



External Fixator for Spinal Deformity

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Treatment for severe spinal deformity

Halo femoral traction

Halo tibial traction

Halo gravity

Require extended
periods of bed rest
or wheel chair

VCR

Technically demanding
Safe?

Ilizarov external fixator

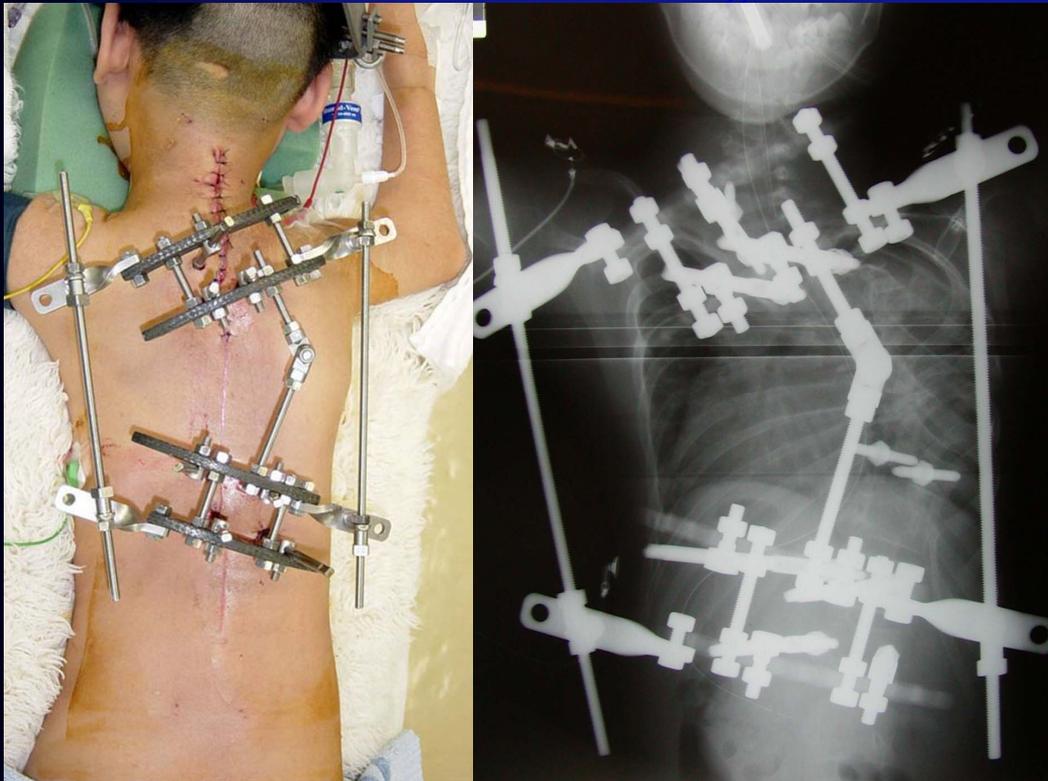


Is it applicable for spinal deformity?

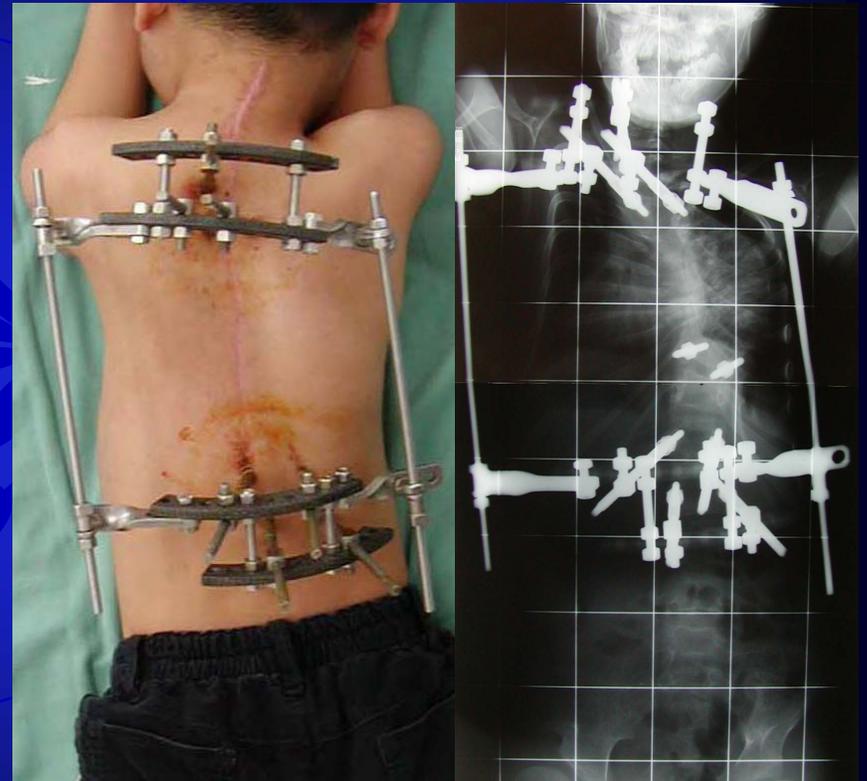
Protocol for attachment of External Fixator



