Early onset scoliosis

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Early onset scoliosis – deformity before 5yrs of age

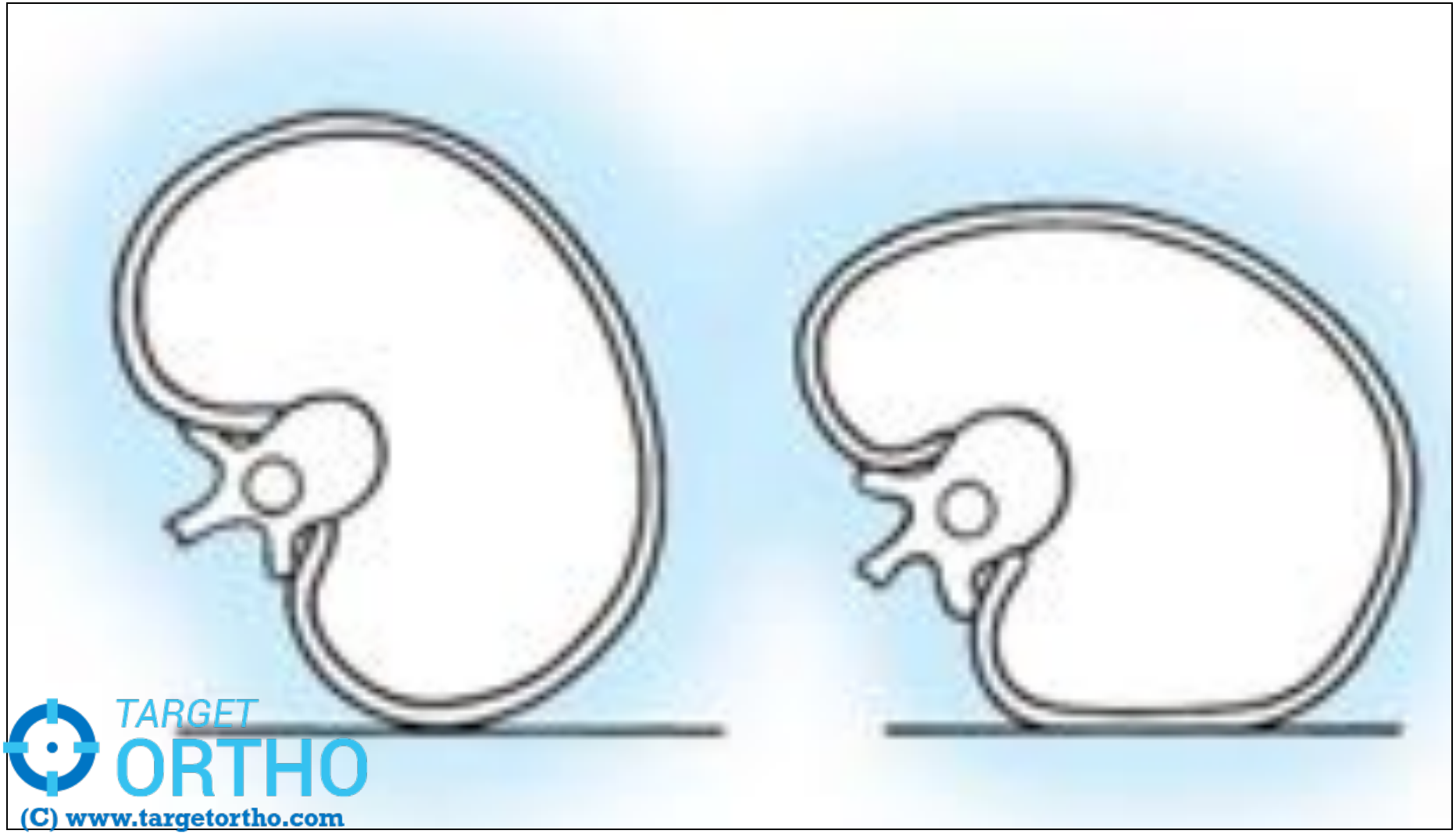
- Treatment principles resemble b/w 5 to 10 and < 5 years.

- 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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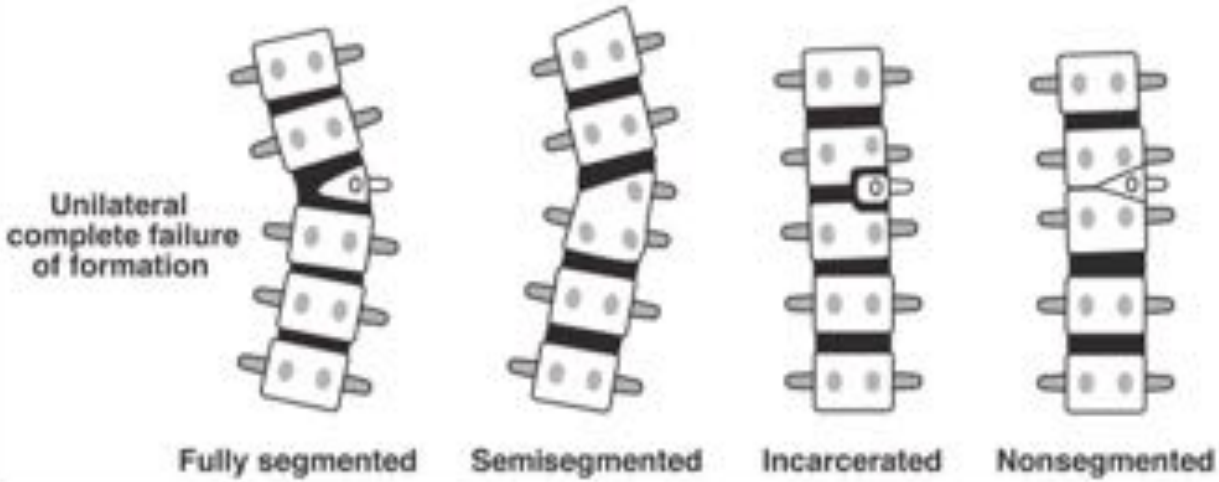
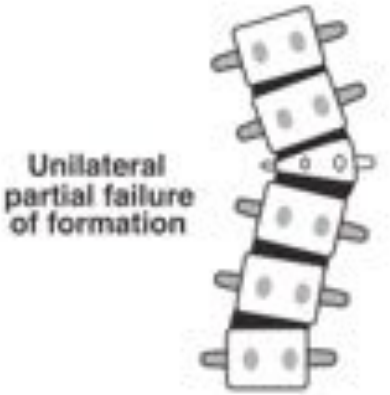
DEFECTS OF FORMATION

