

Déformations rachidiennes

Scoliose idiopathique II

Prise en charge thérapeutique

Dante G. Marchesi MD

HIRSLANDEN 

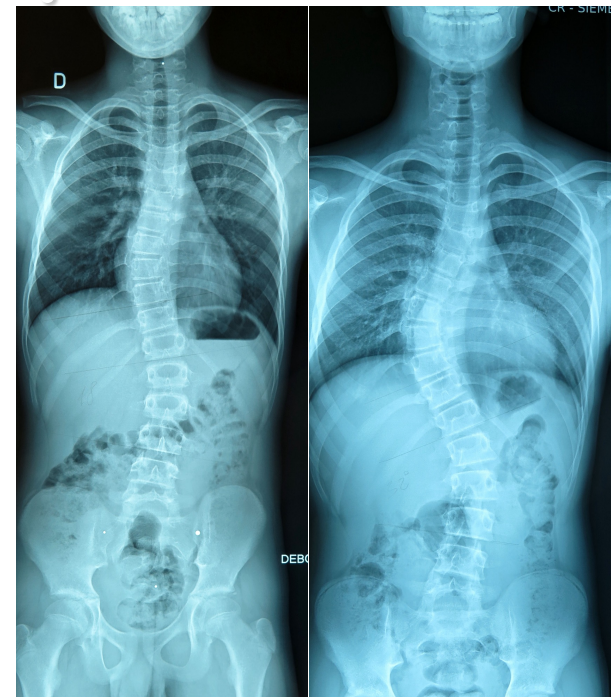
Clinique Bois-Cerf
Lausanne / Switzerland

Spinal deformities

frontal plane

scoliosis

- idiopathic
 - early onset
 - adolescent
 - adult
- congenital
- neuromuscular
- degenerative
- secondary
 - post-traumatic
 - pathol. fracture
 - tumor
 - infection
 - other



PM, male 13y

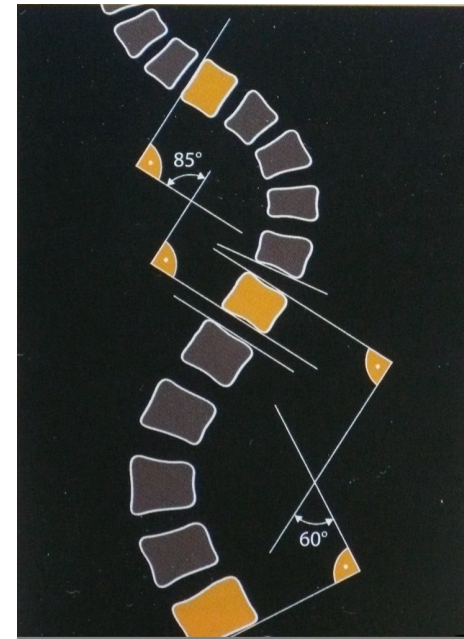
14.5y

Spinal deformities

frontal plane

scoliosis

- idiopathic
 - early onset
 - adolescent
 - adult
- congenital
- neuromuscular
- degenerative
- secondary
 - post-traumatic
 - pathol. fracture
 - tumor
 - infection
 - other

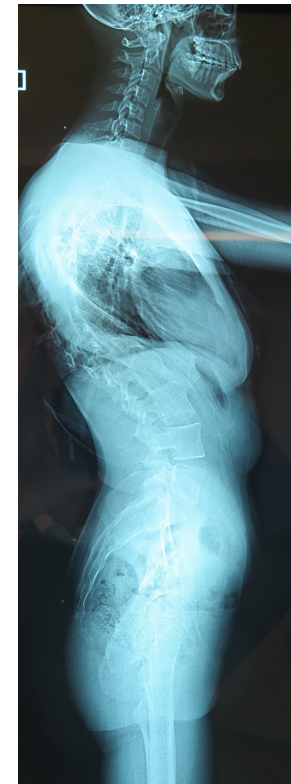
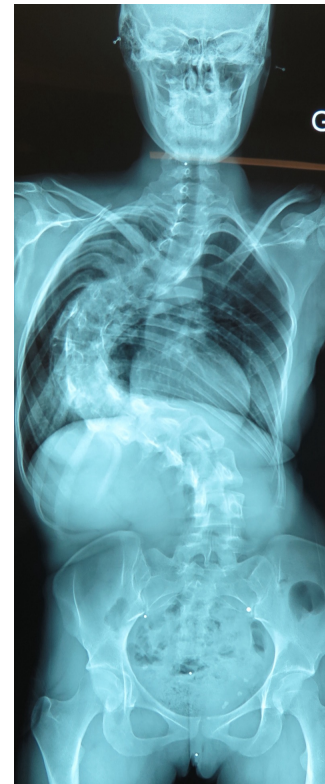


