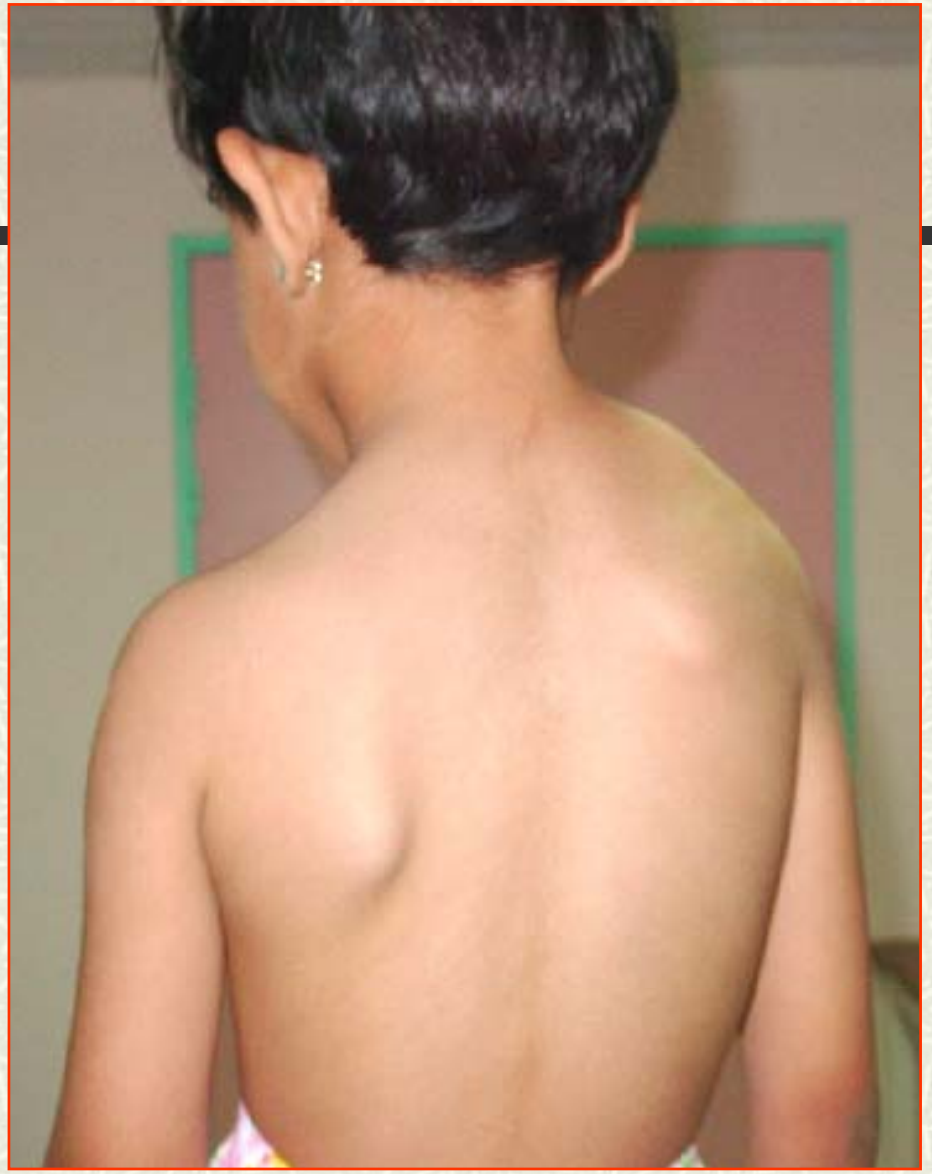
1- Cervico thoracic and lumbar less progressive
2- Thoracic curve → progressive
3- Thoracolumbar curve → progressive.

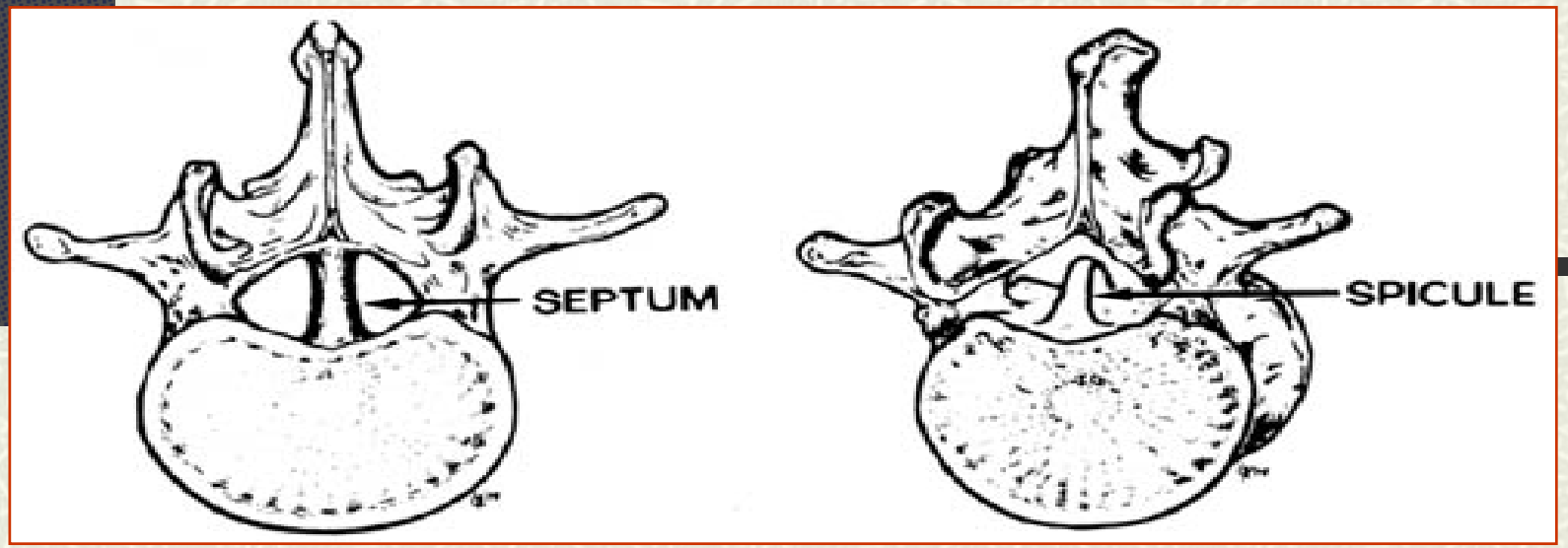
Look for other anomalies

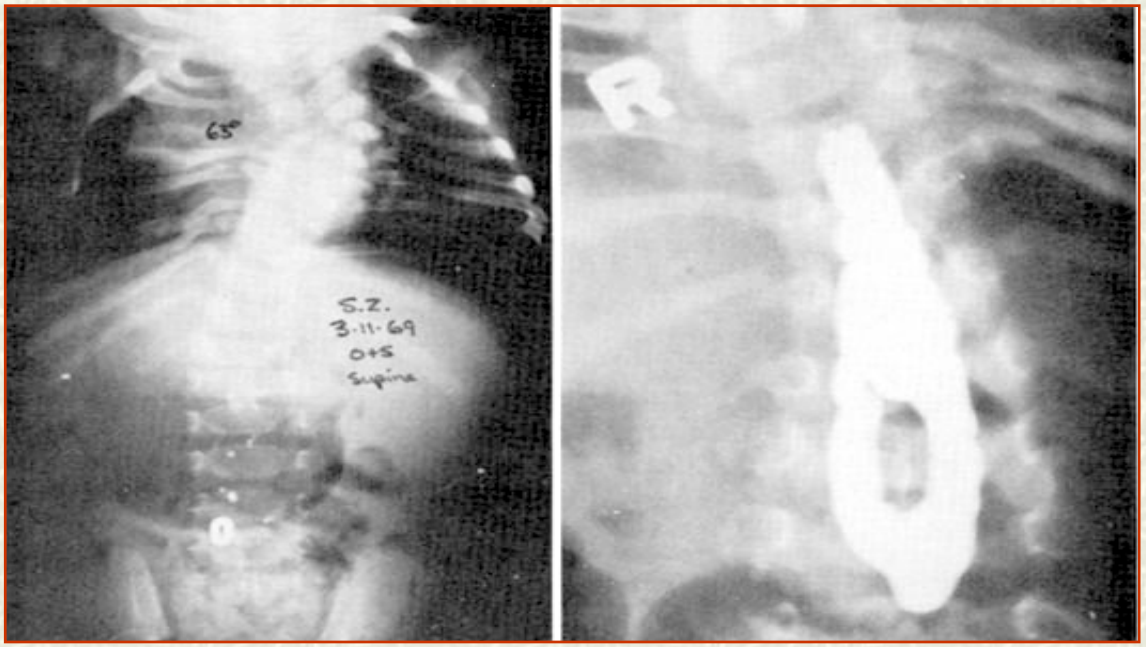
1- Spina bifida
2-Neurological defeciet
e.g small size of the foot
3-Spinal dysraphism
4-Other anomalies
e.g heart & kidney, facial asymmetry, sprengle's