Hemivertebra



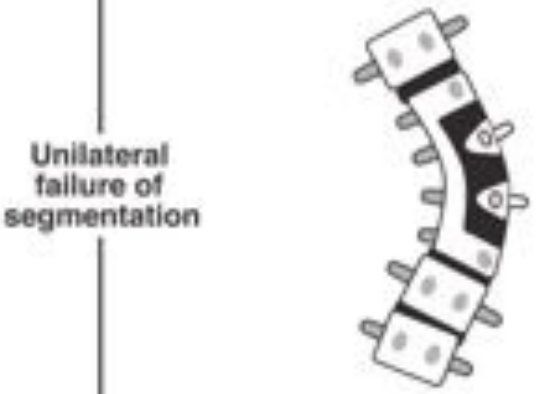
Wedge vertebra



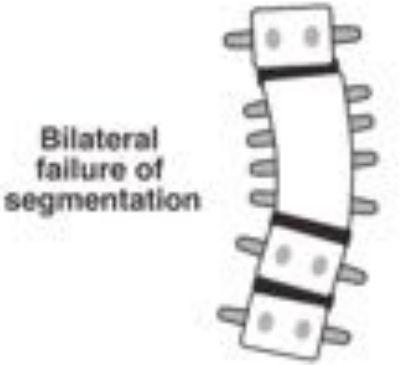
DEFECTS OF SEGMENTATION

Unilateral Unsegmented Bar

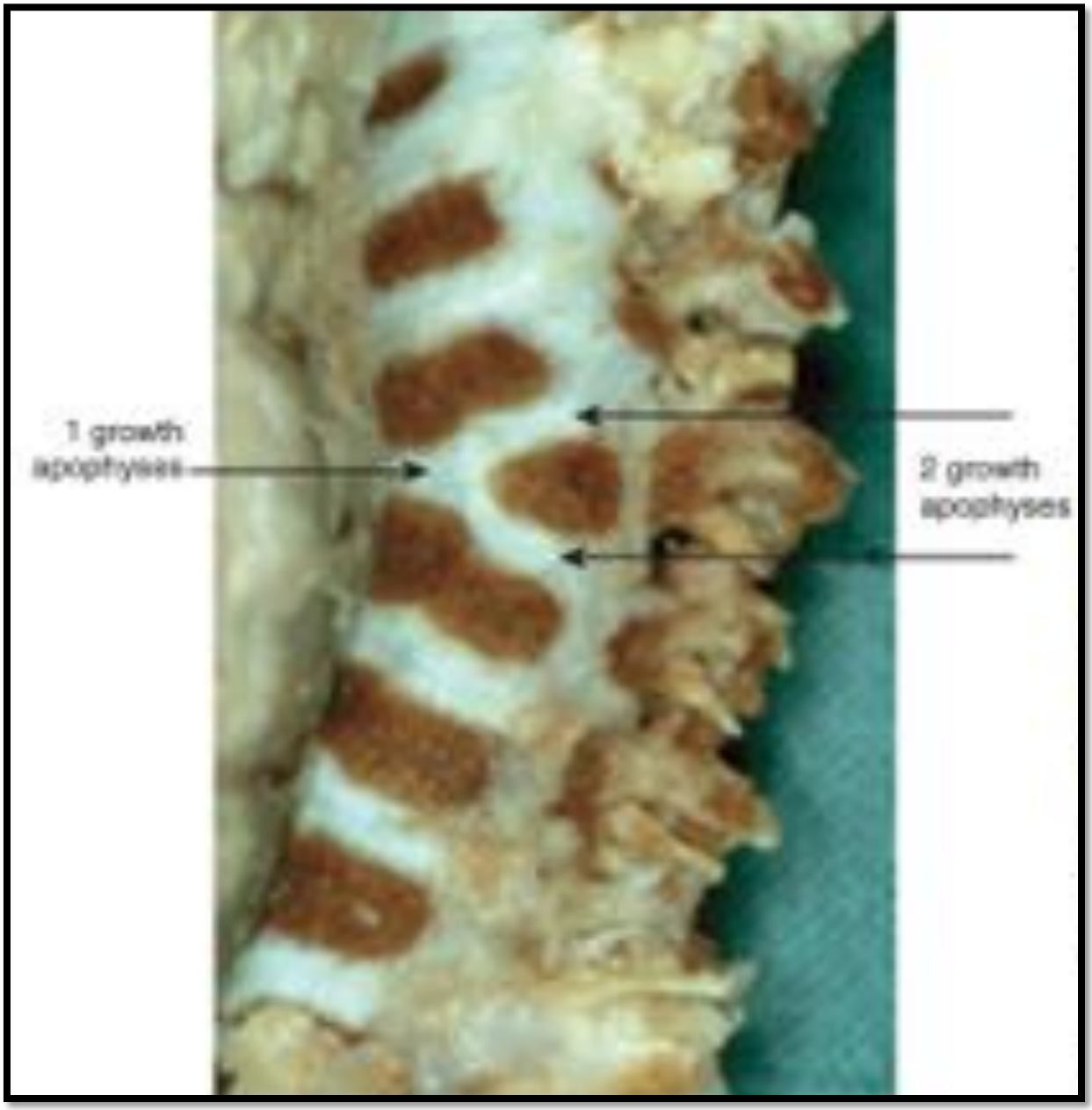
Unilateral Bar and Hemivertebrae



Block vertebra



Congenital scoliosis

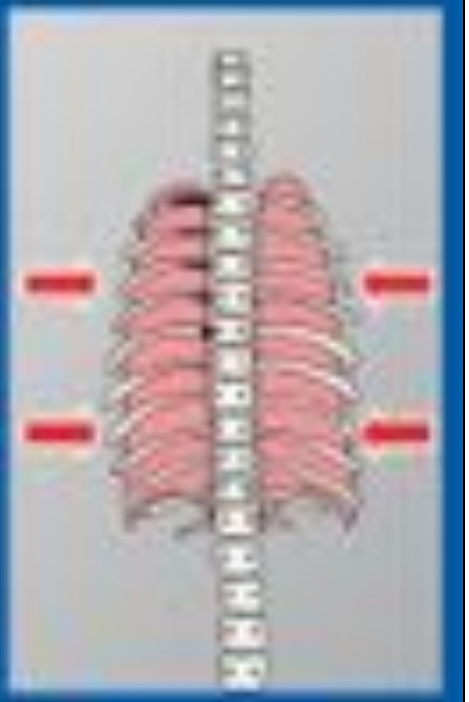


Congenital scoliosis

Volume Depletion Deformities of the Thorax

I

III a



III b

II

Thoracic Institute

Neurocutaneous markers

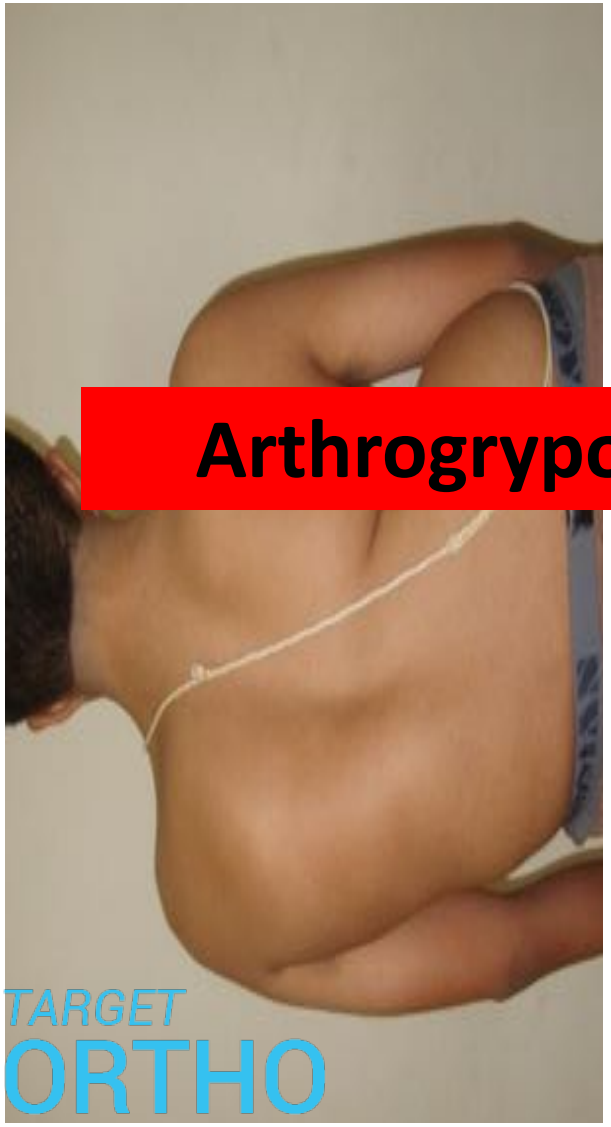
Neurofibromatosis

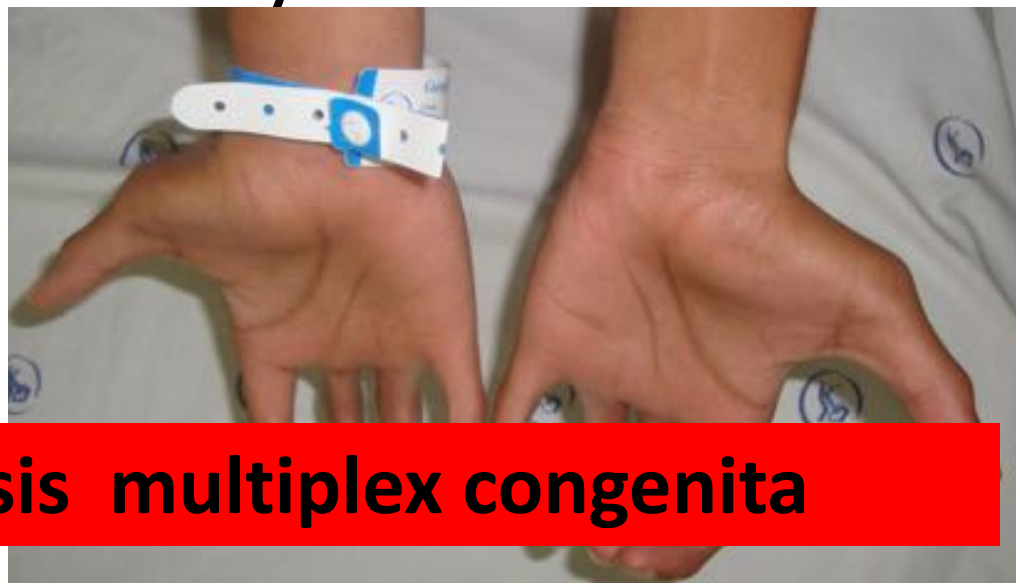
Café au lait spots

Skin tags

