Early onset scoliosis

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Early onset scoliosis – deformity before 5yrs of age

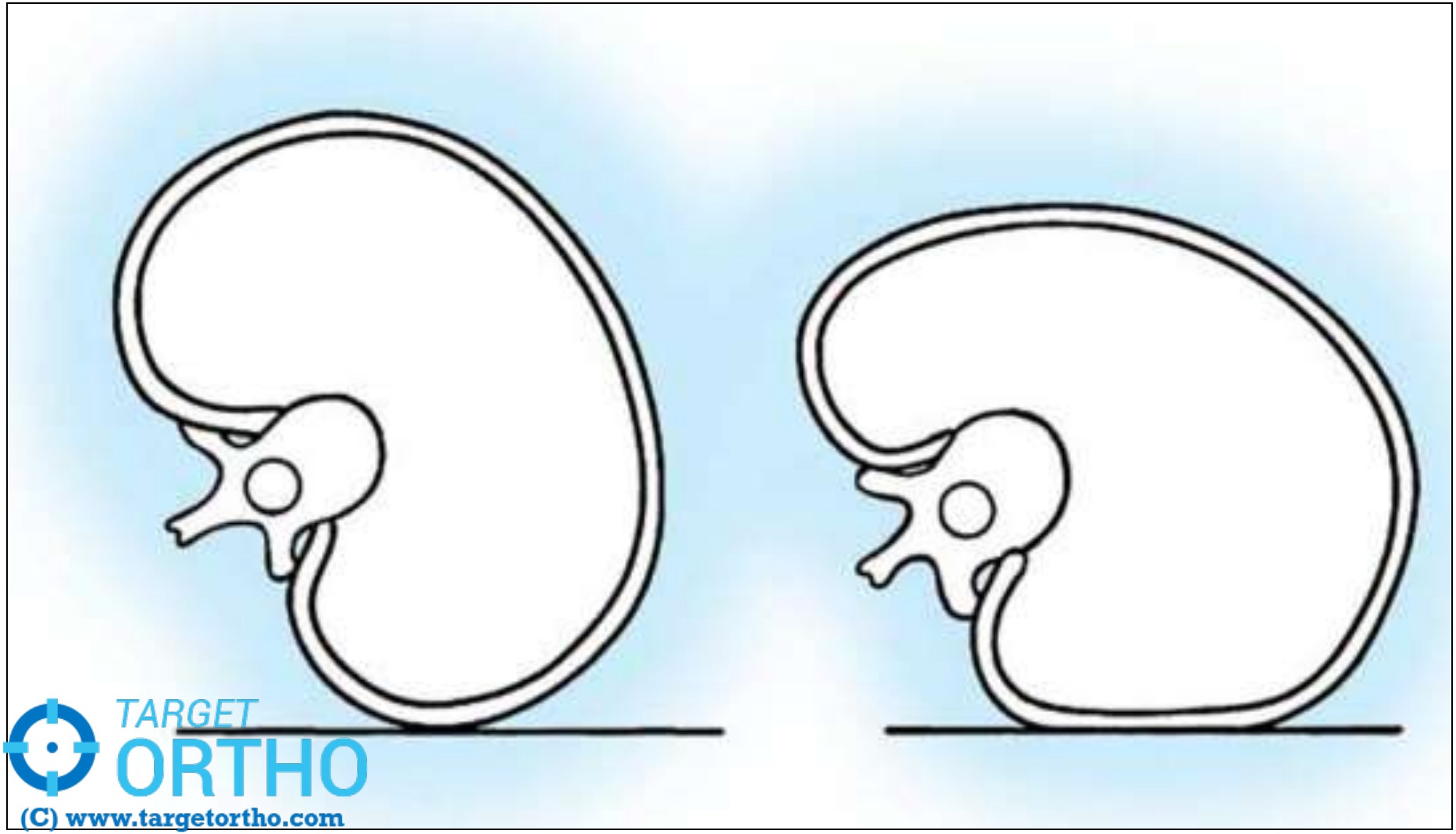
- Treatment principles resemble b/w 5 to 10 and < 5 years.

- Now scoliosis less than 10yrs also included in **EOS**

Etiologies

1. Idiopathic.
2. Congenital
3. Neuromuscular
4. Syndromic

Infantile idiopathic scoliosis	0-3 yrs
Juvenile idiopathic scoliosis	4-9 yrs
Adolescent idiopathic scoliosis	10-20 yrs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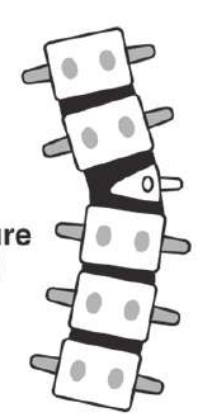
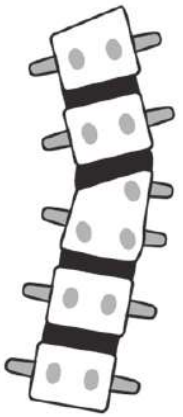
DEFECTS OF FORMATION

Hemivertebra

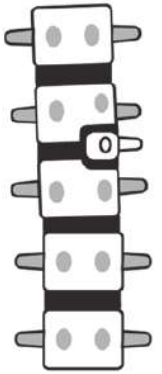
Unilateral complete failure of formation



