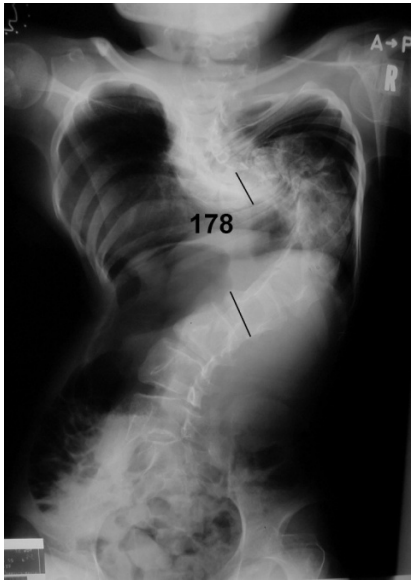
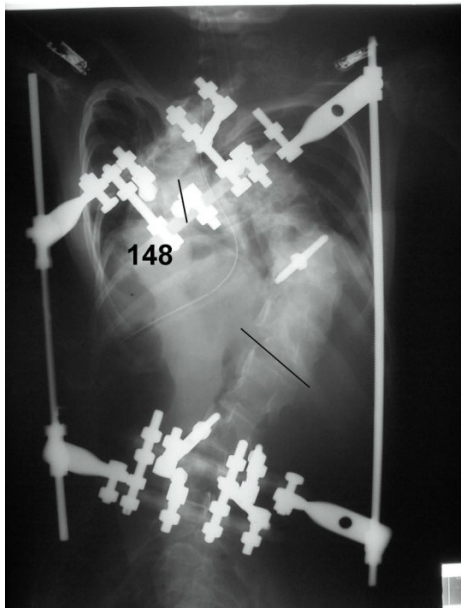
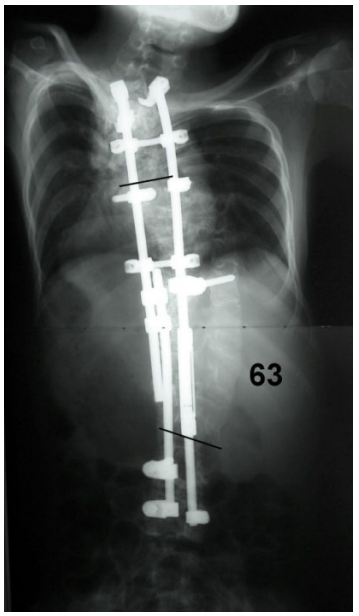
External Fixator Correction for Severe Spinal Deformities







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Back ground

Treatment for severe and rigid deformities

Halo-gravity → low correction rate
confinement to a wheel chair

Halo-femoral → confinement to a bed
Femoral fracture

Halo-Pelvic → serious complications

VCR with spinal cord monitaring → technically demanding
not comfortable to use

Ilizarov external fixator

Is it applicable for severe spinal deformity?

Data of Patients

21 cases

Male :11
Female:10

Average age at first OP:18.7 yrs old

Average follow up : 3.76 yrs

Magnitude of the curve 97(70-178)

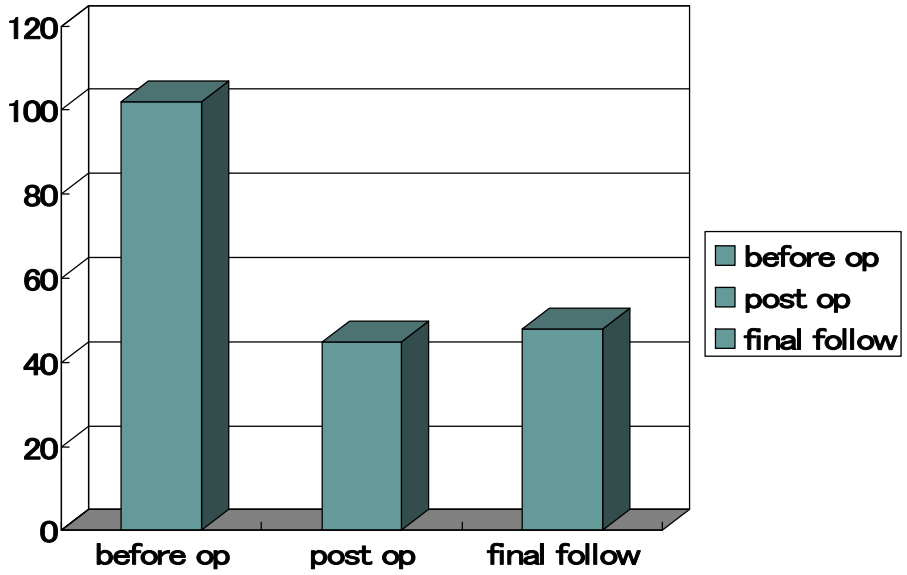
Pathology: idiopathic	**6**
congenital	**11**
(Noonan, Ptygerium synd tethered cord etc.)	
thoracic cage defect	**1**
Larsen synd.	**1**
post tumor resection	**2**