Axillary freckles

Look for other specific syndromic features





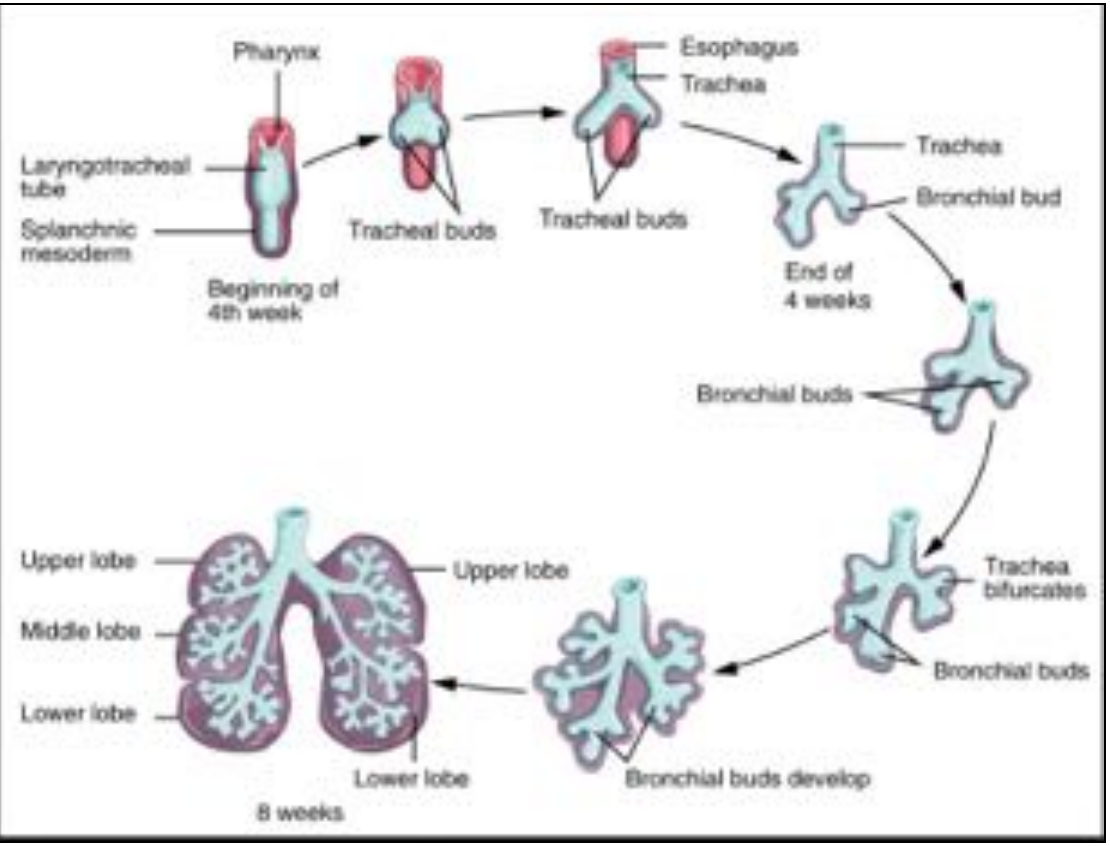
Arthrogryposis multiplex congenita

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**

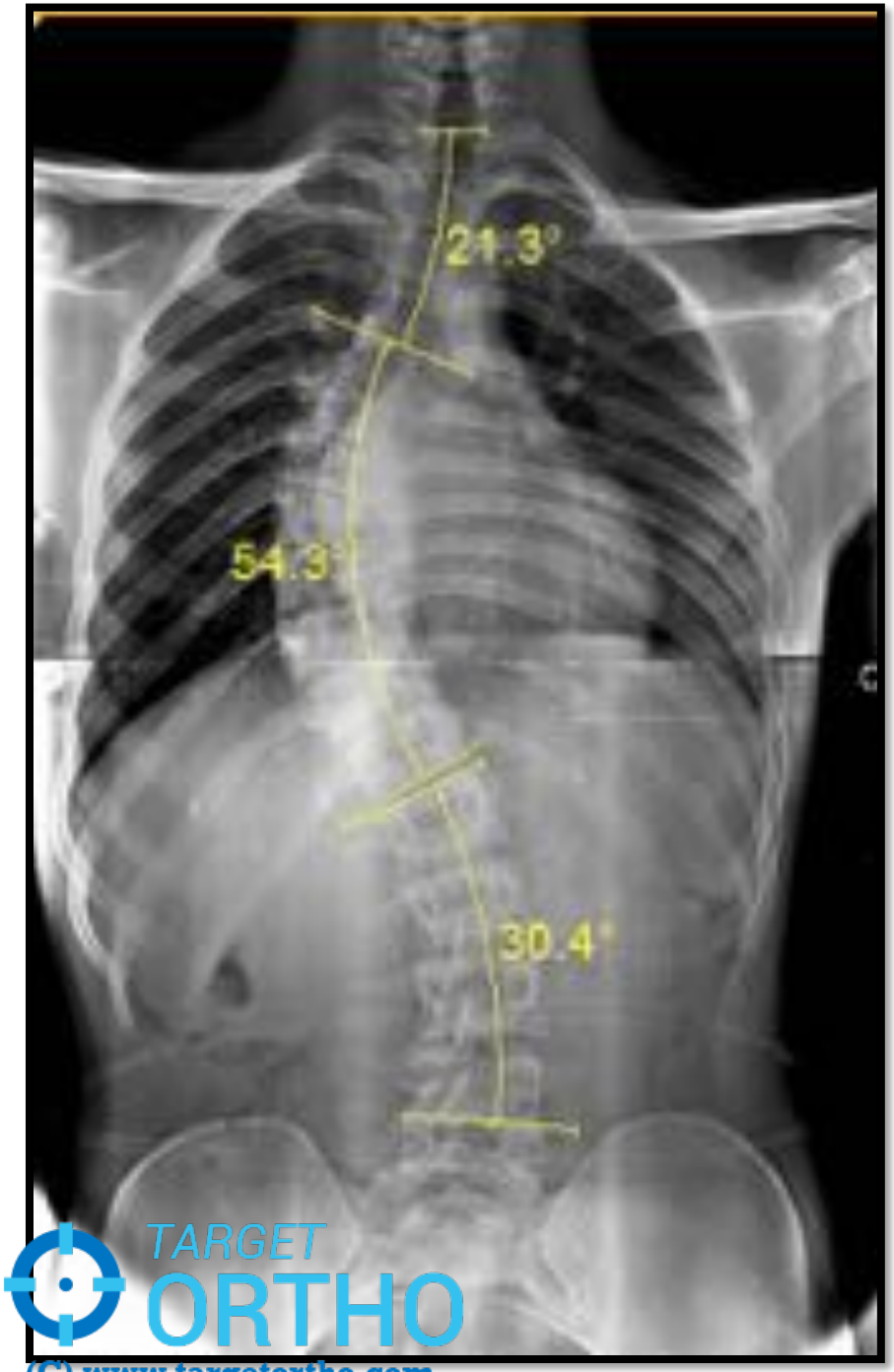
Development of lungs

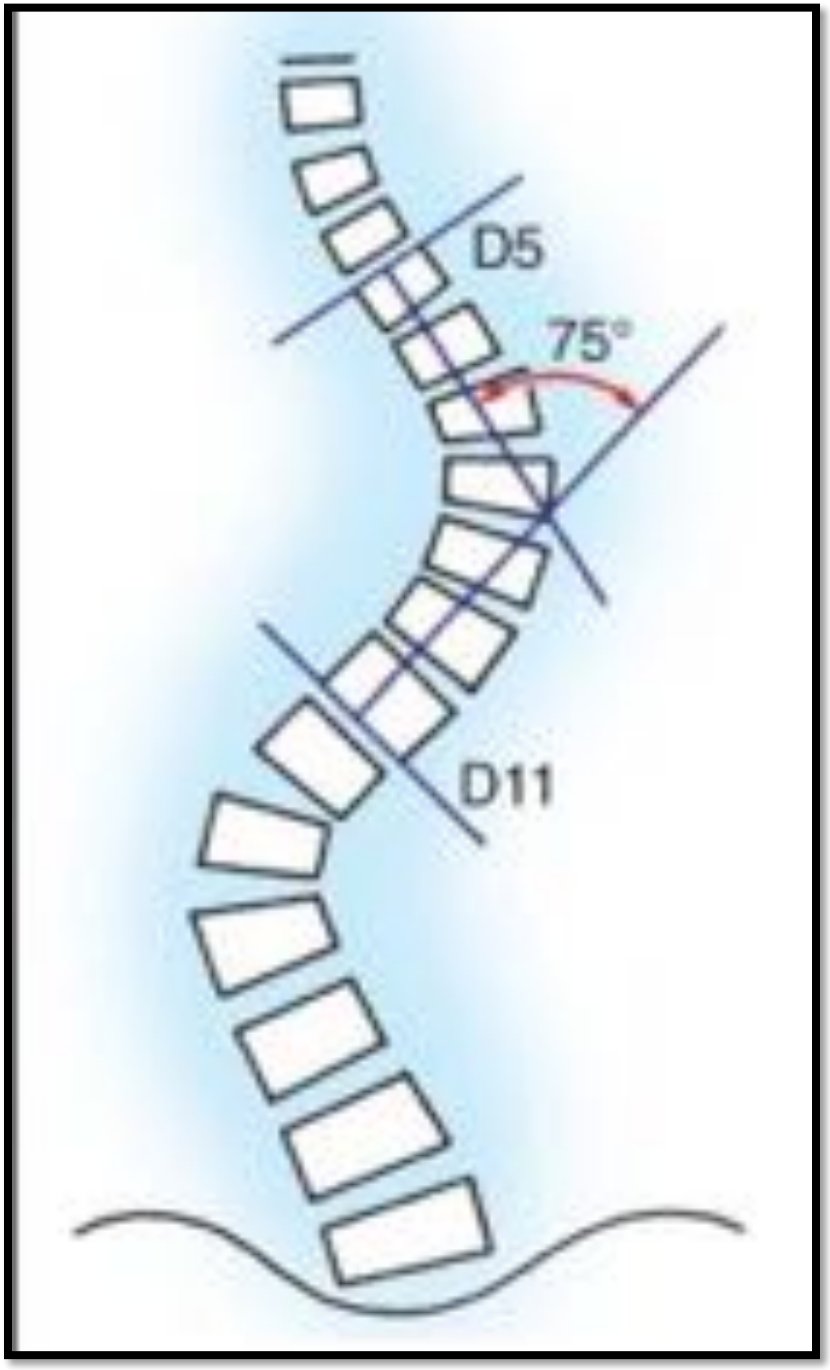


- The alveoli - 10 fold increase till 4 years of age.
- Deformity limits the space for lung growth
- Significant scoliosis before 5 years of age - disabling dyspnea or cardiorespiratory failure.

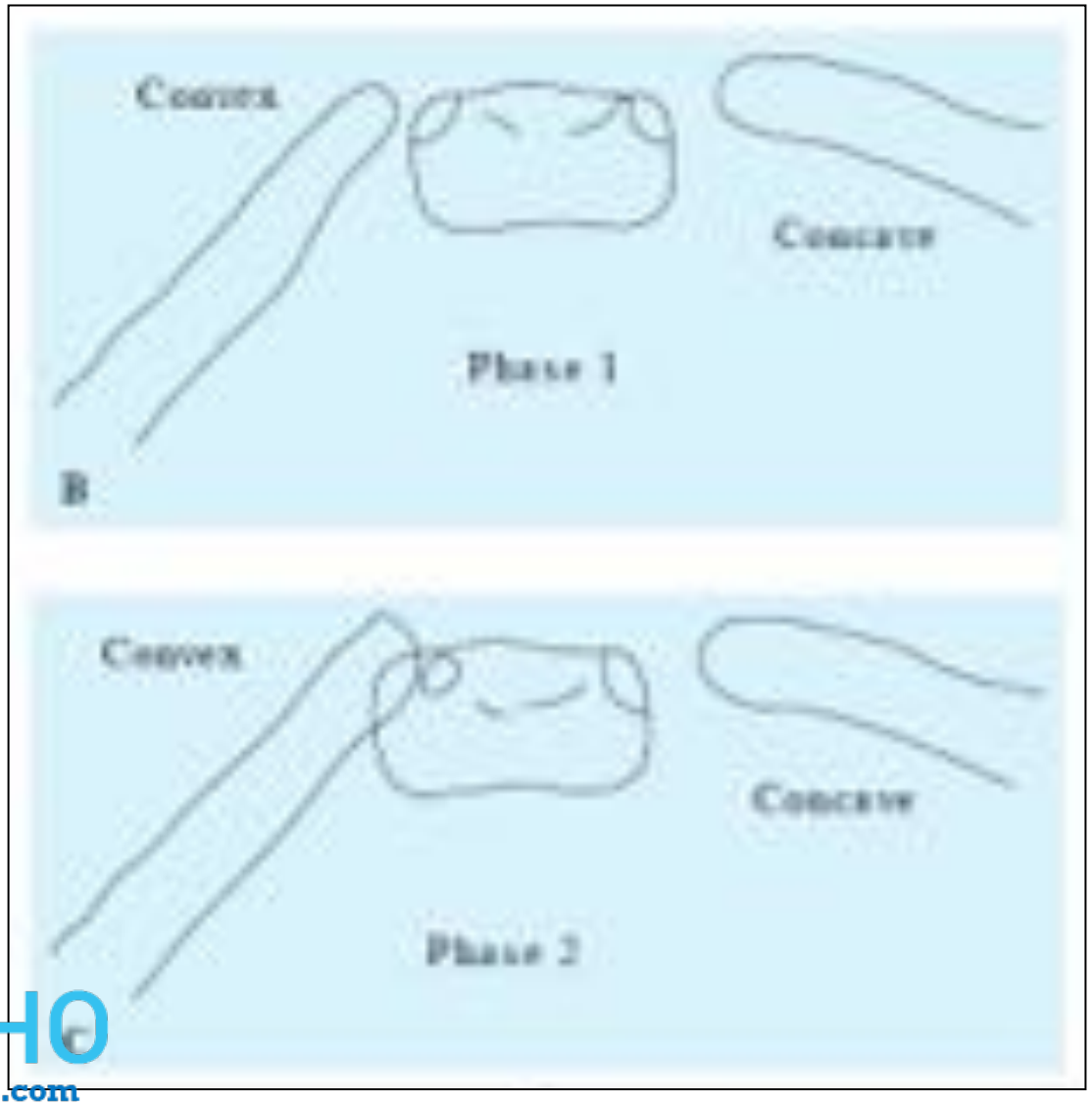
Management of early onset scoliosis
Idiopathic scoliosis