Correction with the external fixator



Before correction



After correction





External Fixator for the treatment of severe spinal disorders

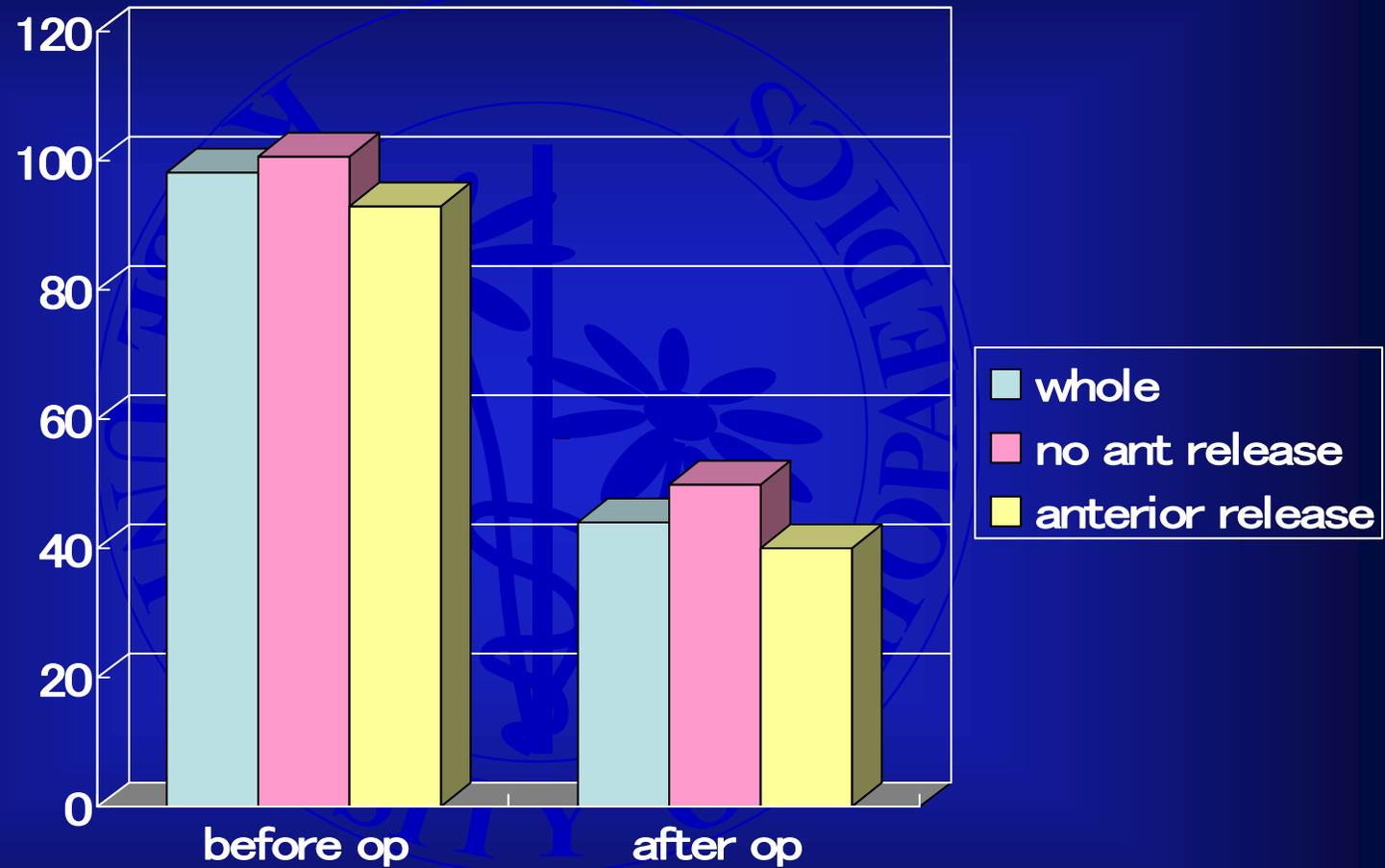
23 cases (male 12, female 11)

- Idiopathic 5
- Congenital 12
- Thoracic cage defect 1
- Post tumor resection 1
- Larsen syndrome 1
- Neuromuscular 1
- Achondroplasia 1
- Spondyloptosis 1

Age at first operation 18.3 yrs(10~40yr)

Average follow up 5.7 yrs

Results



- Period for correction 25.3 (7-43)days
- Correction 93.6 → 43.9(55.6%)