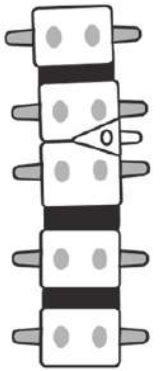
Fully segmented



Semisegmented



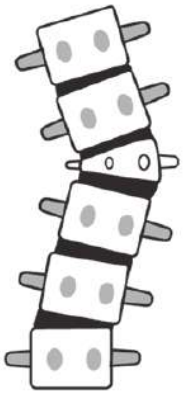
Incarcerated



Nonsegmented

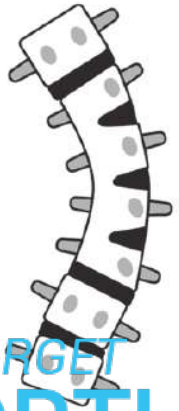
Wedge vertebra

Unilateral partial failure of formation



DEFECTS OF SEGMENTATION

Unilateral Unsegmented Bar

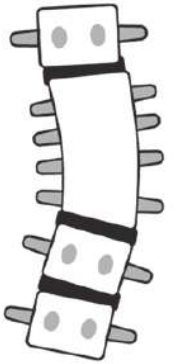


Unilateral Bar and Hemivertebrae

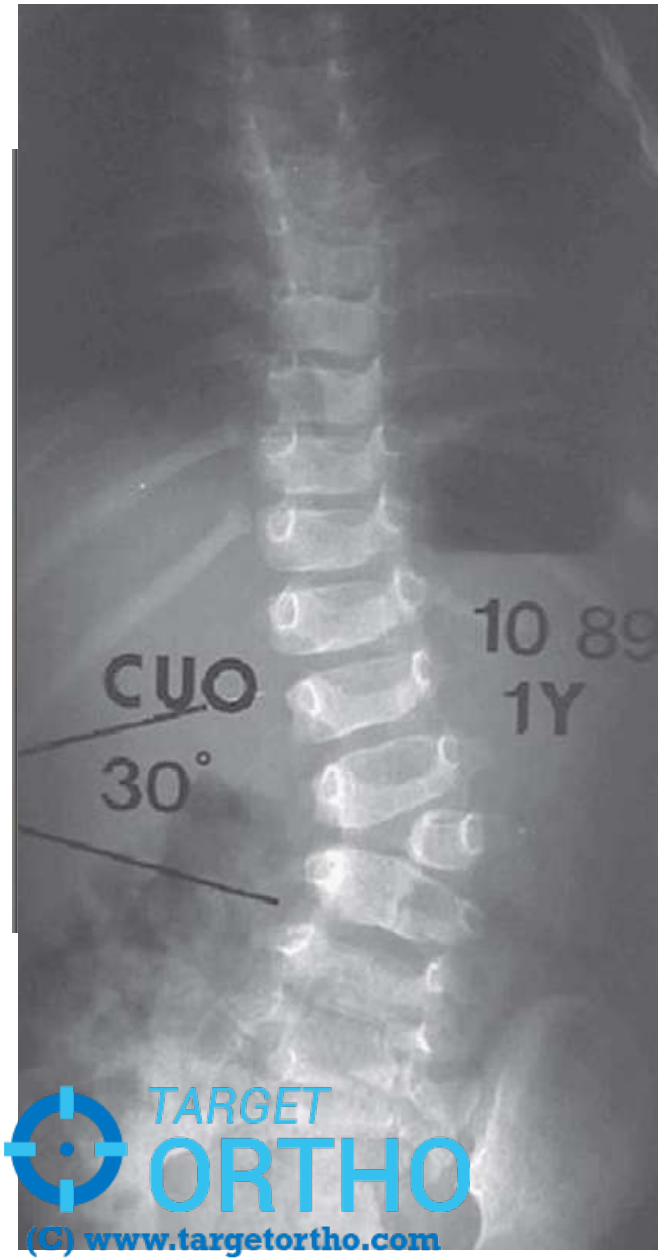
Unilateral failure of segmentation

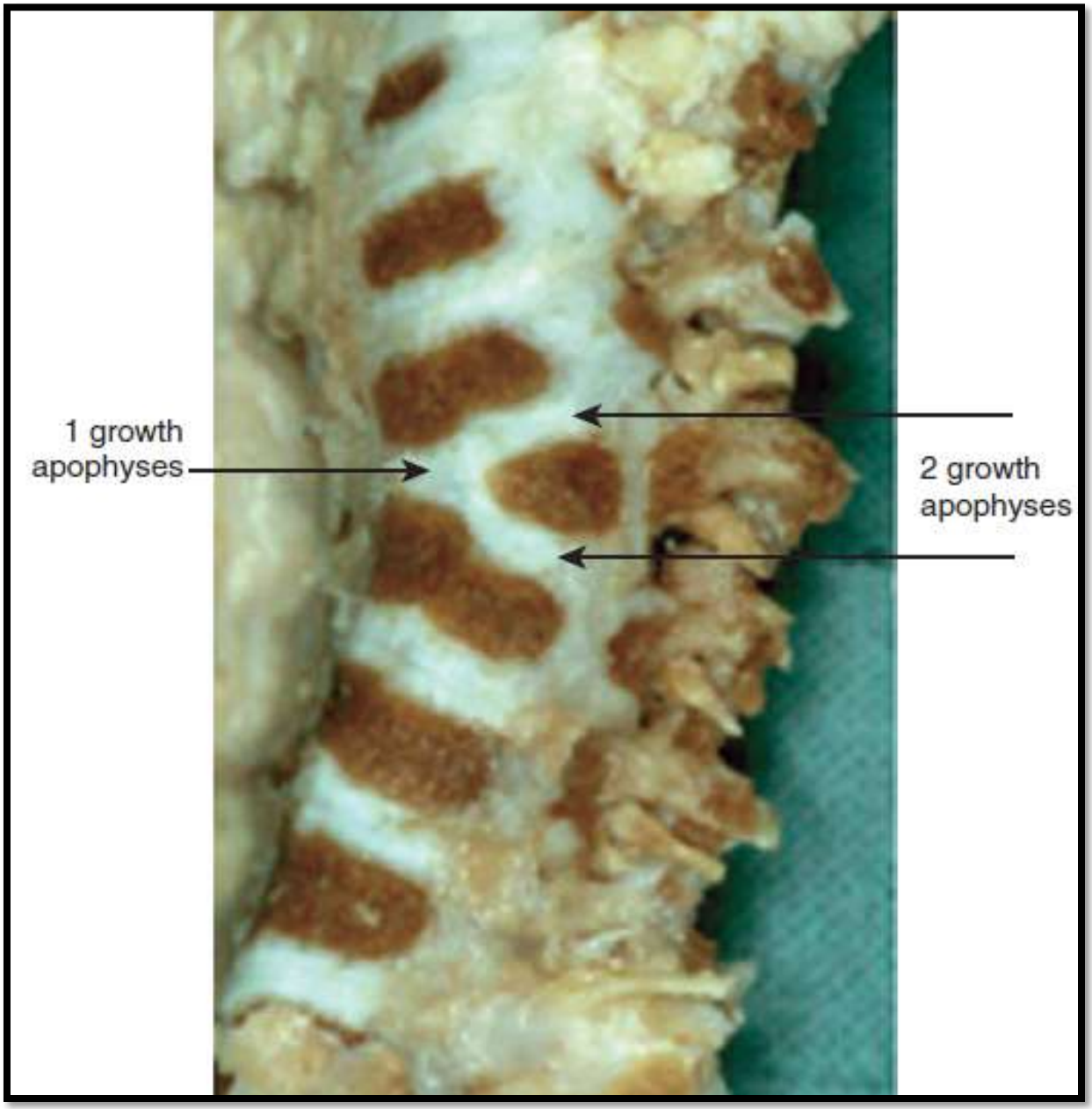
Block vertebra

Bilateral failure of segmentation



Congenital scoliosis





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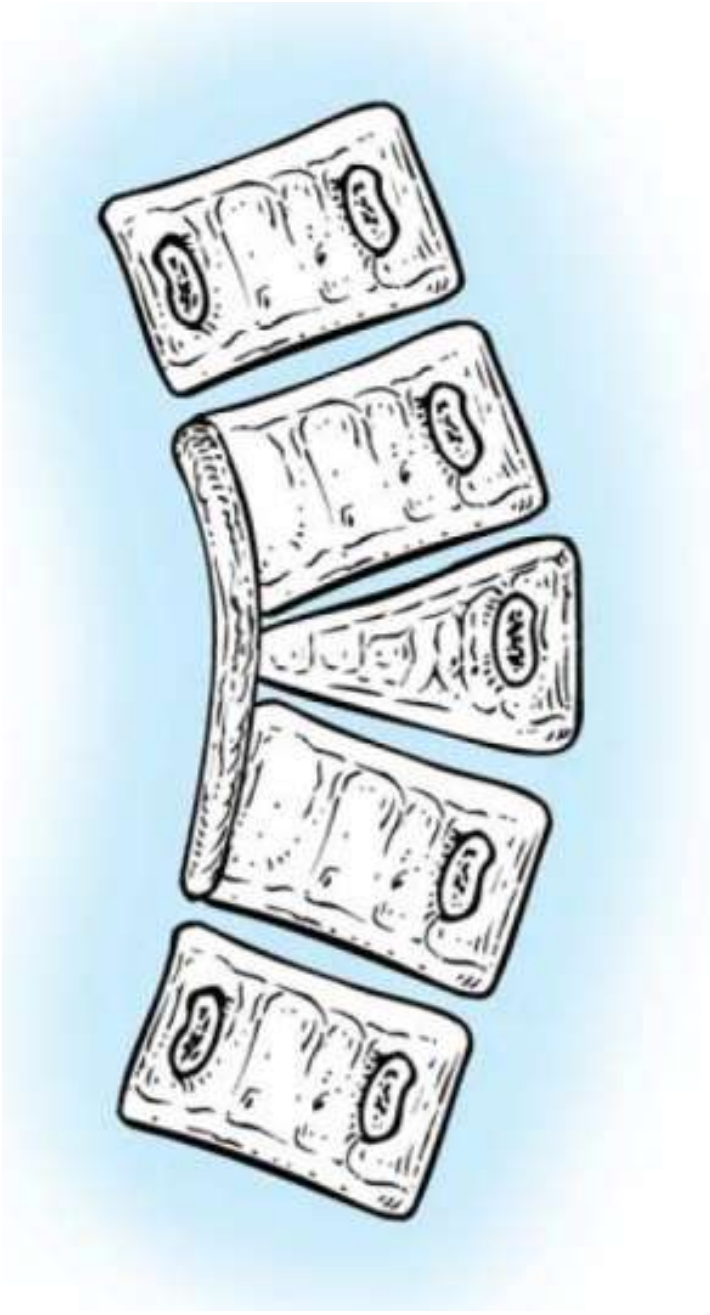
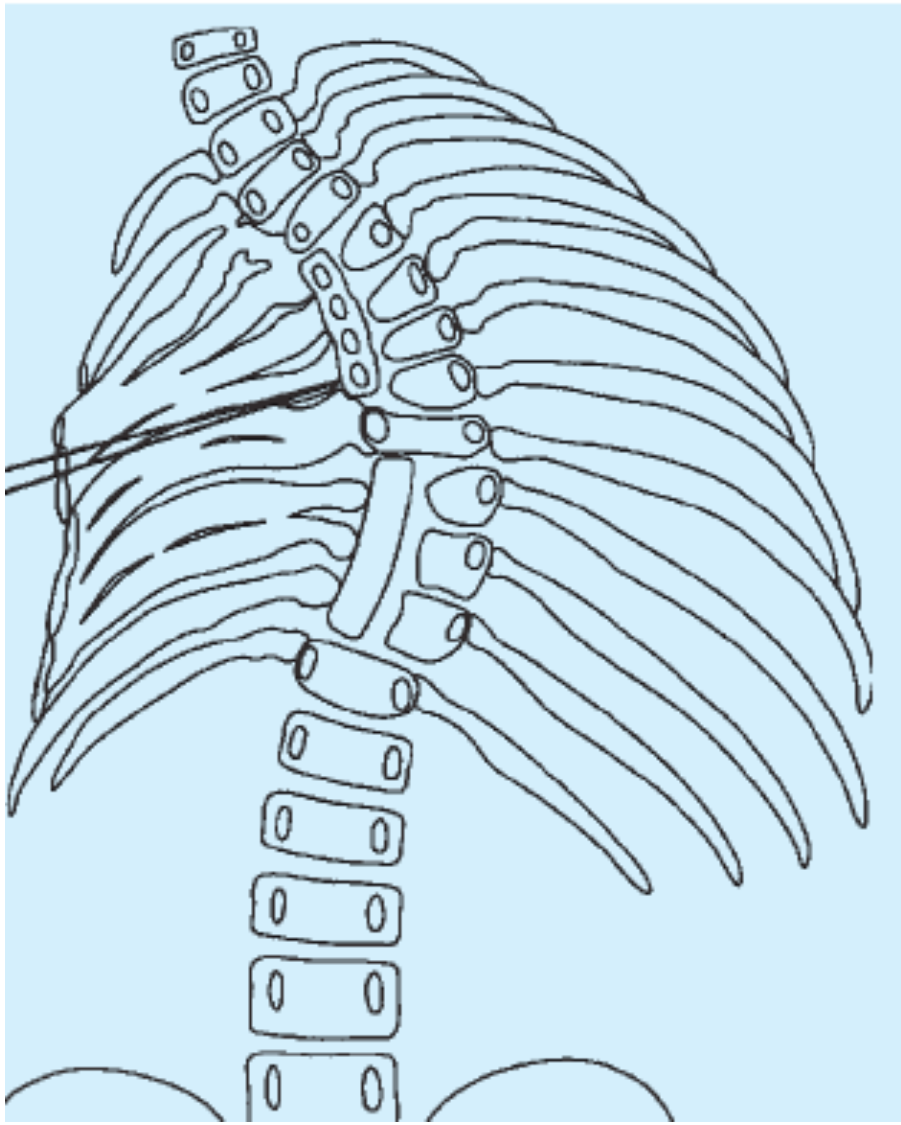
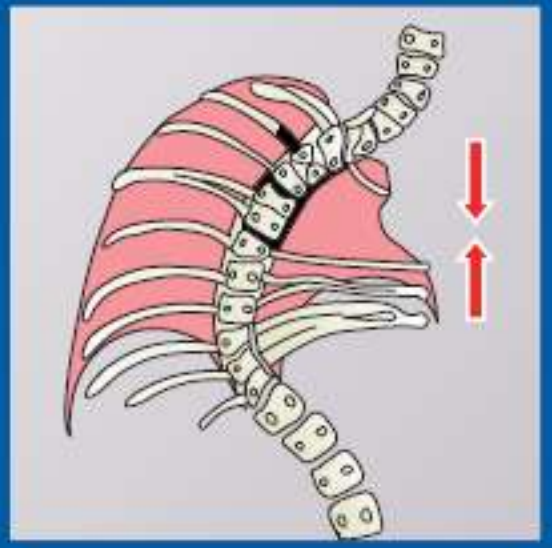




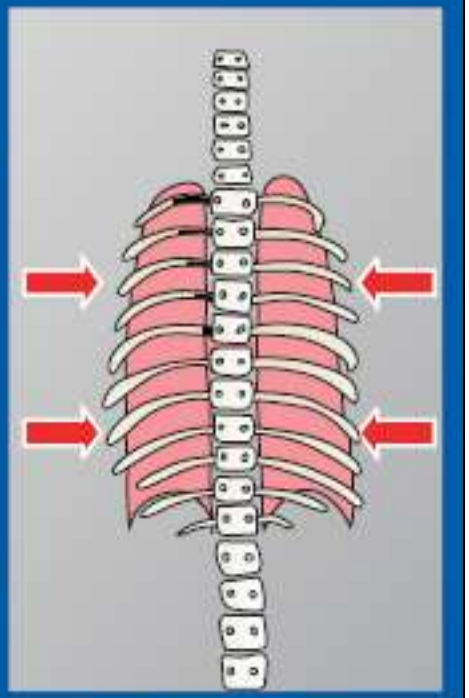
Volume Depletion Deformities of the Thorax



I

II

III a



III b

Neurocutaneous markers

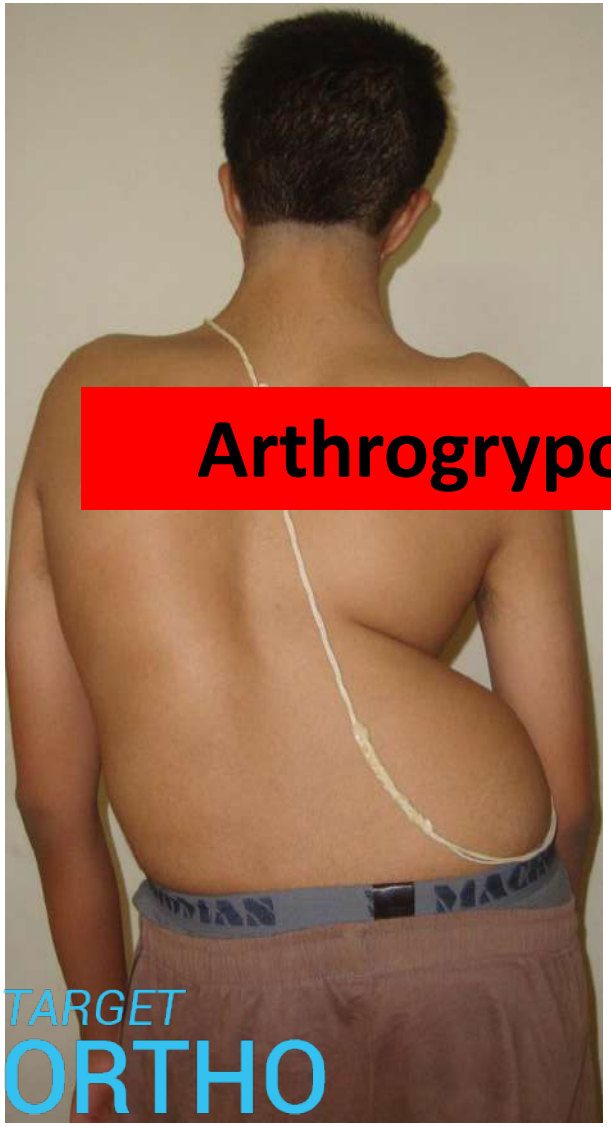
Neurofibromatosis

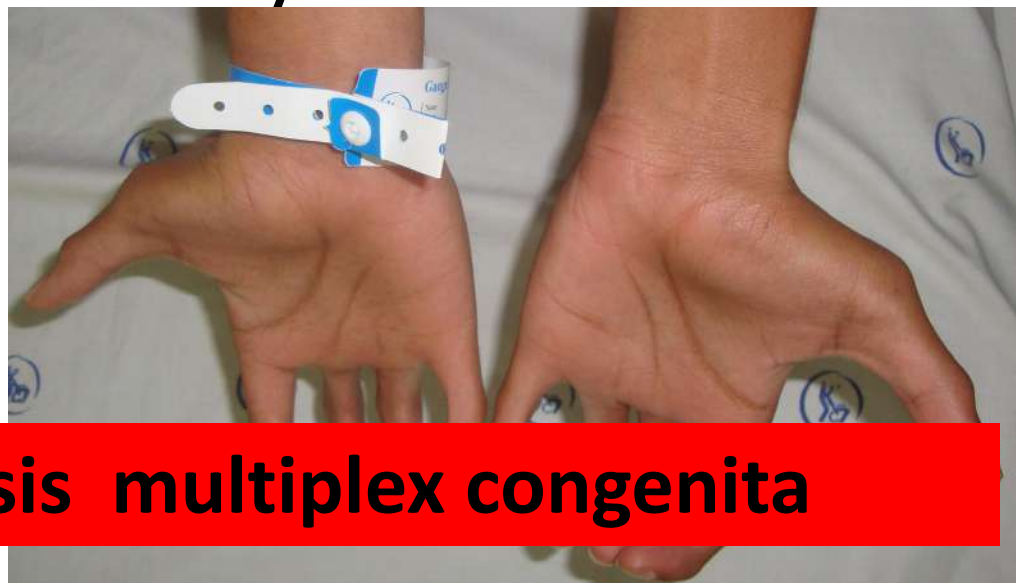
Café au lait spots

Skin tags

Axillary freckles

Look for other specific syndromic features





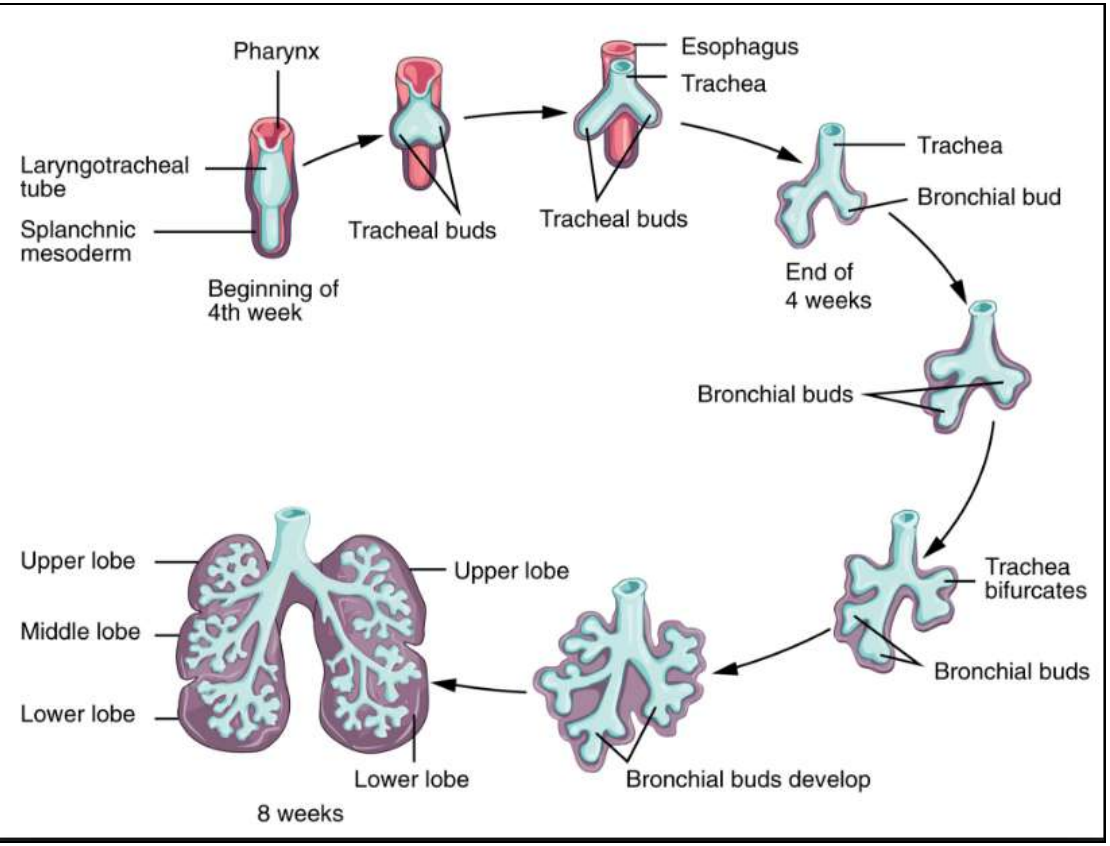
Arthrogryposis multiplex congenita

Thoracic Growth

- 6%-At birth
- 30% by age 5
- 50% by age 10.
- Between 10 & maturity- volume doubles .
- The “golden” period

