DISTRACTION OF (MAGEC) ROD WHY AND WHEN ?

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Early Onset Scoliosis

- Spinal Deformity in children < 5 years

- Natural History dismal and it is challenging

- Aim of Management:

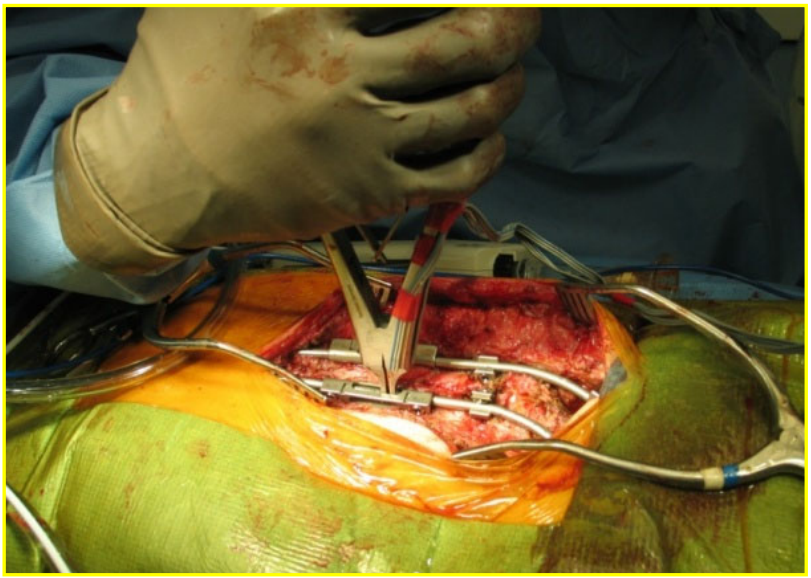
1. Stop curve progression
2. Achieve max axial skeletal growth
3. Allow lung and thoracic cage development to continue

Treatment Of EOS

1. Distraction Based e.g: VEPTR
2. Guided Growth e.g: Shilla Technique
3. Compression Based
   e.g: tether, staples

Disadvantages of Conventional Growth Rod

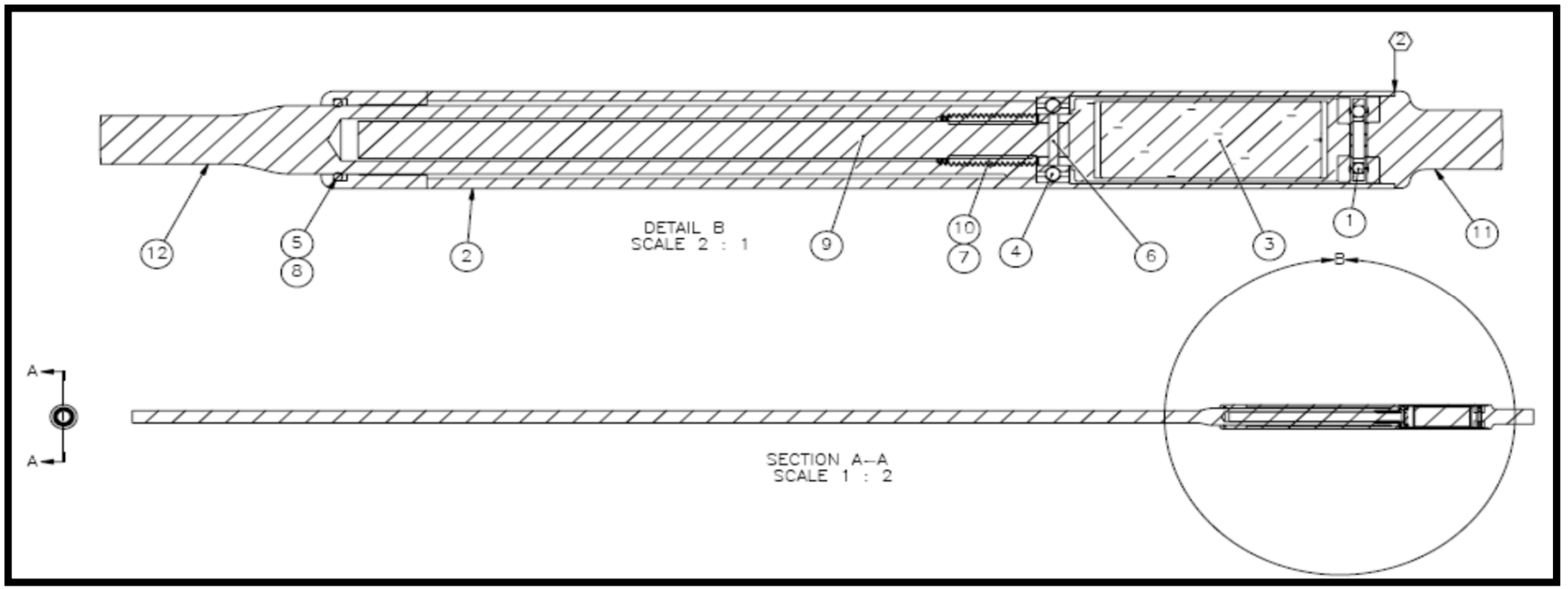
1. Multiple hospital admissions: Psychologically traumatic
2. Repeated 6 monthly anaesthesia & its risks
3. The law of diminishing returns: Large forces every time



The MAGEC™ System

- A Remotely Expandable Device for Non-invasive Lengthening of Growing Rod
- MAGEC™ comprises two major elements
  - Implantable distraction rod
  - External adjustment device

How Does It Work?