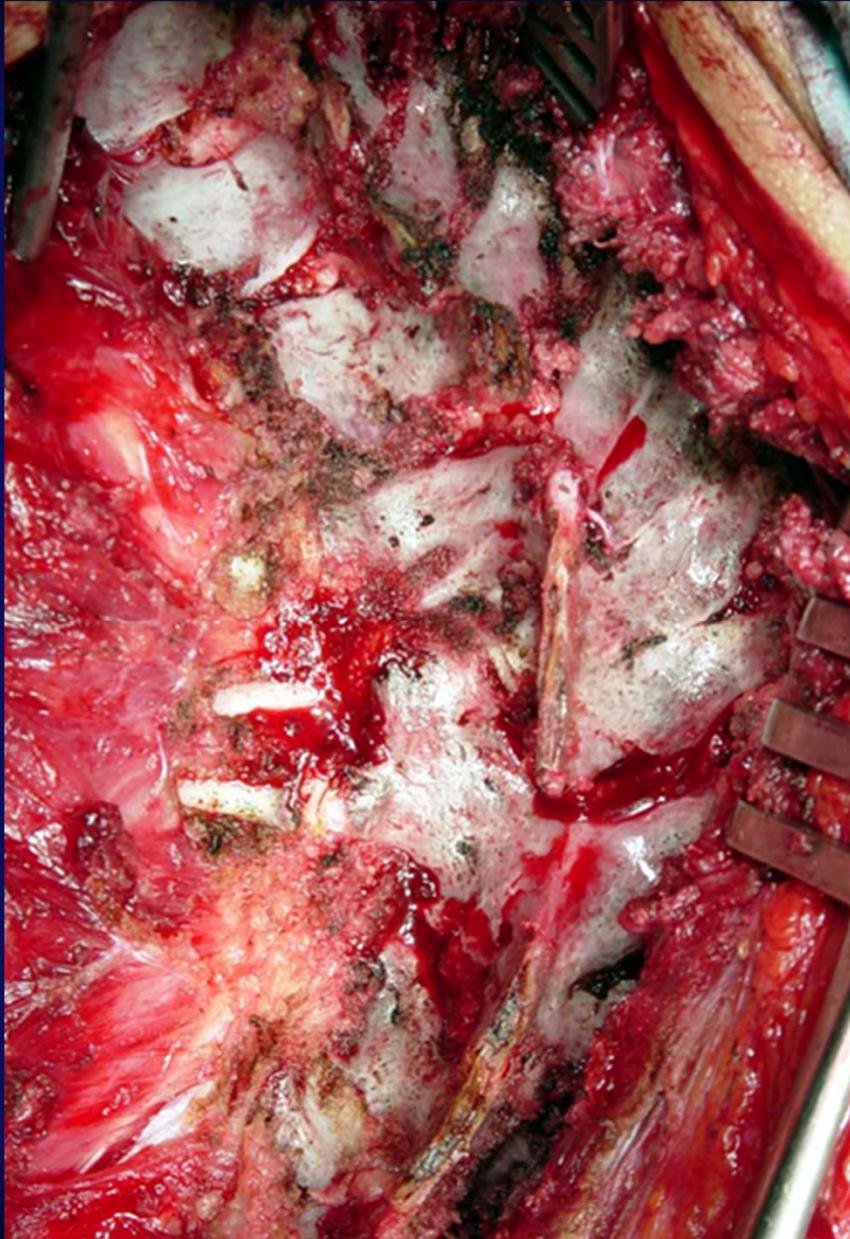
Complications related to external fixator

- Deep infection 4
- Pin site infection 3
- Skin necrosis 3
- Transient nerve palsy 2
- Screw Dislodgement 1