-**between birth and 8 years**

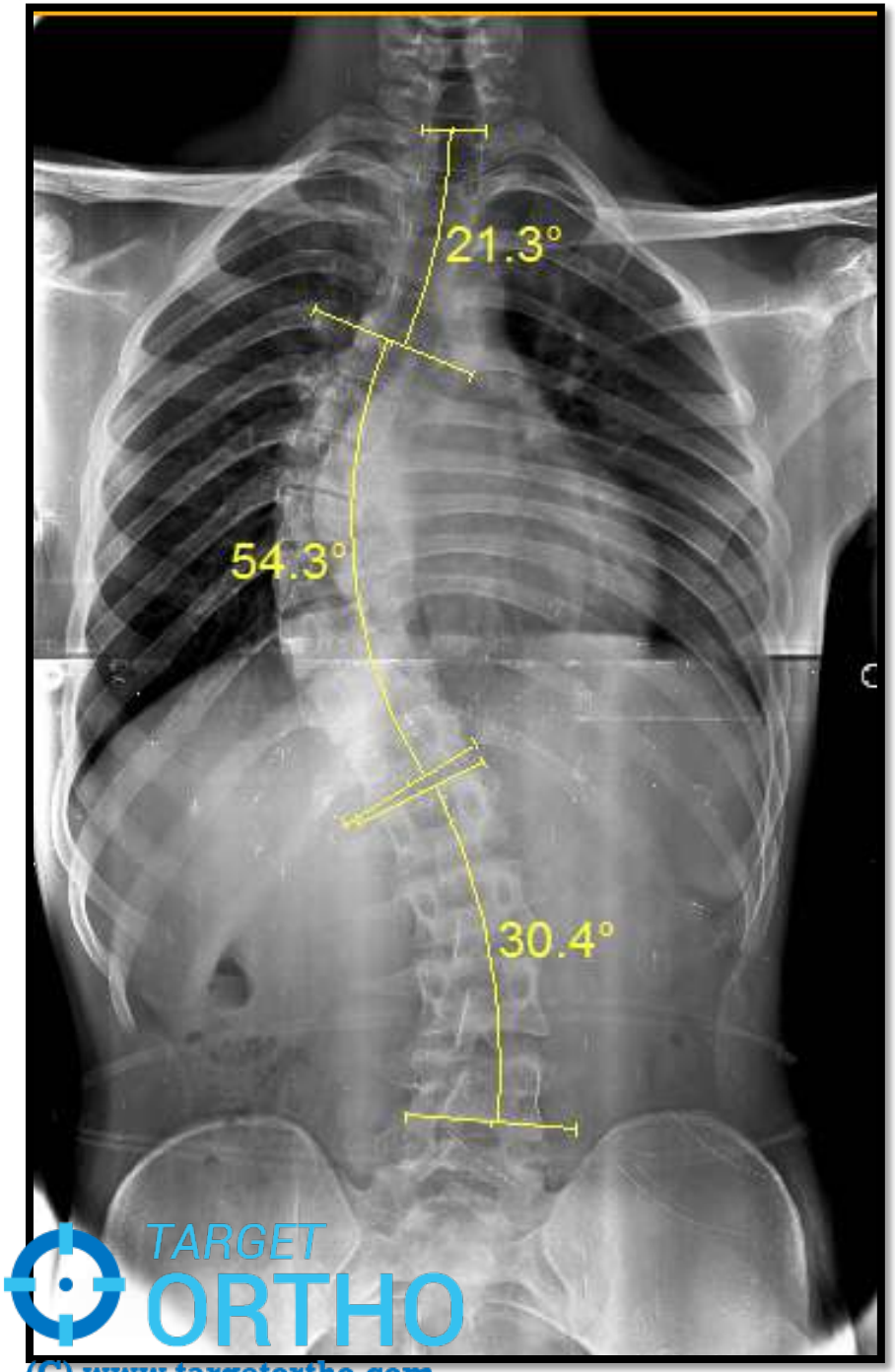
Development of lungs

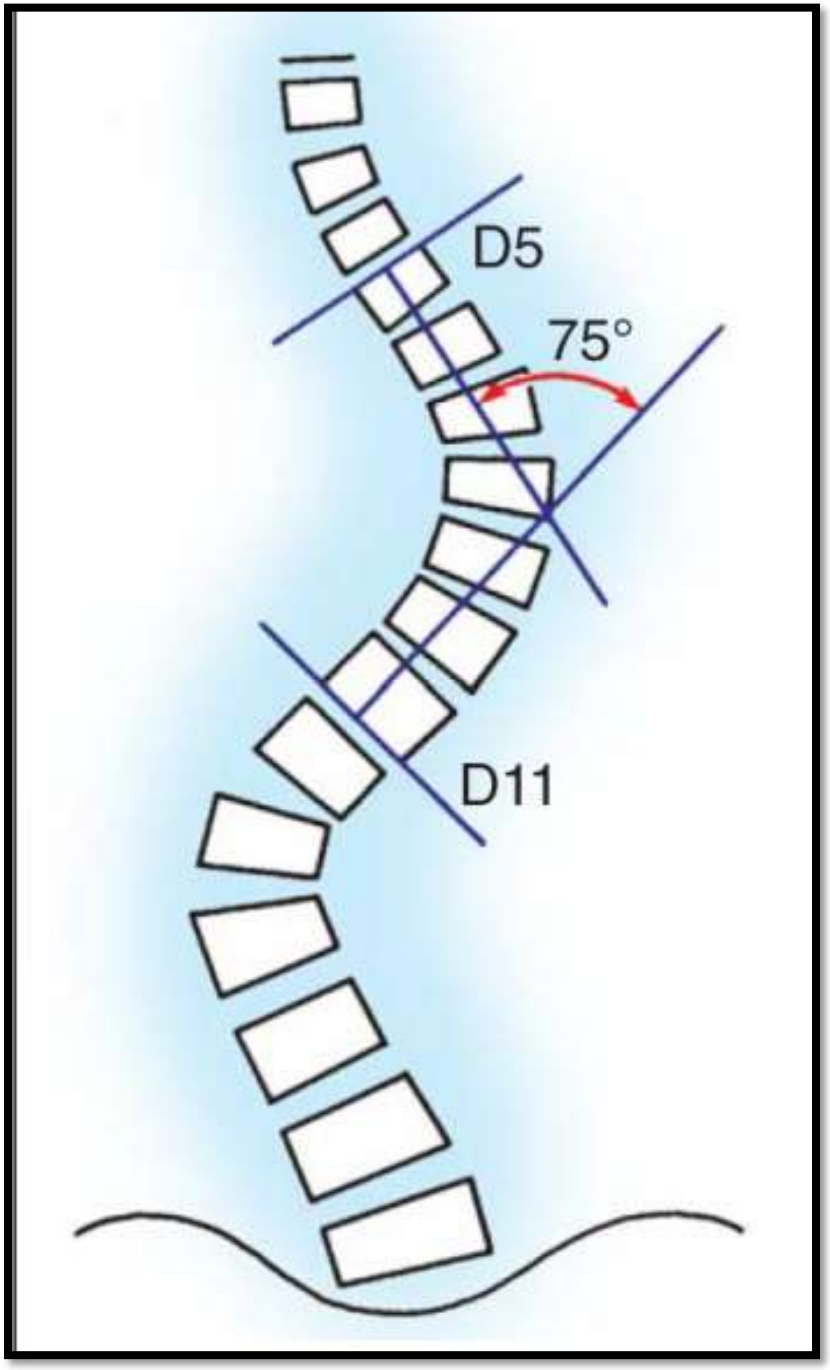


- The alveoli - 10 fold increase till 4 years of age.
- Deformity limits the space for lung growth
- Significant scoliosis before 5 years of age - disabling dyspnea or cardiorespiratory failure.

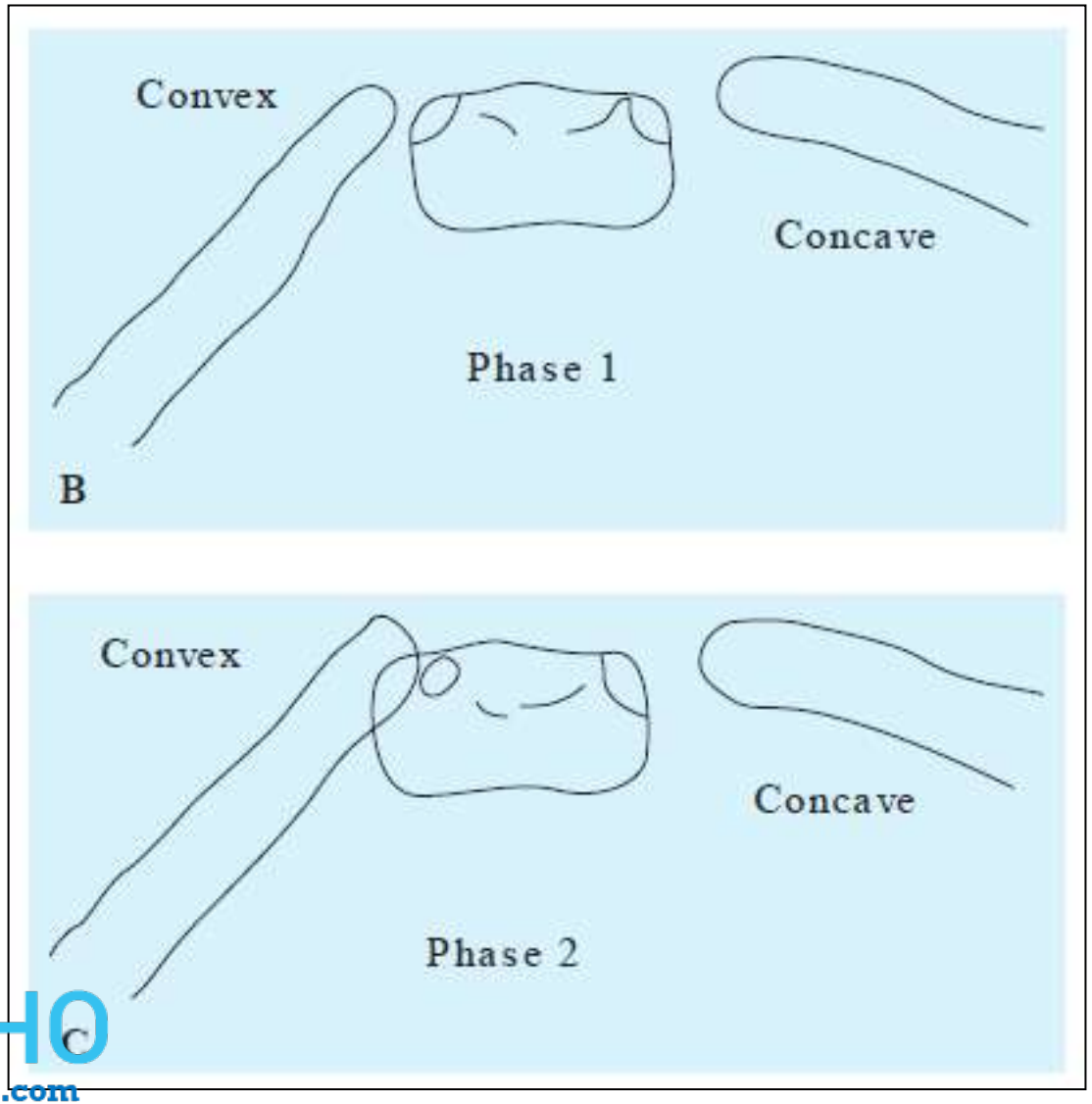
Management of early onset scoliosis Idiopathic scoliosis