- **Radiological evaluation**

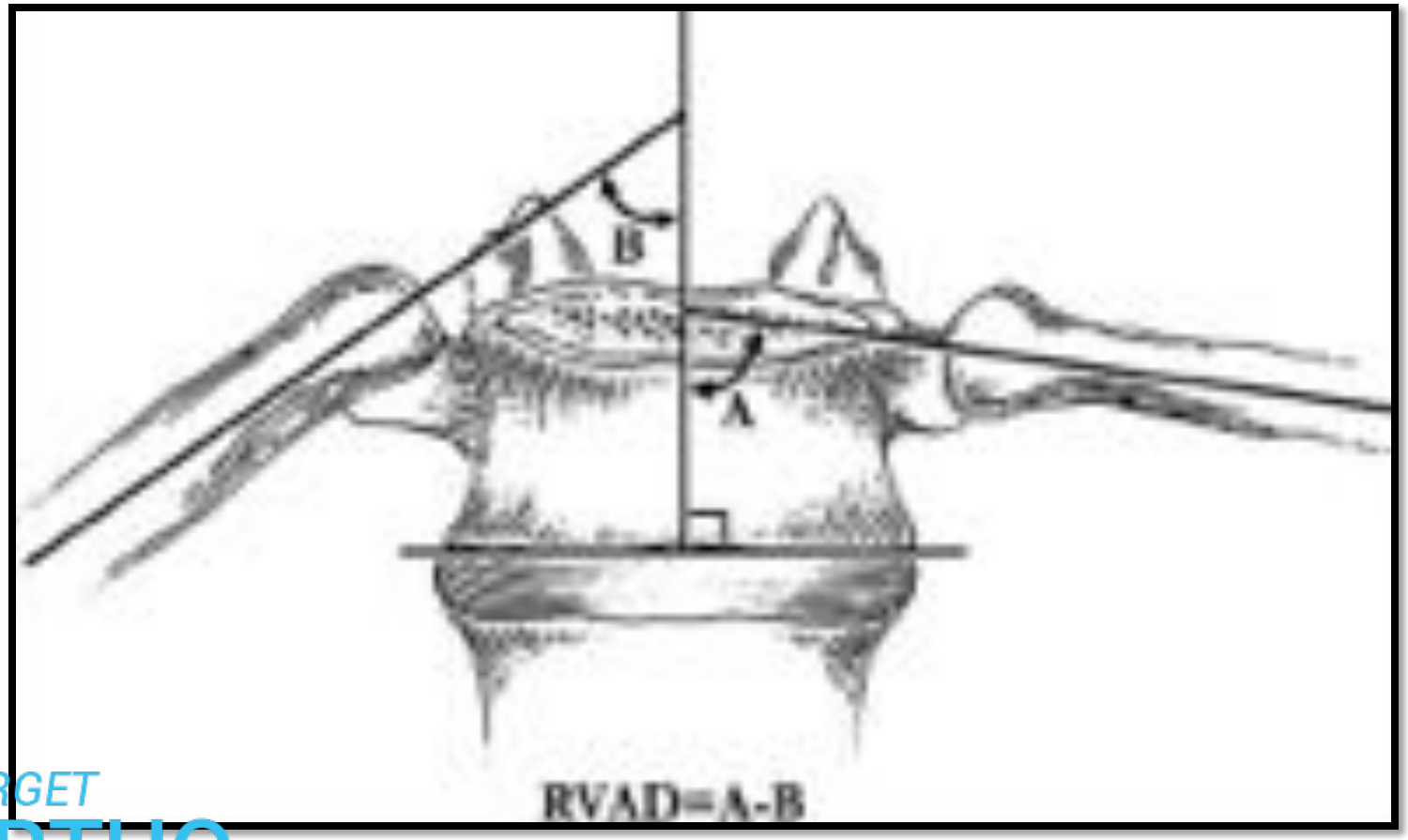




Rib phase- at apex

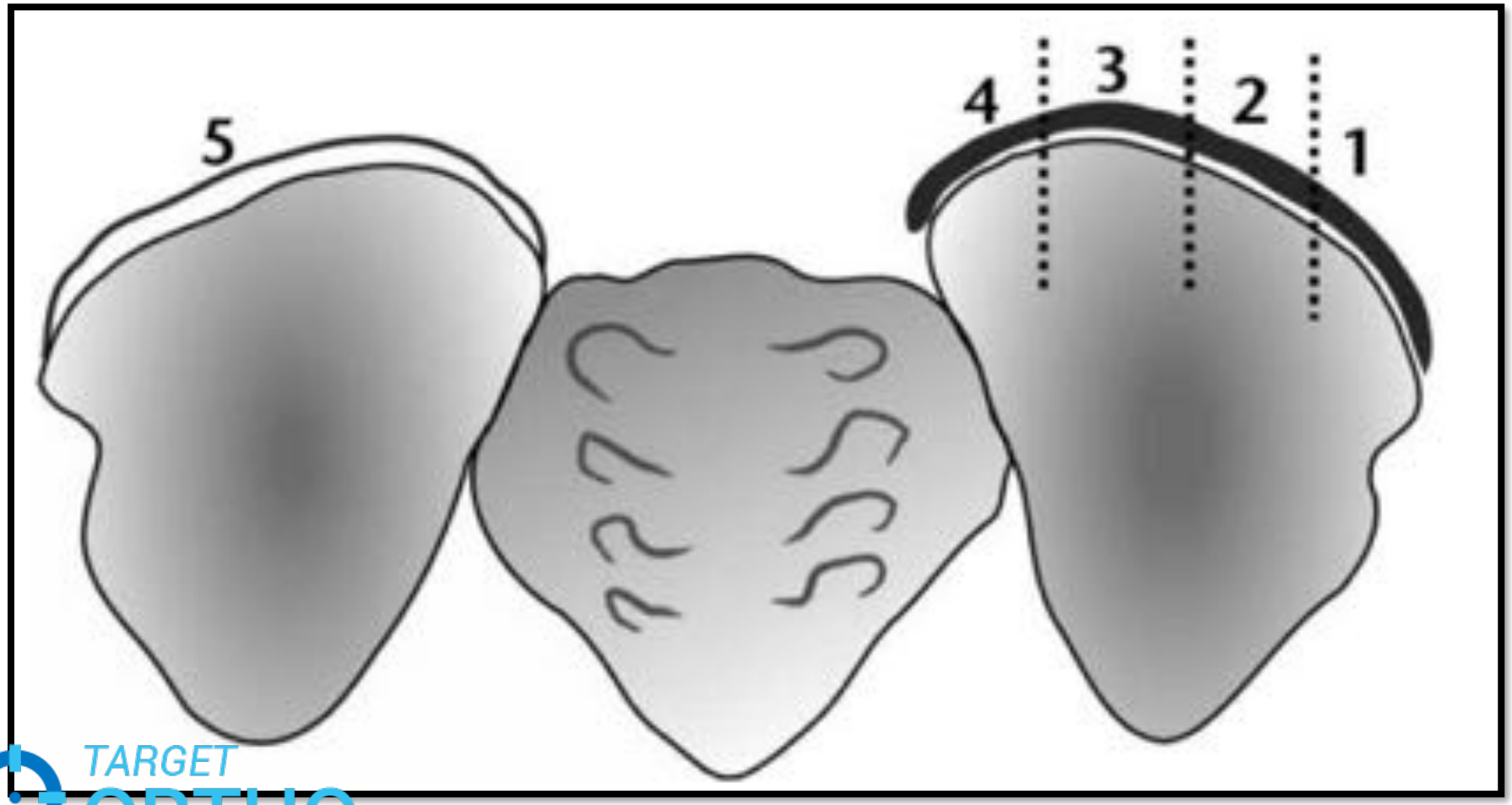


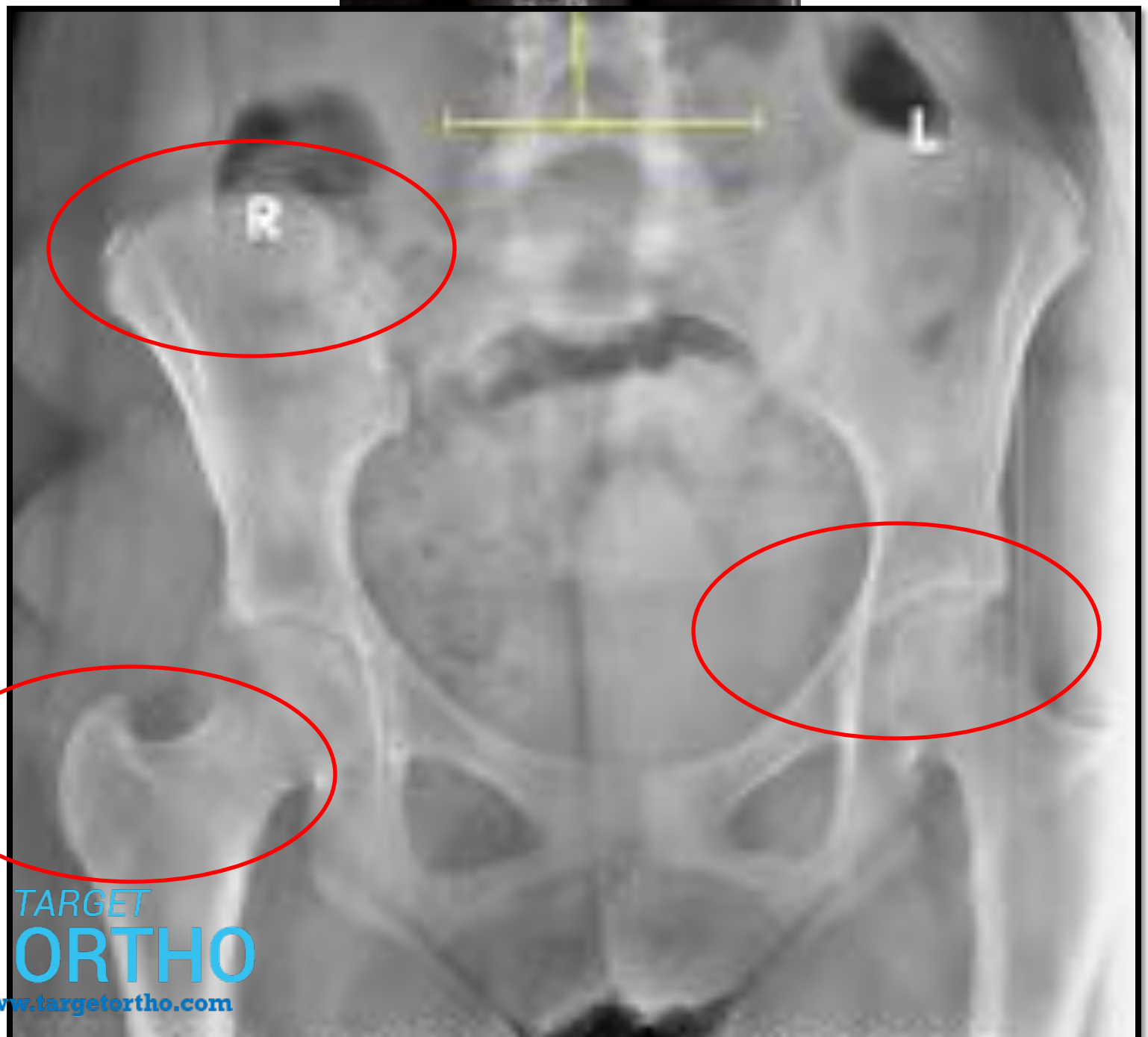
Mehtas rib vertebral angle difference Infantile idiopathic scoliosis