Congenital Scoliosis

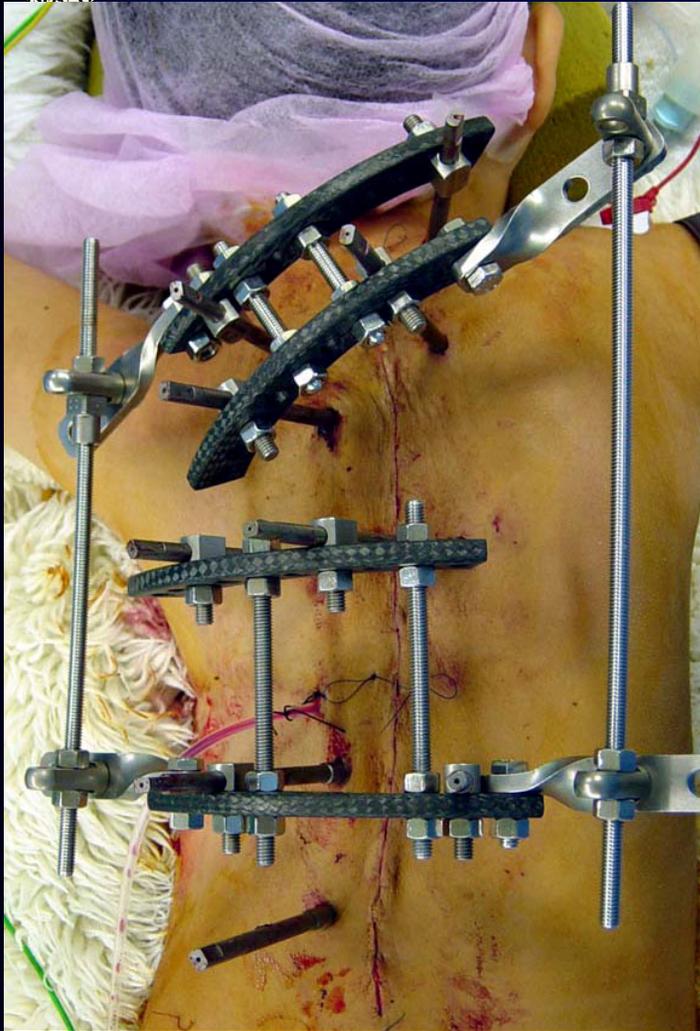


10yrs old: Cobb 98°

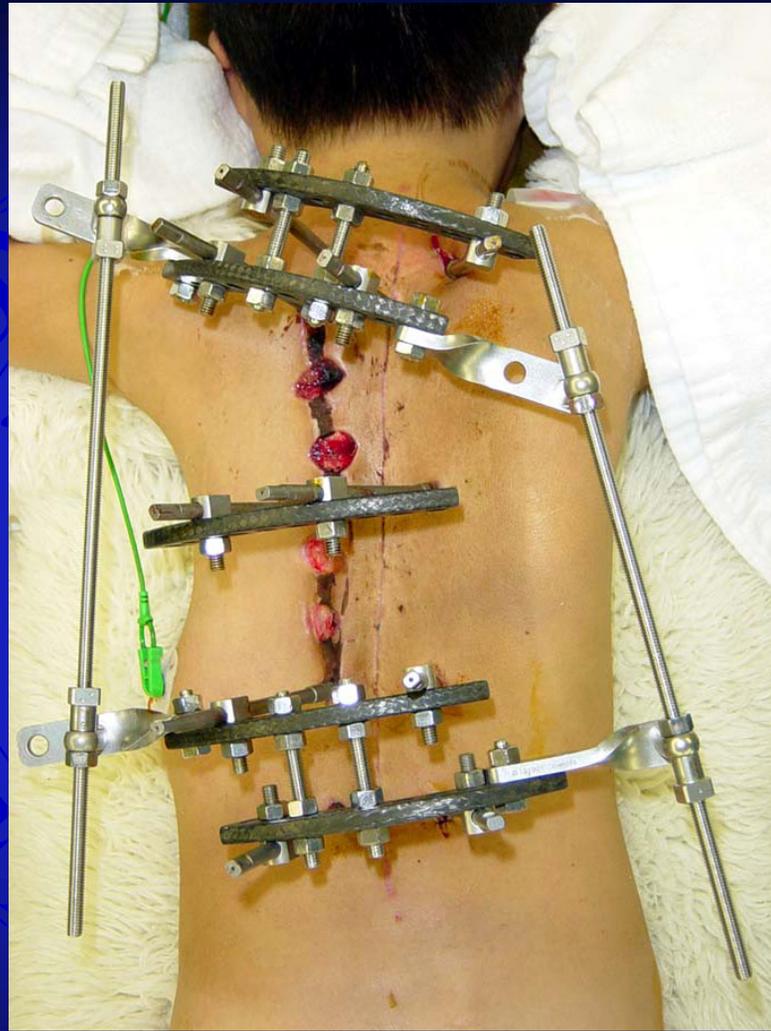


Spinal Osteotomy(Ponte)
Laminectomy
Pediclectomy
Rib resection

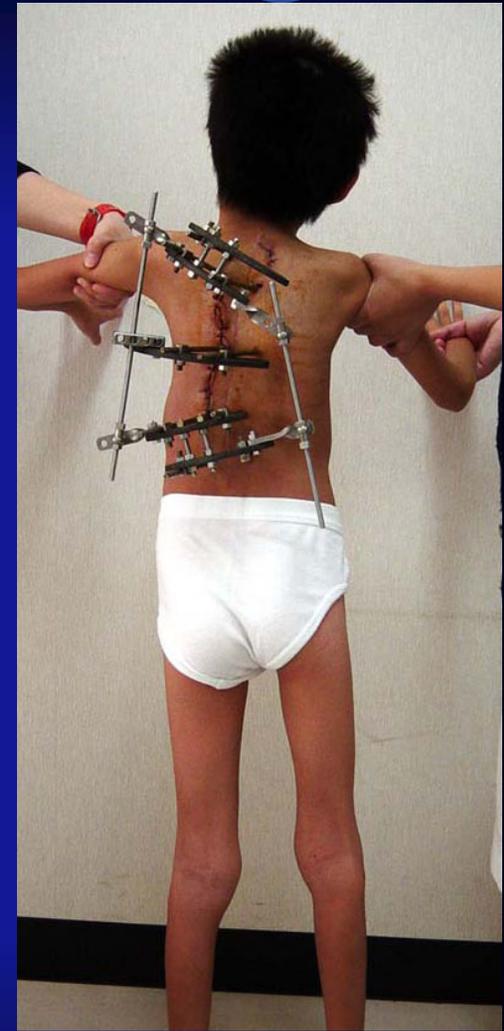
SO