- **Radiological evaluation**

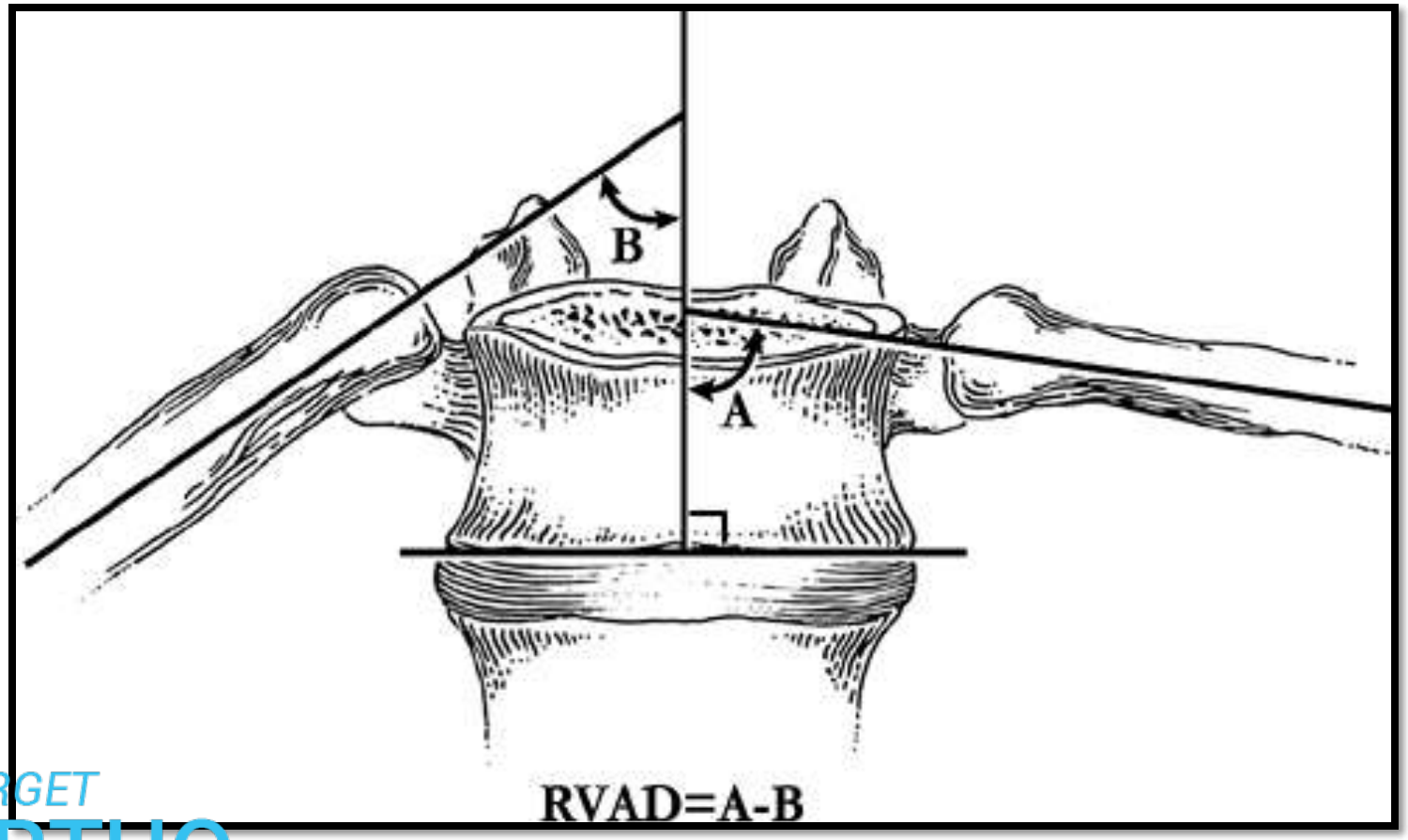




Rib phase- at apex

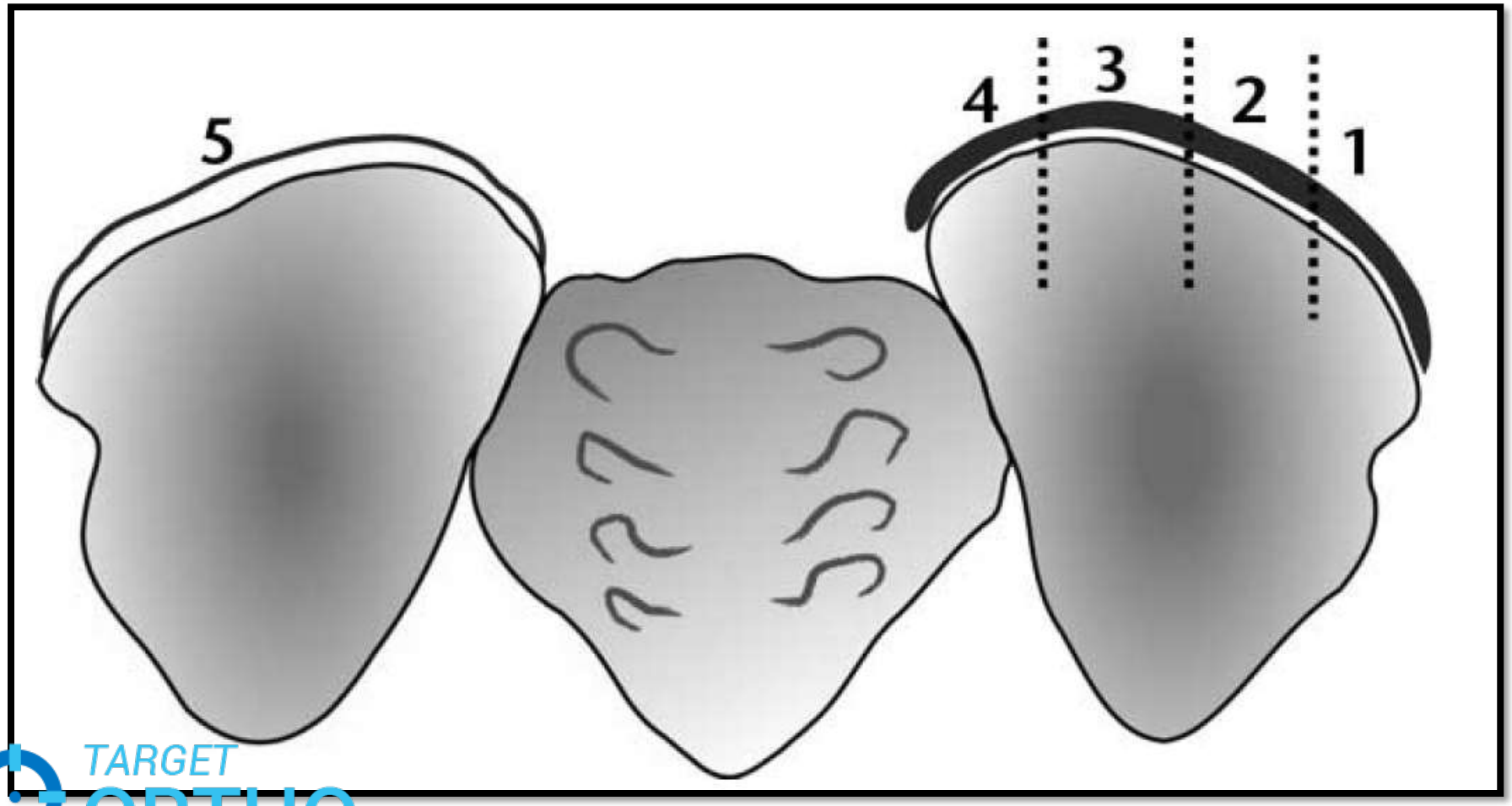


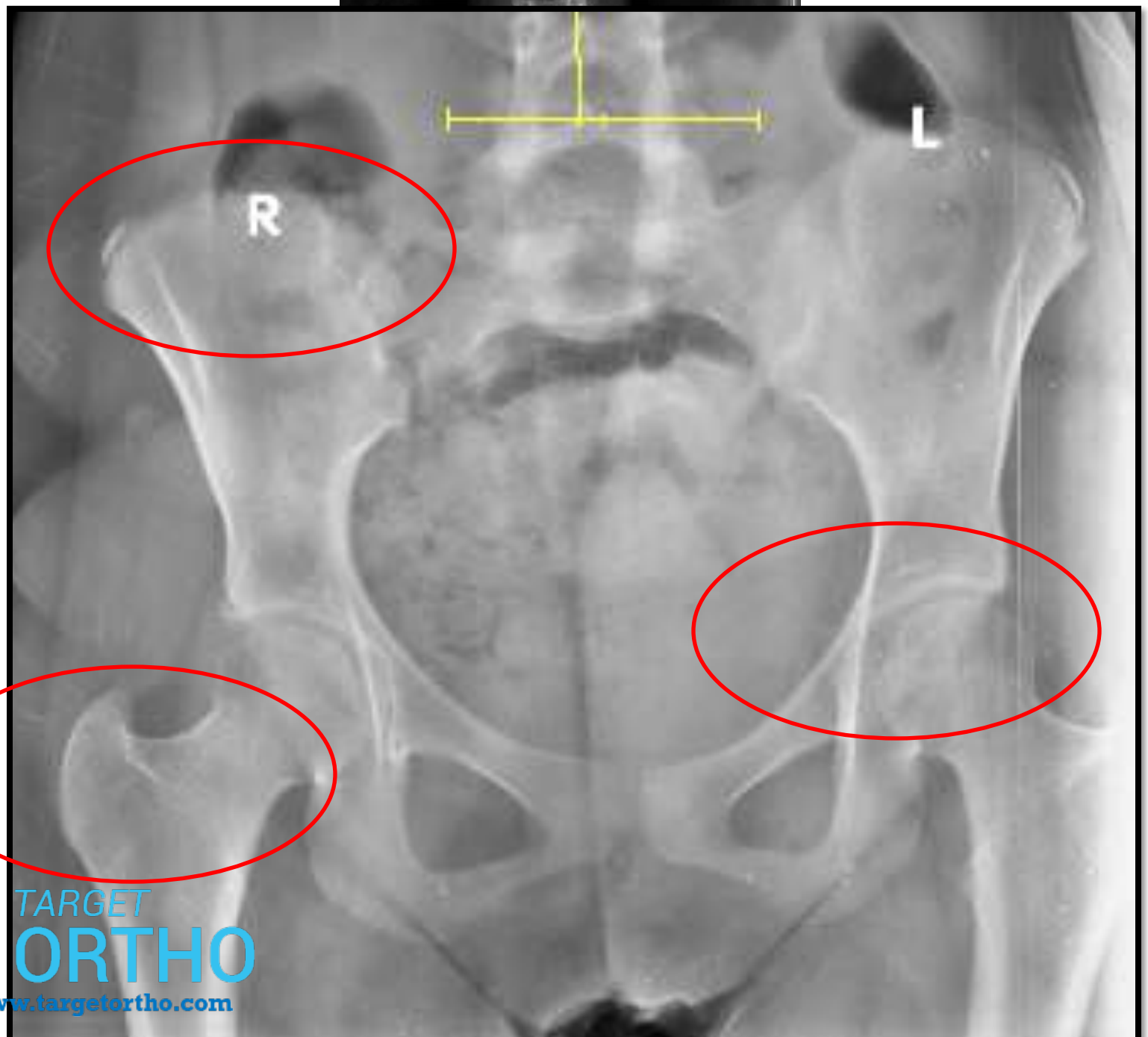
Mehtas rib vertebral angle difference Infantile idiopathic scoliosis



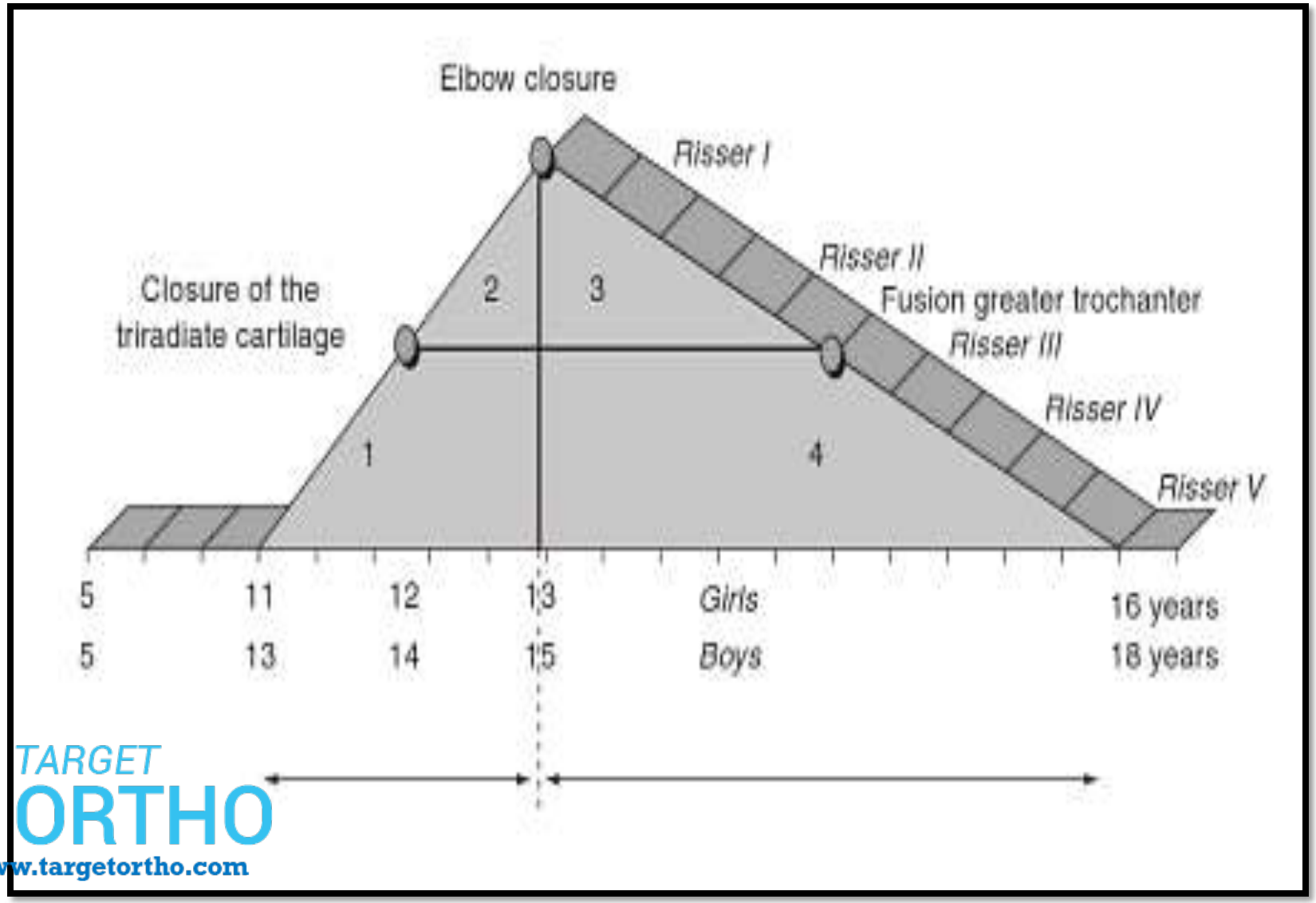
RVAD > 20 deg = more chance of progression

Rissers grading





Where does your patient stands in this growth curve ?



Early onset idiopathic scoliosis

Observation

- 1. Cobb angle <20°*
- 2. RVAD <20°*
- 3. Phase 1 rib head*

If curve progression more than 10deg/6months or 20deg /1 yr –Intervene

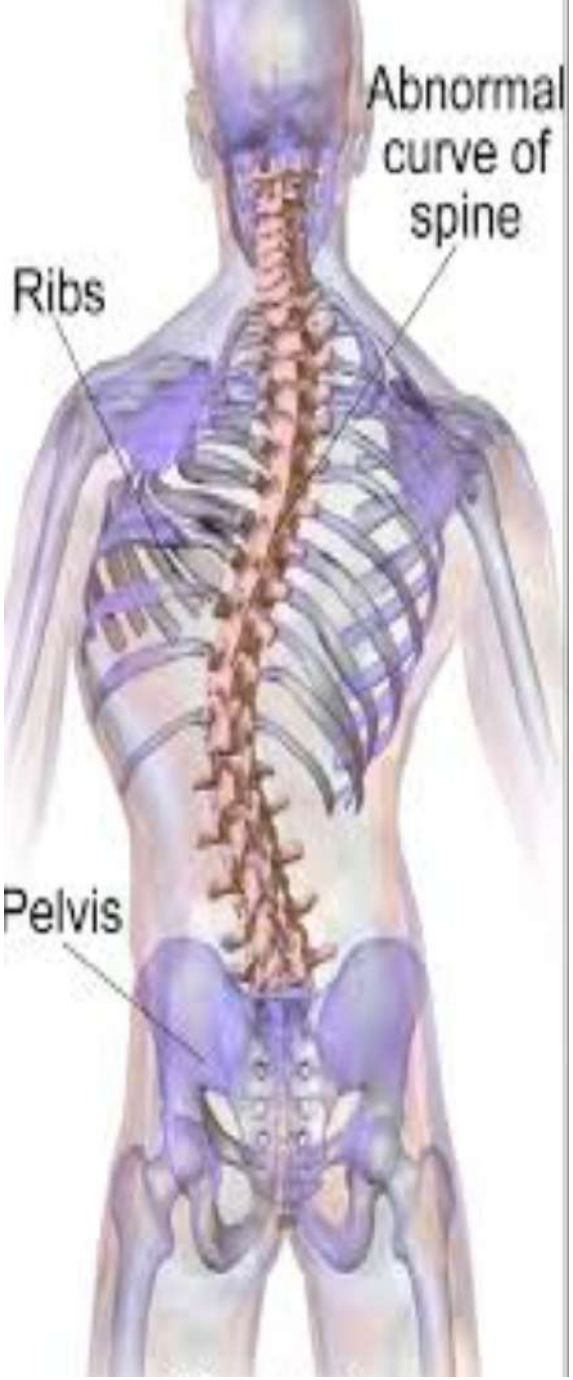
Intervention

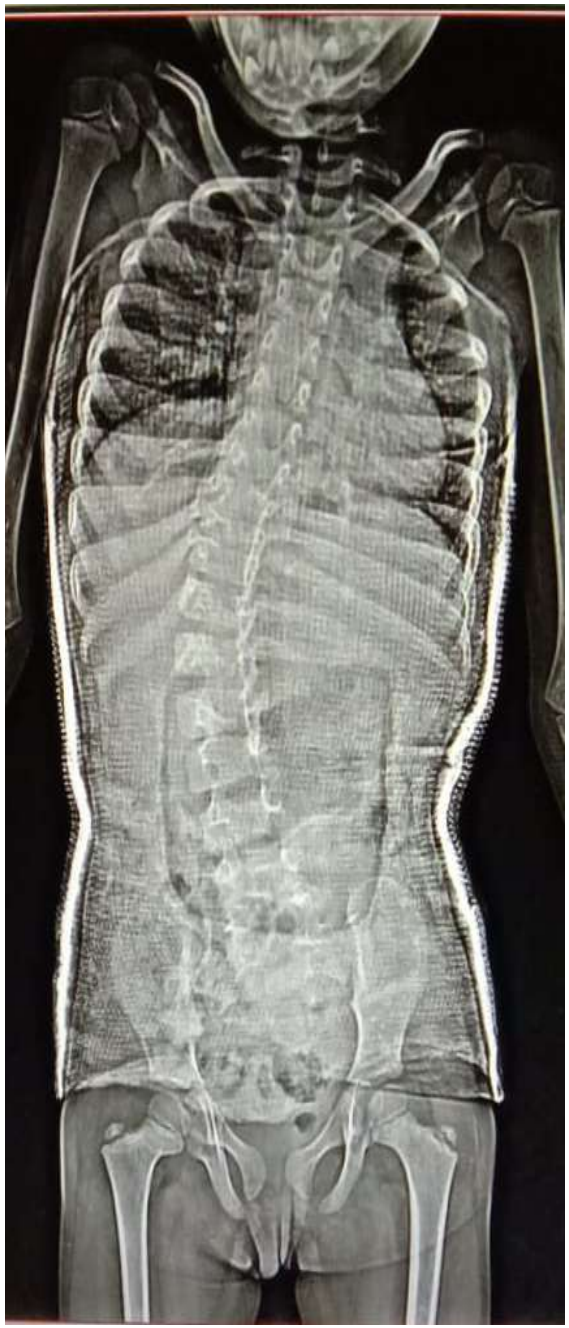
- 1. Cobb angle >25°*
- 2. RVAD more than 20°*
- 3. Phase 2 rib head*
- 4. Documented progression of curve