Data of Surgery

Ant +Post release & External Fixator	→	Ant & post fusion	6
Post release & External Fixator	→	Post fusion	15

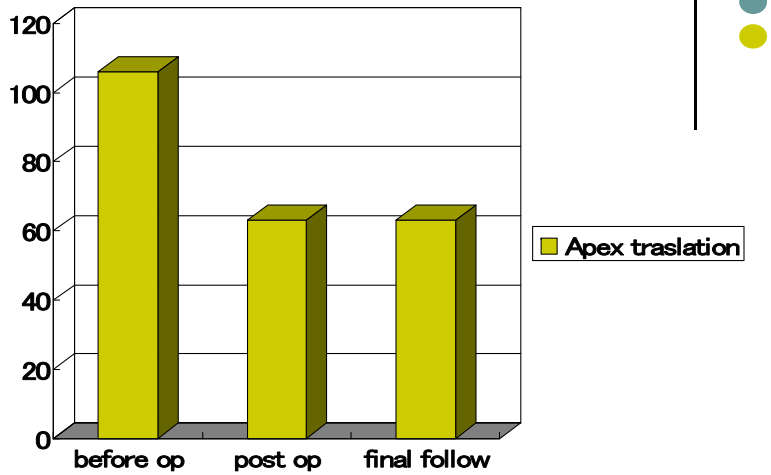
Duration of External Fixator 39.7days (9 days~100days)