SEPTUM
SPICULE


65°
S.Z.
3.11.69
0+5
supine
R

Diagnosis by Sonogram

Can be done before birth

Can be done at birth or soon after

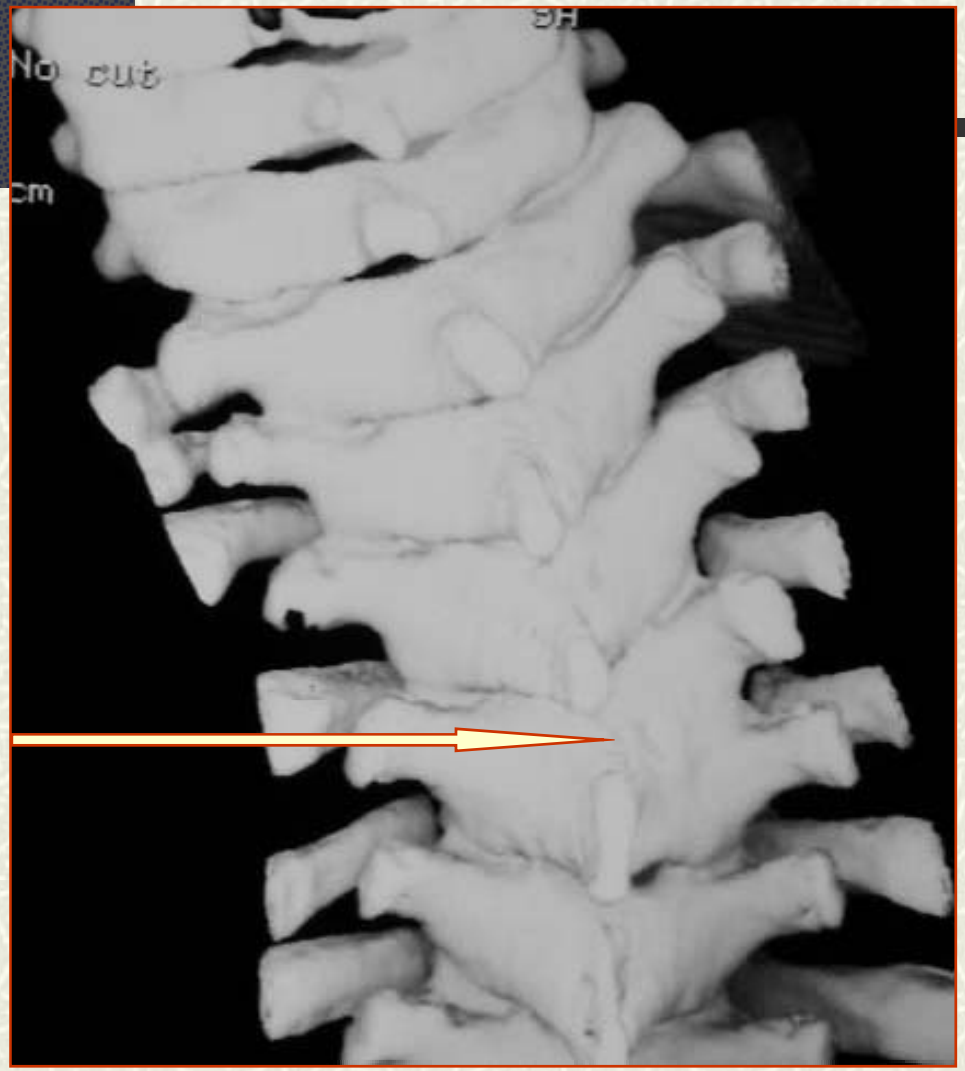
Clinical diagnosis

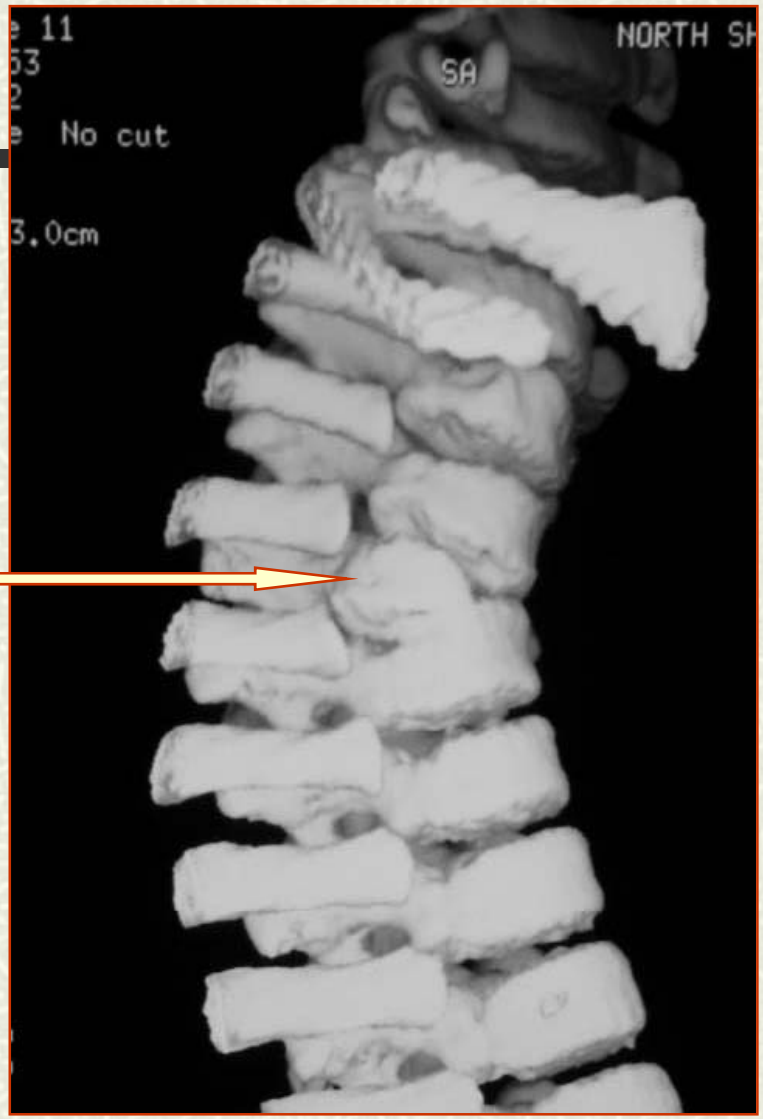
Deformity

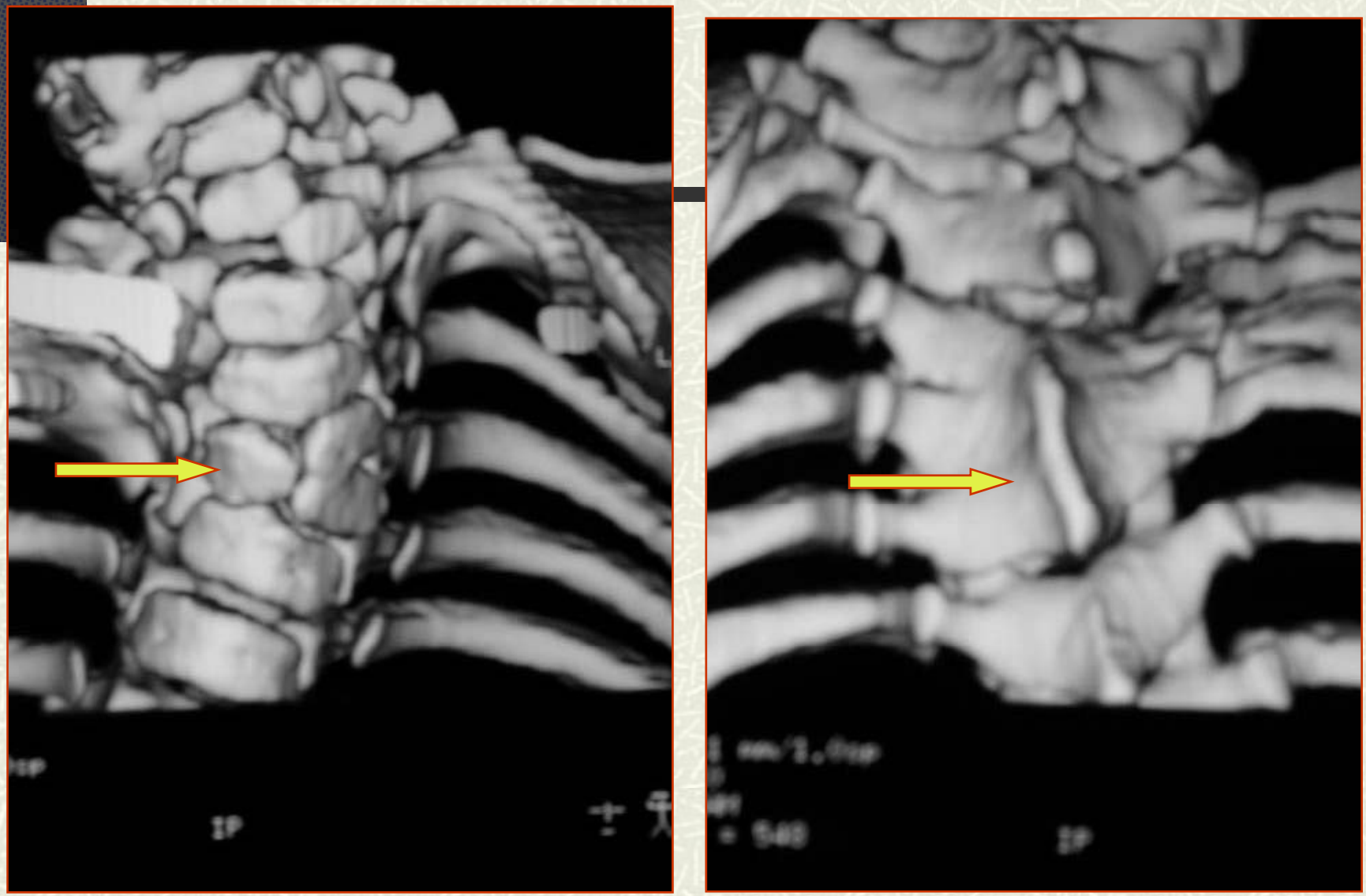
Associated congenital problems.

Radiographic diagnosis

1-Simple PA and Lat. X- rays.
2-CT scan with 3D reconstruction
3-Myelography
4-MRI


No cut
cm


11
53
No cut
3.0cm
SA
NORTH SH



Managment

Conservative

Cast or brace (Milwaukee)

Indications

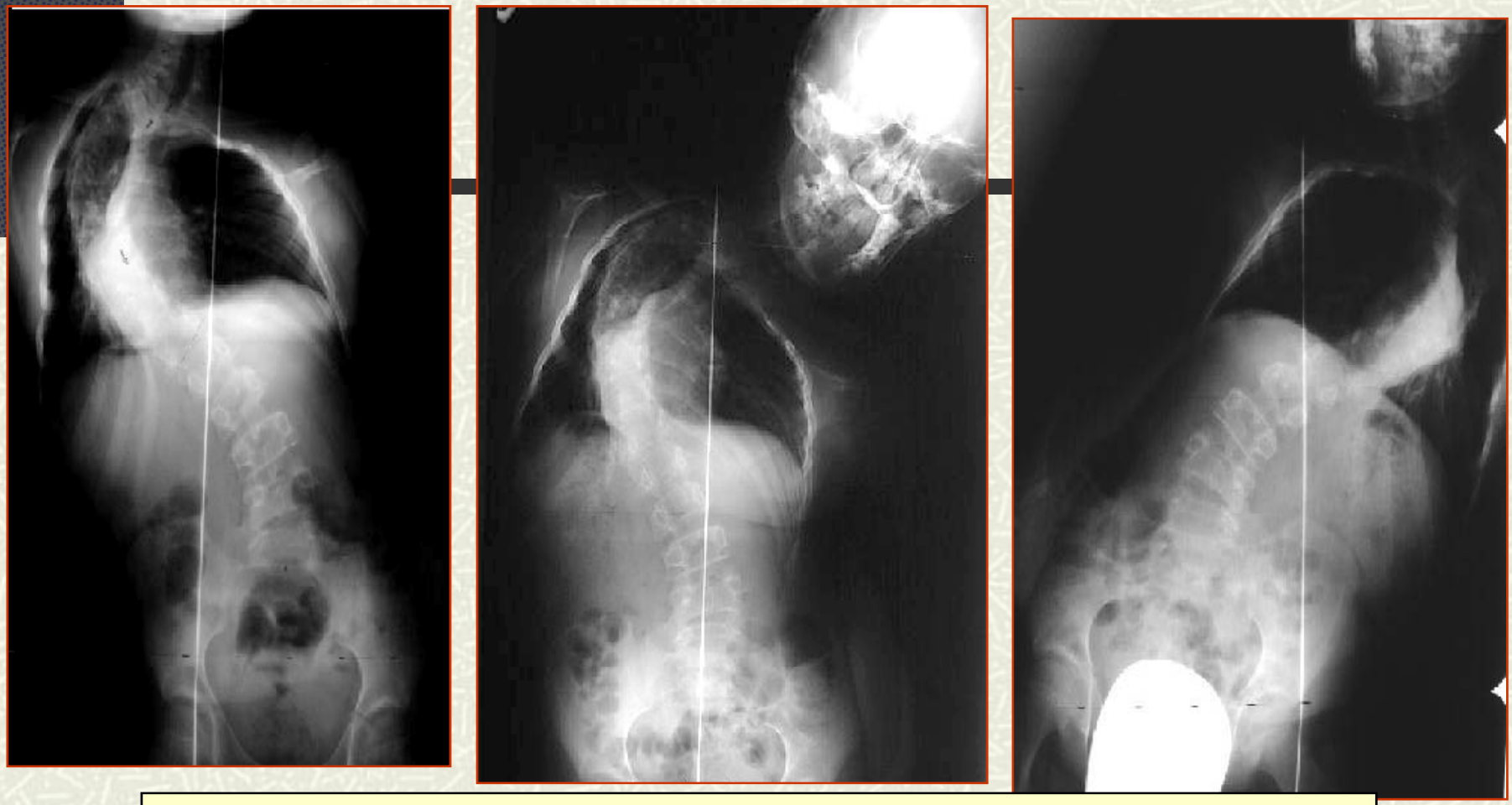
A- Flexible long curve

B- Skeletal immaturity

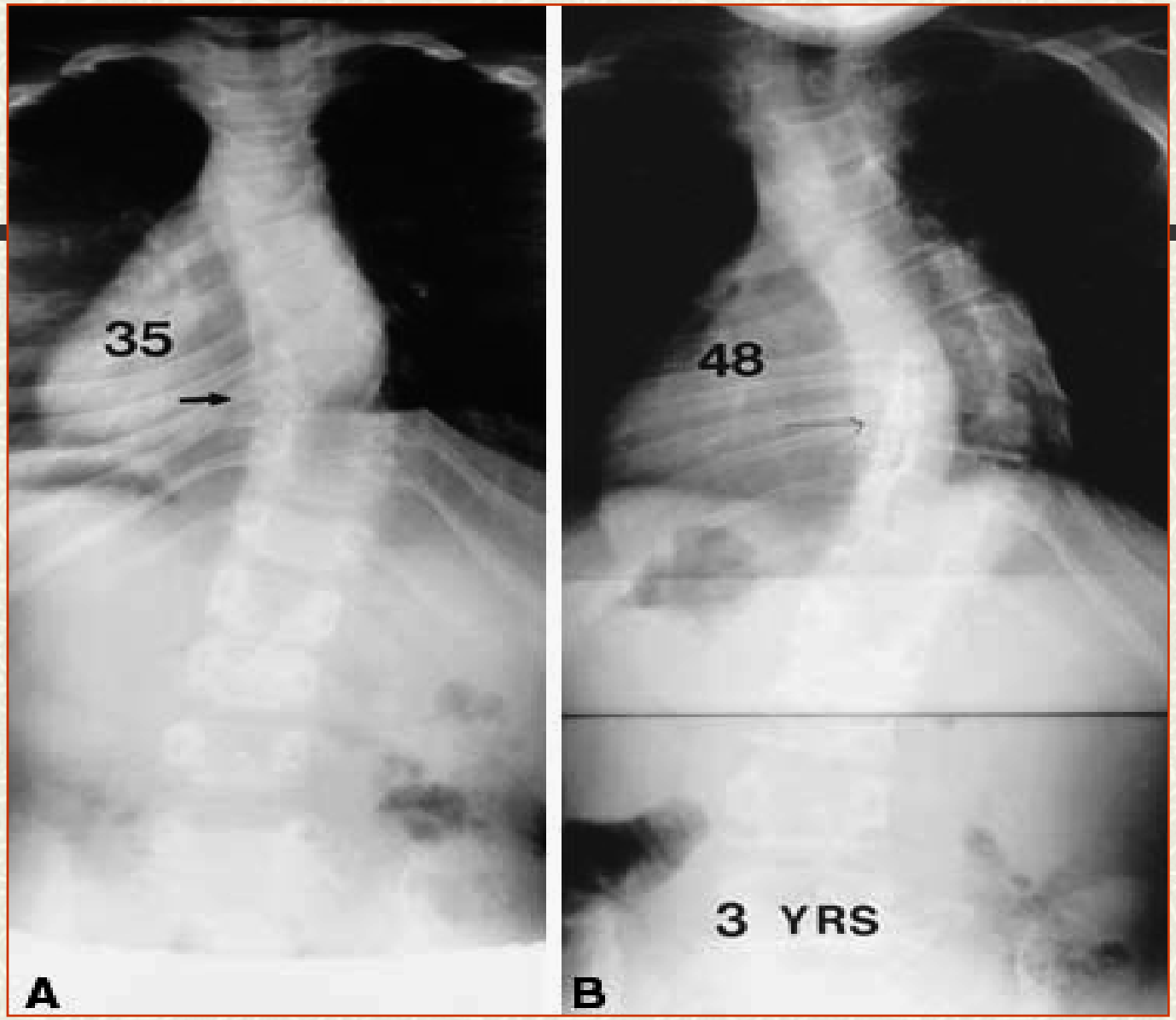
- Control compansatory curve

- No evidance in affection the prognosis

- Can be fitted to 2 years old child.



Watching congenital scoliosis grow is not the solution.