Spinal deformities

frontal plane

scoliosis

- idiopathic
 - early onset
 - adolescent
 - adult
- congenital
- neuromuscular
- degenerative
- secondary
 - post-traumatic
 - pathol. fracture
 - tumor
 - infection
 - other



BM, female 34y

Spinal deformities

Adolescent idiopathic scoliosis (AIS)



scoliosis: coronal curve $> 10^\circ$
with vertebral rotation (SRS)

- structural deformity 2-3% adol. pop.
 0.1- 0.3% $> 30^\circ$
- females $\gg$ males
- aetiology unknown
 multifactorial
 imbalance ant/post spinal growth (?)
 hormonal (?)
 familiar
- benign natural history

Spinal deformities

Adolescent idiopathic scoliosis (AIS)



Physical examination:

- inspection (skin,..)
- curve location/side
- flexibility
- rib hump (scoliometer, $7^\circ = 20^\circ$)
- shoulder level
- pelvic obliquity
- sagittal profile
- balance (frontal, sagittal)
- physical maturity
- neurological examination

Scoliosis is a **3-dimensional deformity**

frontal



Lateral deviation

horizontal



Axial rotation

MEDICOL
sagittal



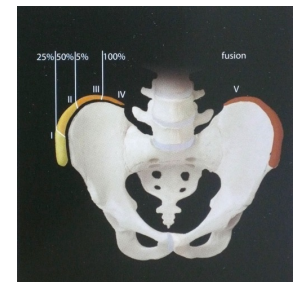
Hypokyphosis

Adolescent idiopathic scoliosis (AIS)

Treatment Principles

Factors

- * Curve magnitude (Cobb angle)
- * State of growth (Risser)
- * Risk for curve progression
- * Cosmesis
- * Patient's desire



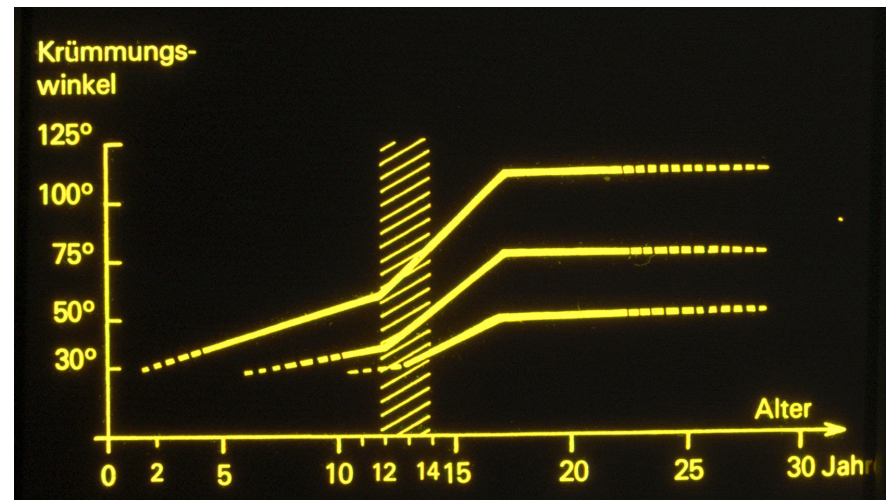
HE, female 15Y

Adolescent idiopathic scoliosis (AIS)

Decision Making

Factors

- * Curve magnitude (COBB)
- * State of growth
- * Risk for aggravation
- * Cosmesis
- * Patient's desire