ORTH



After op

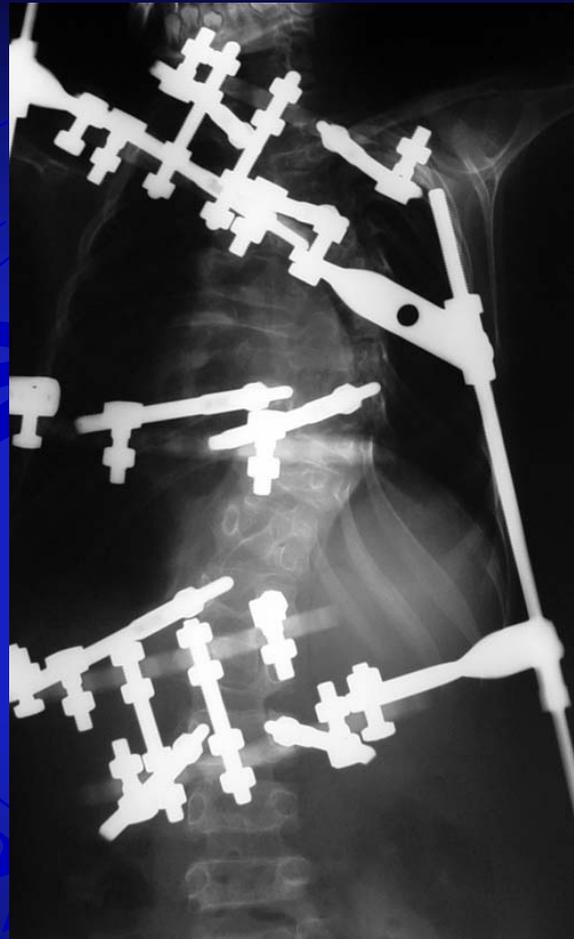


Correction with the external fixator

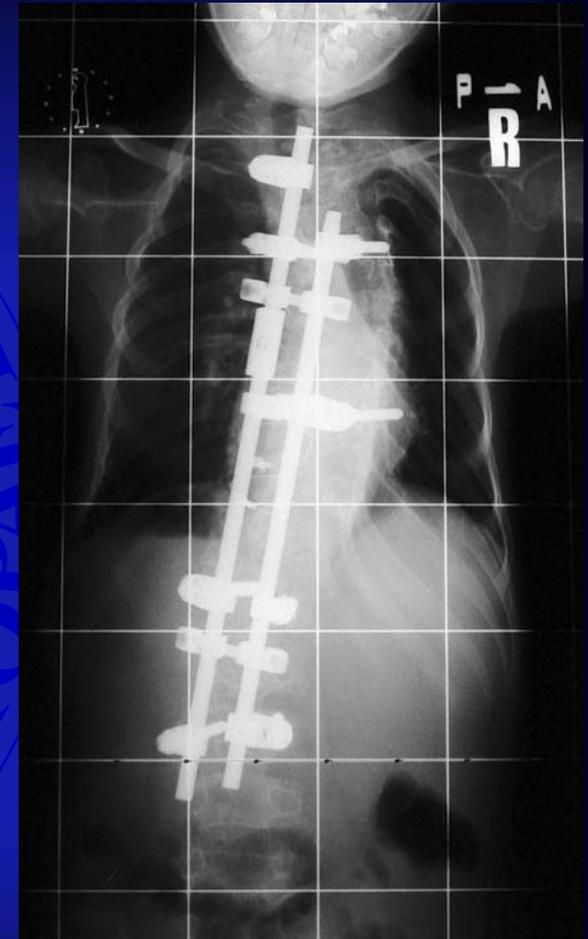




Before op 98°



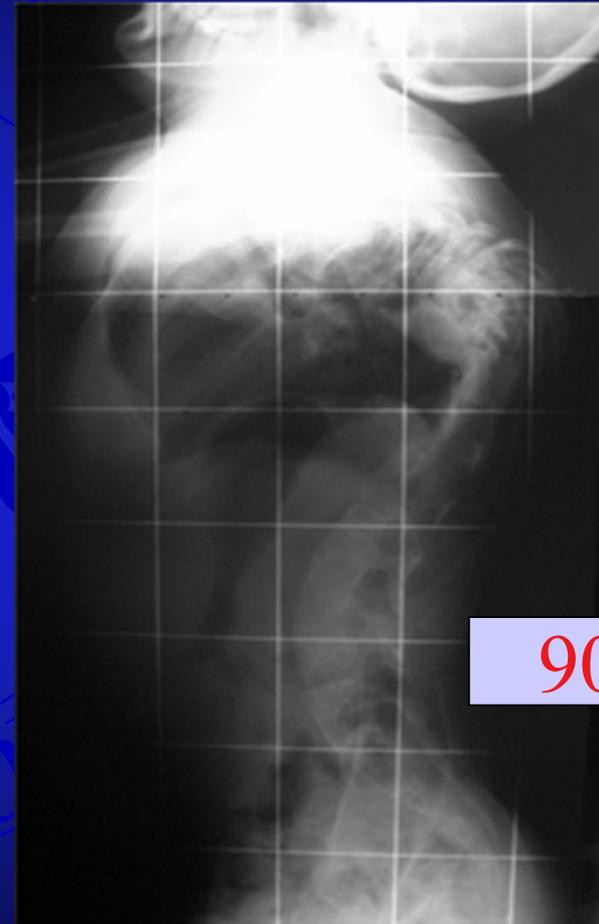
Correction with
The external fixator
 24°