Radiographycal data

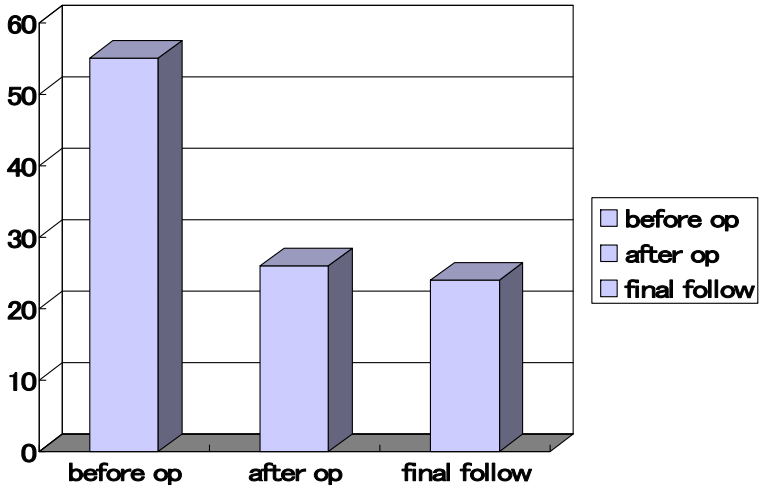


Curve Magnitude

53% correction



Apex Translation



C7 Plumbline

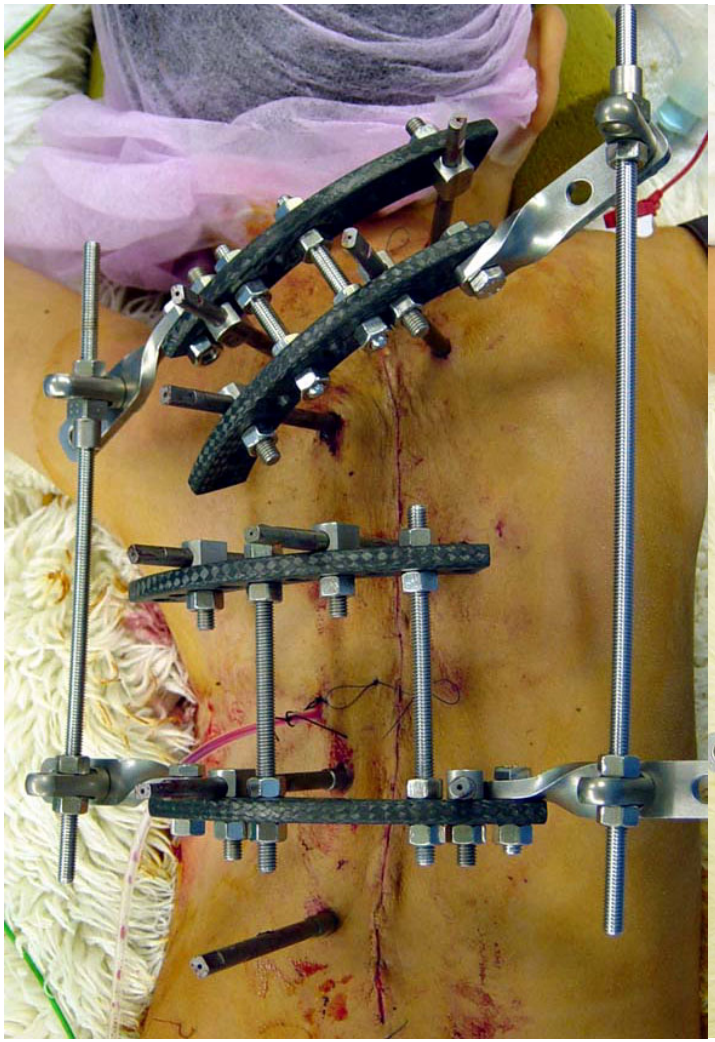
Comlications

External Fixator Related		
Infection :	deep	3(15%)
	pin site	7
Skin Erosion		2
Neurological disturbances:	transient peripheral nerve	1
	transient paraplegia	1(5 %)
Dislodgement of external fixator		1
Others		
Dural tear		4
Pseudo arthrosis		2

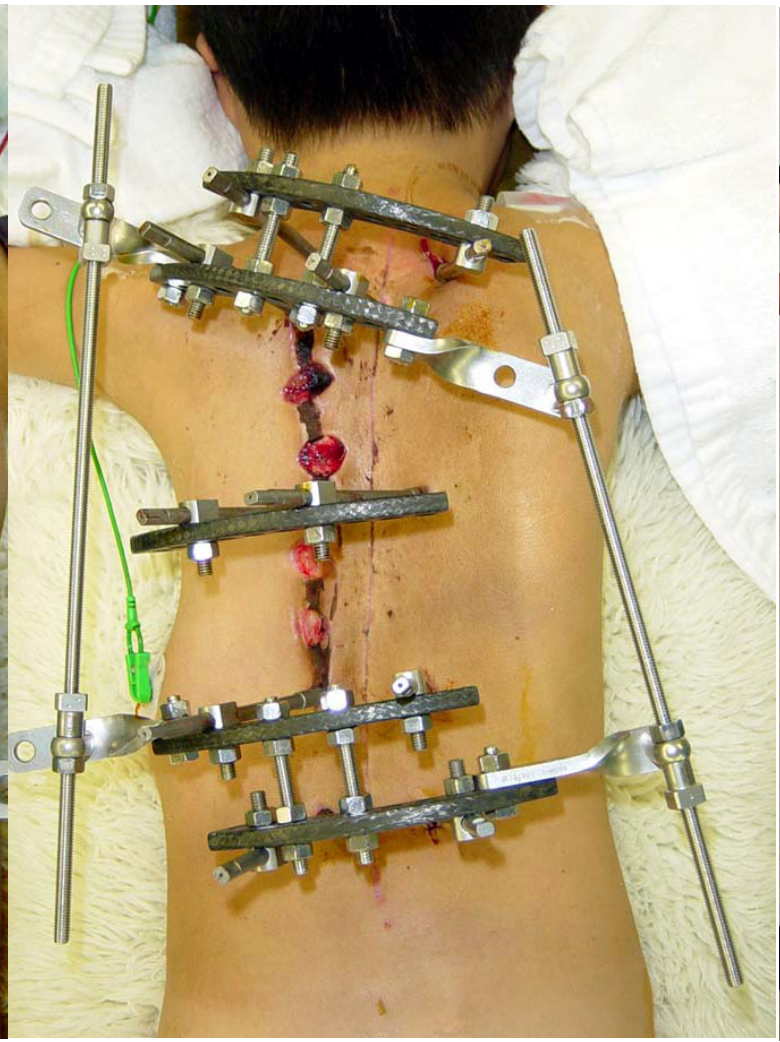
No complicatios 8 cases(40%)