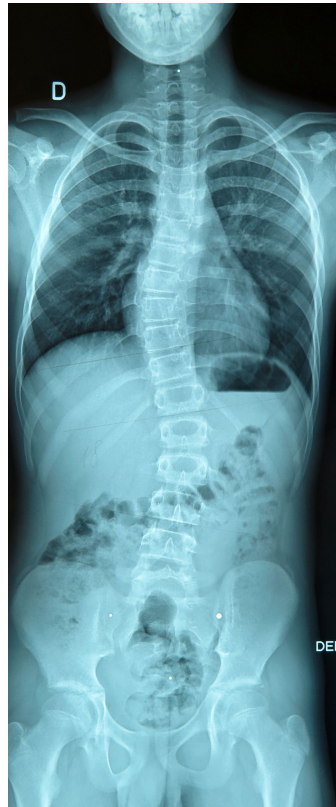


Adolescent idiopathic scoliosis (AIS)

Decision Making

Risk factors for progression:

- young age at onset (<12y)
- Risser 0-1
- premenarchal status
- physical immaturity
- large curves (>50°)
- thoracic > lumbar
- double curve > single curve



PM, male 13y

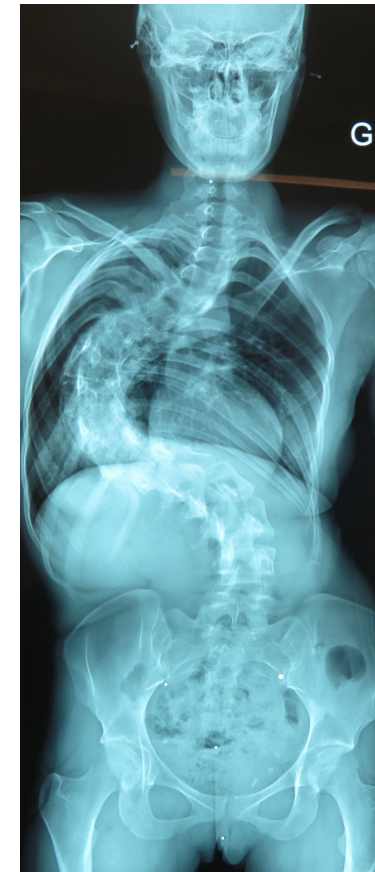


14.5y

Adolescent idiopathic scoliosis (AIS)

Aims of Scoliosis Treatment

- * Prevent curve progression
- * Stabilise the spine (spinal fusion)
- * 3D-Correction (coronal, axial, sagittal)
- * Maintain or correct balance
- * Maintain mobility (save segments)
- * Allow for further spine growth
- * Avoid complications



Keep in mind: the natural history is benign

Adolescent idiopathic scoliosis (AIS)

Treatment Principles

During Growth

< 25°



Observation

Physiotherapy

25 - 40°



Physiotherapy
Electrostimulation

> 50°



Operation

40 - 50° “gray zone”



Adolescent idiopathic scoliosis (AIS)

Treatment Principles

During Growth

Cobb $< 25^\circ$

Risser < 4

FU

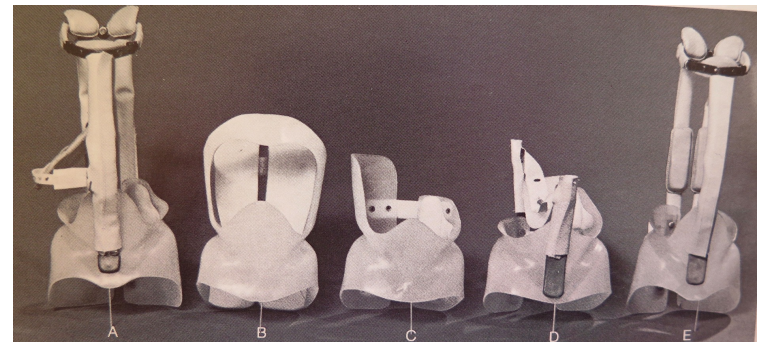
3 mo if growing

6 mo

Physiotherapy

if curve progression
($> 5^\circ$ /6mo)

Brace
23h/day



Adolescent idiopathic scoliosis (AIS)