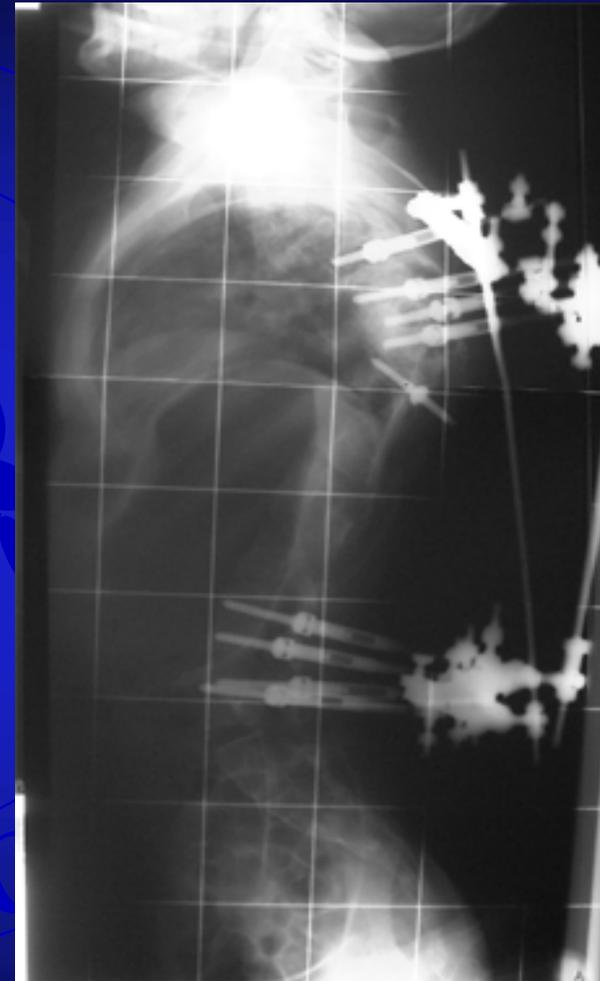


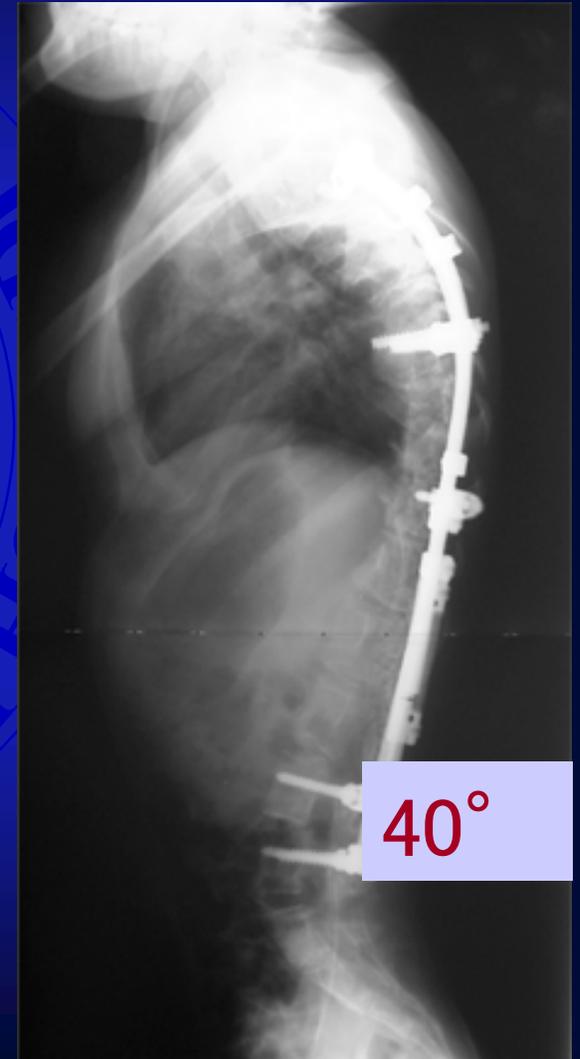
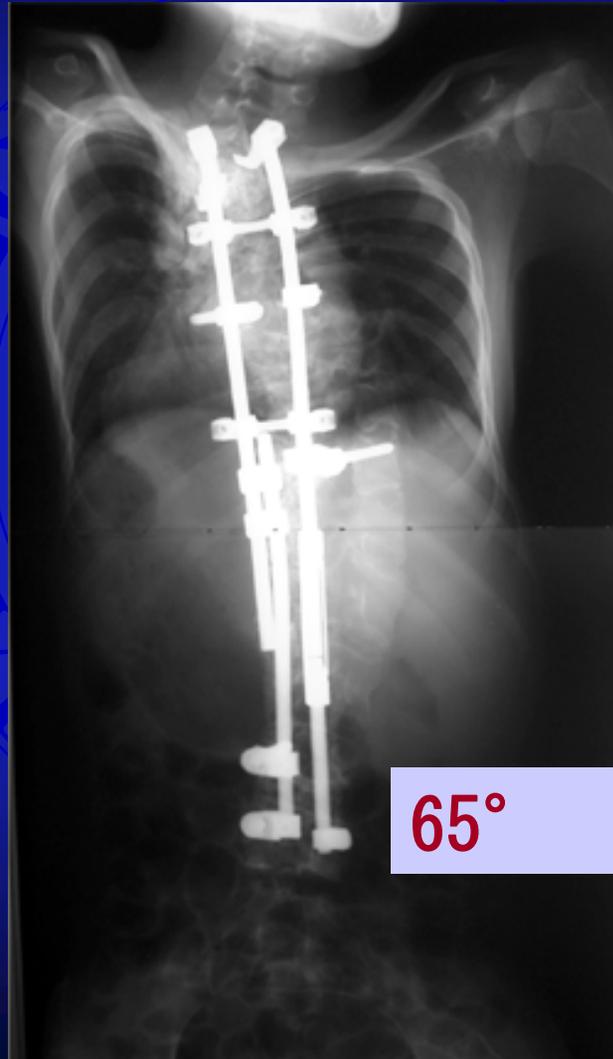
After final fusion
 34° (67%)

