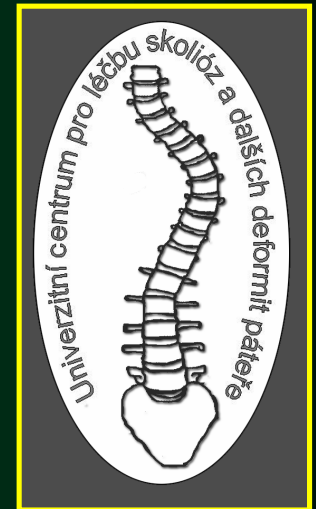


Growing rods in severe juvenile neuromuscular scoliosis.

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Introduction

Progressive severe neuromuscular scoliotic curves in juvenile age are very complicated for any kind of solution.

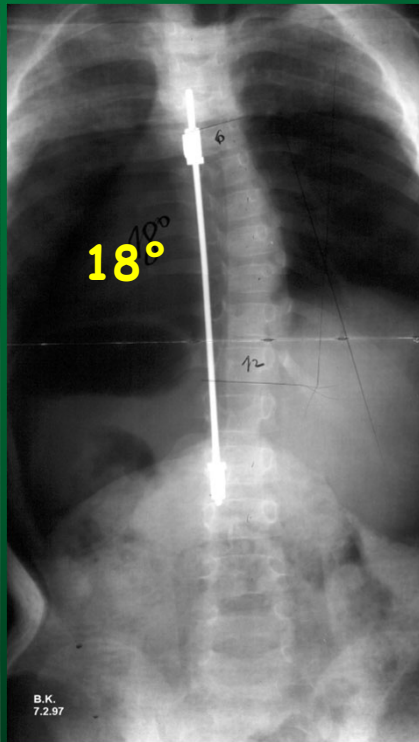
Definitive surgery is impossible because of spine growth and repetitive redistractions are unsuitable.

There are a lot of difficulties and complex care required by these patients.

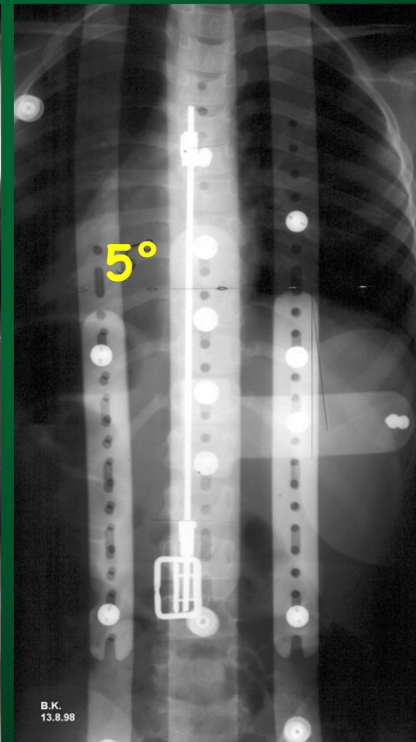
Repetitive distractions



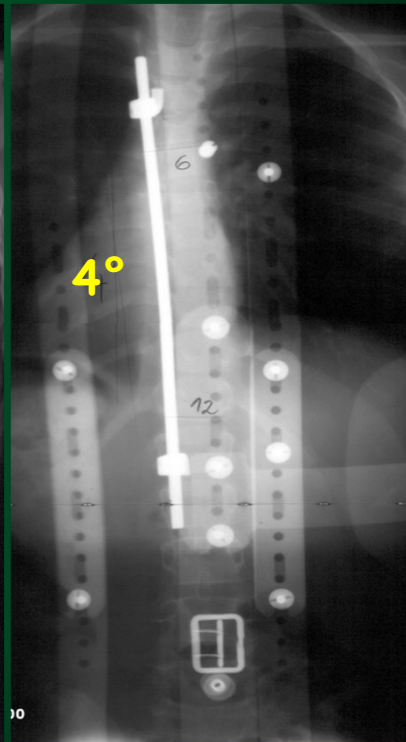
1996



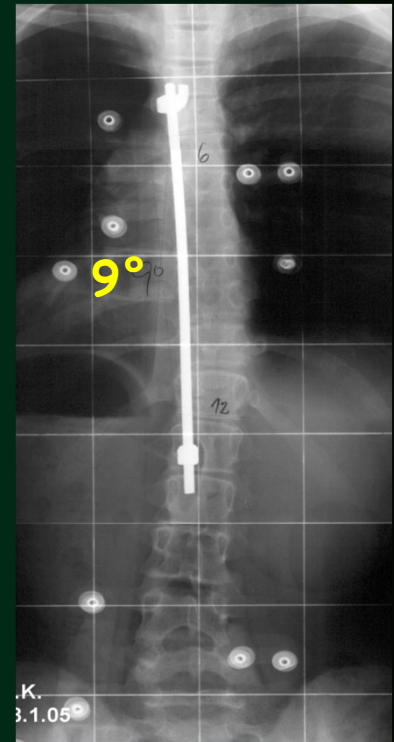
1997



1998



2000



2005

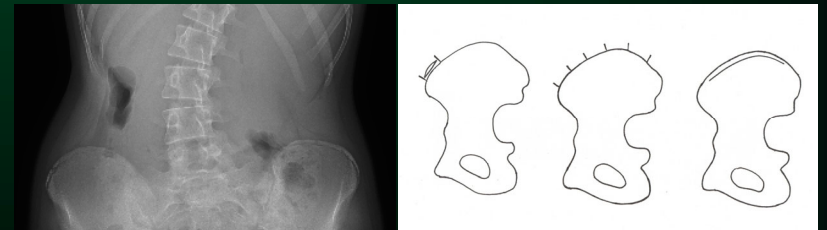
- Disadvantages:**
- repetitive surgeries (each half an year)
 - orthosis necessity
 - distractive methods of correction (risk of neuro lesion)