Case 1;10 yrs old

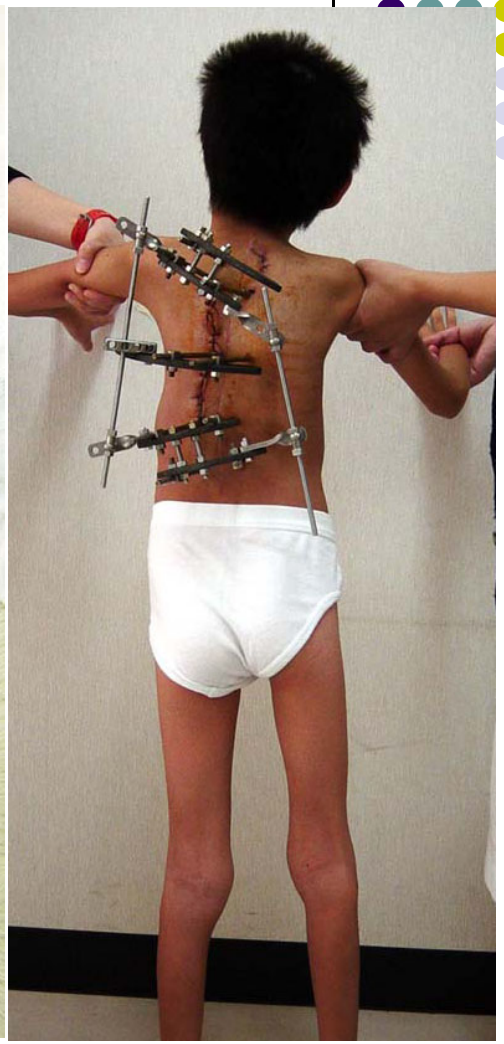
Congenital Scoliosis with unilateral bar
98degrees