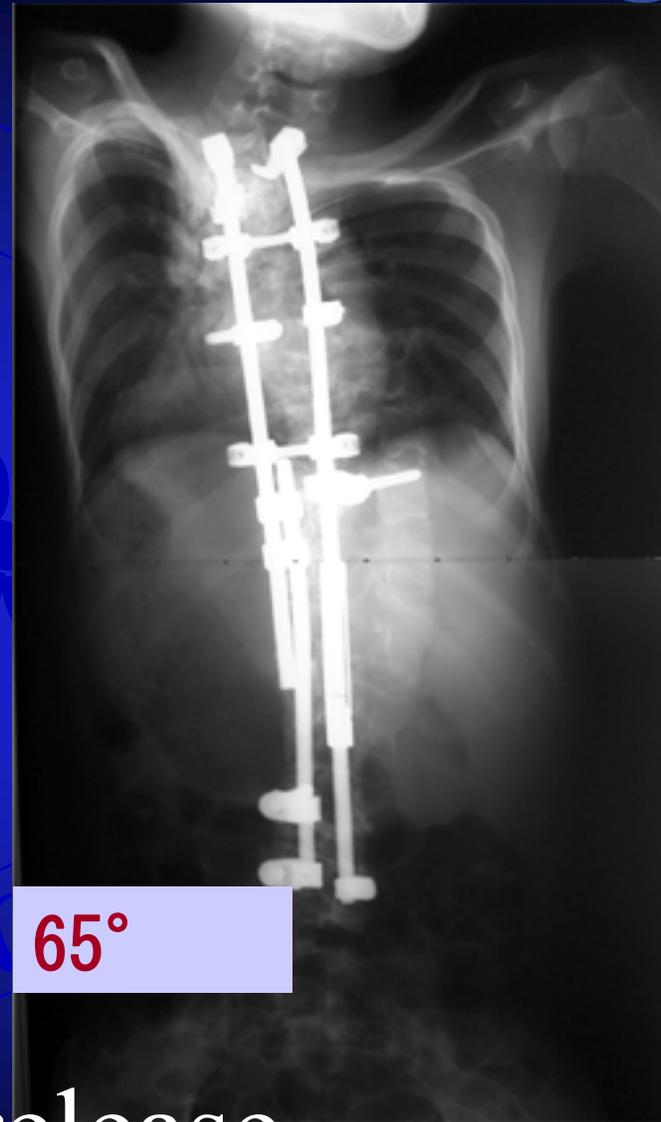


Case 2: 13-yr-old girl (Larsen syndrome)







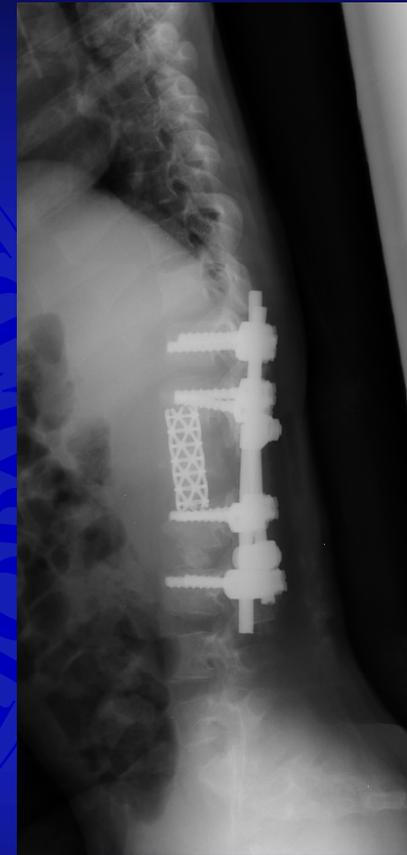


No anterior release





Achondroplasia 4 yr old boy

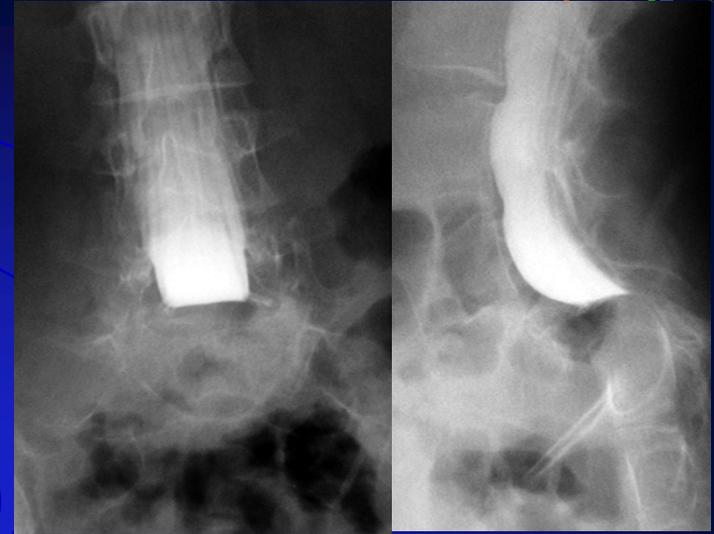
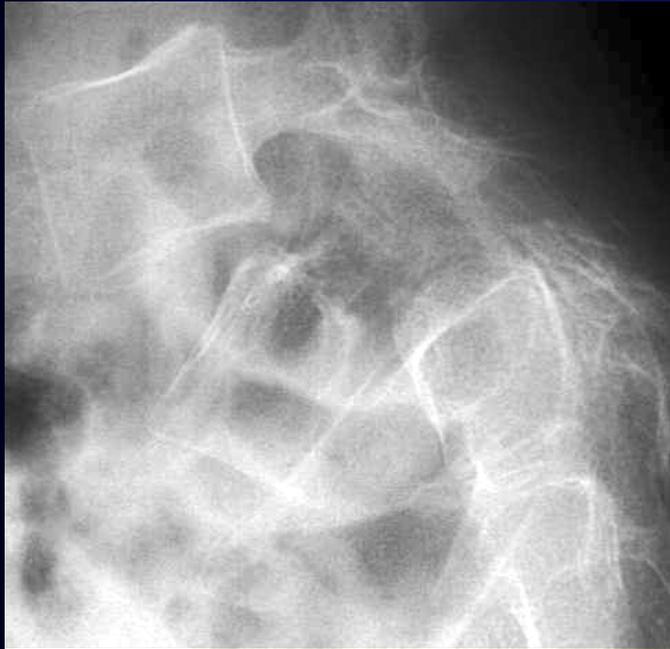


After apex of the kyphosis was resected totally
Correction with External Fixator was performed.