35
48
3 YRS
A
B

Surgical treatment

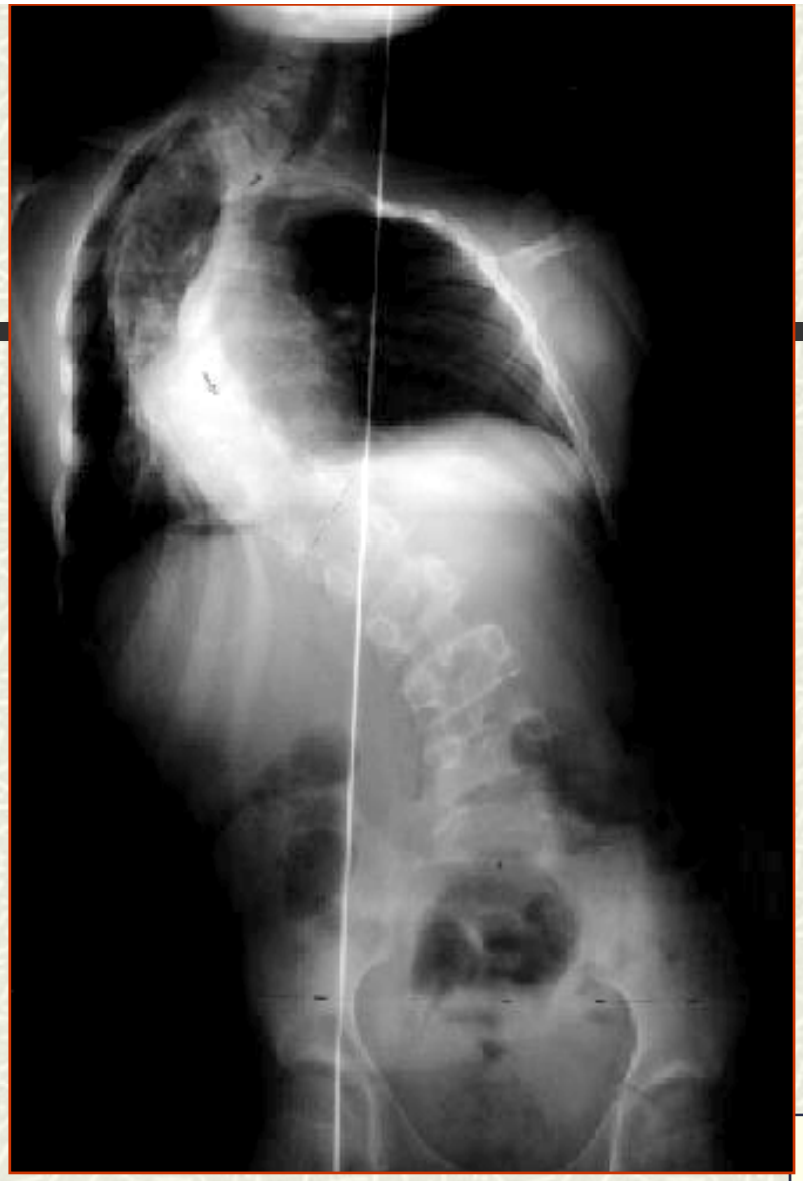
1- Insitu ant. and post fusion

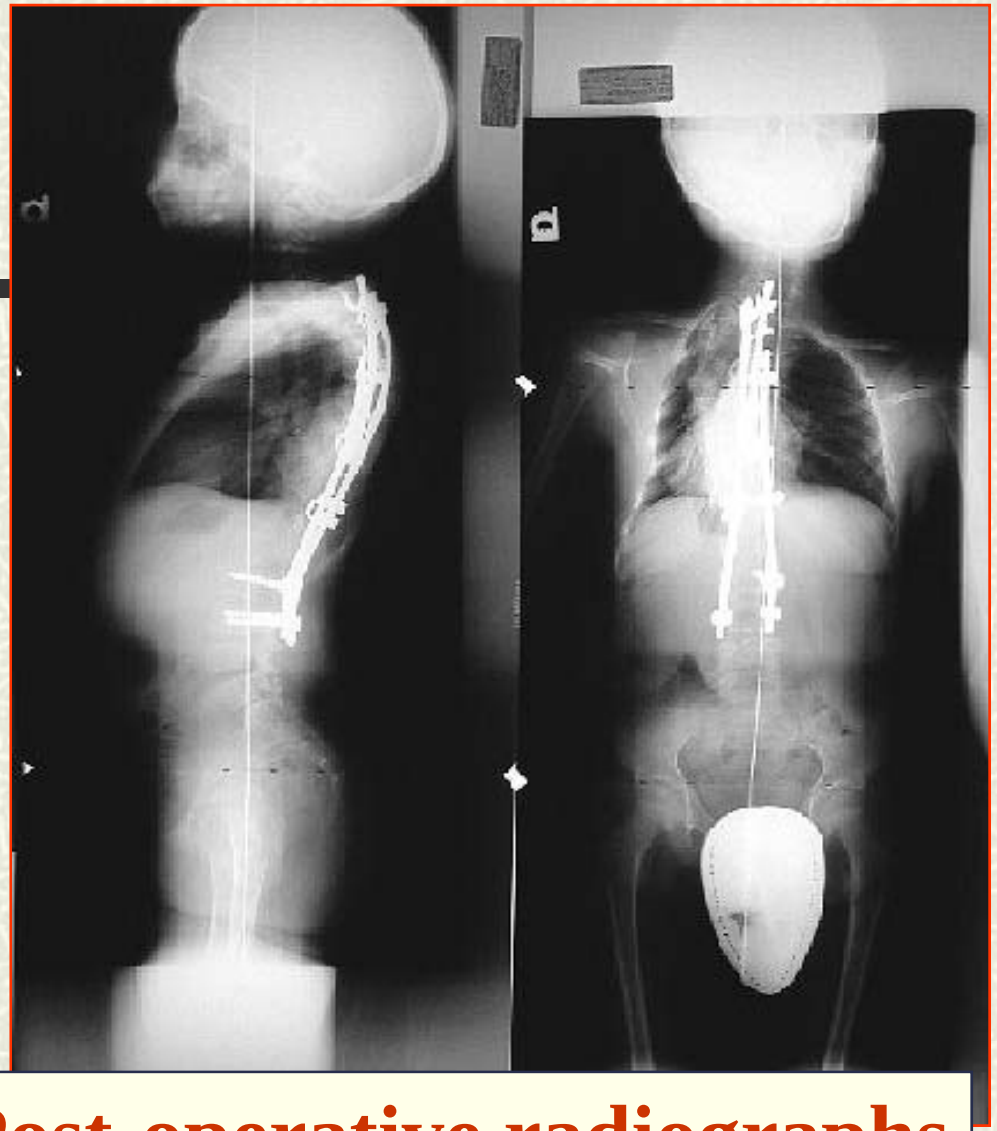
In minimal to moderate deformity

2- Ant. and post unilateral epiphseodesis on the convex side.

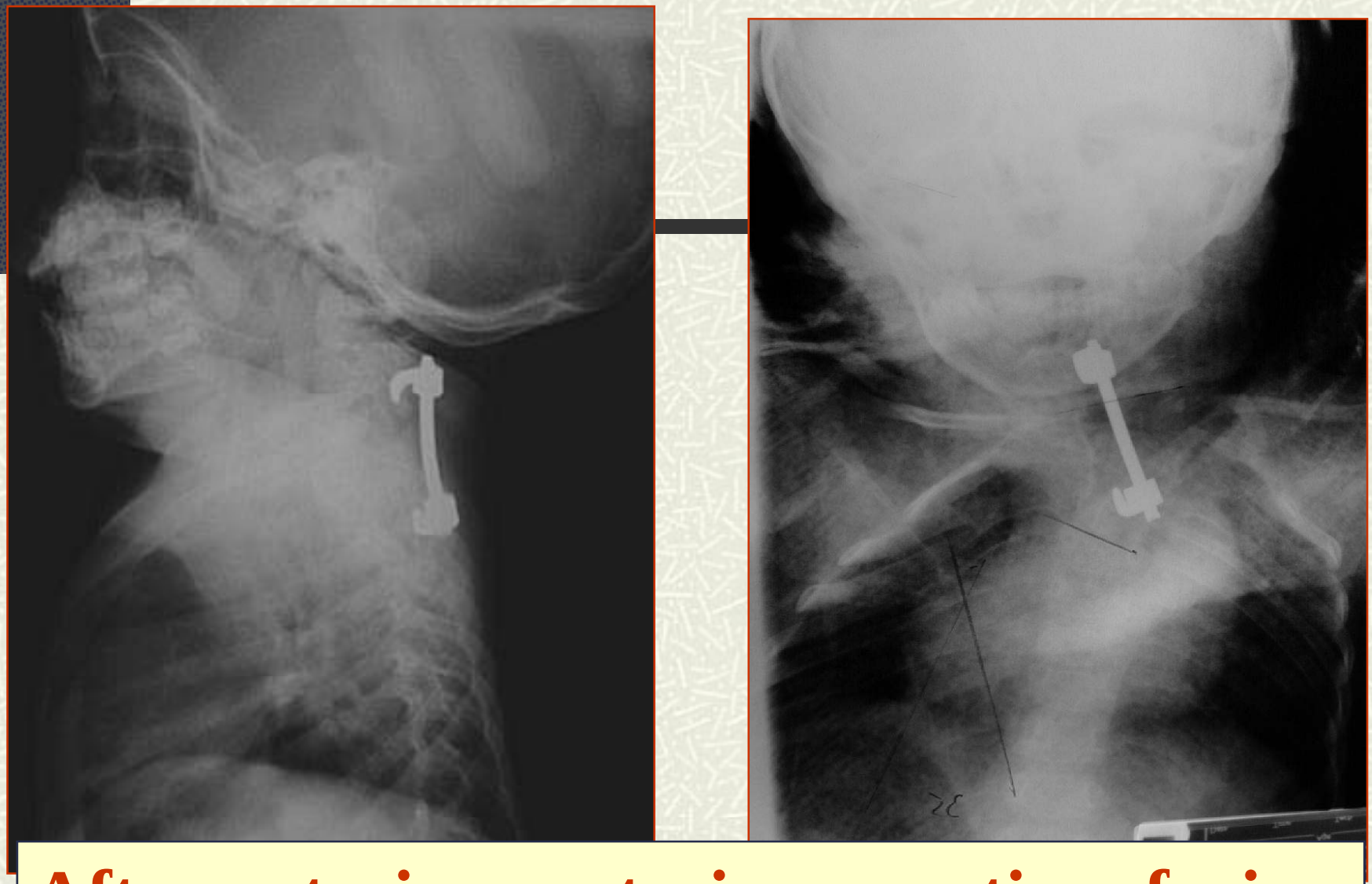
3- Staged correction of the curve followed by fusion