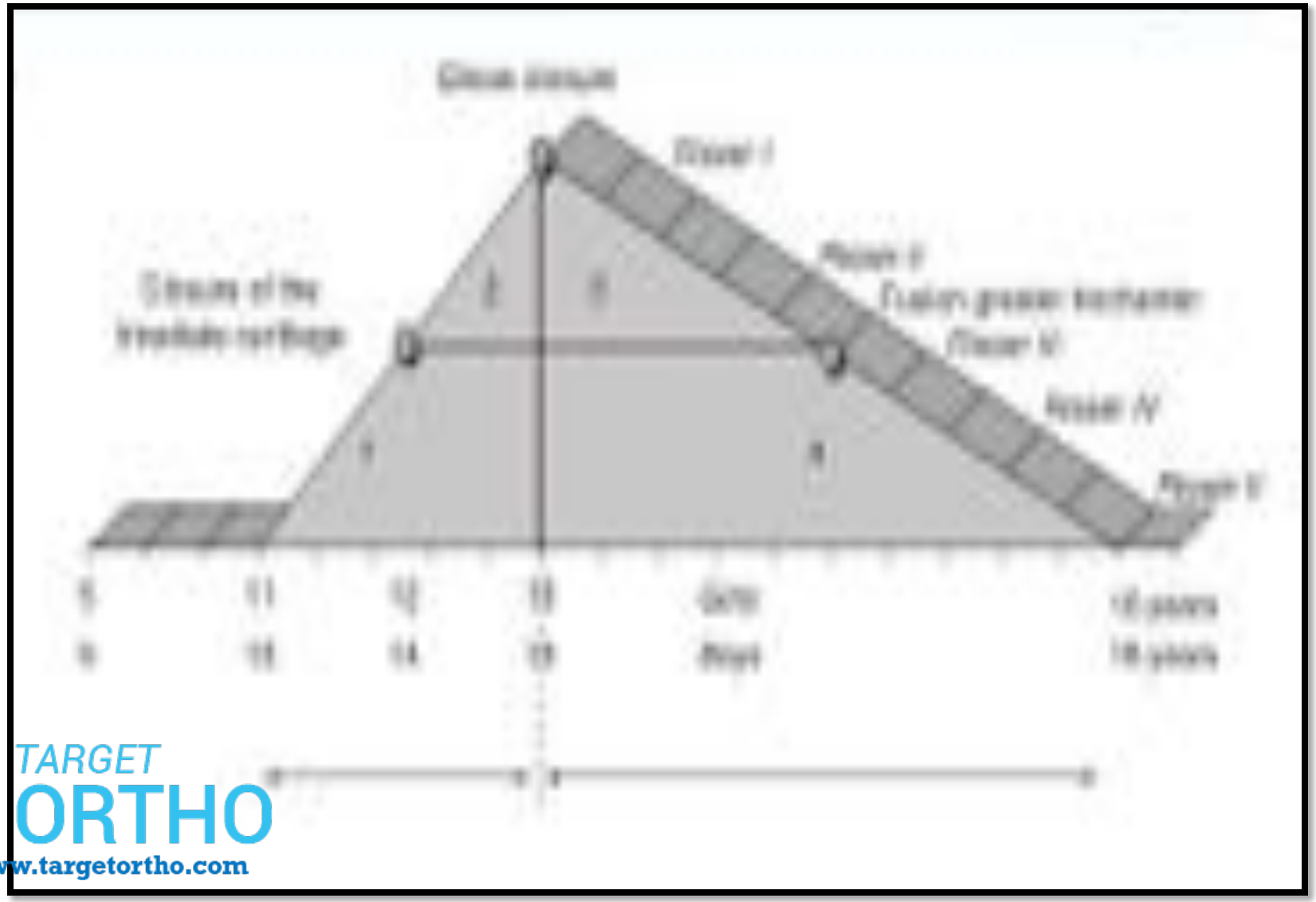
RVAD > 20 deg = more chance of progression

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 <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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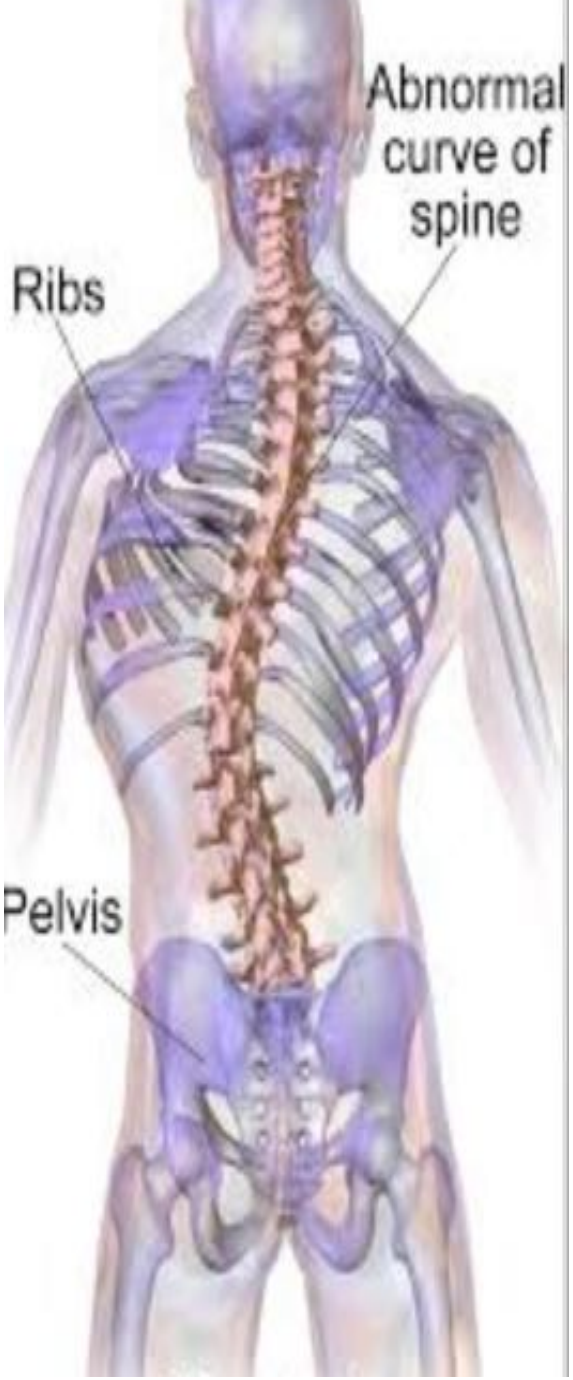
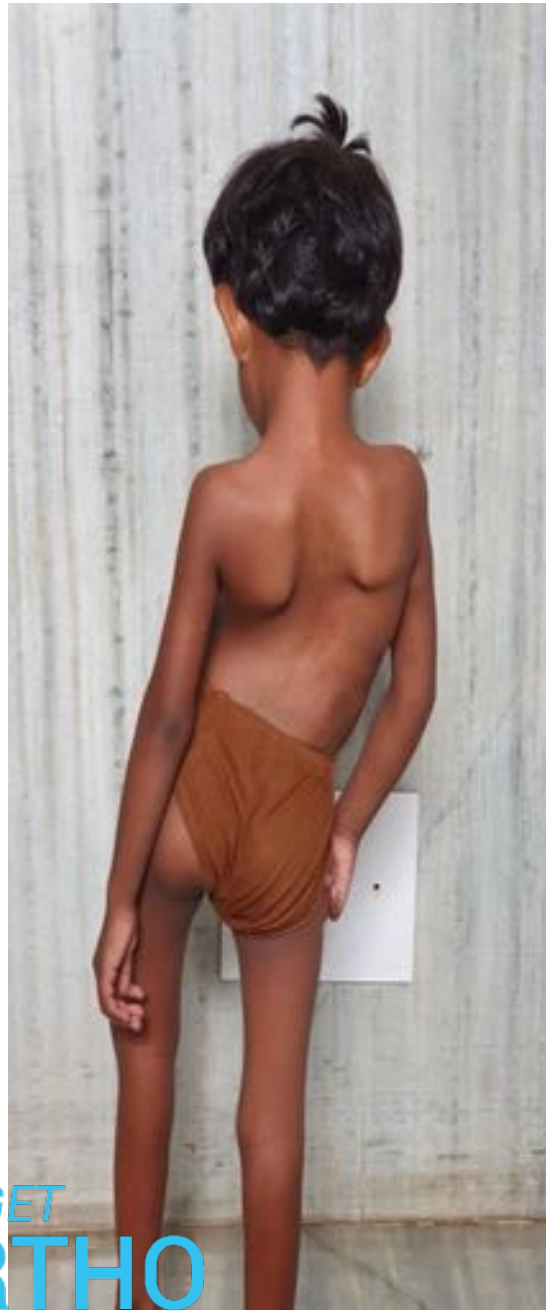