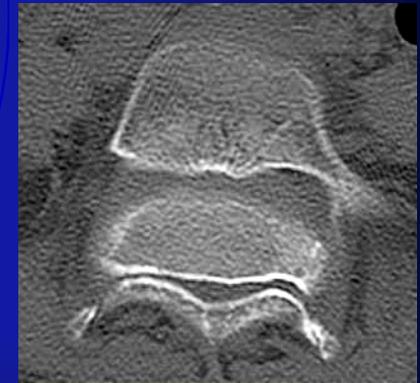
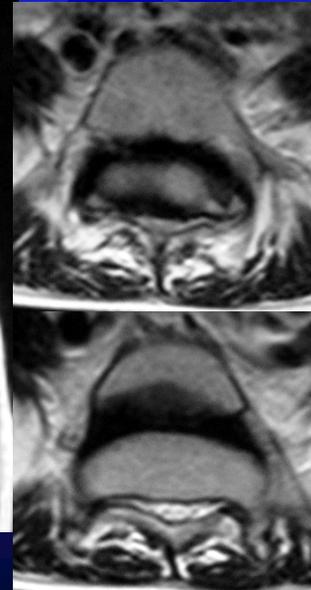


Spondyloptosis

背髄腔造影検査



MRI

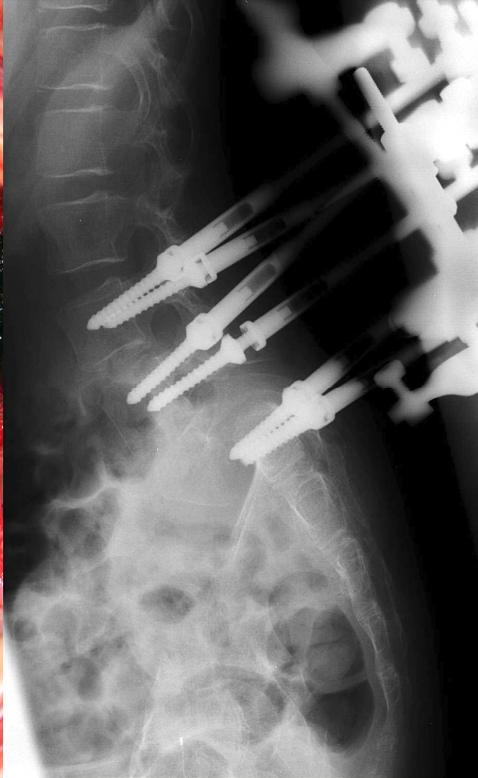


CT-M

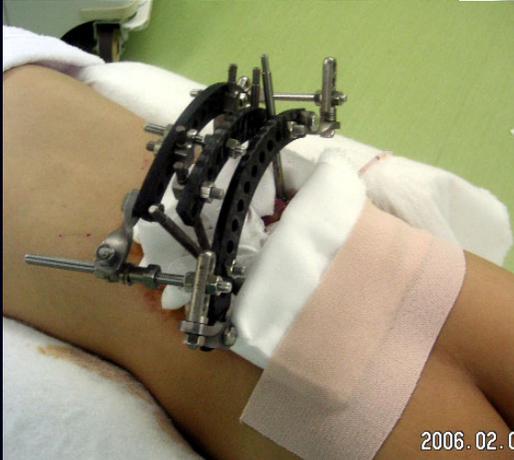
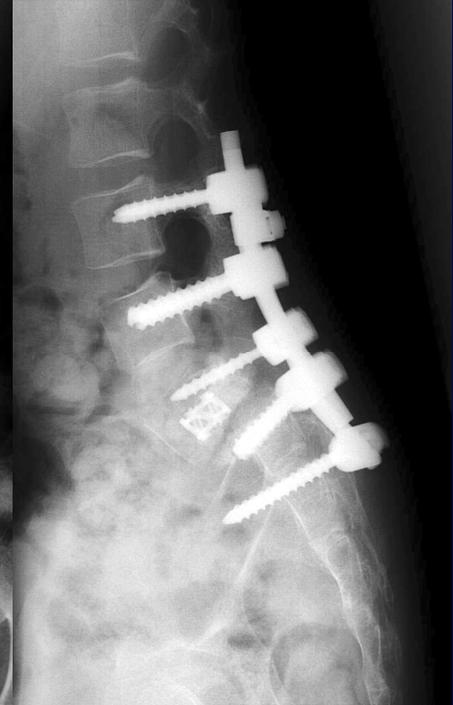
11 yr old female

Tight Hamstring +

1st ope



2nd ope



2006.02.0

**Reduction
100% ⇒ 30%**



Advantages of External Fixator

advantages

Gradual & Safe correction

Comfortability

Direct correction force

disadvantages

Infection

uncomfortability

Skin necrosis

Long Hospital Stay



Indications of the Ilizarov external fixator for the spinal deformity

Idiopathic&syndromic: curve magnitude >100 degrees

→ curve magnitude >130 degrees

Congenital

:curve magnitude>80 degrees

Severe trunk decompensation

Failed previous surgery

Soinal cord tethering

Poor pulmonary condition

Thoracolumbar, Lumbar Kyphosis



Conclusion

External fixator allows us a drastical and safe correction for severe spinal deformity and can be the candidate of treatment for severe spinal deformity.