4- excision of the hemivertebra



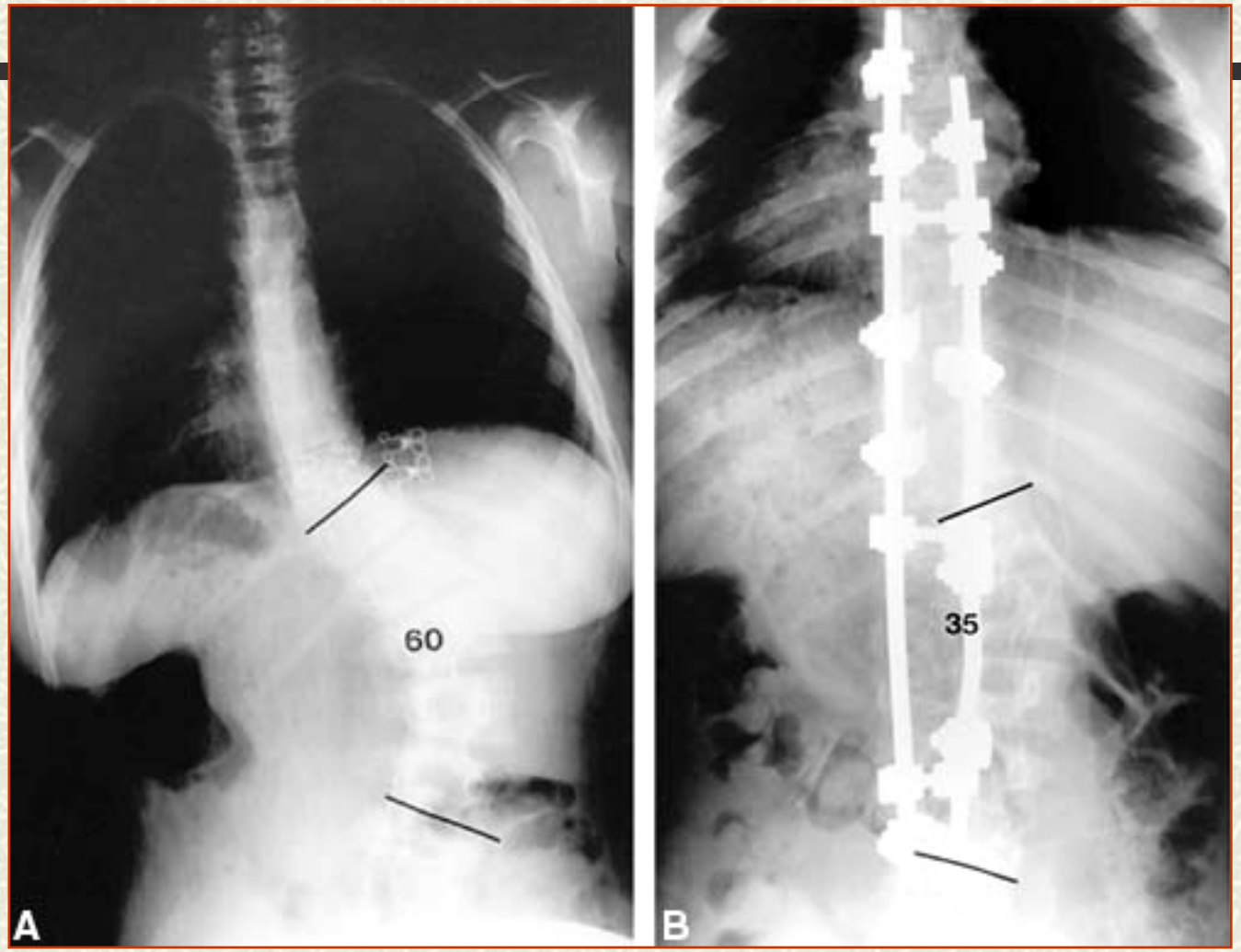


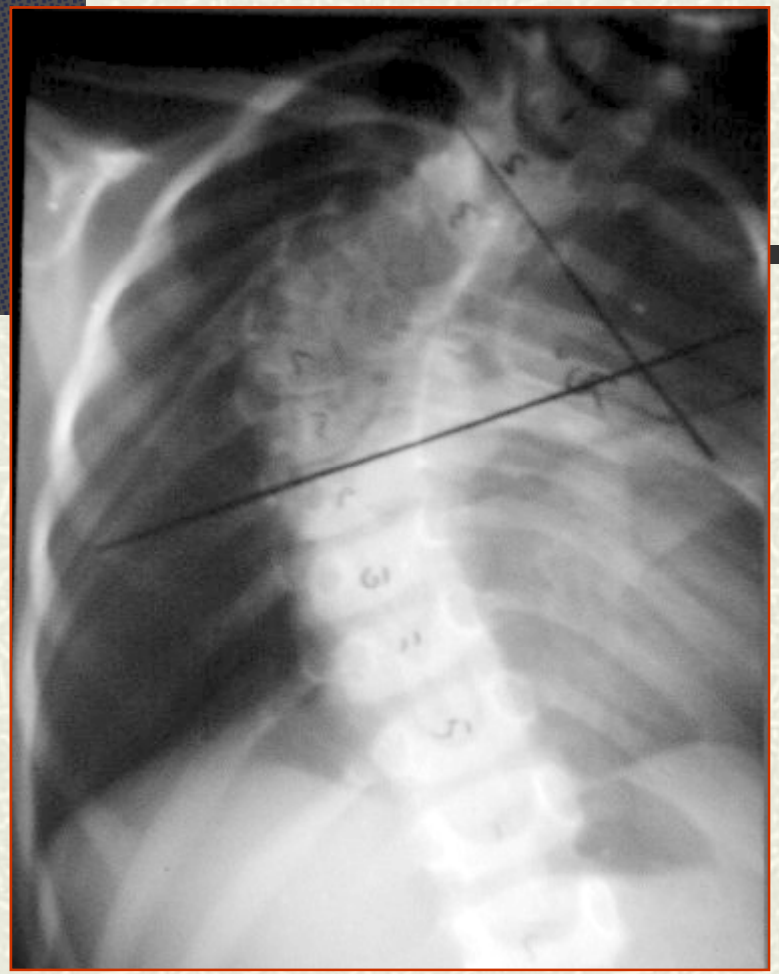
Post-operative radiographs

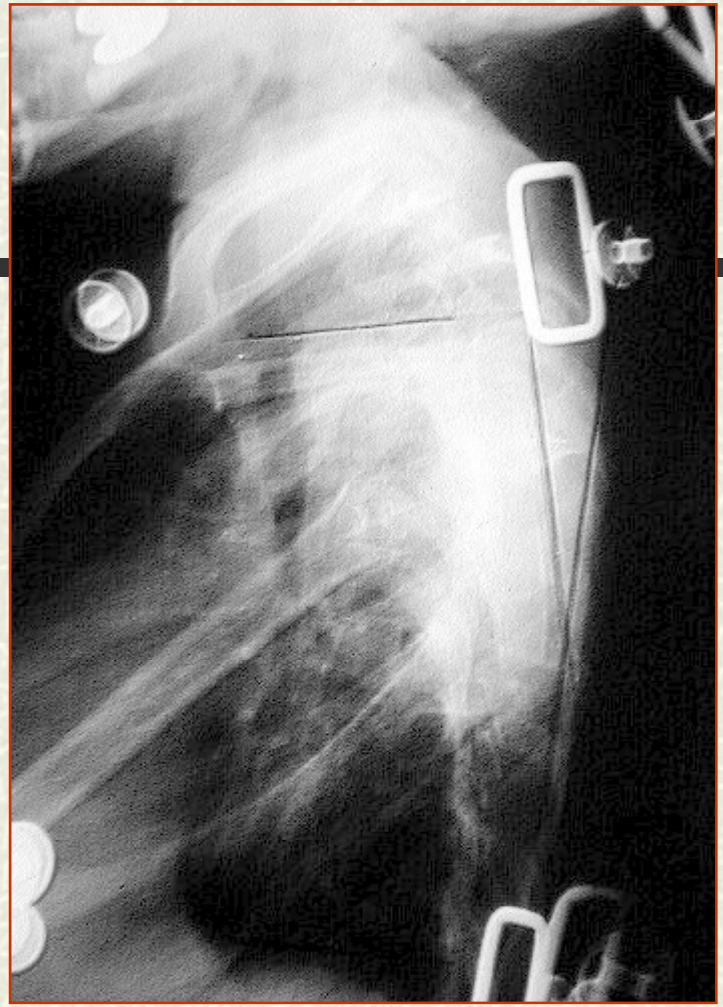


After anterior-posterior resection, fusion

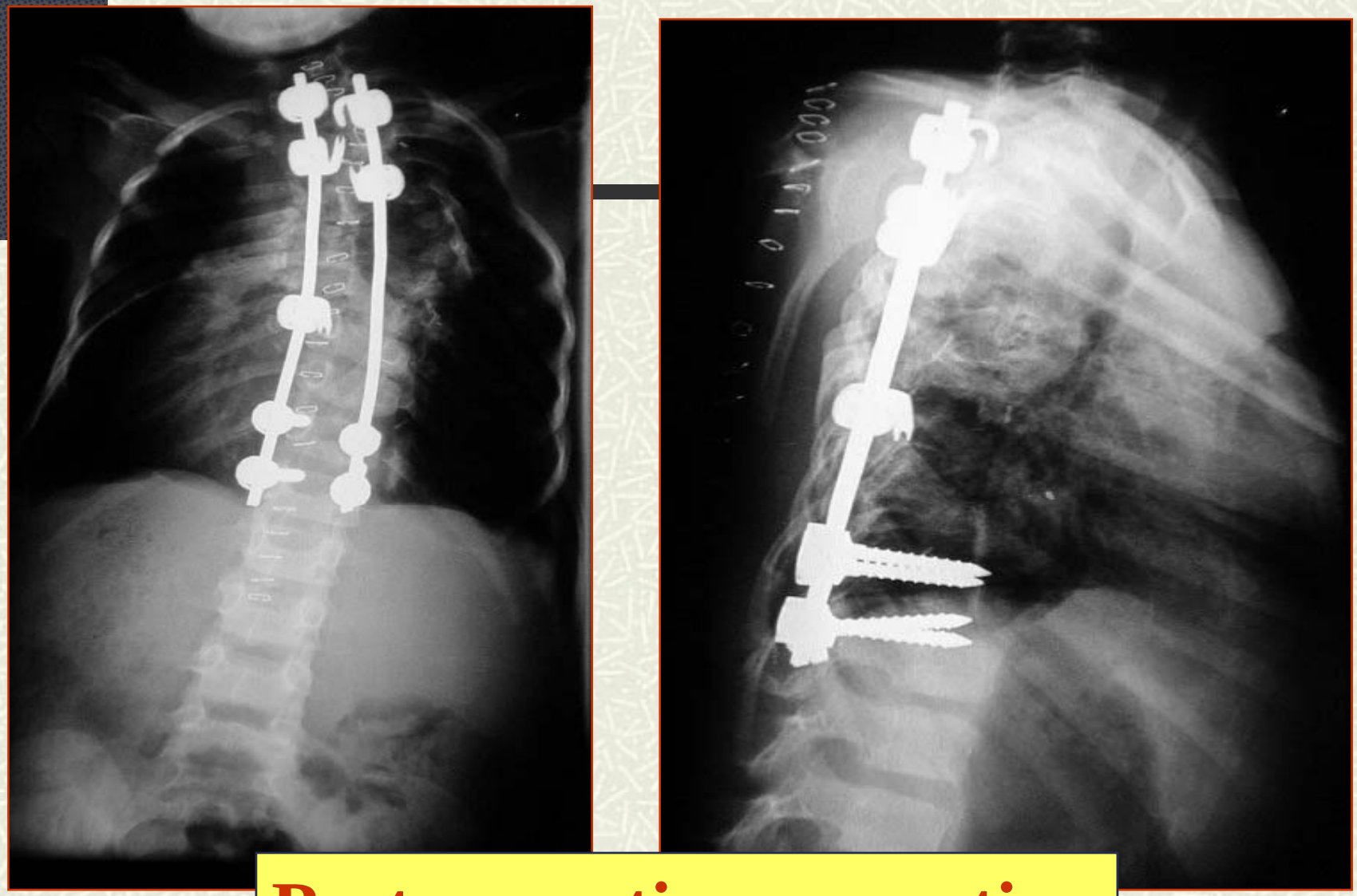
VERTEBRAL EXCISION



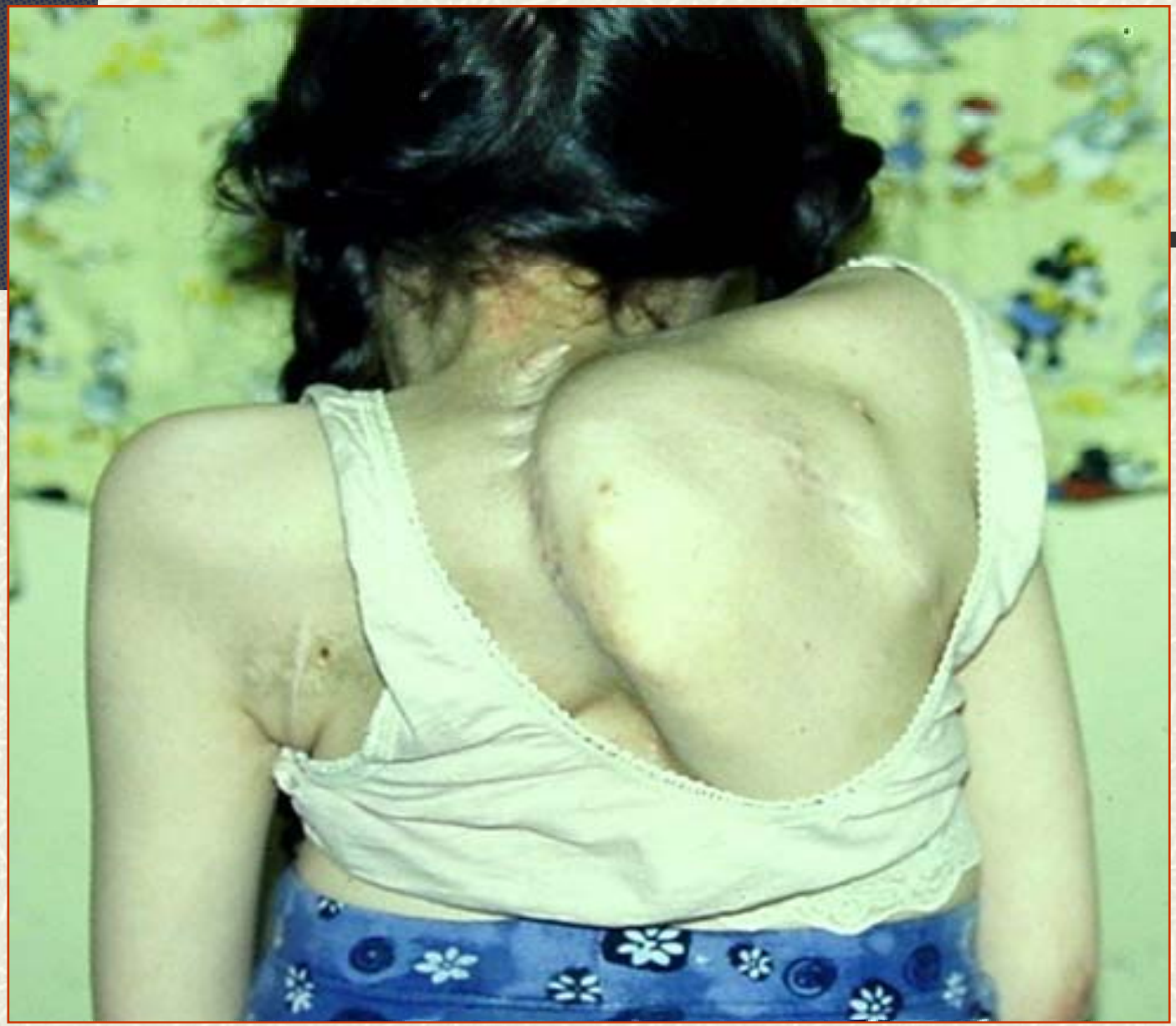


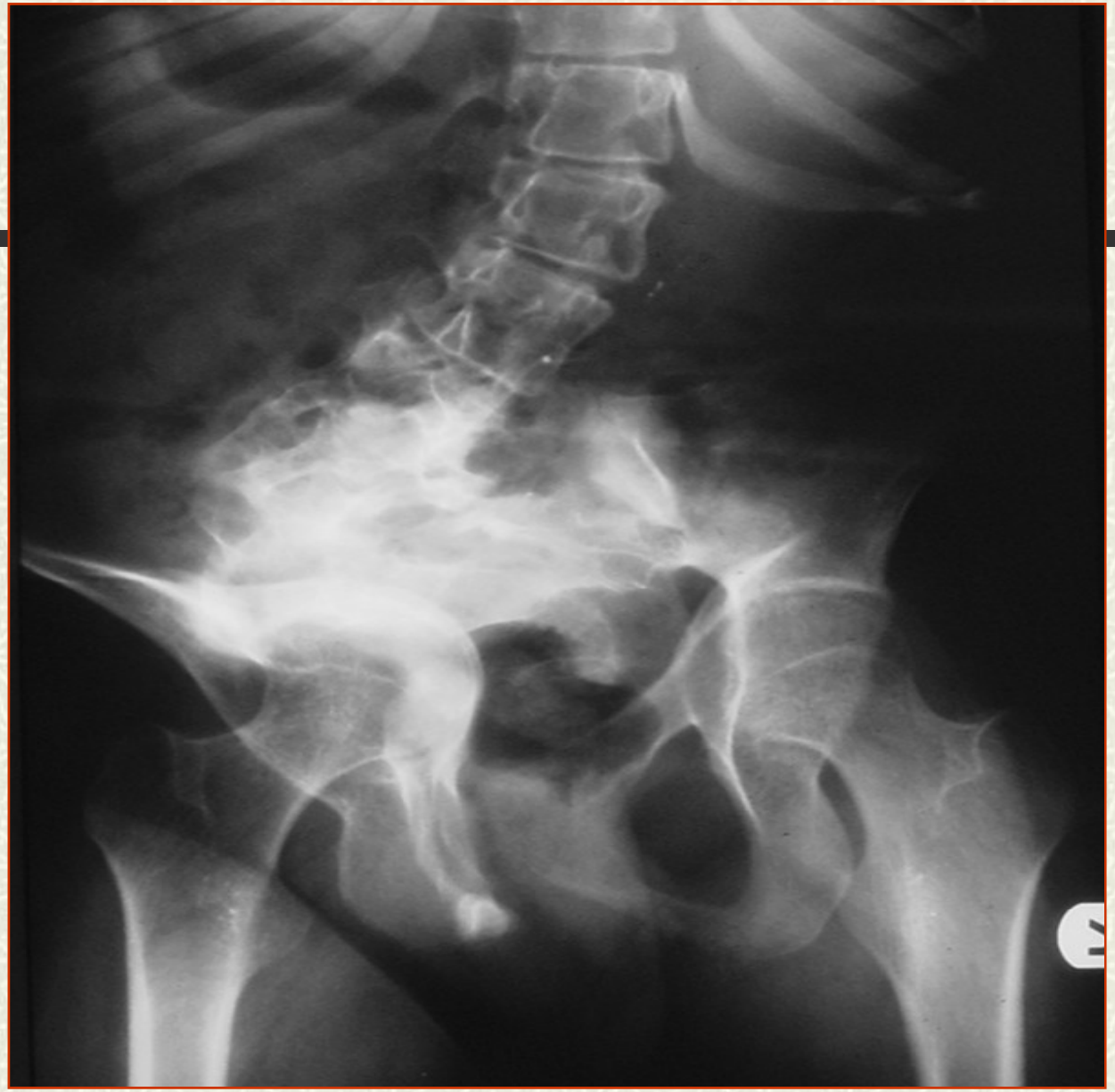