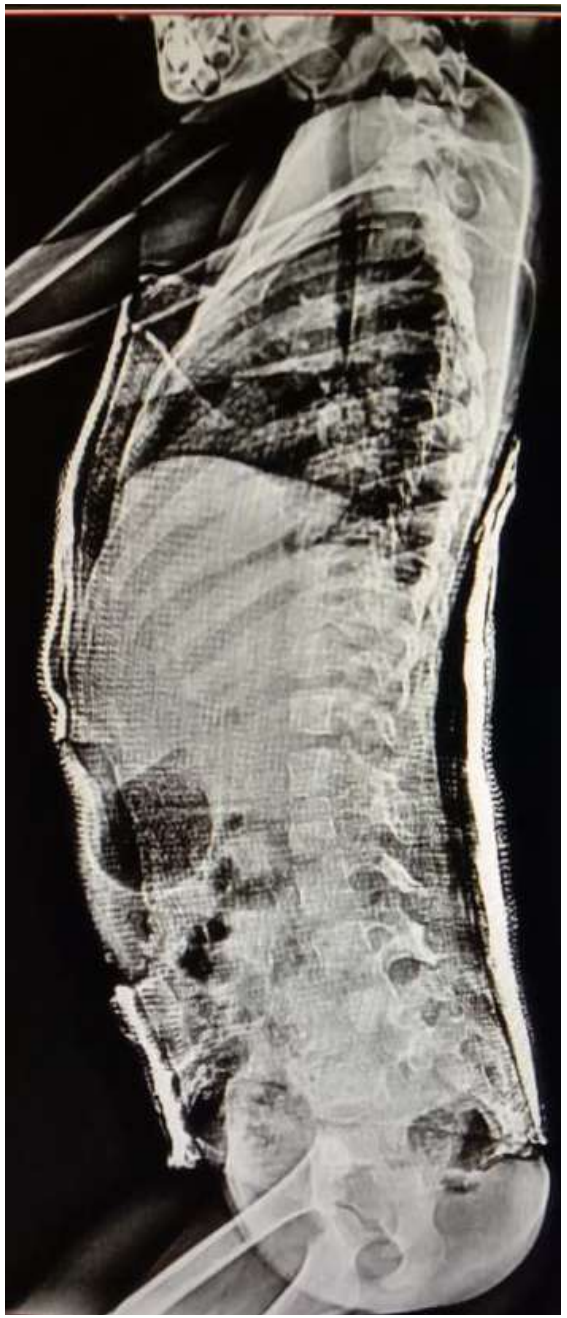
Intervention

- Curve deg - **25deg – 40 deg-** ***cast application***

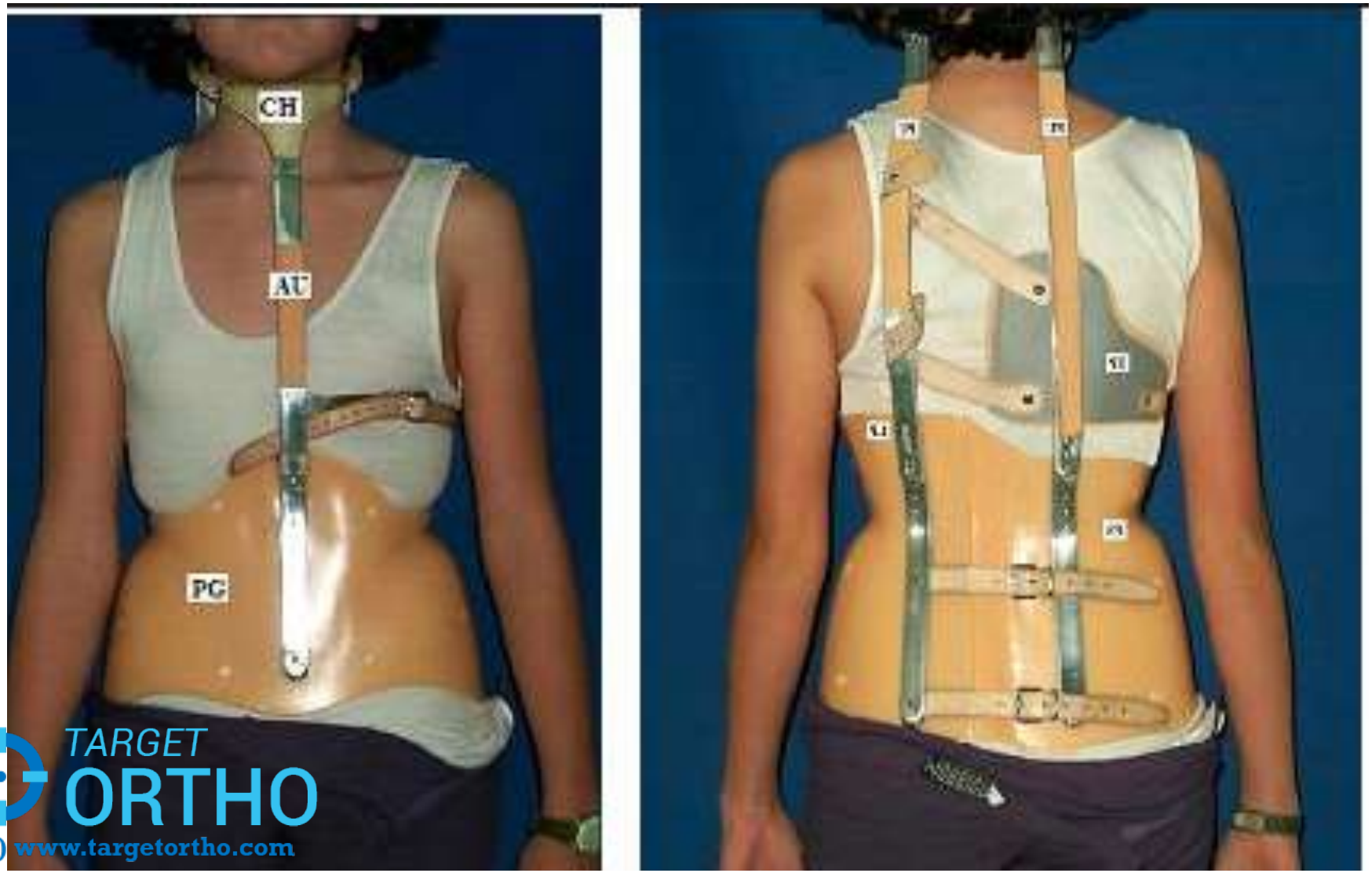
- **More than 40deg** – surgical – fusion less surgeries







Spinal brace
Milwaukee brace



Boston brace

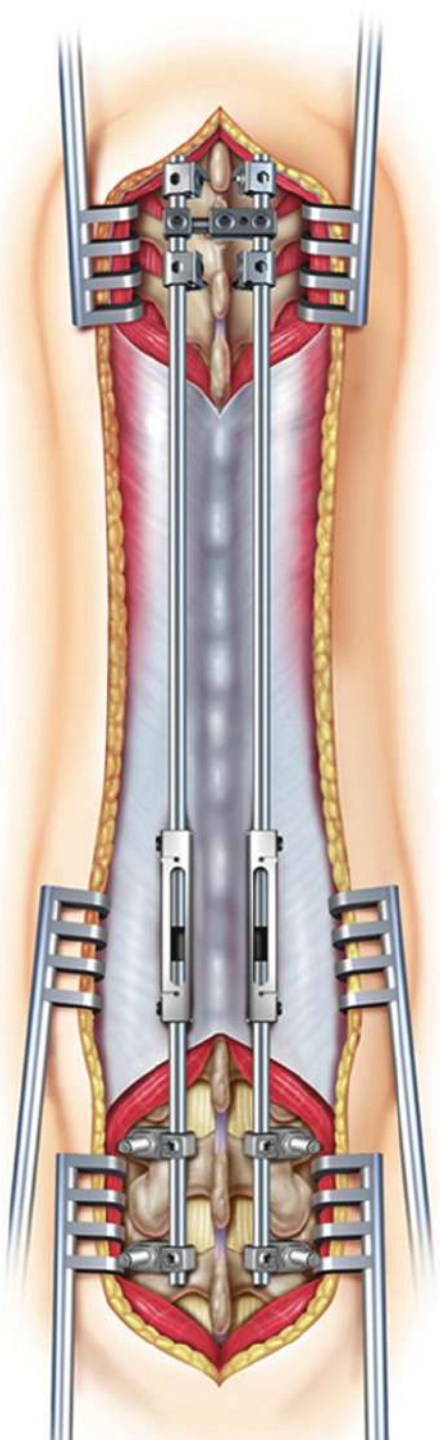
Fusion less surgeries
3 categories

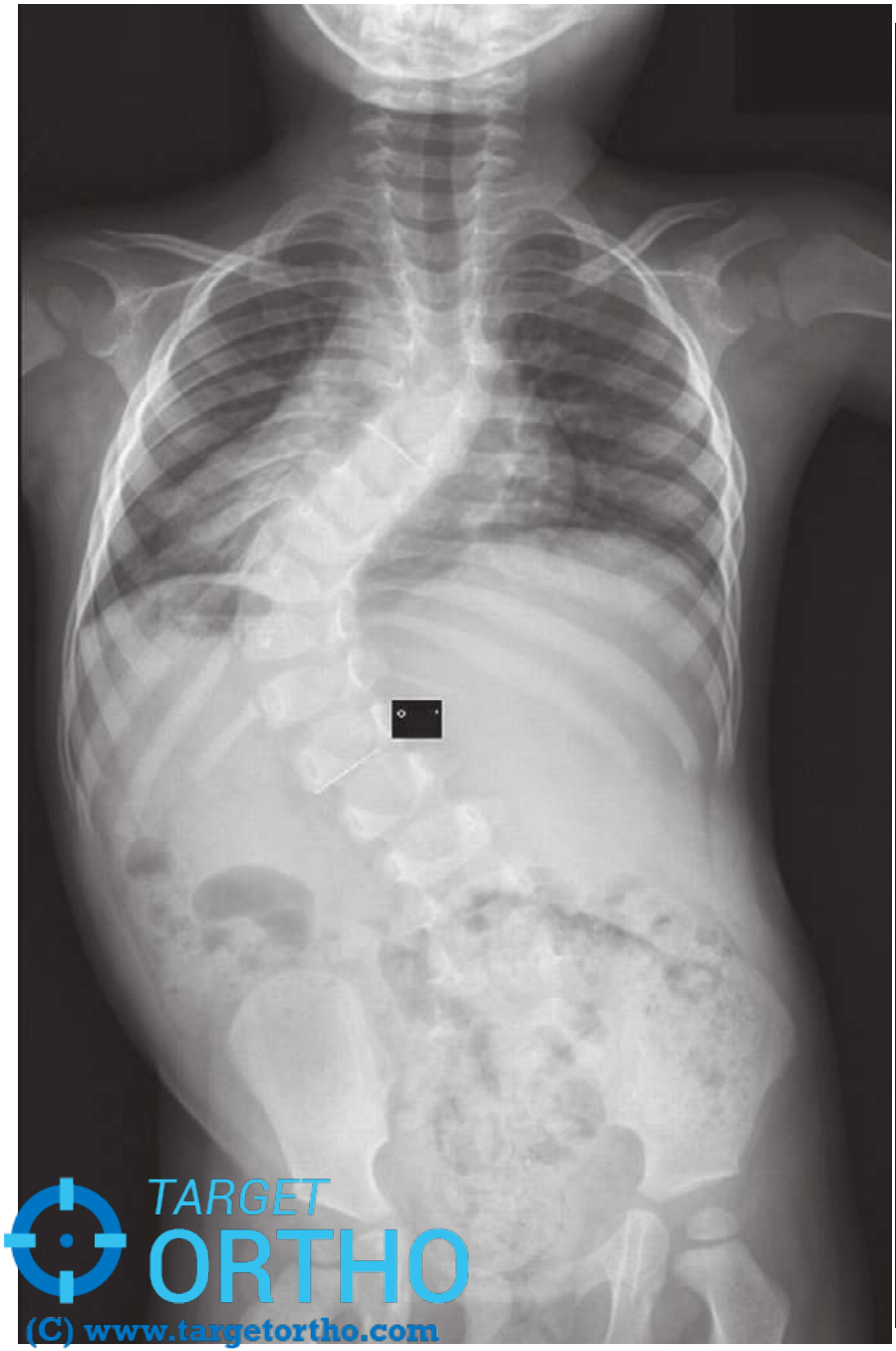
- **1-Distraction-based systems** - distractive force across deformed segment- growth rods

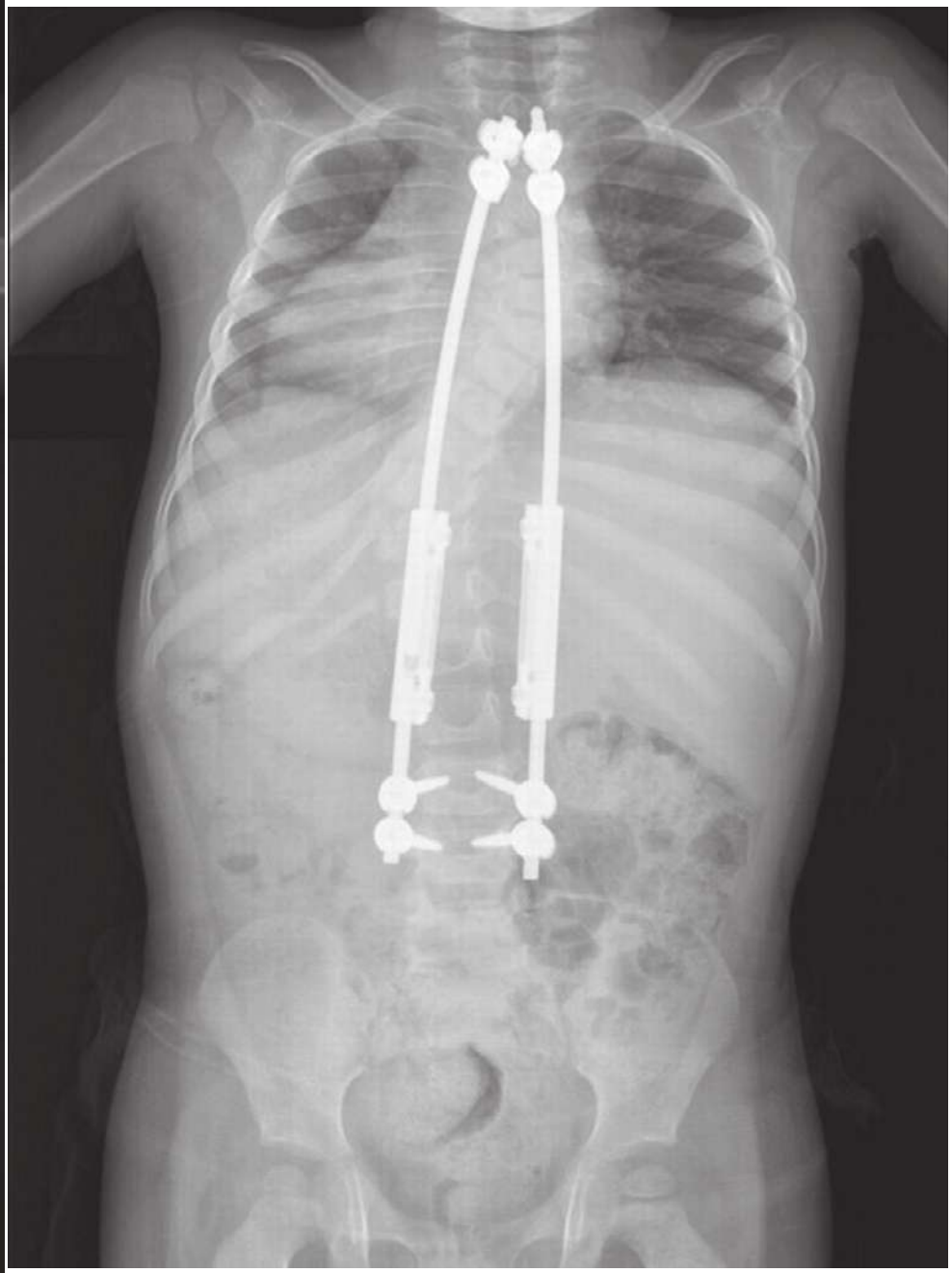
- **2-Compression-based systems** - compressive force - inhibition of the convex side.
- Examples - vertebral body staples and vertebral body tethering.

- **3-Guided growth systems=anchoring** multiple and apical vertebrae to rods -permitting longitudinal growth . Shilla System.