Treatment Principles

During Growth

Cobb $< 25^\circ$

Risser < 4

FU

3 mo if growing

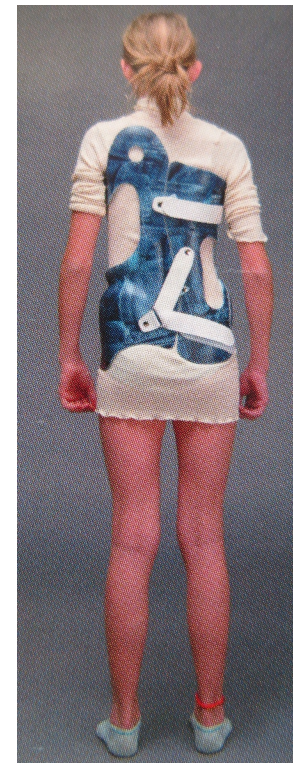
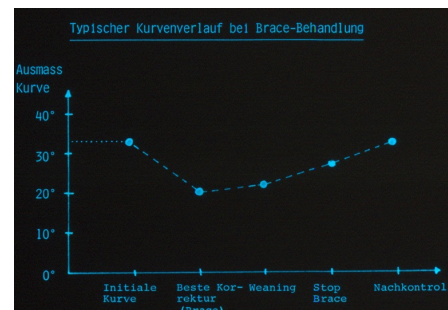
6 mo

Physiotherapy

if curve progression
($> 5^\circ$ /6mo)

Brace
23h/day

- no curve correction
- can hold or slow down progression



Adolescent idiopathic scoliosis (AIS)

Treatment Principles

During Growth

Cobb 25-40°

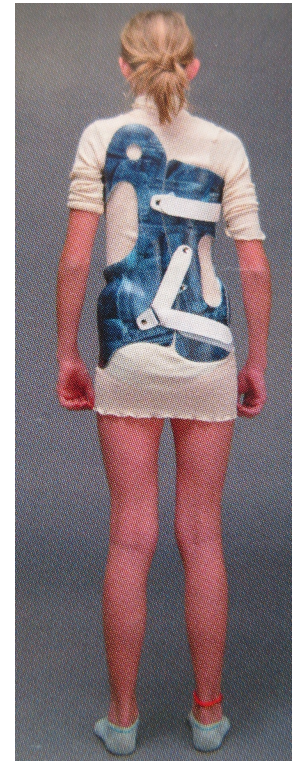
Risser 0-3

Brace
Physiotherapy

no curve correction
can hold or slow down progression

Risser => 4

FU
1y to end of growth
Physiotherapy



Adolescent idiopathic scoliosis (AIS)