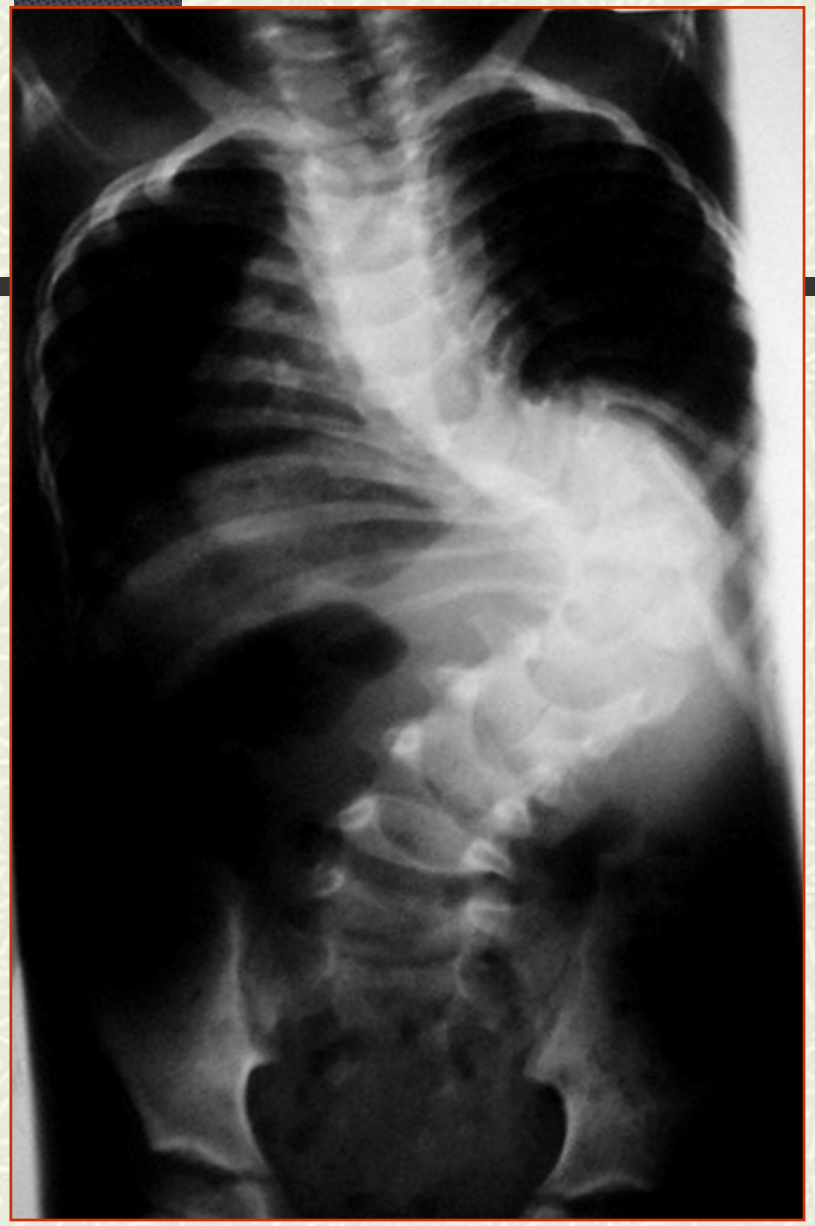
Posterior “in situ” fusion sets the stage for “Crank Shaft Phenomenon”

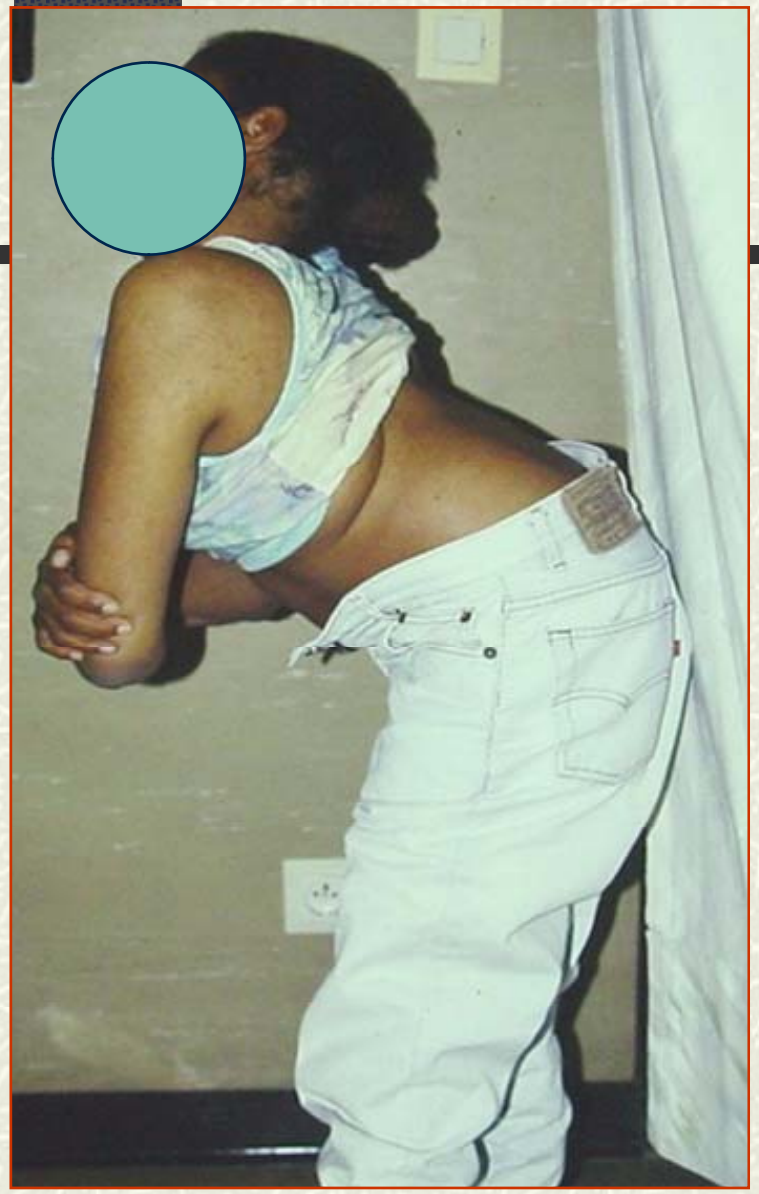


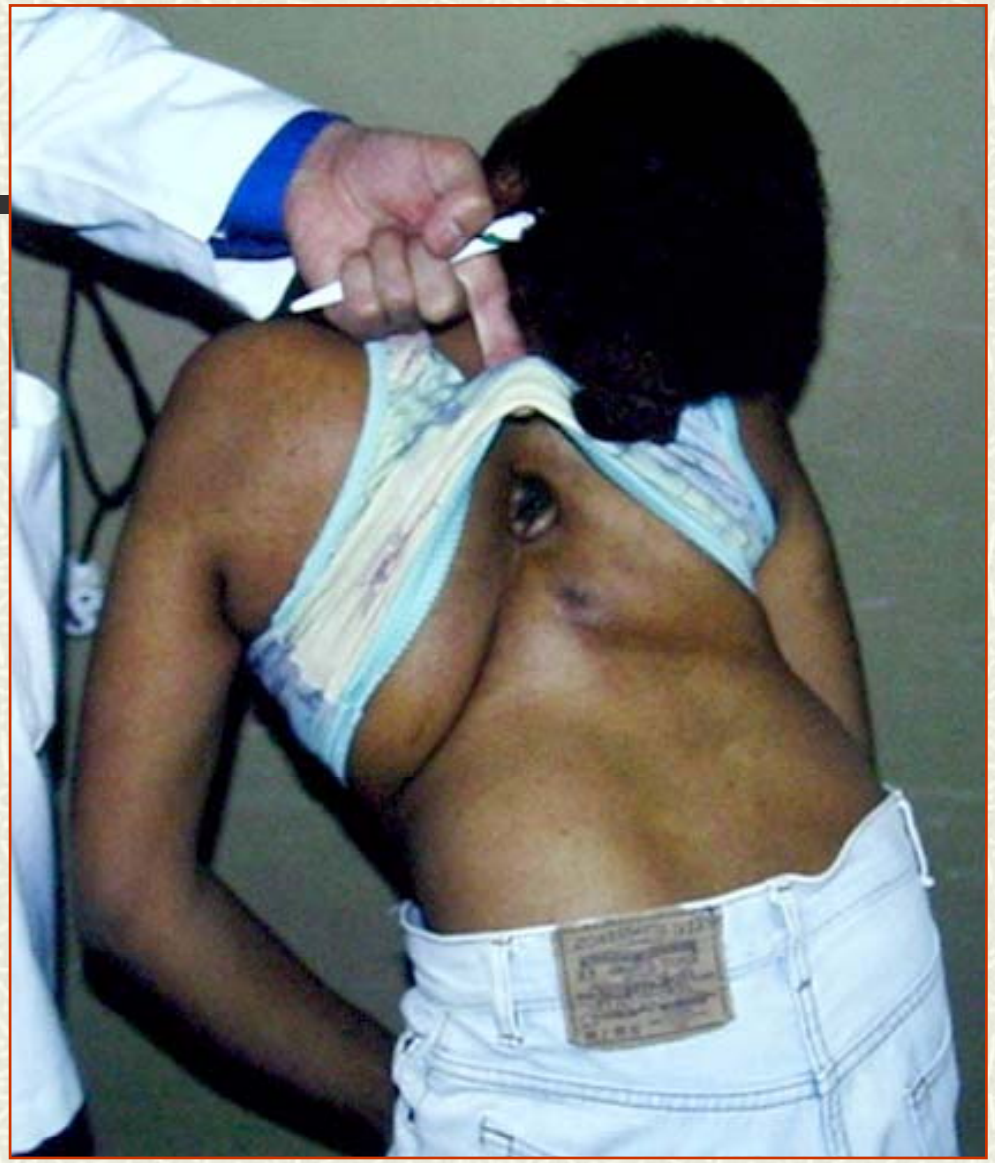
Post-operative correction





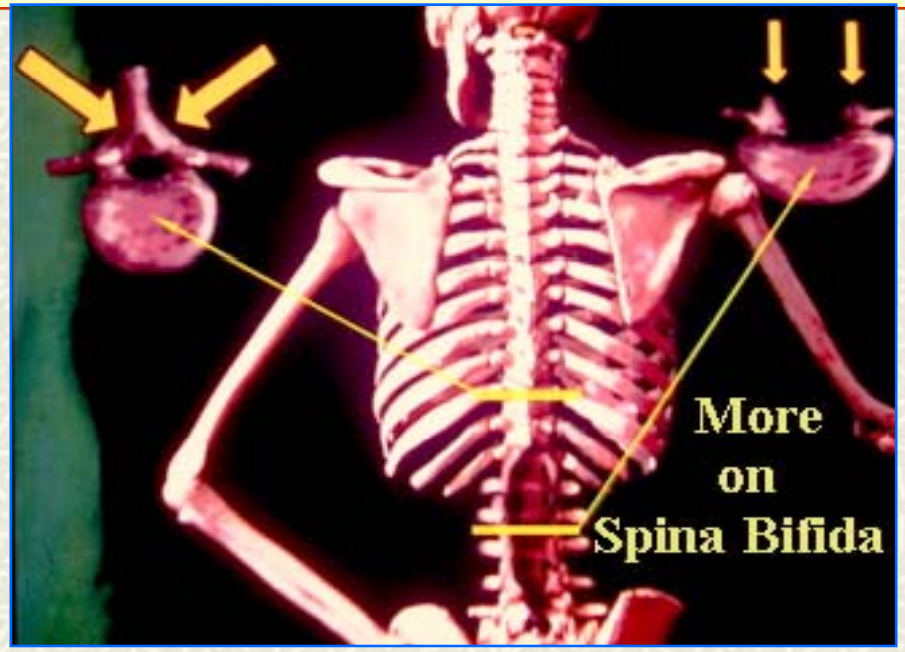






SPINA BIFIDA

Spina Bifida refers to incomplete closure of the laminar arches of the spine.