1.Thrust Bearing
2.Actuator Housing
3.Magnet
4.Radial Bearing
5.O-ring dynamic seal
6.Pin (holds lead screw to magnet housing)
7.Nut
8.Gland (groove in which O-ring resides)
9.Lead Screw
10.Inner space in proximal rod where nut resides
11.Distal rod (shown short)
12.Proximal rod (shown short)

MAGEC™ Distraction

External Remote Controller (ERC)

- The ERC is a portable, hand held unit that uses a pair of permanent magnets to automatically modify the length of the implant through touch of a switch.
- The amount of applied distraction /retraction can be seen on a built in display.
- If dual rods are used, they can be distracted/retracted independently.

Advantages of MAGEC

1. One off surgery
   (EOS in neuromuscular disorders, e.g: SMA)

2. Save theatre time and expenses of repeated surgery

3. Pulmonary Function not compromised

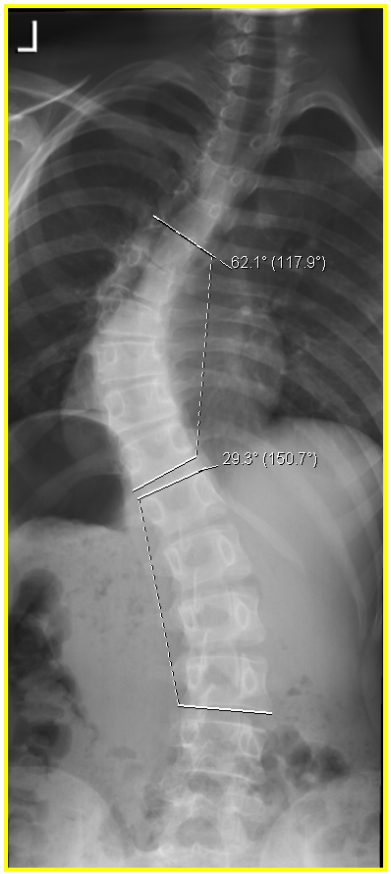
4. Addresses the limitations of VEPTR and Conv. GR

Frequency Of Distraction

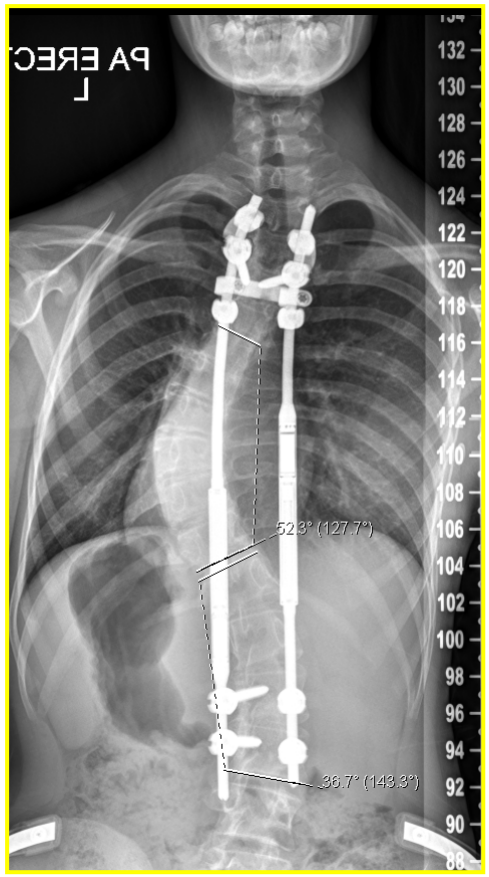
- Rods are usually distracted every 3-6 months
- AP view of the whole spine is obtained during each visit
- Distraction can be:

1. Targeted
   (predetermined)
2. Non-targeted
   (Max length that the spine allows)

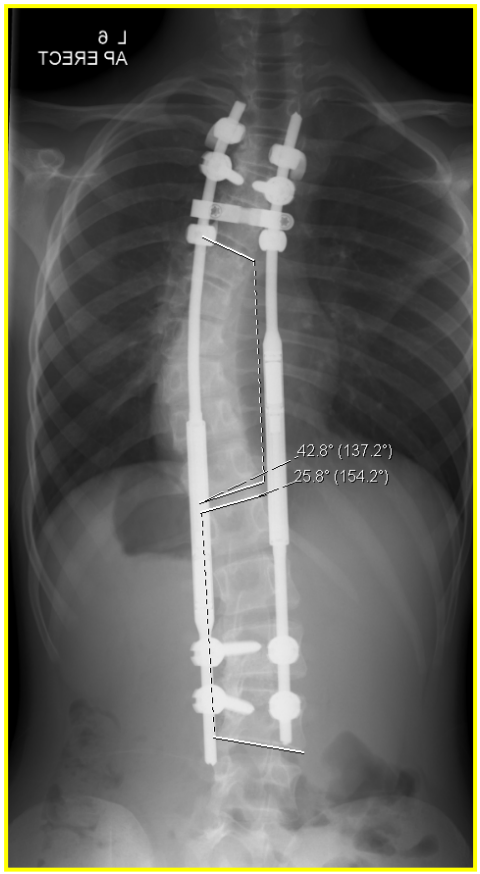
Case Presentation:



Pre-op
T1-s1: 375mm
Cobb ^le - 62



Post-op
T1-s1: 388 mm
Cobb ^le - 52



After 5 distractions: total 19mm
T1-s1: 415 mm
Cobb ^le - 42

Thank You

London 2012- Opening Ceremony