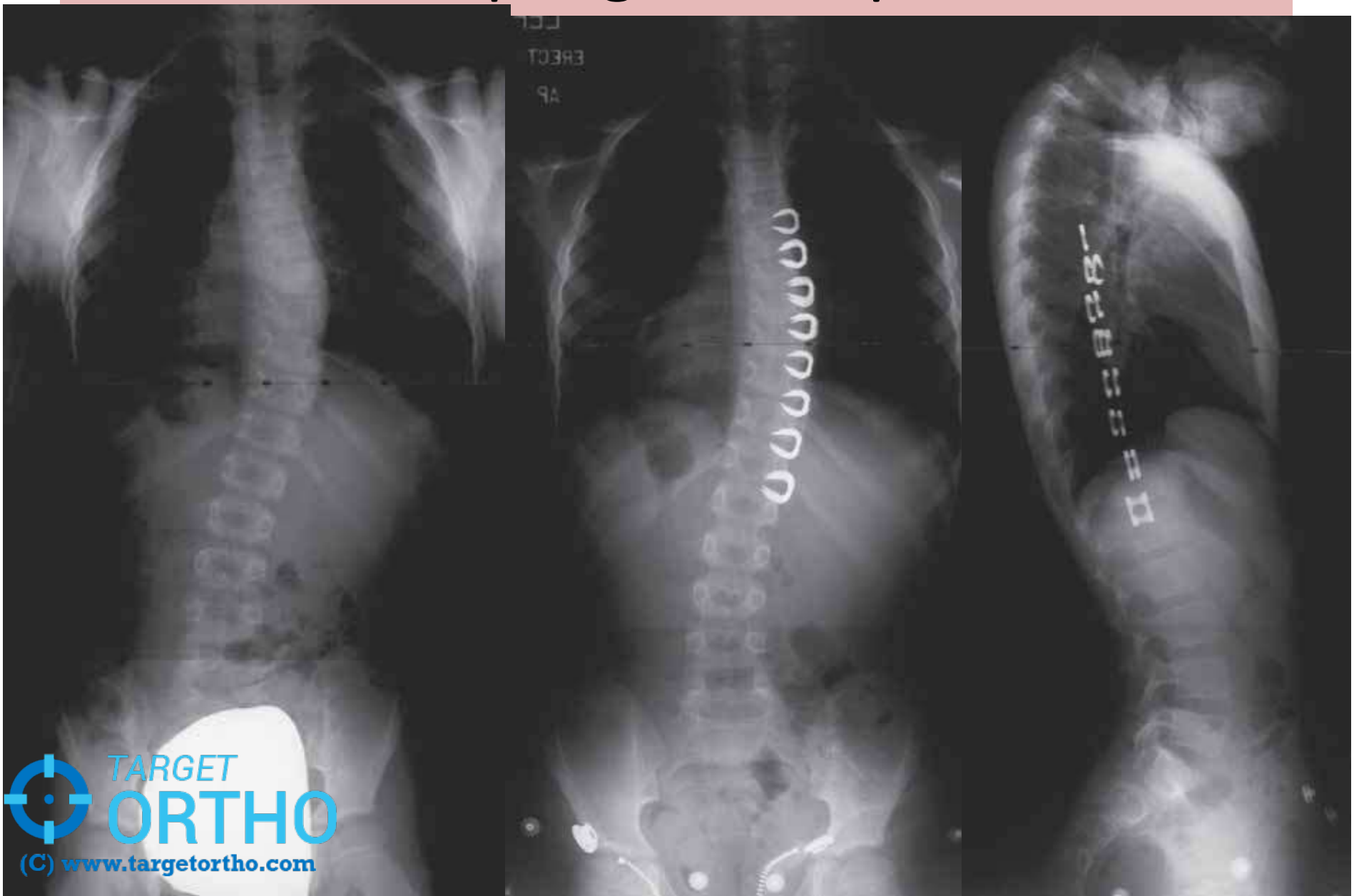
Growth rods



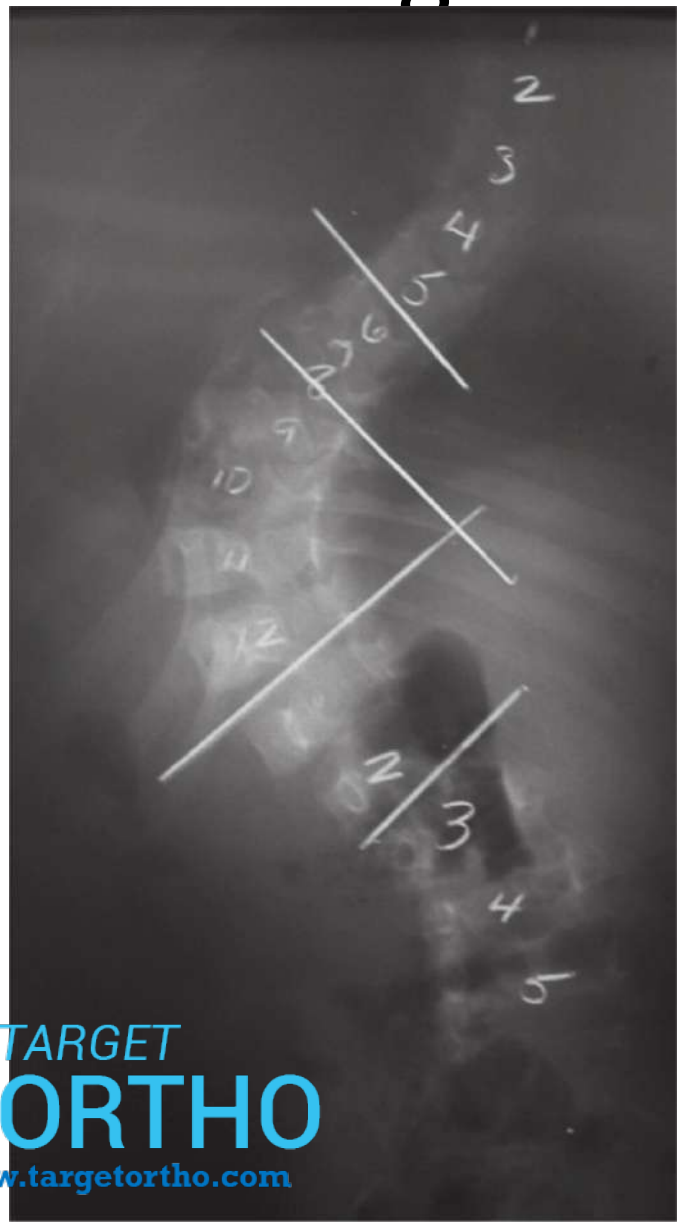


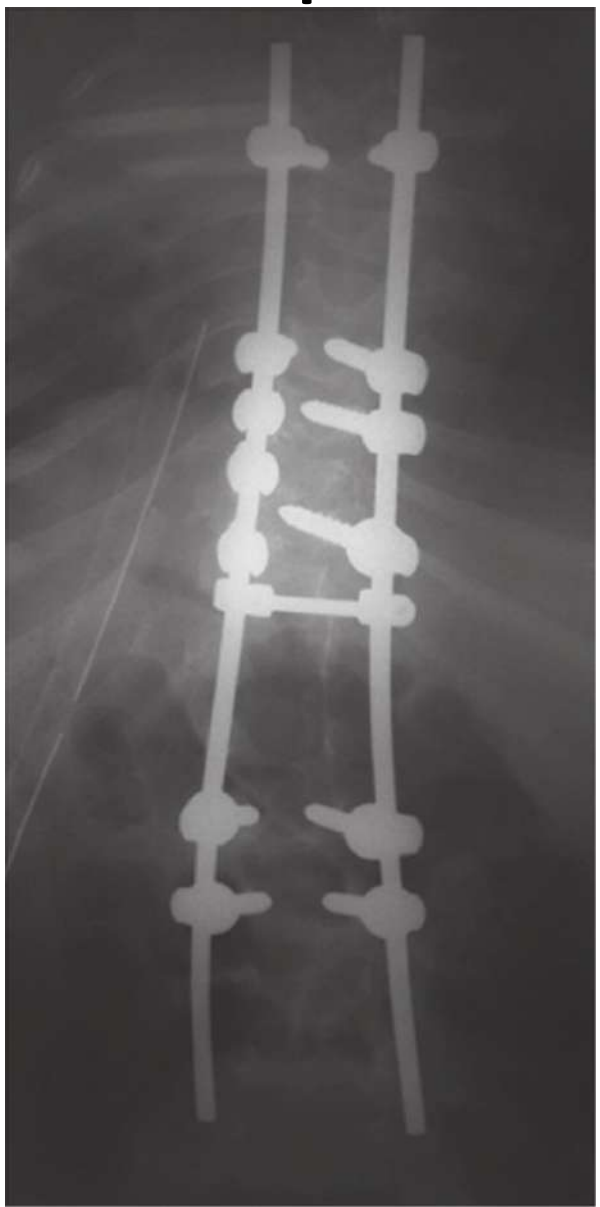


Stapling technique

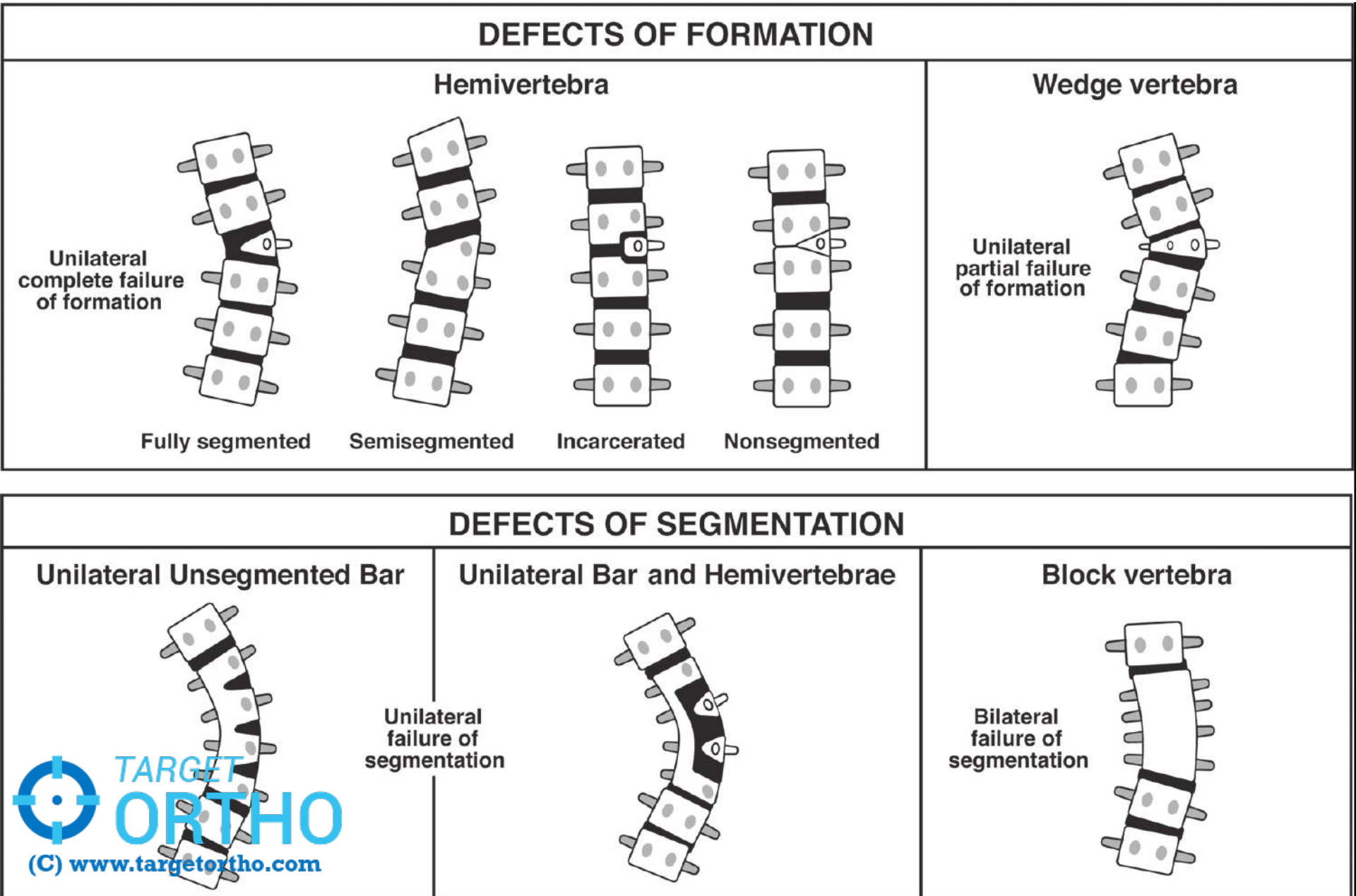


Guided growth- shilla procedure





Congenital scoliosis



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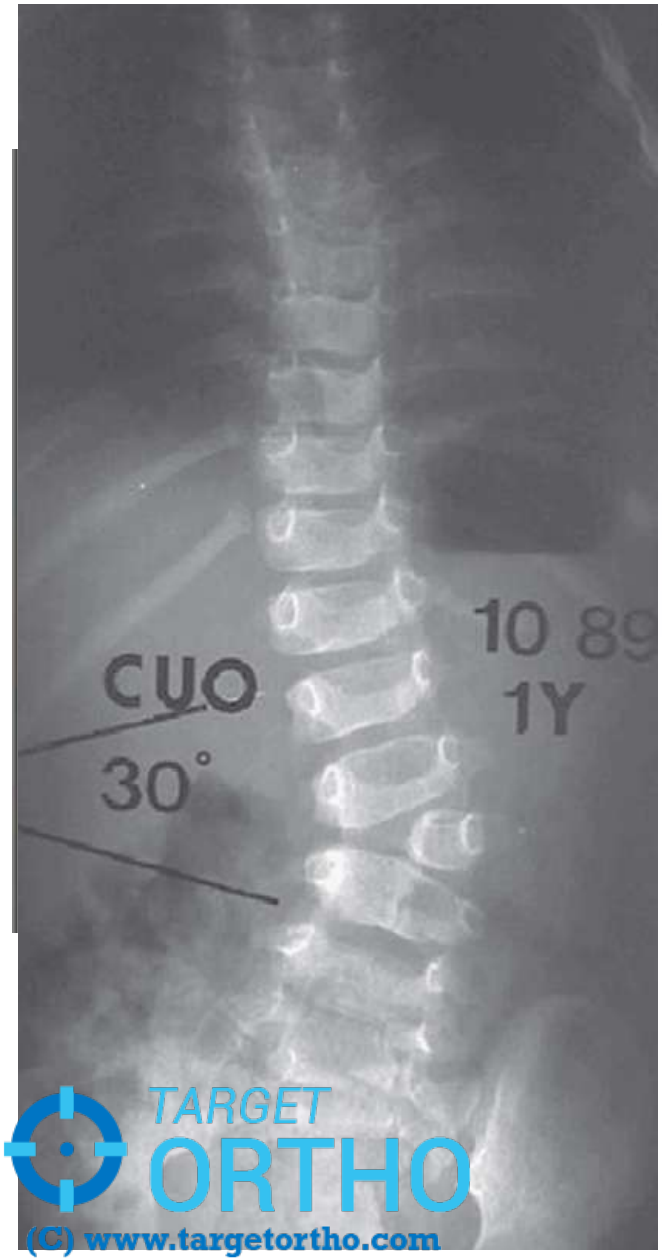