Genetics

not known.
However, the risk of occurrence in first-degree relatives is slightly increased → 3.2%.
The incidence of spina bifida occulta is 2-3%.

Signs

Signs-local:

1- Dimple to hairy patch.
2- Vascular marking.
3- Fatty mass (lipomeningocele).
4- Exposure of the meninges (myelomeningocele)

Signs-distant

1-Motor weakness,

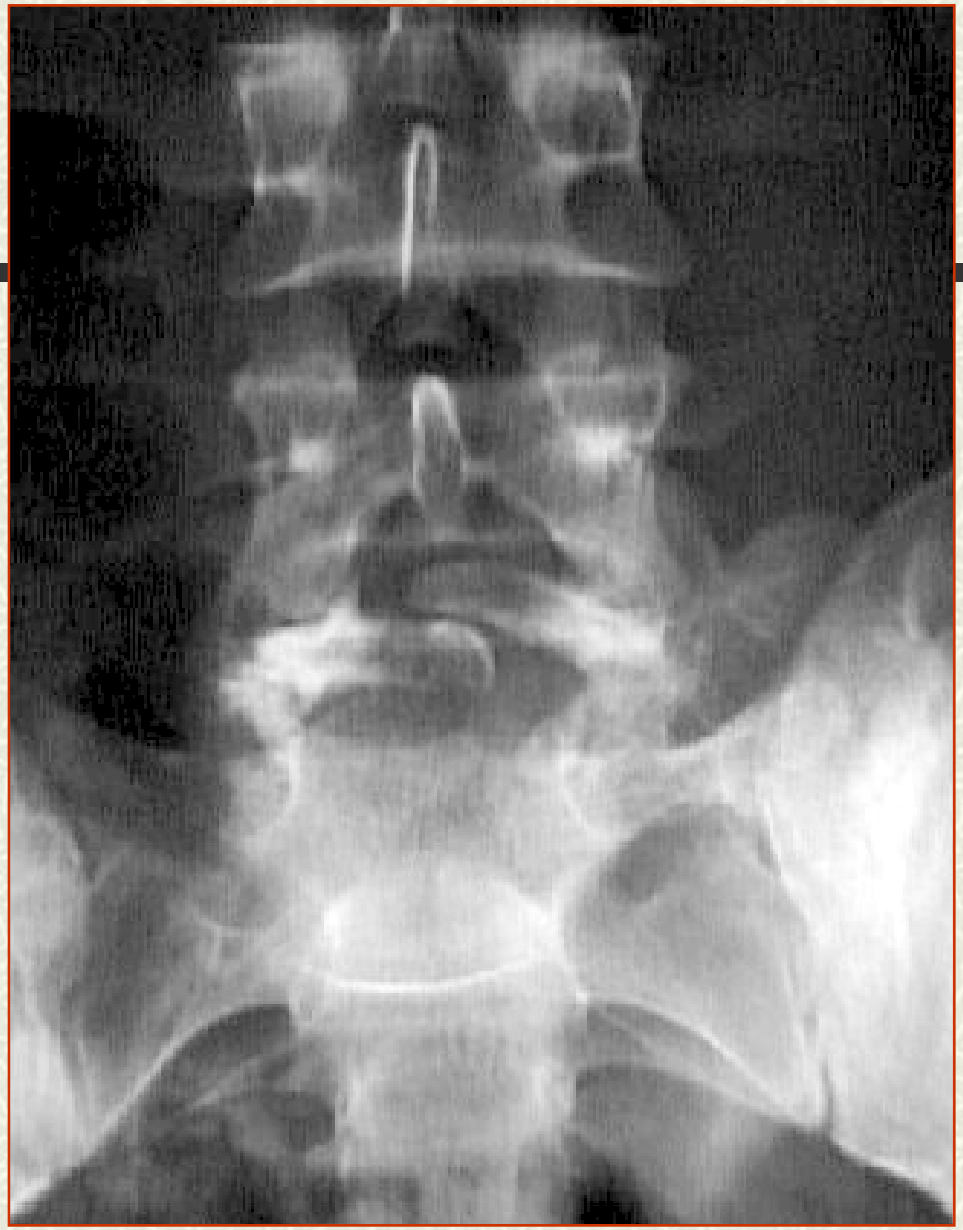
2-Atrophy of calf or thigh

3-Neurogenic bladder.

Classifications

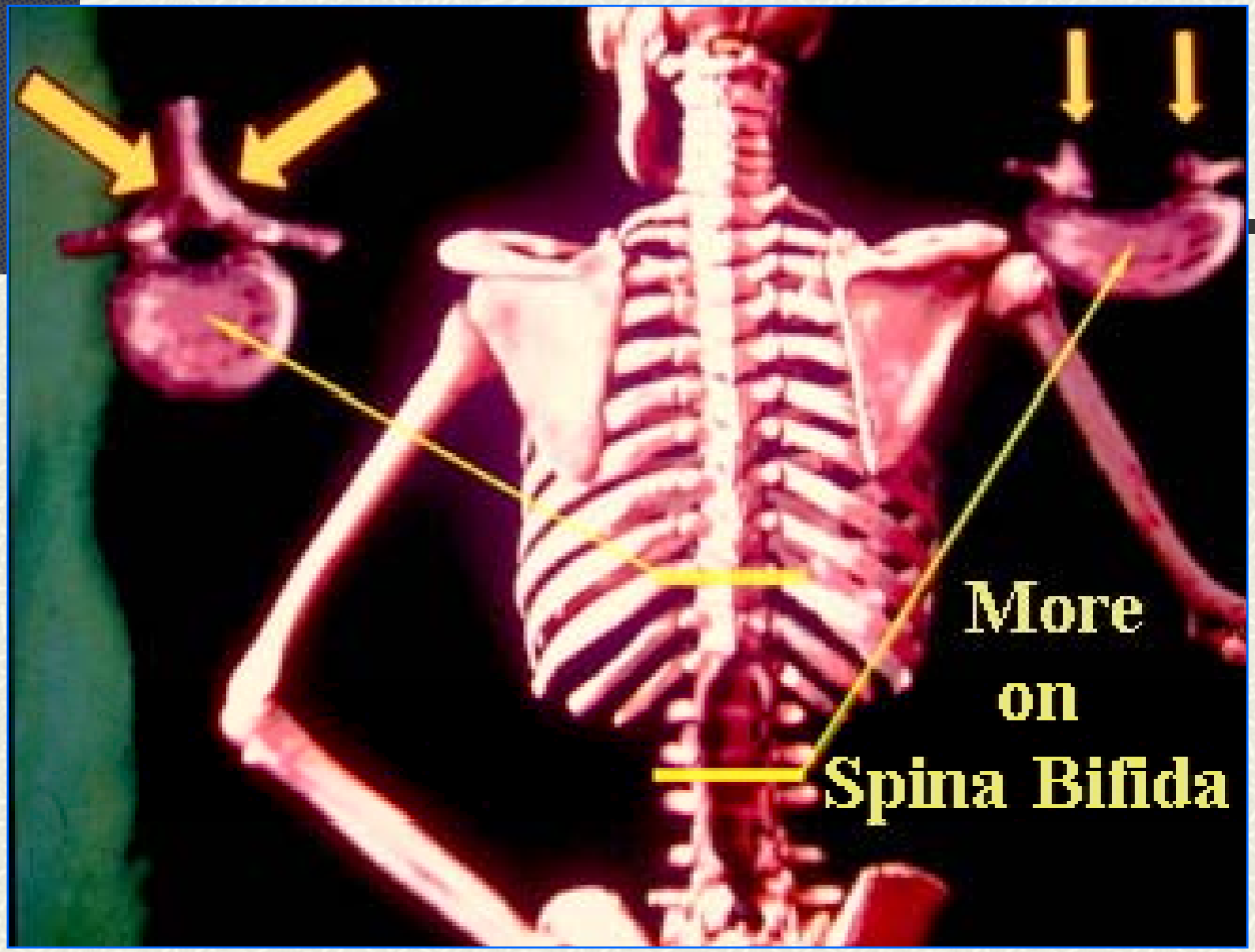
1- Simple (occulta)

At the L5, S1 with no neurologic deficit. The only associated problem is a slightly increased risk of spondylolisthesis.



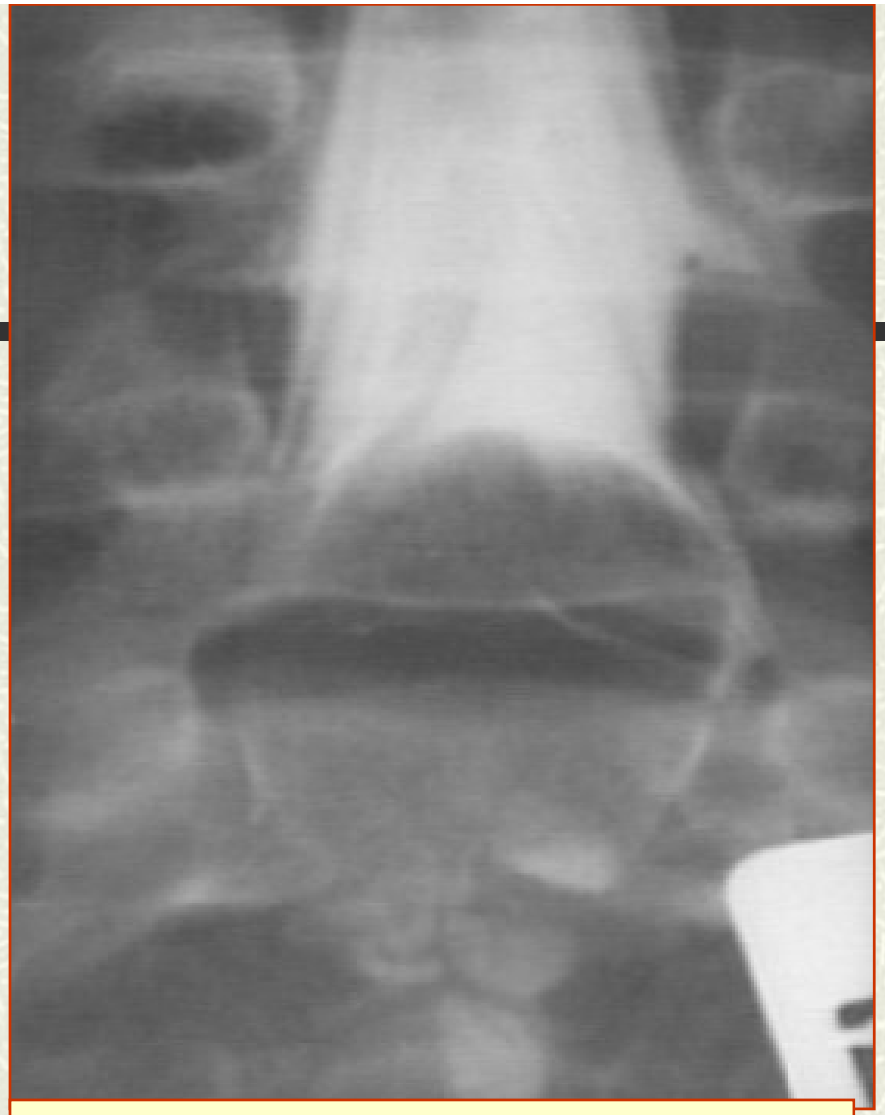
2-Myelomeningocele:

Bony defect, usually involving several missing laminae, with exposed meninges and usually some neurologic deficit at the same level.


More
on
Spina Bifida

3-Lipomeningocele

Caudal fatty mass arising from spinal canal, palpable under the skin, with associated neurologic deficit but no significant risk of hydrocephalus



Lipomeningocele

Causes

1- Unknown.

Involves either failure of closure of the neural tube or its late rupture.

2- Folate def.

3- Congenital defect

Overview of Care

At birth, the child should be seen by

1-Neurologist,

2- Neurosurgeon,

3-Orthopaedic surgeon

4- Urologist .

Also:

= Latex exposure should be avoided.