Spinal brace

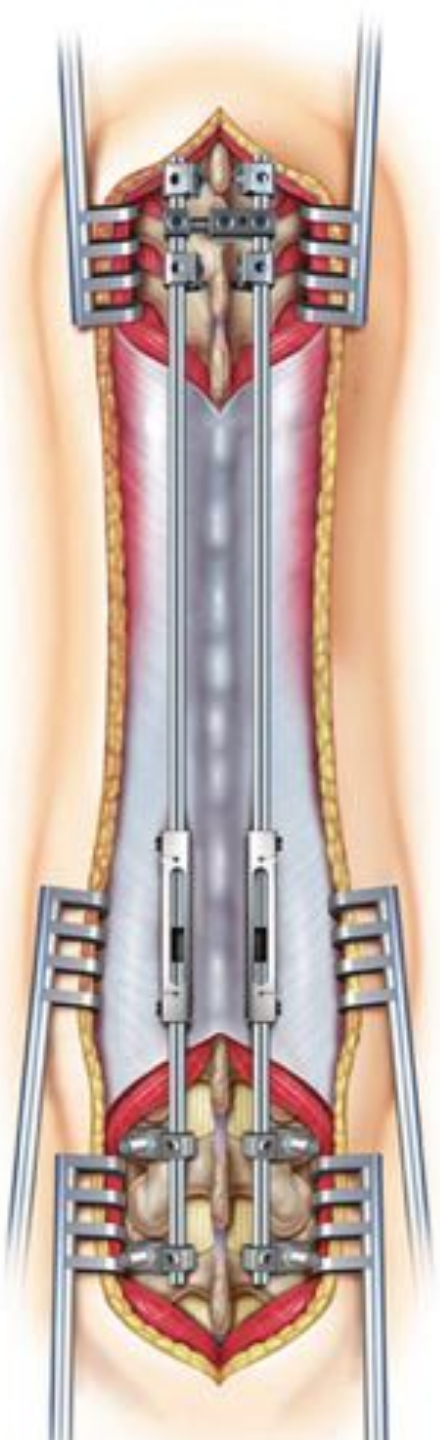
Fusion less surgeries
3 categories

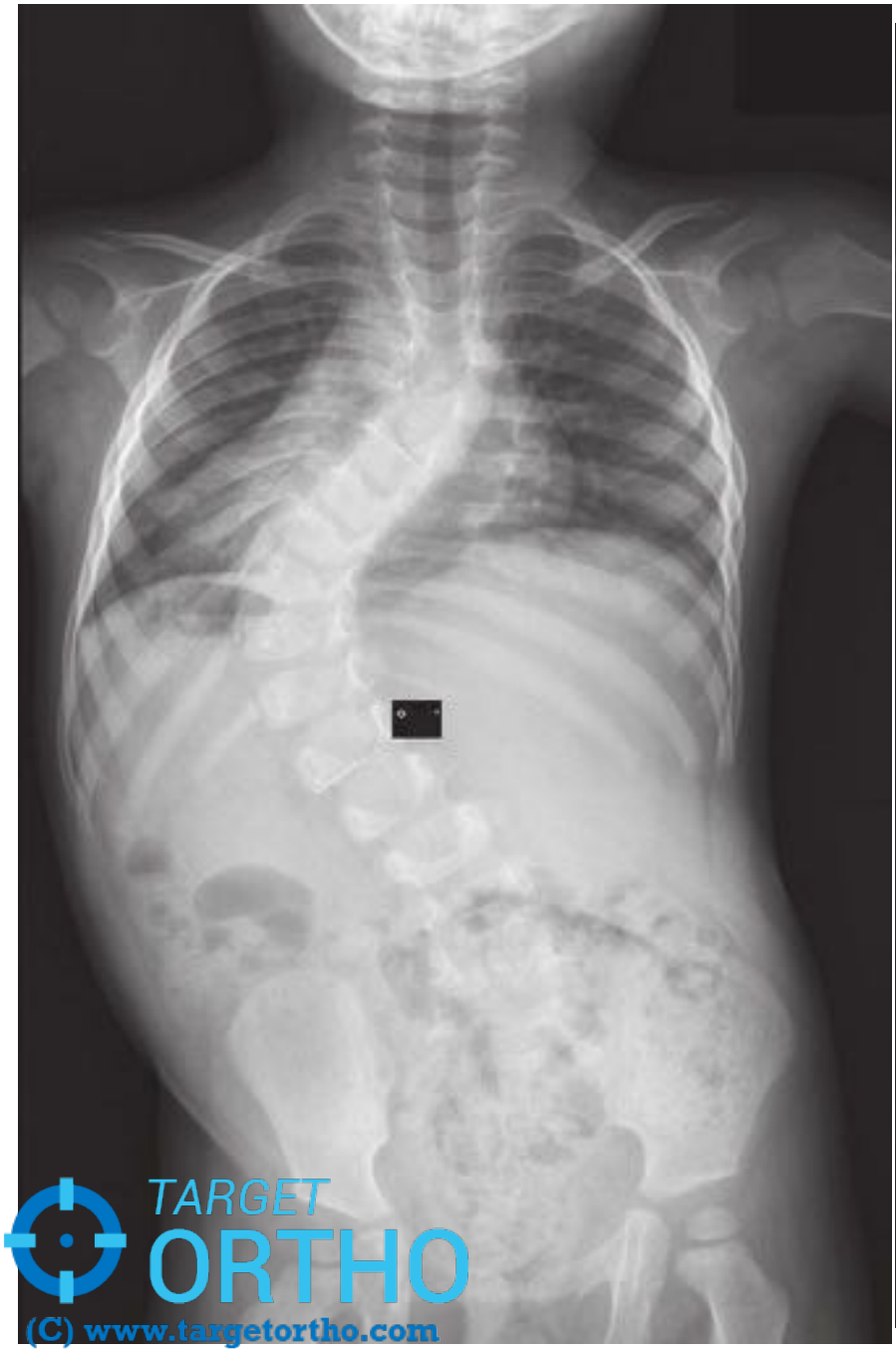
- **1-Distraction-based systems** - distractive force across deformed segment- growth rods

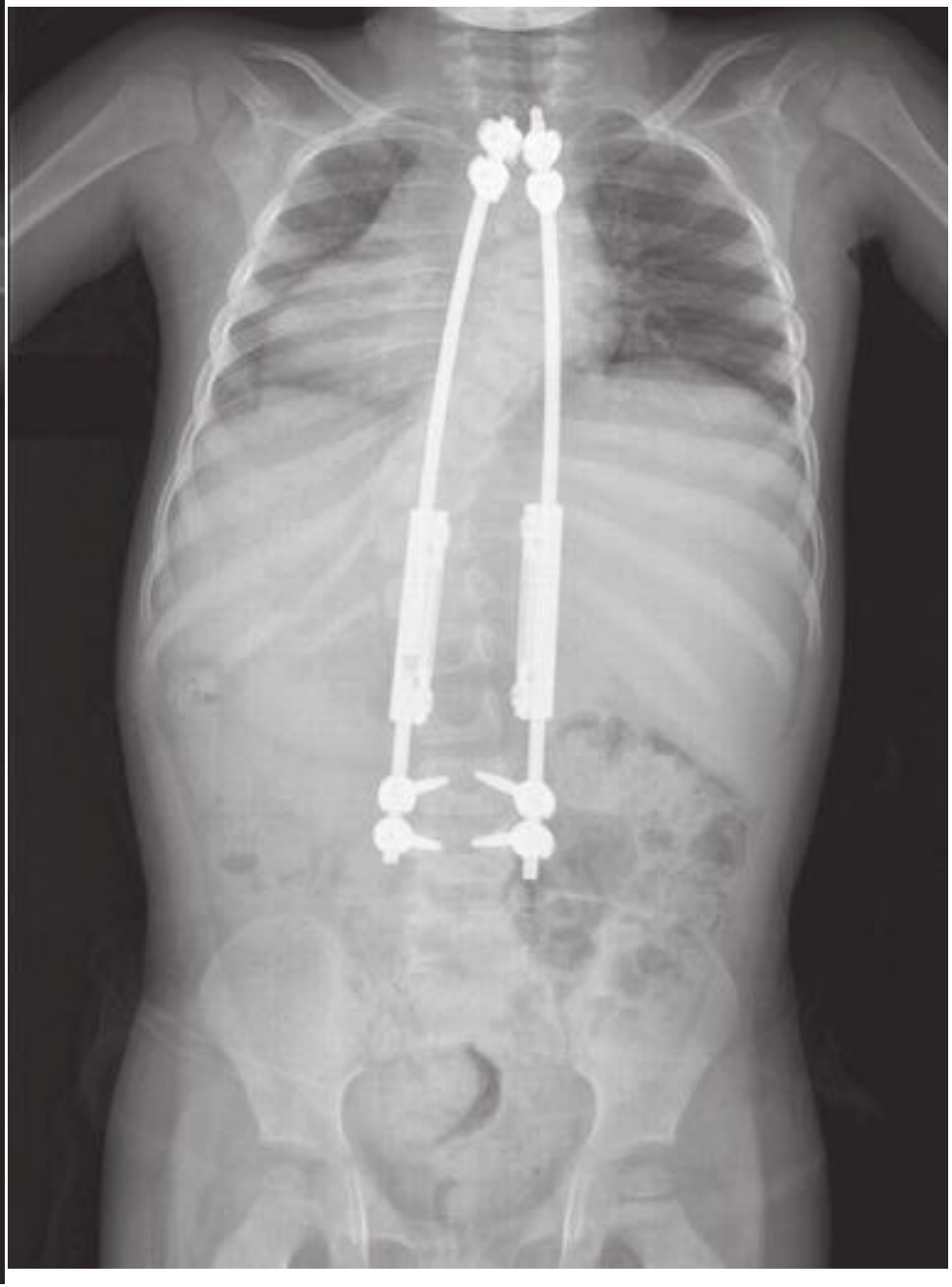
- **2-Compression-based systems** - compressive force -inhibition of the convex side.
- Examples - vertebral body staples and vertebral body tethering.