Treatment Principles

During Growth

Cobb $> 45^\circ$

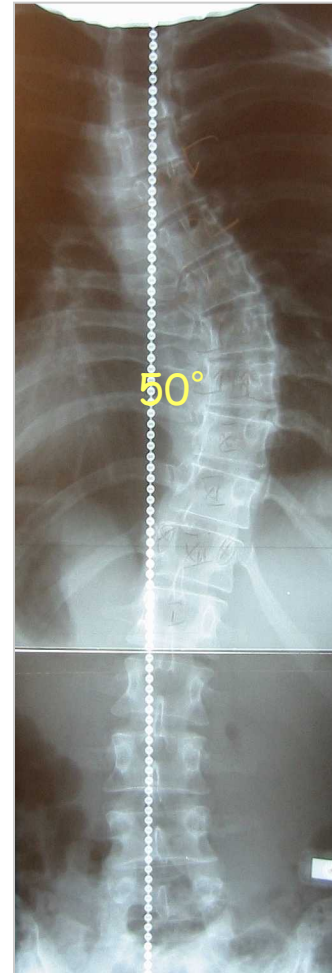
Risser < 5

Surgery

Risser 5

Surgery

if progression or
symptomatik

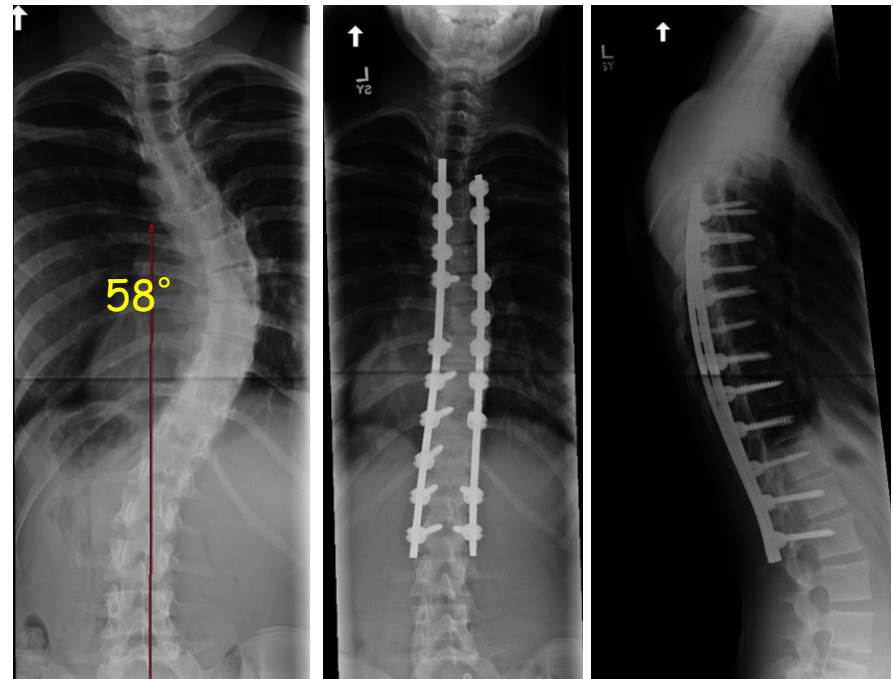


Adolescent idiopathic scoliosis (AIS)

Decision Making

Factors

- * Curve magnitude (Cobb)
- * State of growth
- * Cosmesis
- * Patient's desire



FE, 13 y / fem

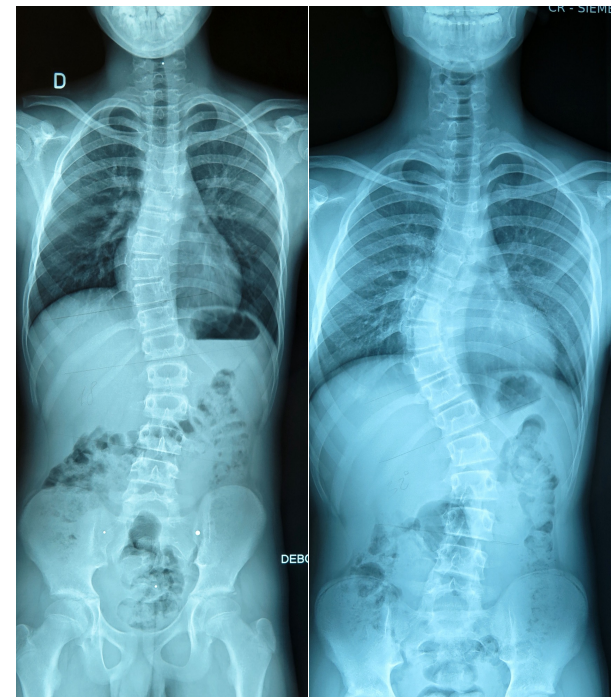
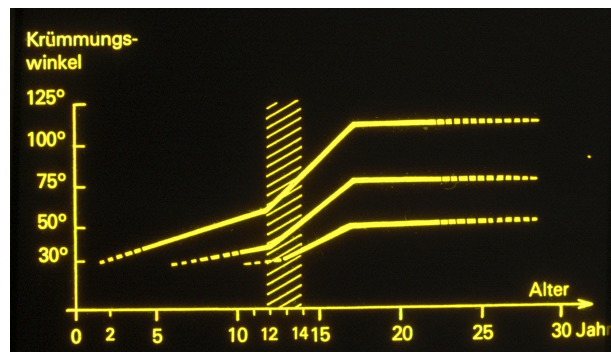
Keep in mind:
the natural history is benign

Adolescent idiopathic scoliosis (AIS)