= Genetic counseling should be offered to the family

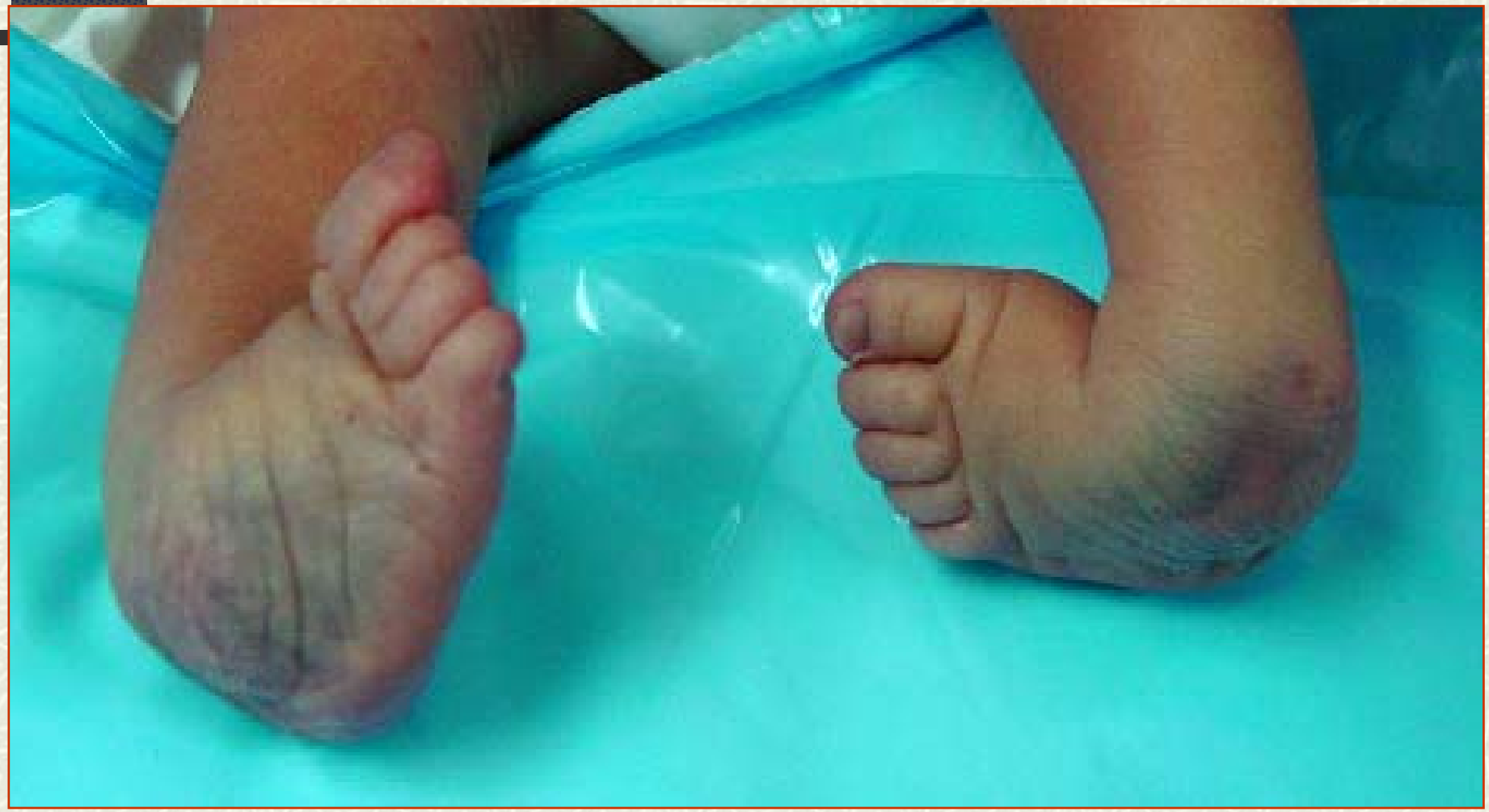
Surgery

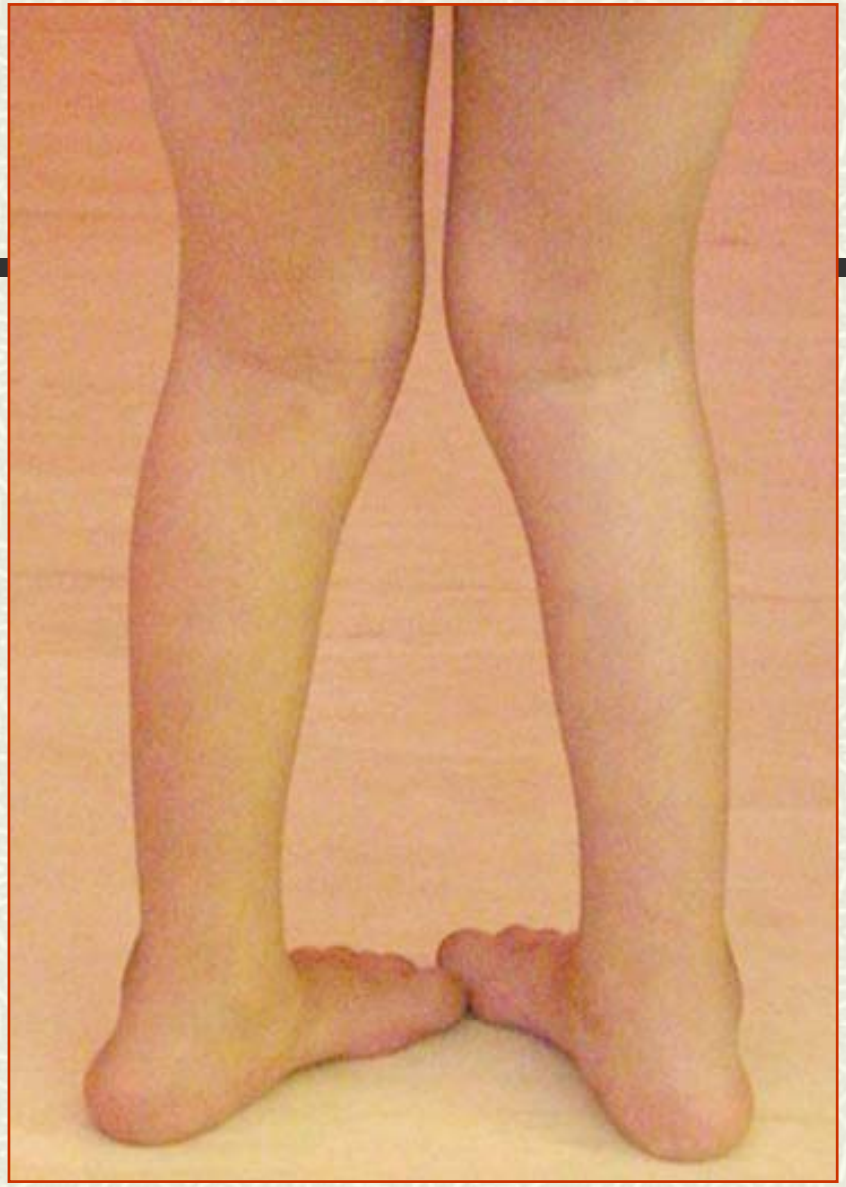
Clubfoot surgery

Lengthen tendons and realign bones to create a foot which will be flat on the ground.

Spine surgery

indicated if unbalanced and impairing sitting: straighten and fuse spine using implanted rods.





General Measures

1-Monitor motor strength and sensory level and record throughout life in order to detect tethering or other complication.

General Measures

2-Treat other deformities by stretching , bracing or surgery.
3-Teach family how to protect skin.

4-Hip subluxation do not need surgery: especially if high and bilateral in a nonambulator

Complications of Spina bifida

1-Cord tether at site of opening causing weakness with growth.

2-Fracture- risk is higher with higher neurologic deficit.

Signs include low-grade fever, swelling, and warmth without much pain.

3-Pressure sore over insensate skin, especially of ischium, foot or trochanter.

4-Renal failure due to poor self-care.

NEUROMUSCULAR SCOLIOSIS

Neuromuscular diseases are a group of disorders characterized
lack of normal function of the brain, spinal cord, peripheral nerves, neuromuscular junctions, or muscles.

Classification of neuromuscular spinal deformity

NEUROPATHIC

UMNL

- **Cerebral palsy**
- **Friedreich ataxia**
- **Charcot-Marie-Tooth**
- **Syringomyelia**
- **Spinal cord tumor**
- **Spinal cord trauma**

Classification of neuromuscular spinal deformity

LMNL

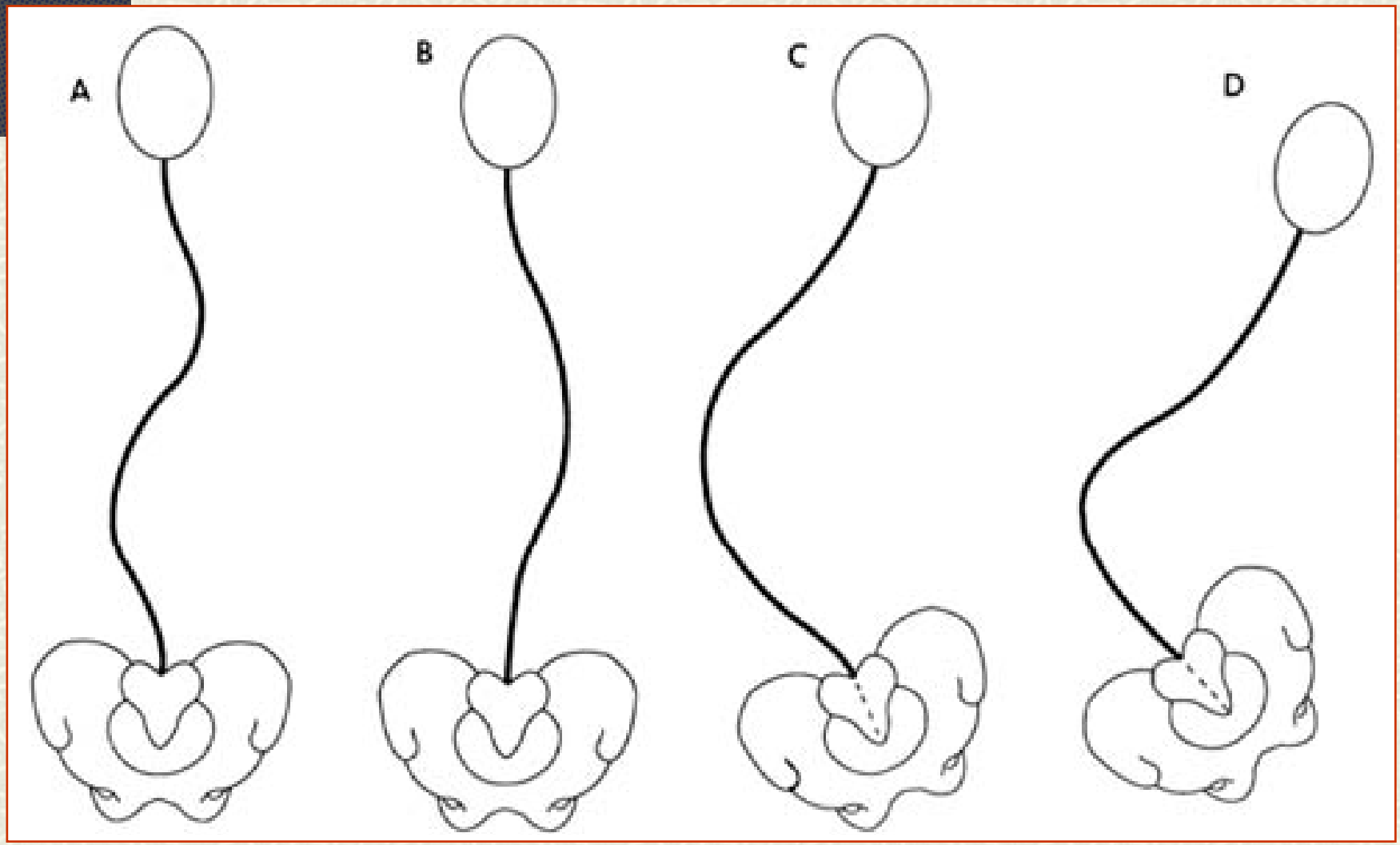
- Poliomyelitis
- Traumatic
- Spinal muscle atrophy
- Werdnig-Hoffmann
- Kugelberg-Welander
- Dysautonomia (Riley-Day syndrome)

Classification of neuromuscular spinal deformity

MYOPATHIC

- Arthrogryposis
- Muscular dystrophy
- Duchenne
- Limb-girdle
- Facio-scapulo-humeral
- Congenital hypotonia
- Myotonia dystrophica