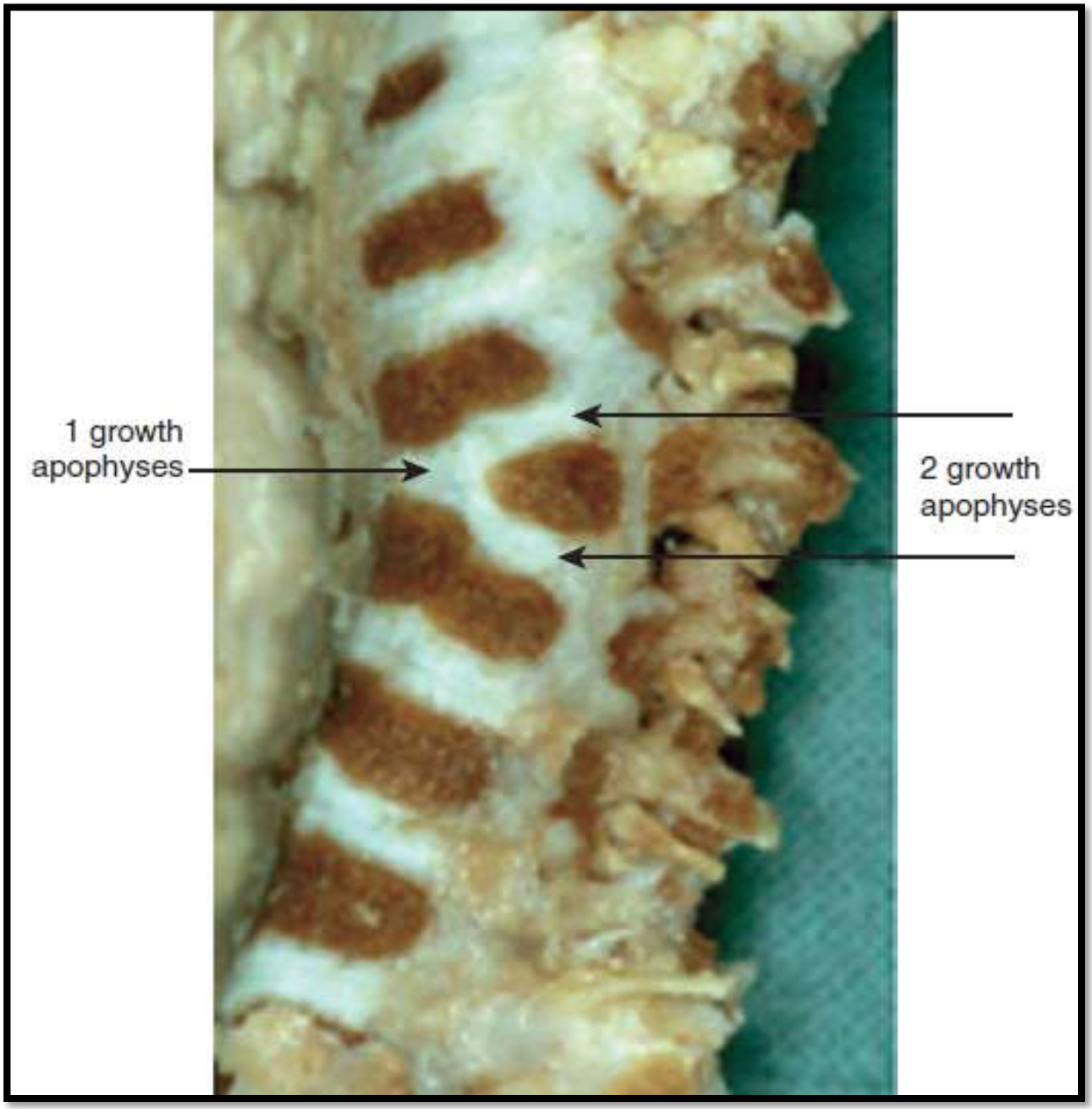

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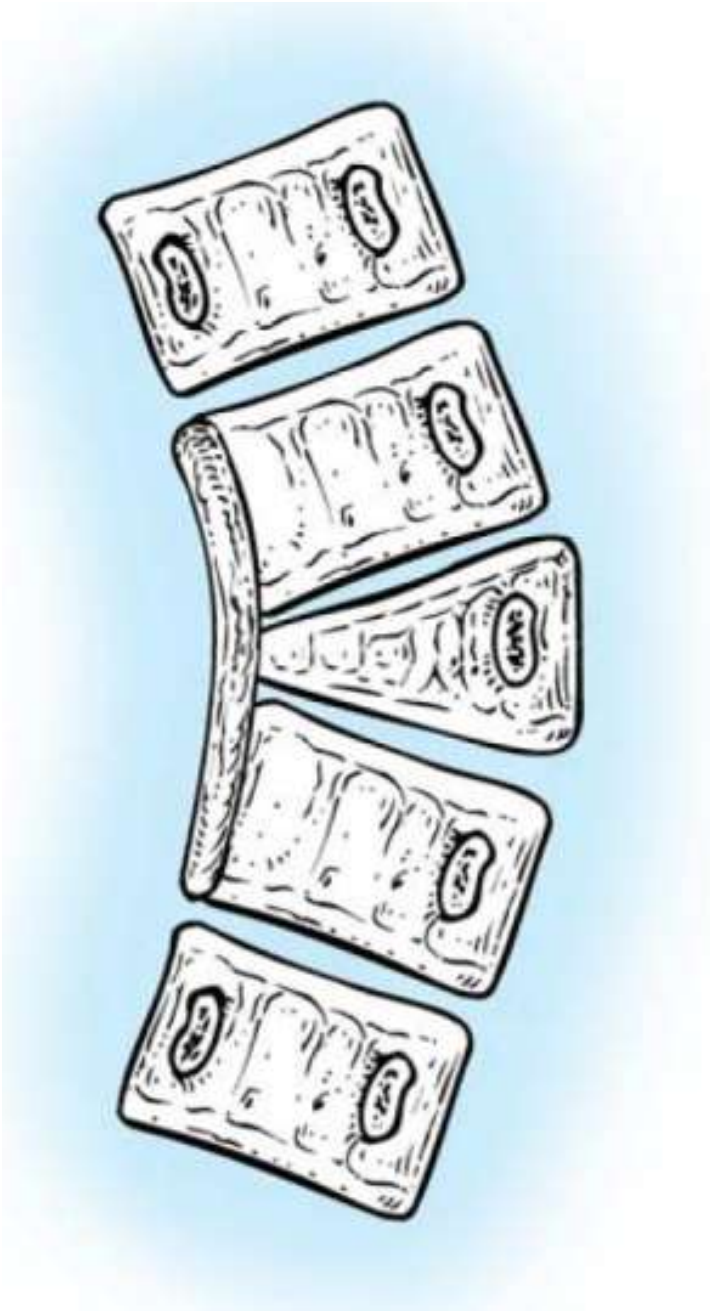

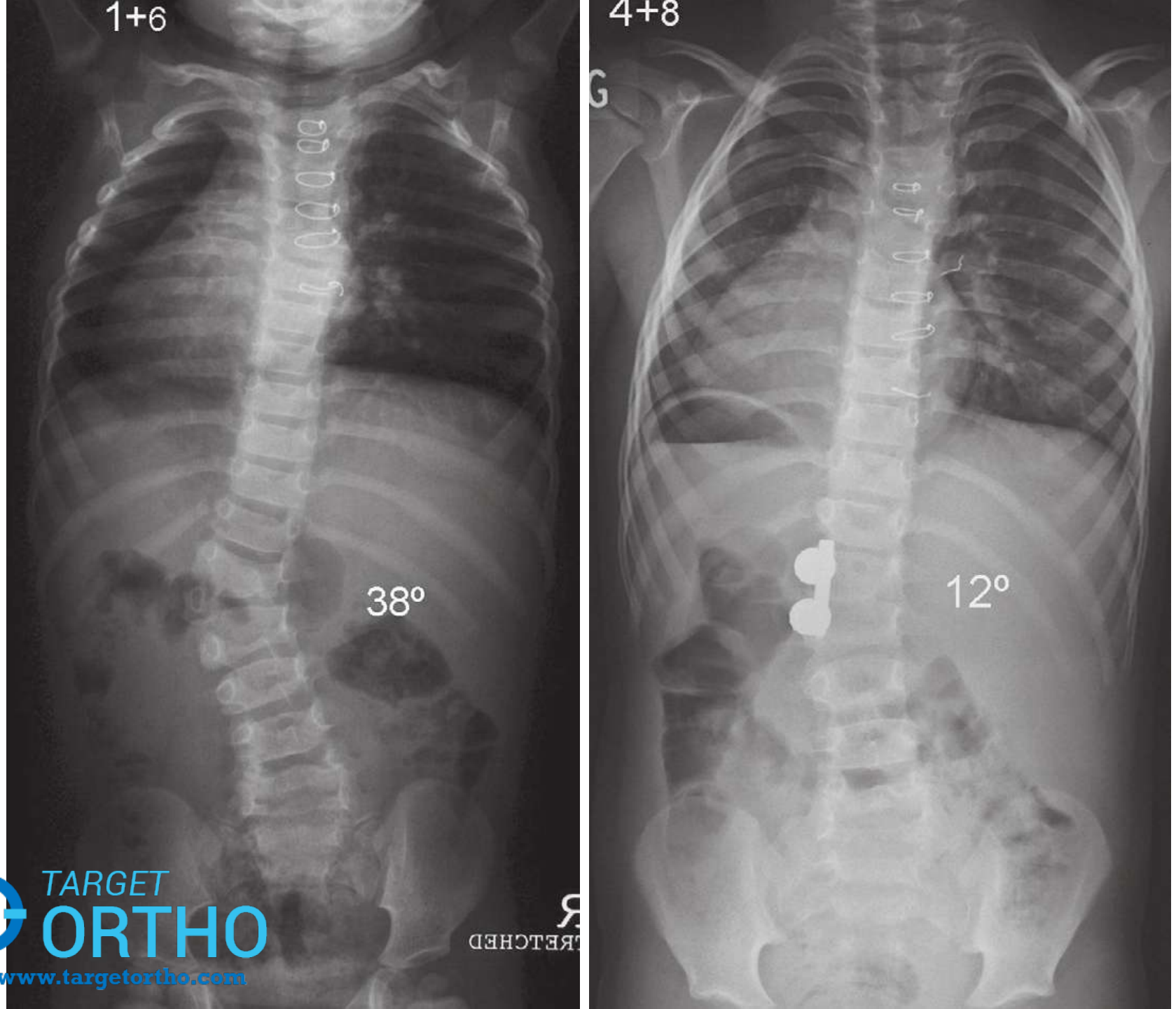
1+6
38°
4+8
12°
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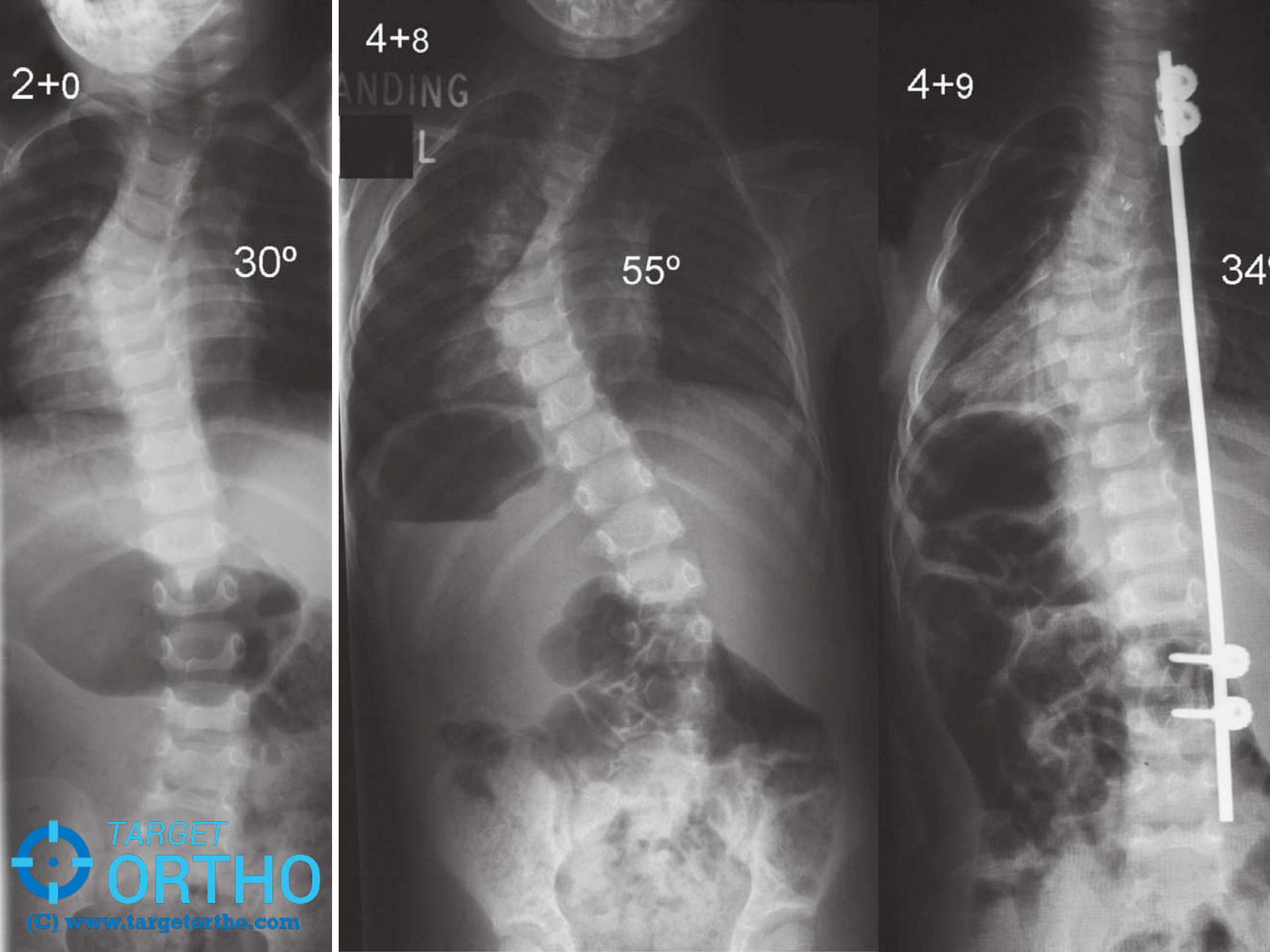
2+0
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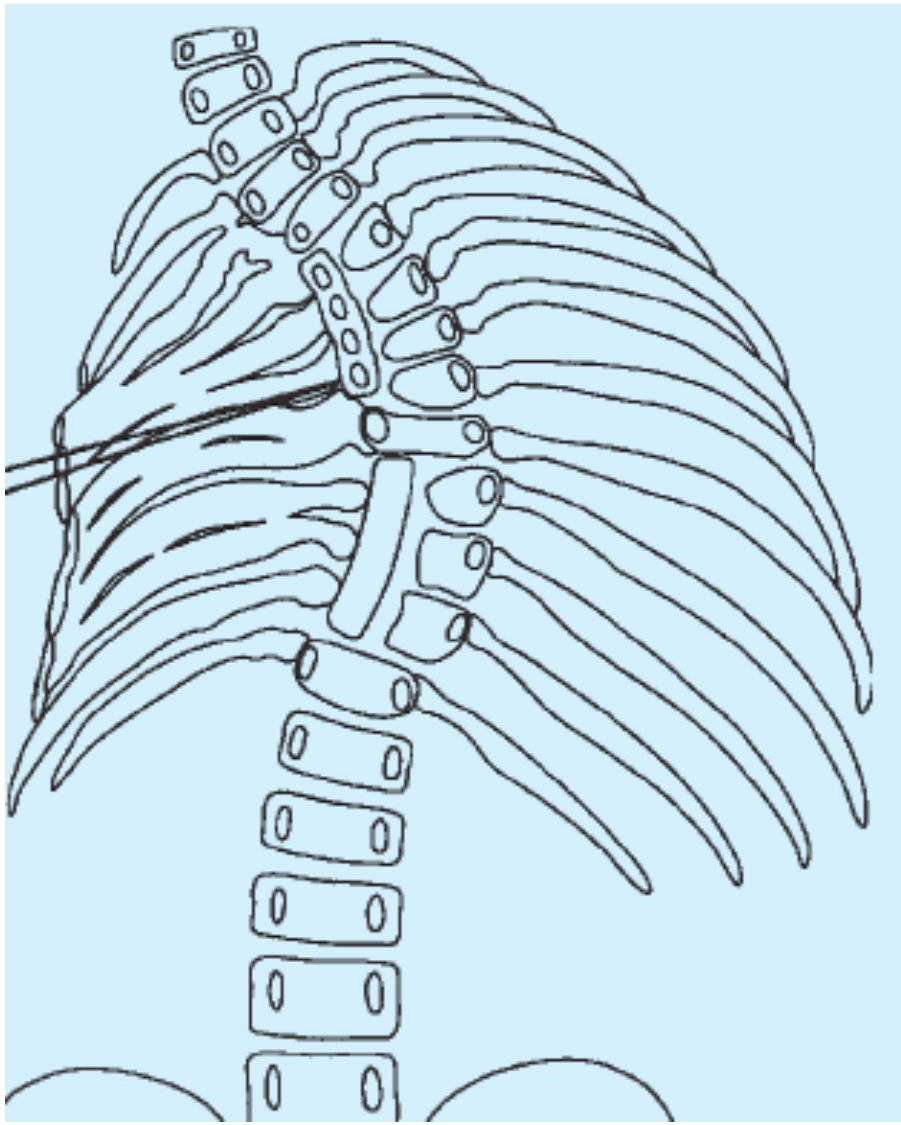
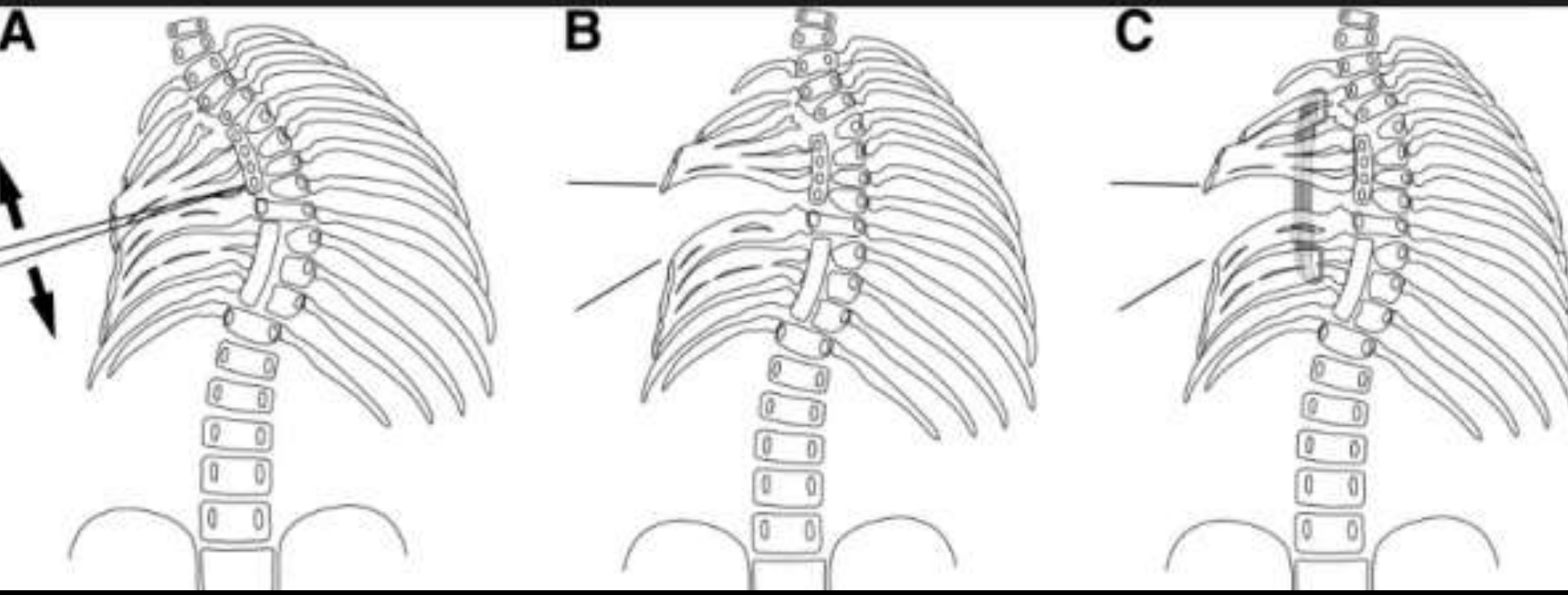
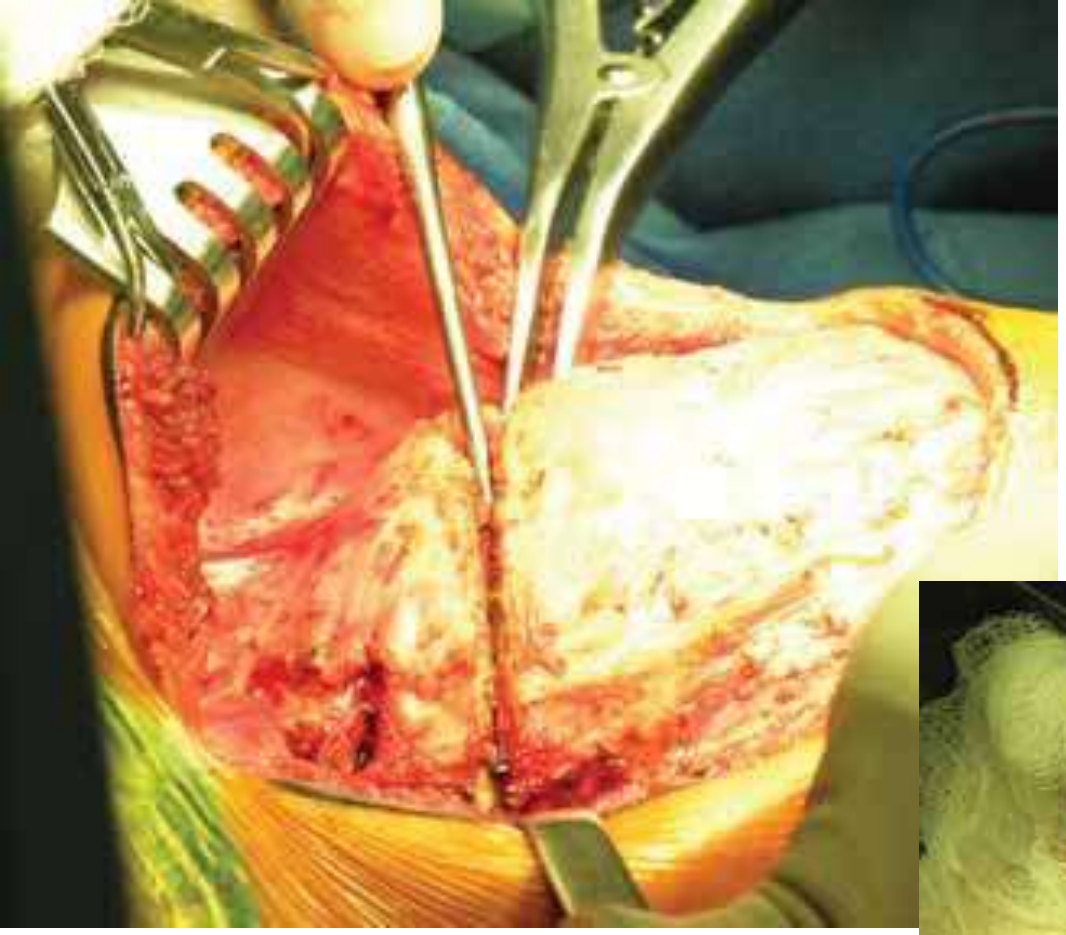
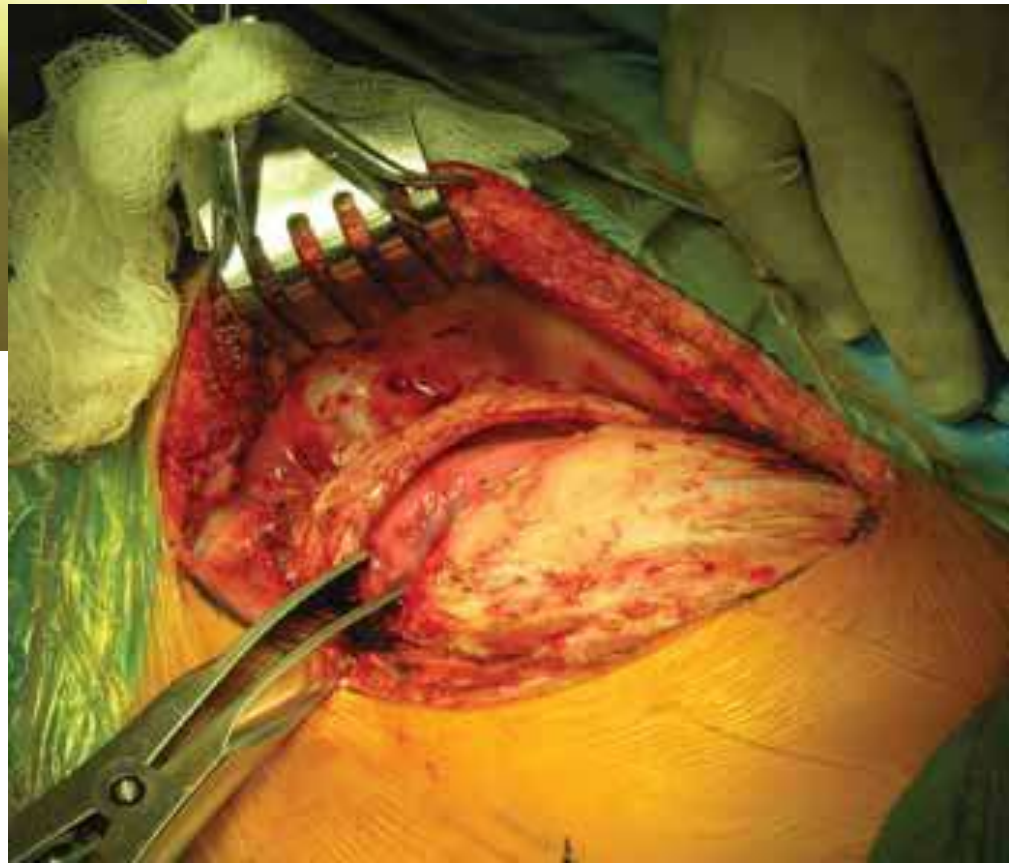