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

Growth rods

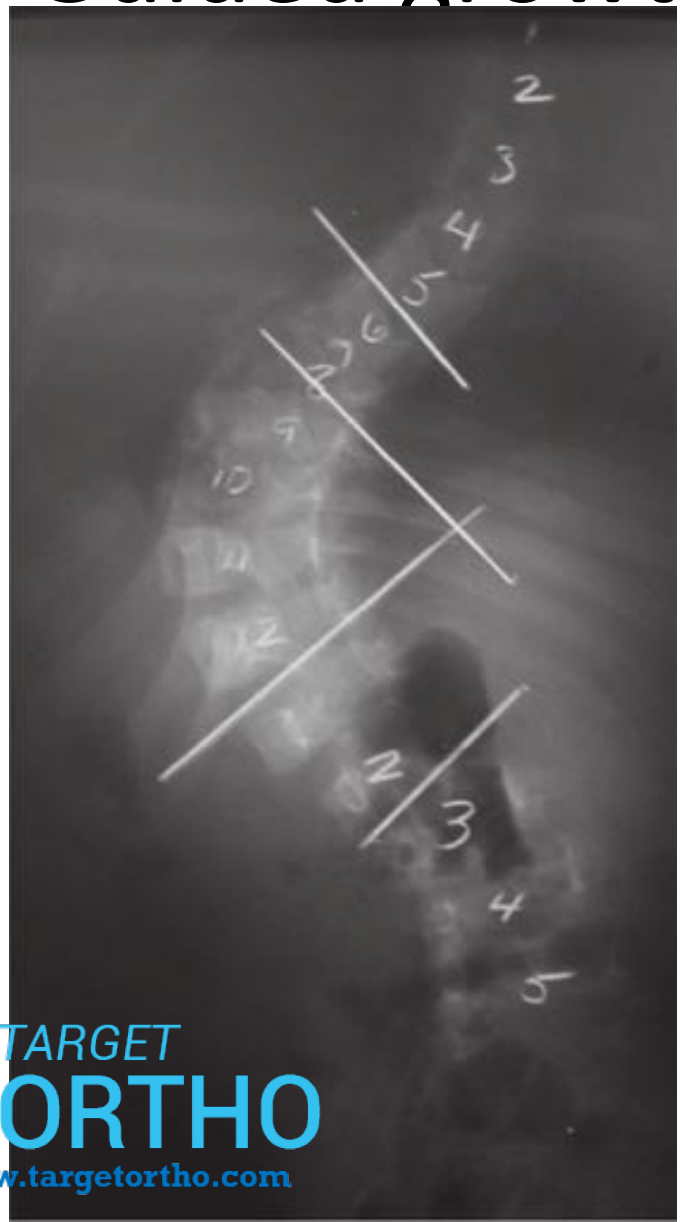


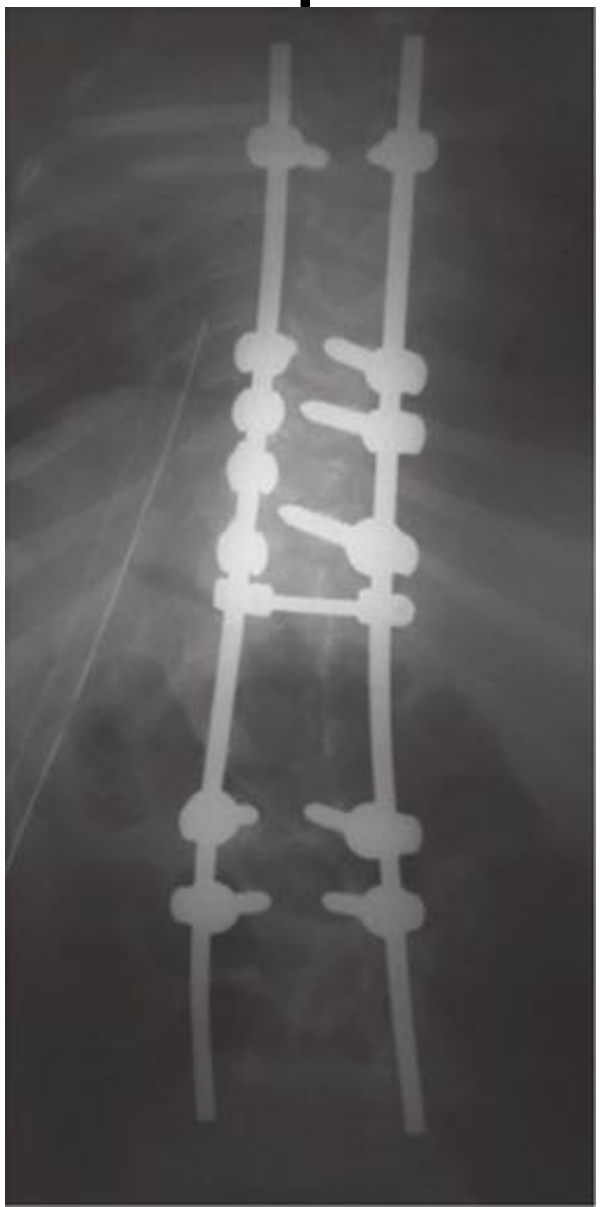




Stapling technique

Guided growth- shilla procedure





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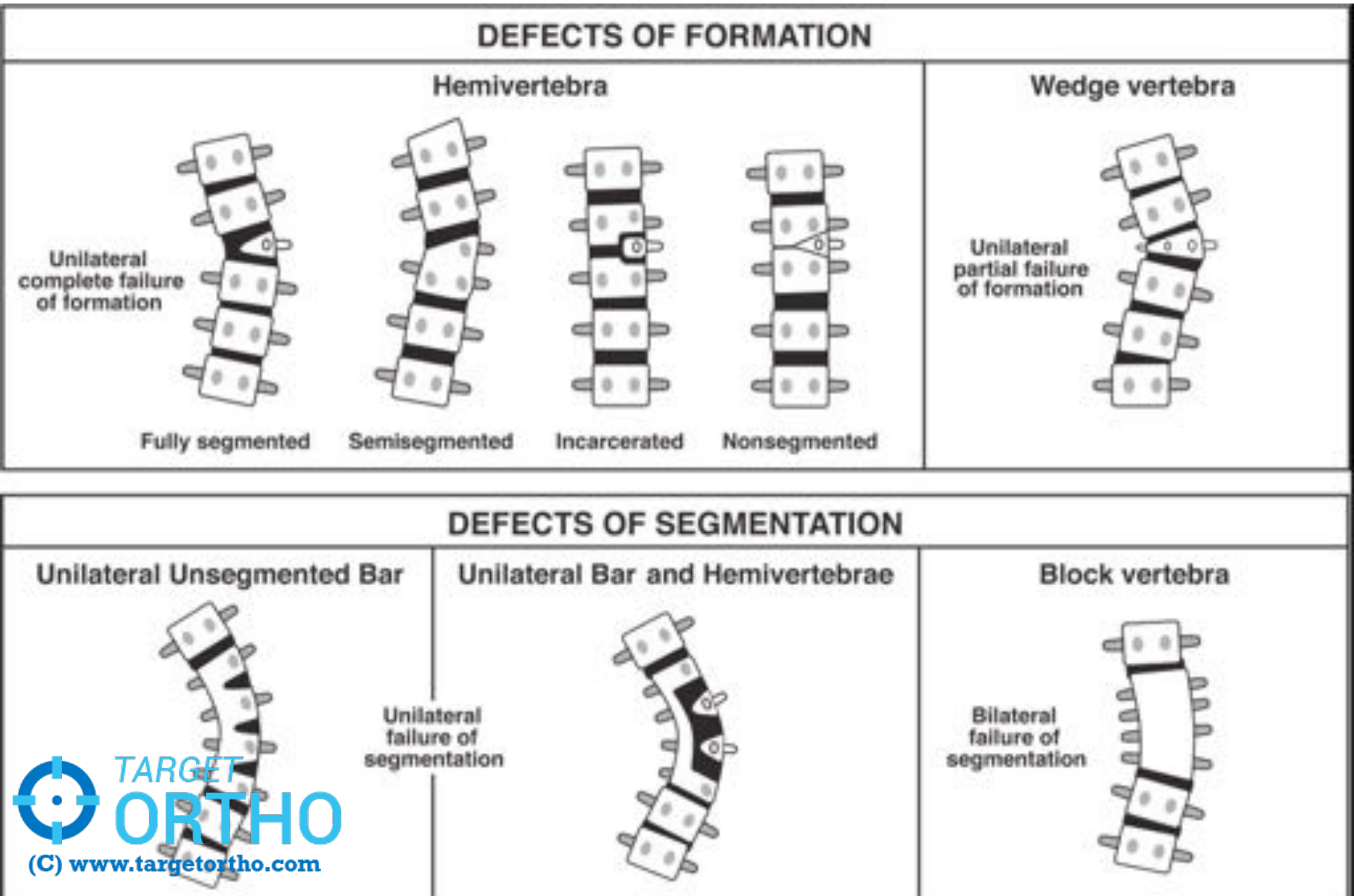

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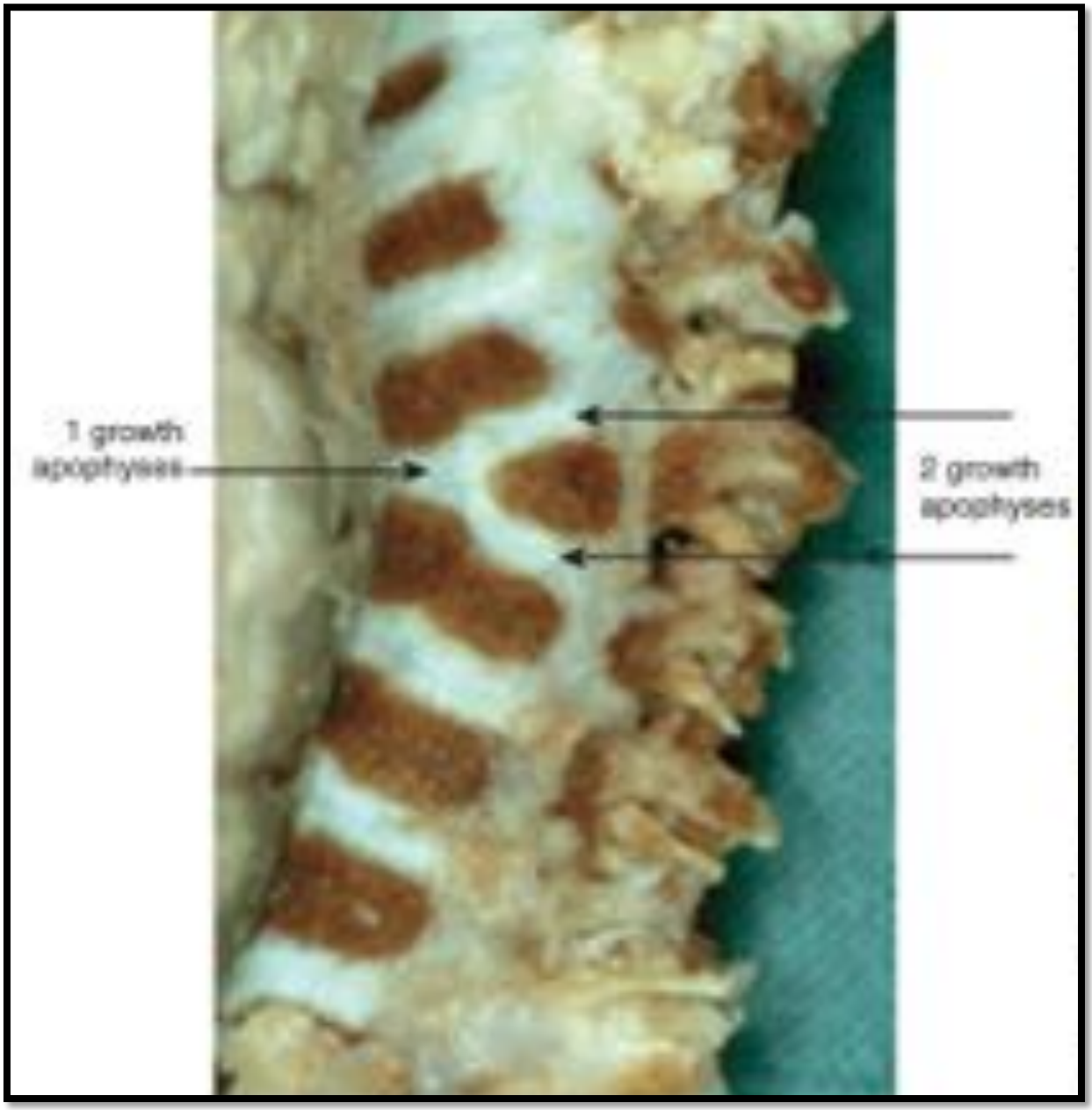

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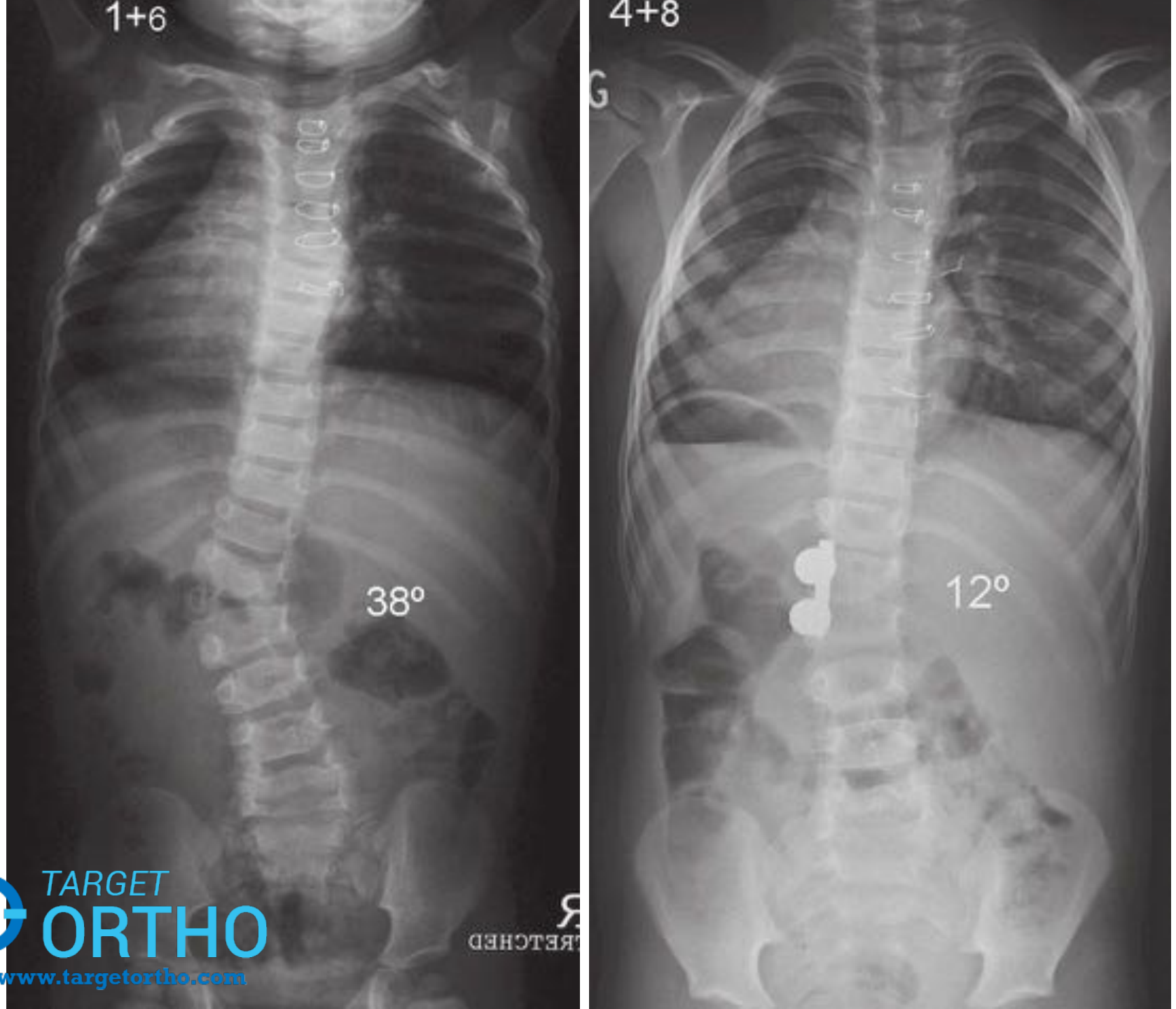