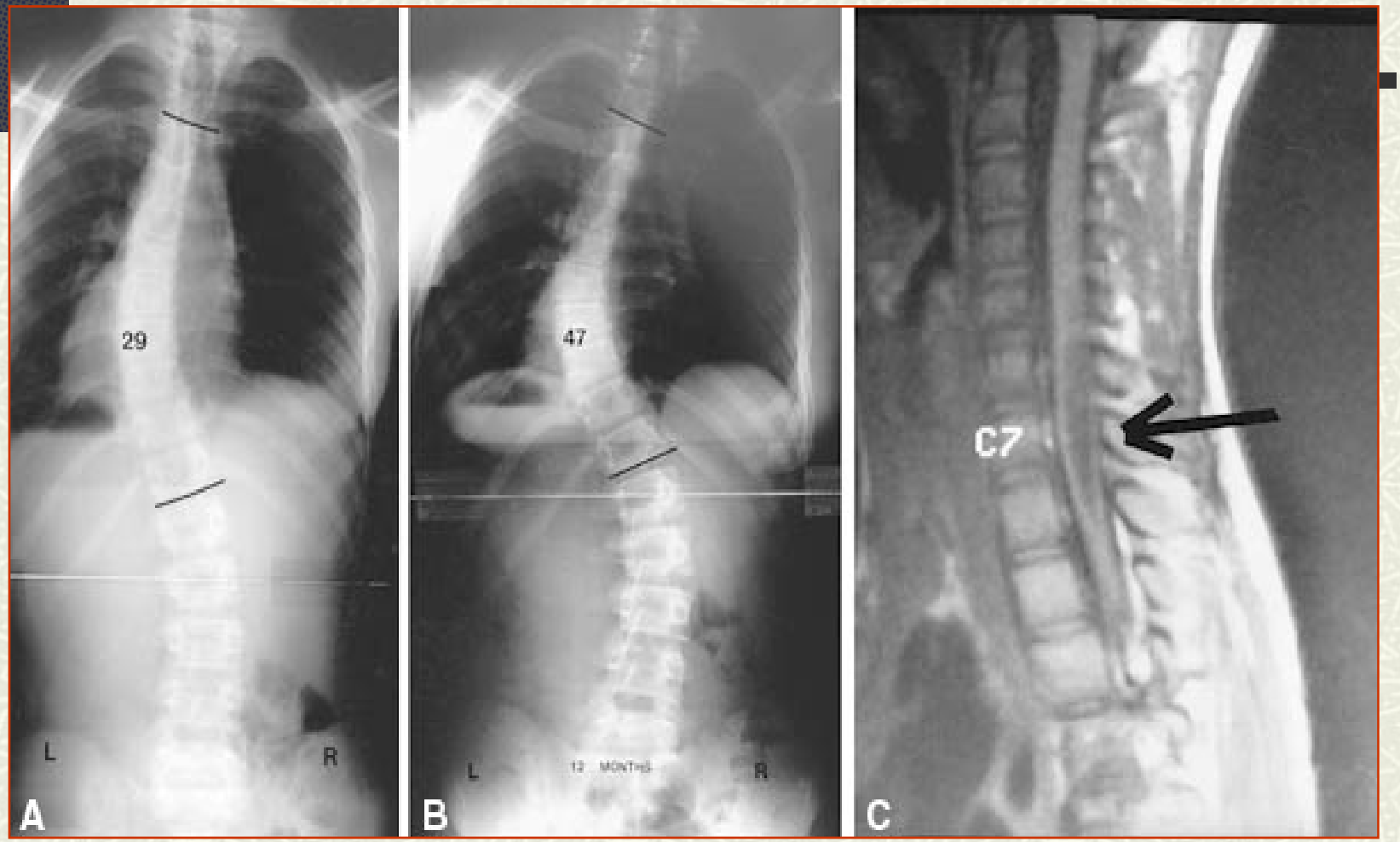
Neuromuscular curves



Pelvic obliquity

1-Loss of sitting balance
2-Ribs impinge on the iliac crest
3-Decubitus ulcers over the ischium
4-Progressive pulmonary deficiet due to chest deformity
5-Hip contracture, subluxation, or dislocation

Syringomyelia

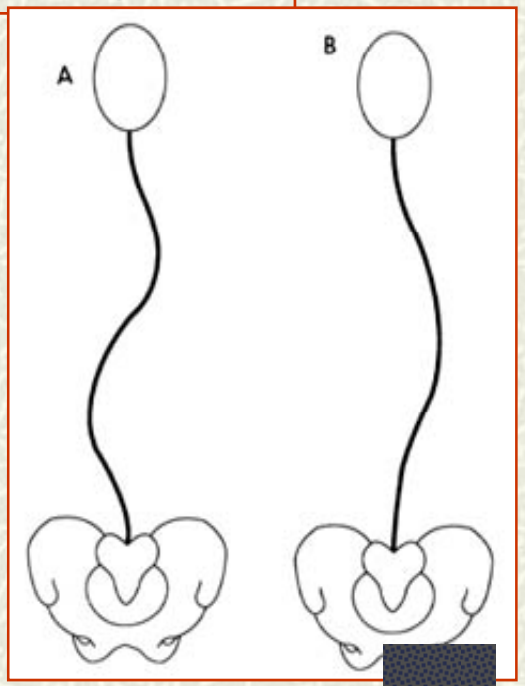


Treatment

Brace is not effective at all.

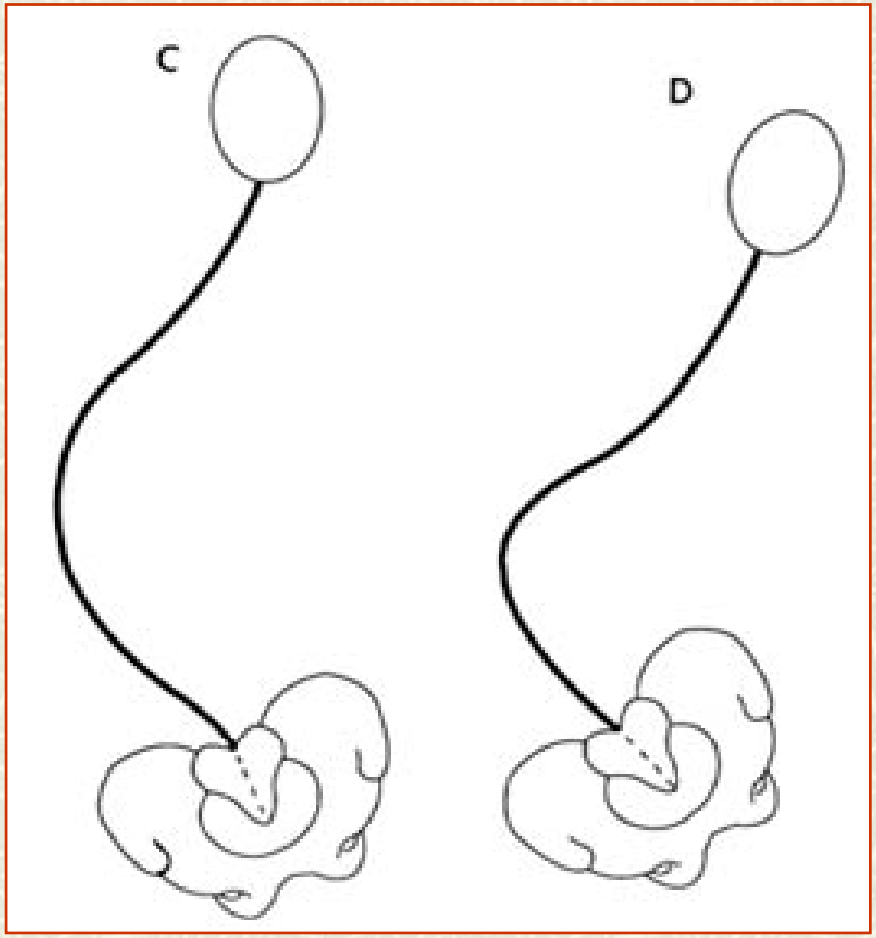
Operation if the curve > 25 degree

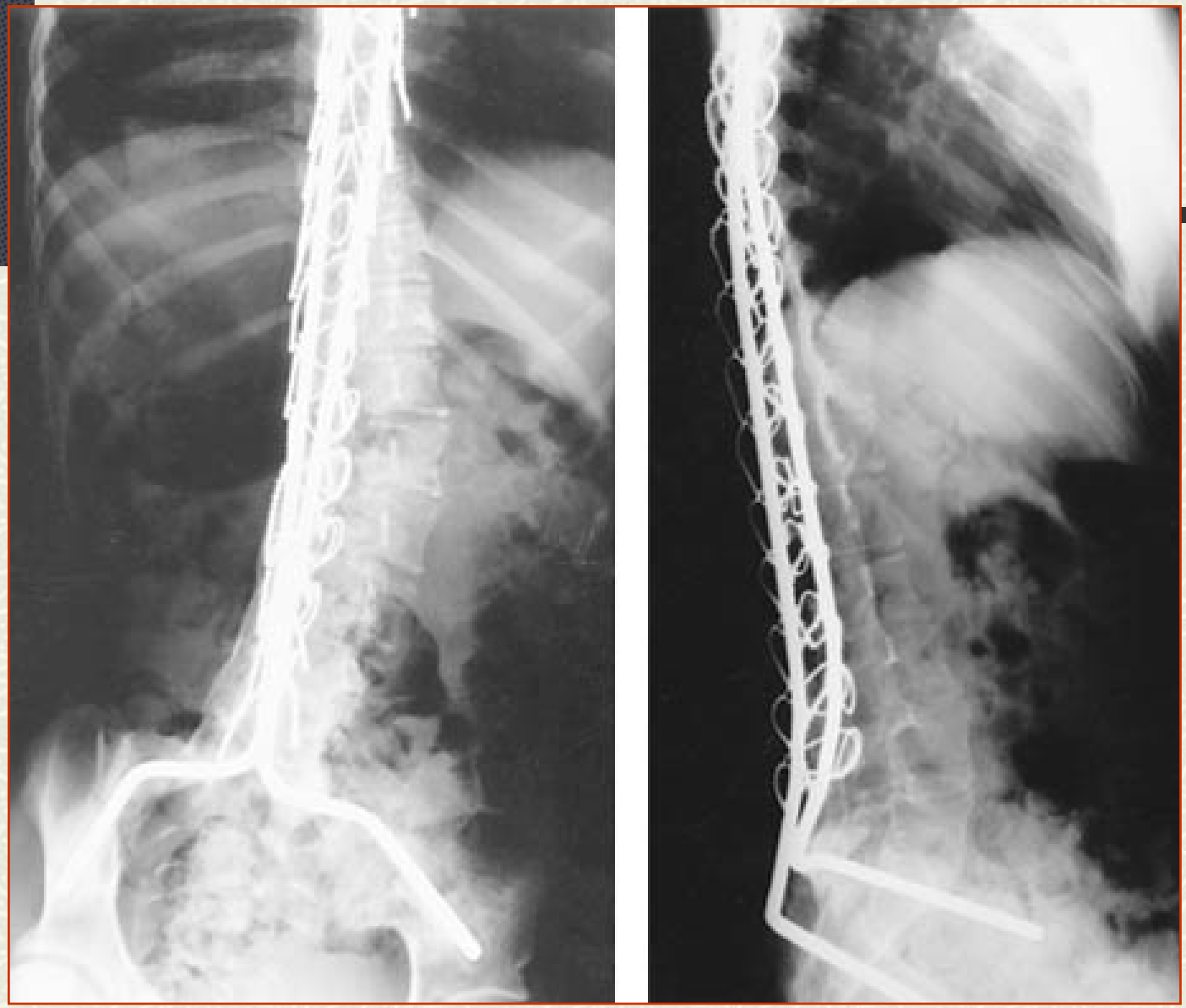
If not involving the sacrum treat as idiopathic

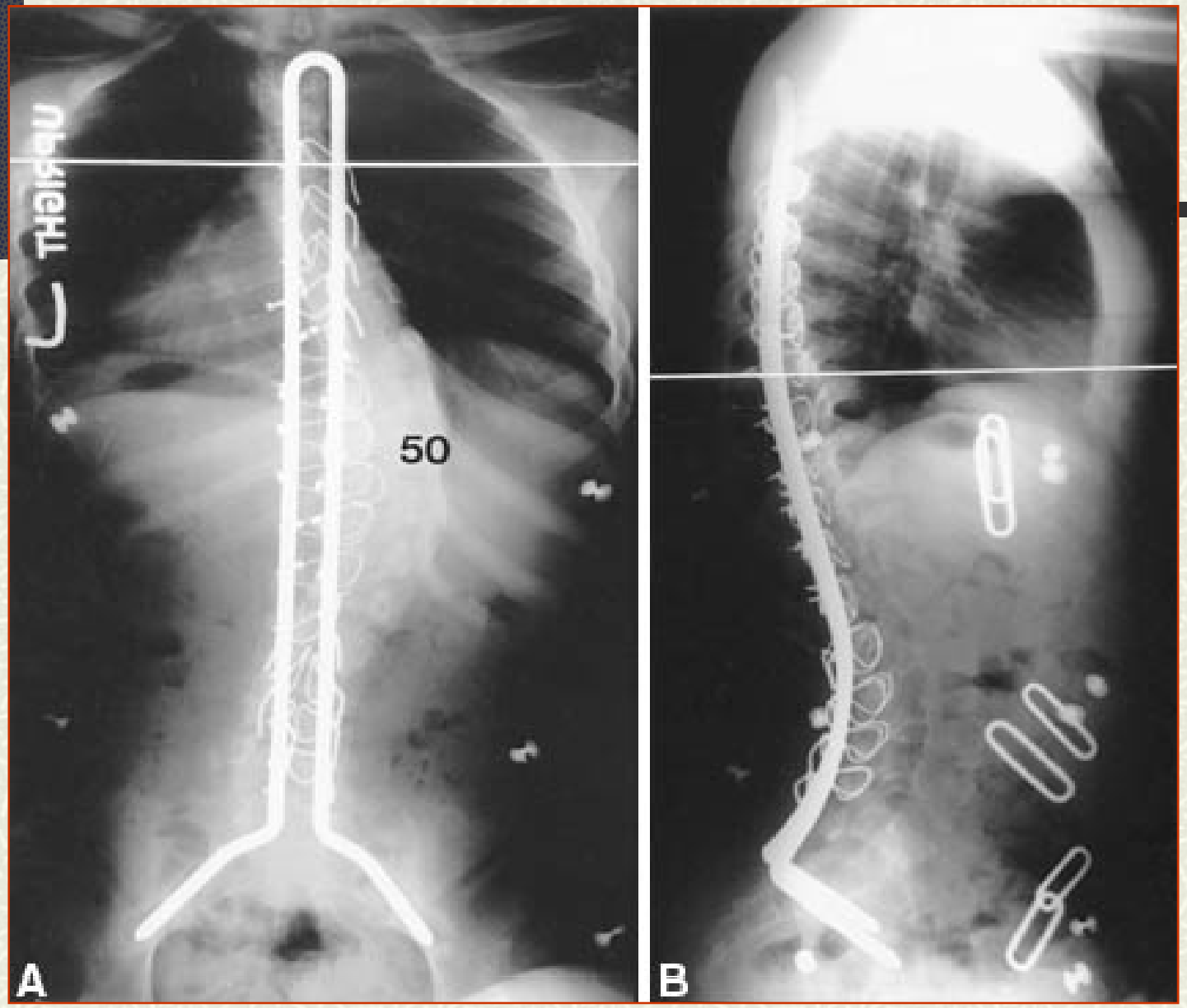


If involving the sacrum→ pelvic obliquity

Fuse all the spine






RIGHT
50
A
B