Operative treatment

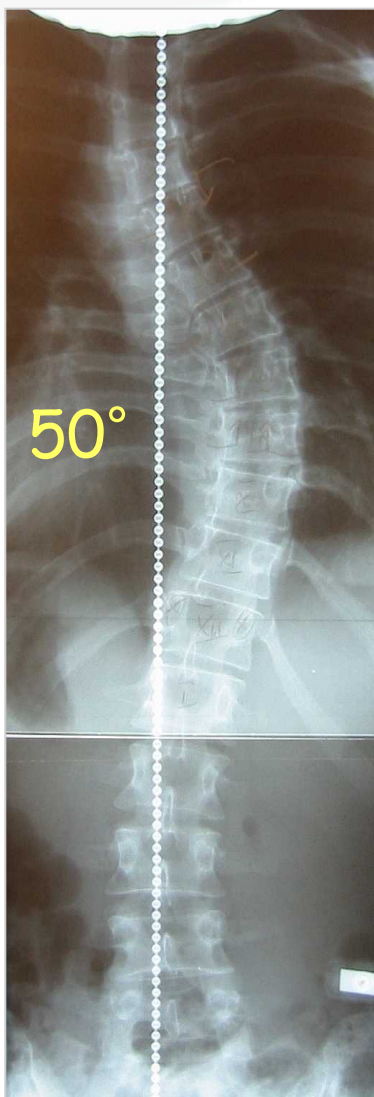
indications depend on:

- risk for progression
- skeletal maturity
- curve type
- curve magnitude
- cosmetic appearance
- failure of conservative ttt



PM, male 13y

14.5y

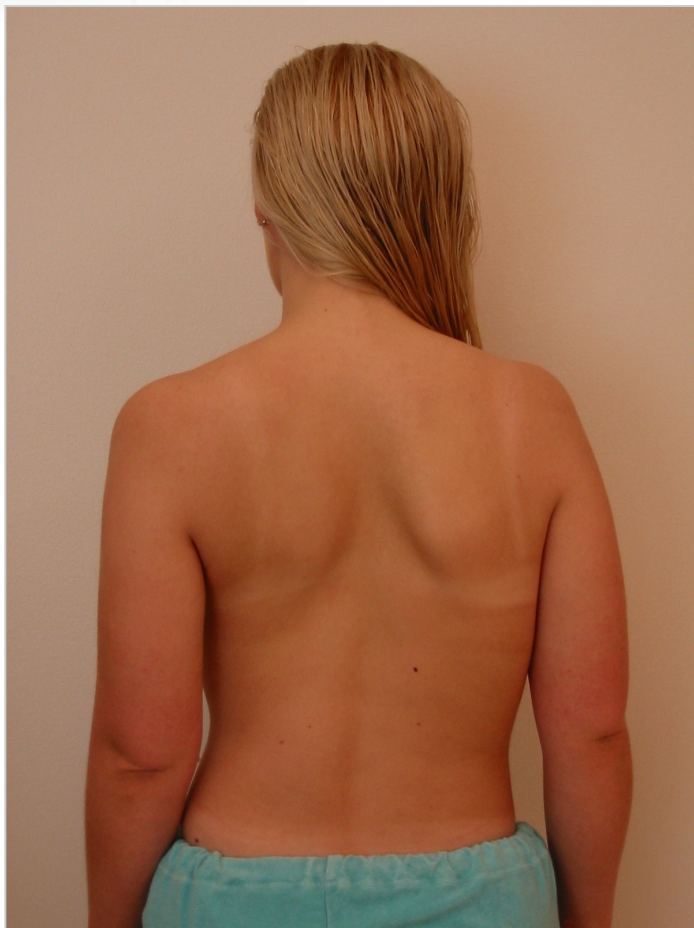


Result ?

26 y / fem



2 y p.op

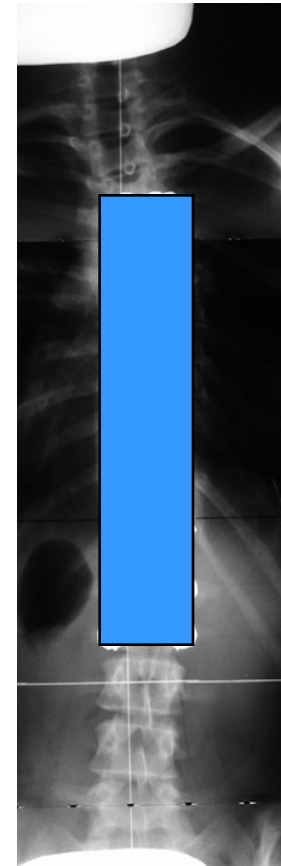


26 y / fem



2 y p.op

Goals of surgery



spinal balance (AP and sagittal)
preservation of a maximum of mobile vertebral levels
stable over time (no further extension surgeries)

Adolescent idiopathic scoliosis (AIS)

How much correction ?

“The straighter is NOT the better”

Goal ?

Balanced spine with levelled (horizontal) shoulders