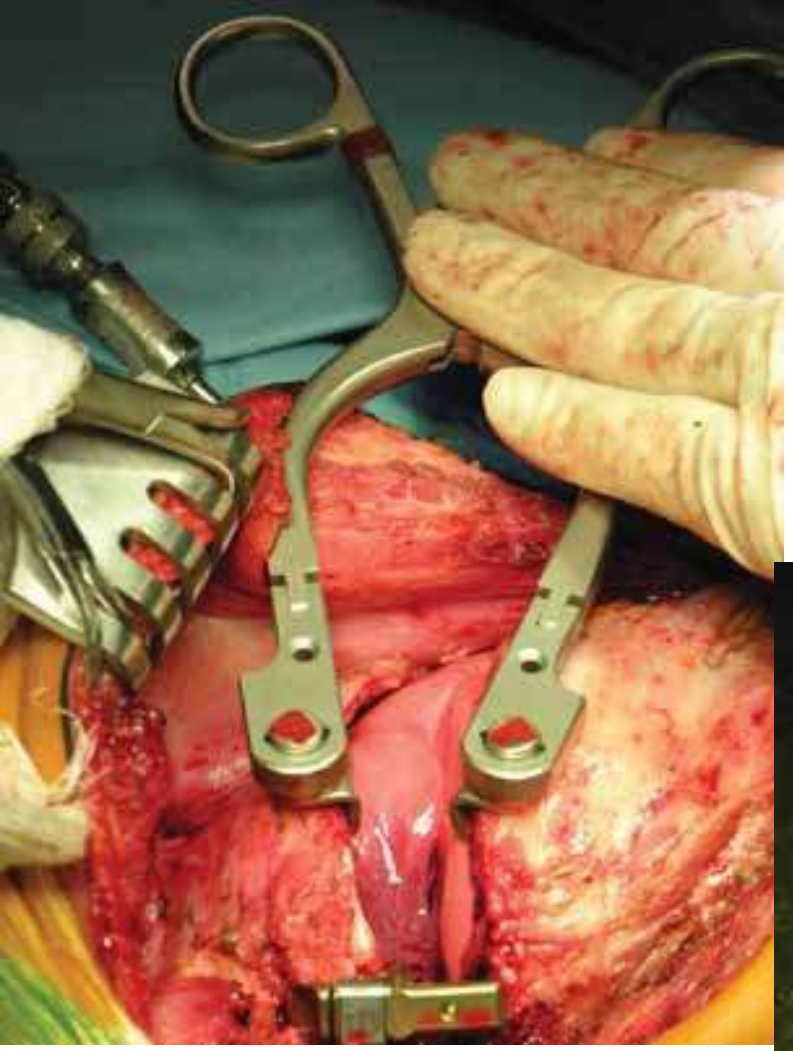
Thoracic expansion devices

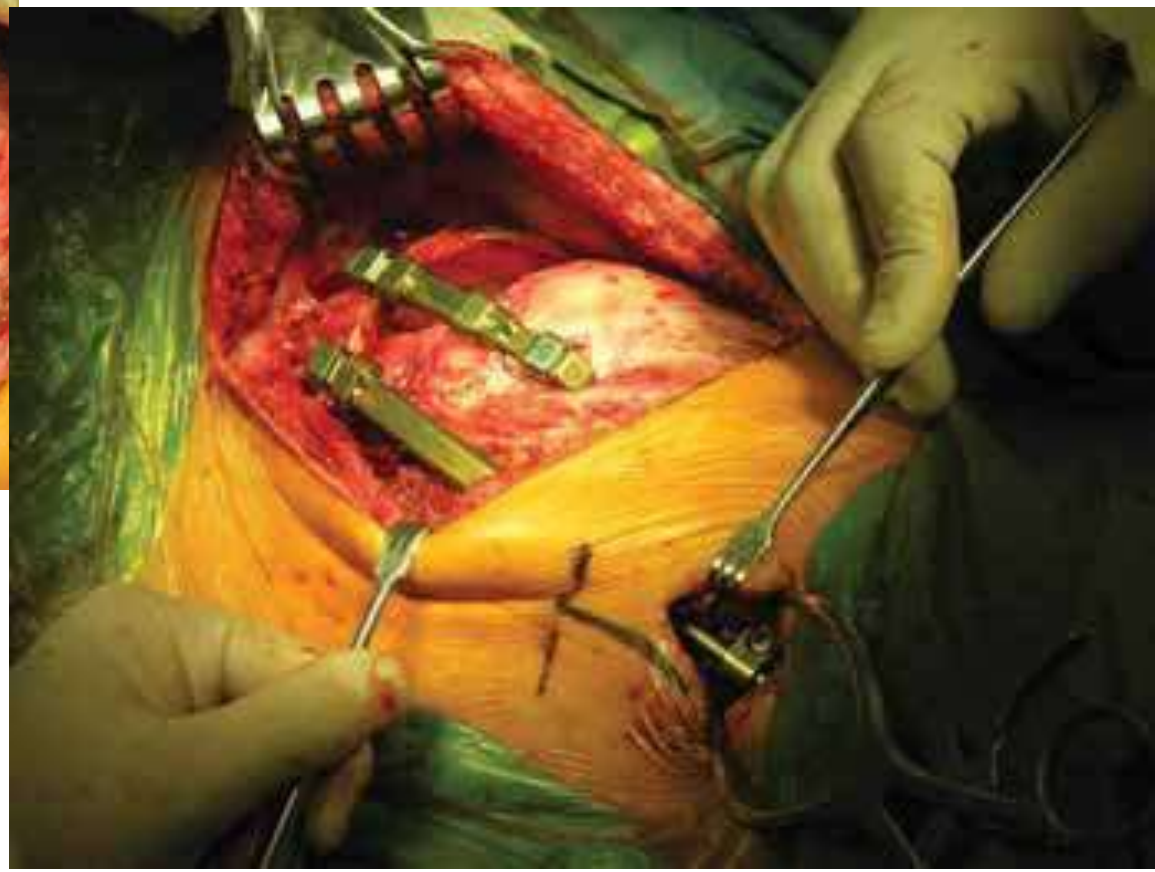


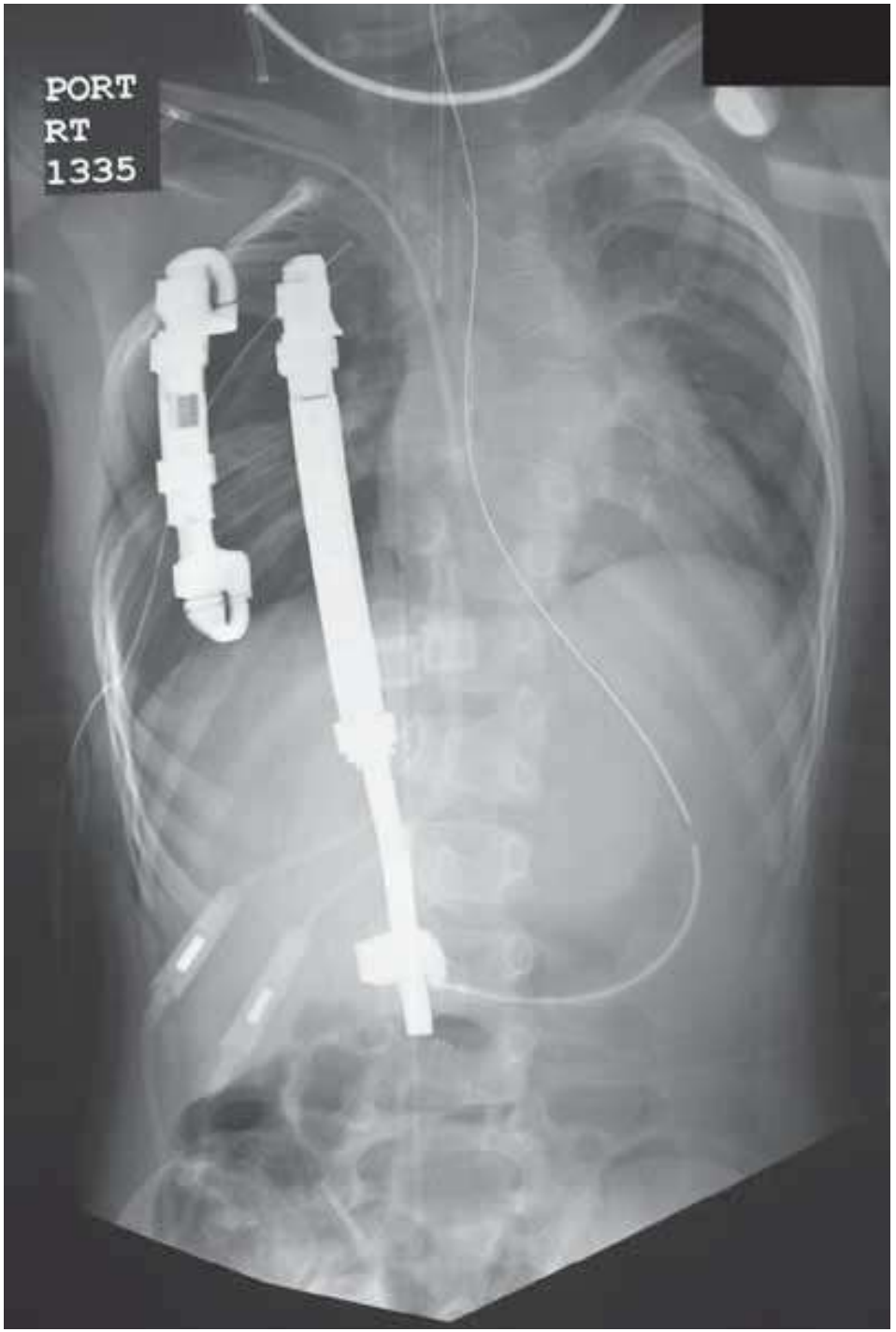
Vertical expandable prosthetic titanium rib











Thank you