Attachment of External Fixator

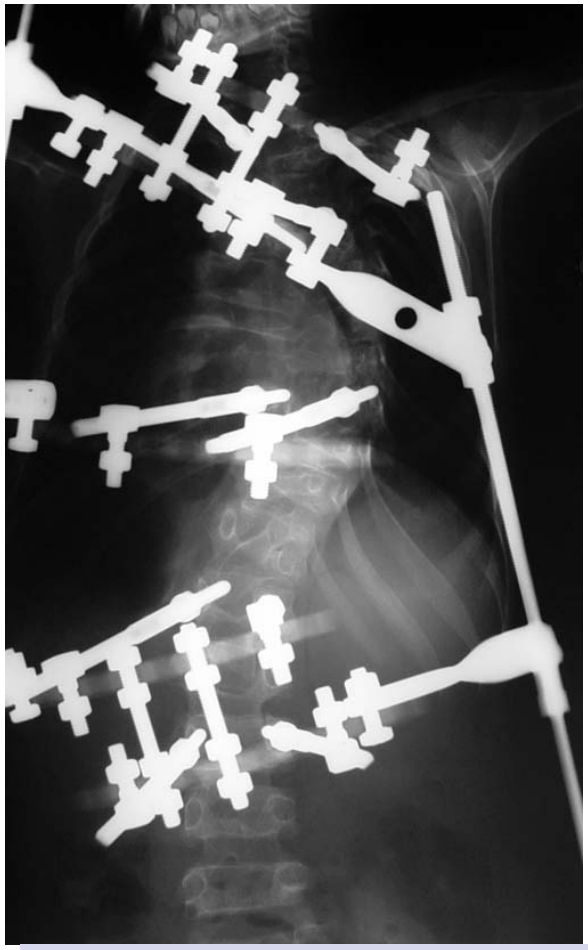


Correction

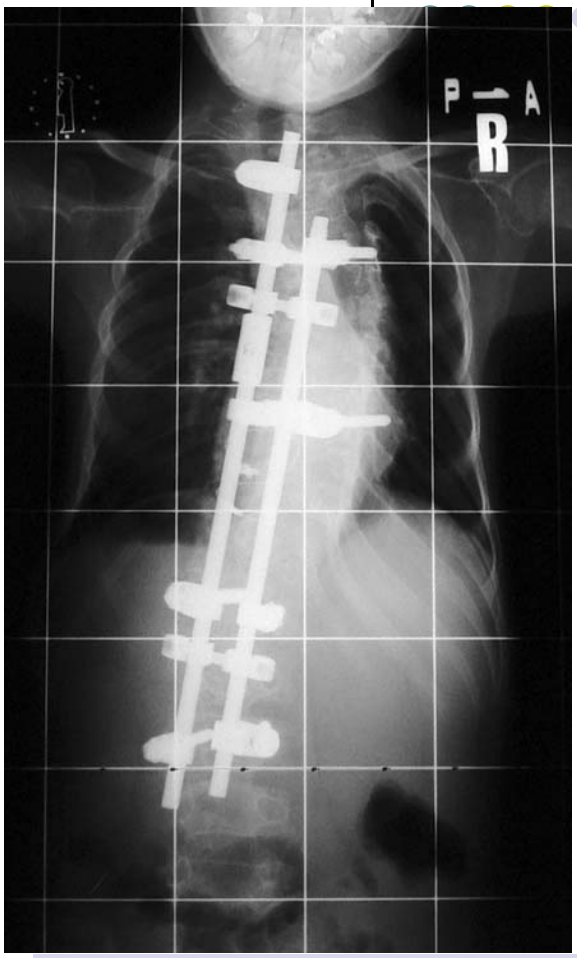


Before final fusion

Before op 98°



Correction with the external fixator 24°



After final fusion 34° (67%)

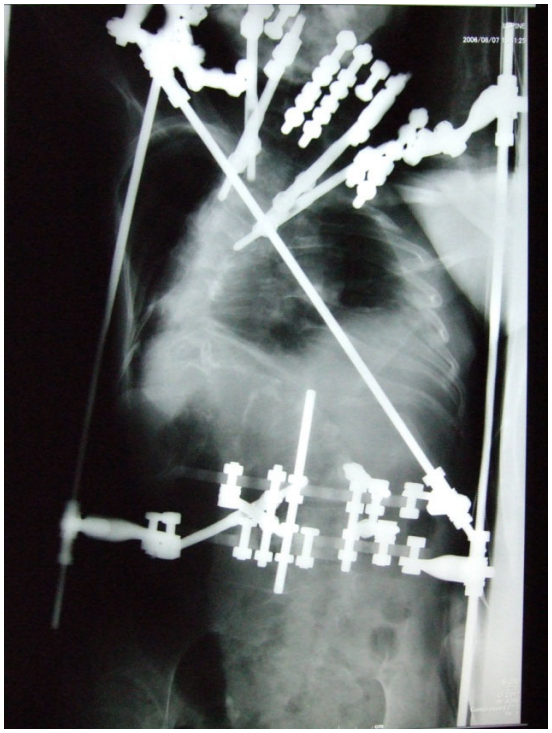
14yrs old girl
Congenital kyphoscoliosis

14y

%

as necessa

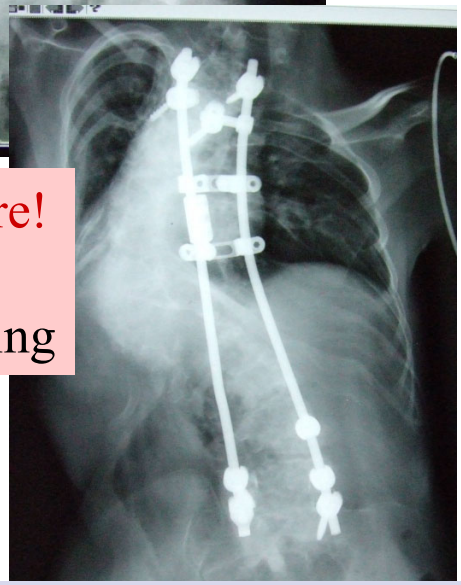
3yrs old



Skin breakdown due to screw head prominence

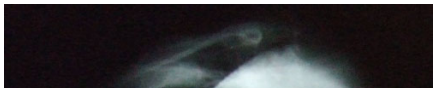
Paraplegia 7hrs after lengthening procedure!

Pin site infection after re-start of lengthening



Skin break down 1 months after surgery
MRSA infection 3 months after surgery

Solid union was obtained 2yrs after final fusion.



cessary

SpO2 9

CPAP

Are You comfortable for performing VCR to this case?

Discussion

An Idea of using external device for spinal deformity correction is not new.

Halo-dependent traction is an external device for spinal deformity
And especially halo-pelvic is ,in a sense, an external fixator.

External Fixator to the Spine: Ancor sites are pedicles instead of skull and pelvis

→ Drastical Correction
No worry about cervical spine
Apply correction force in both directions
Patient Mobility

Discussion

Major concern
of the external fixator → Infections!

Pin site infection is inevitable but manageable

Deep Infection Rate 15%(=growing rod)

Conclusion

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

Thank You!