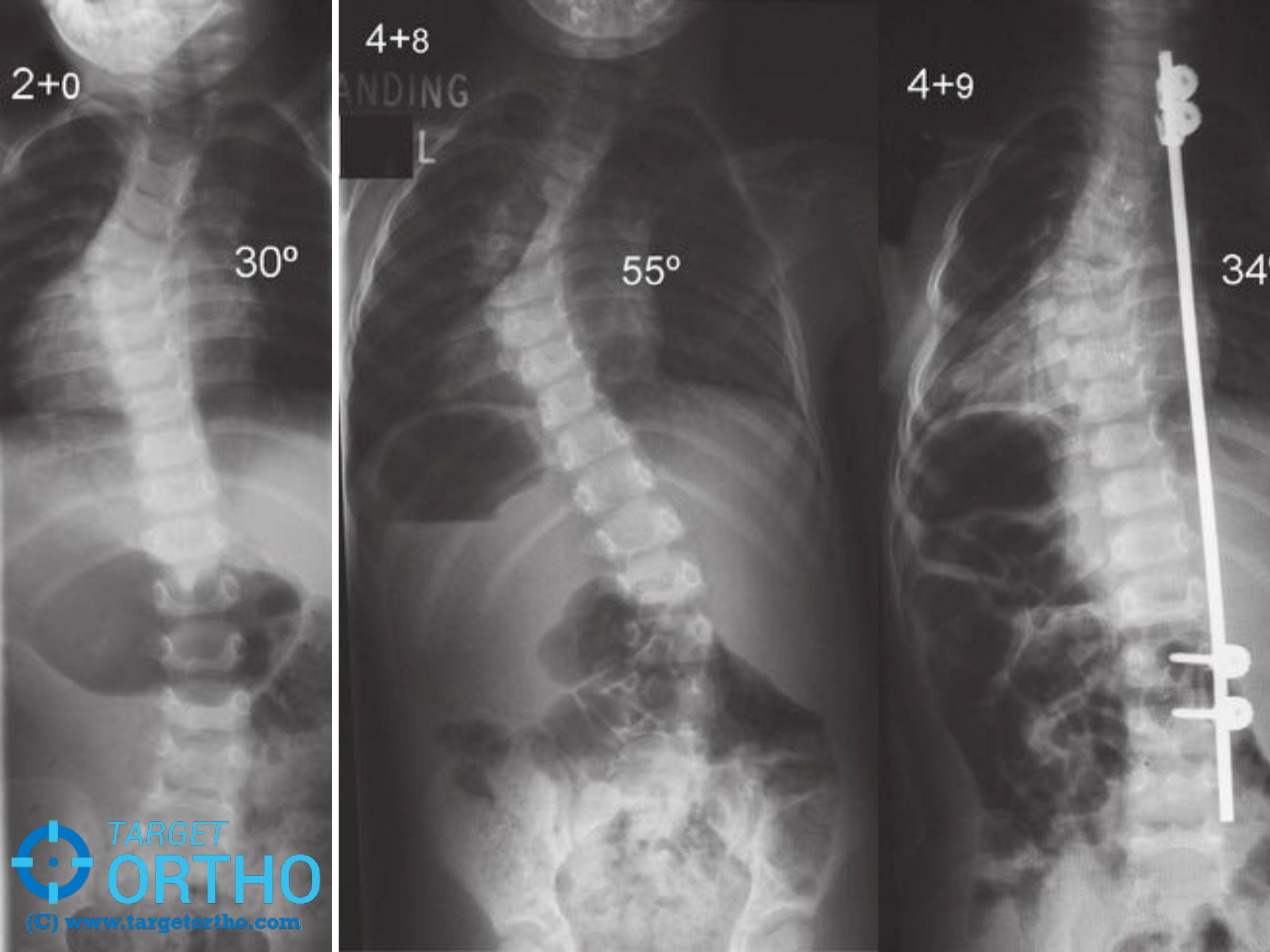
2+0
30°
4+8
ANDING
L
55°
4+9
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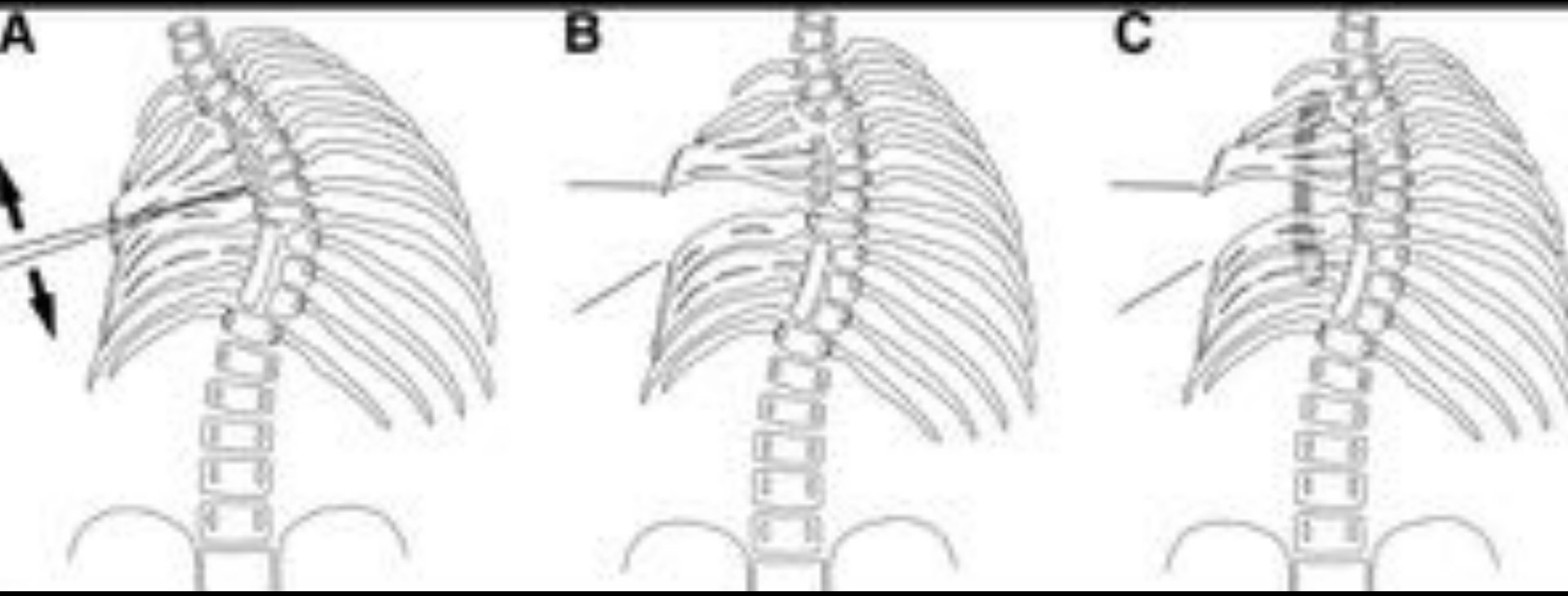
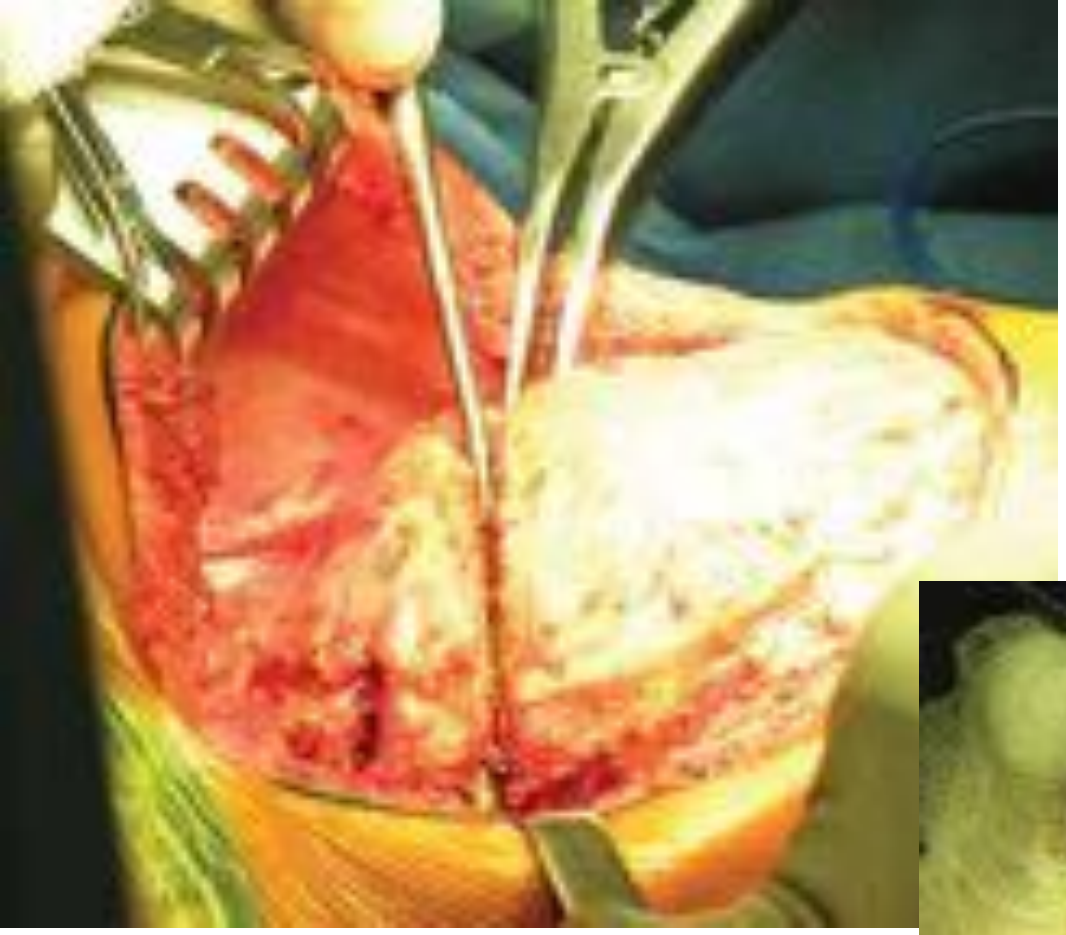
Thoracic expansion devices



Vertical expandable prosthetic titanium rib



Thank you