Advantages of growing rods

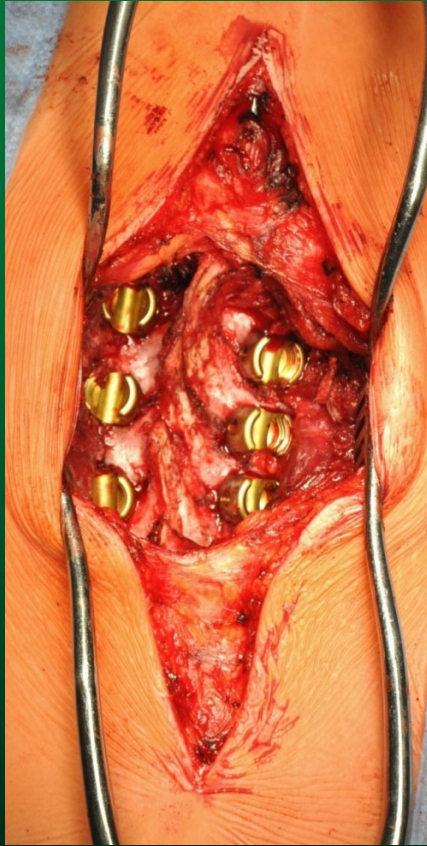
- Single stage surgery
- Translation method of correction
- Growing of the spine enabling

Indication for growing rods

- Progression above 40°
- Deformities before growing spurt
(up to 11 y., Risser 0-3)



Surgical technique



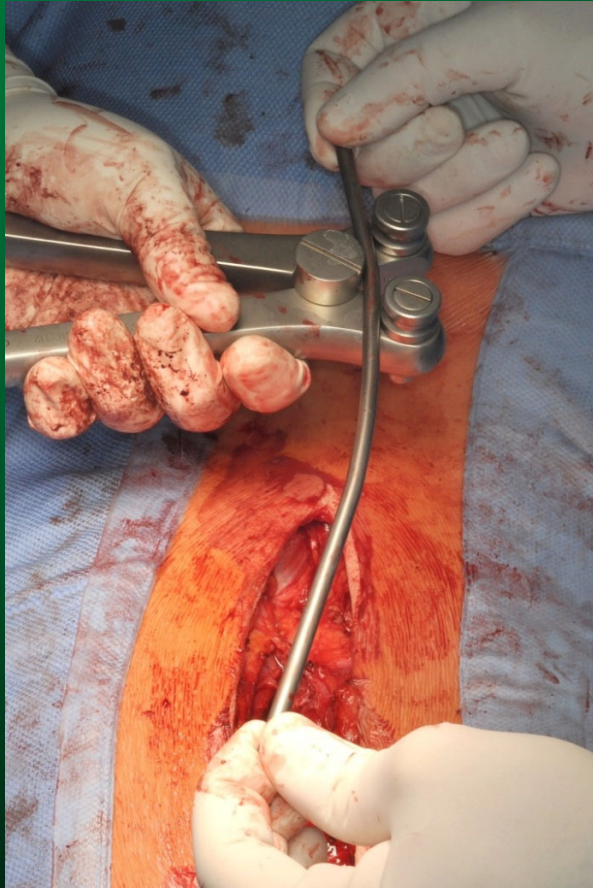
Transpedicular screws implantation to the **apex** of the curve using full skeletisation



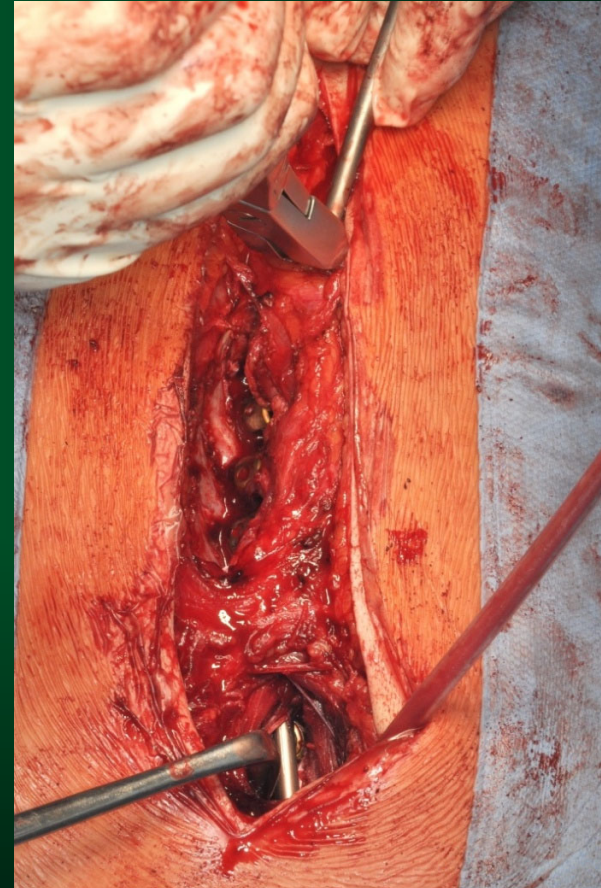
Transpedicular screws implantation to the **cranial** and **caudal** ends of the curve using subfascial paramedial approach



Surgical technique

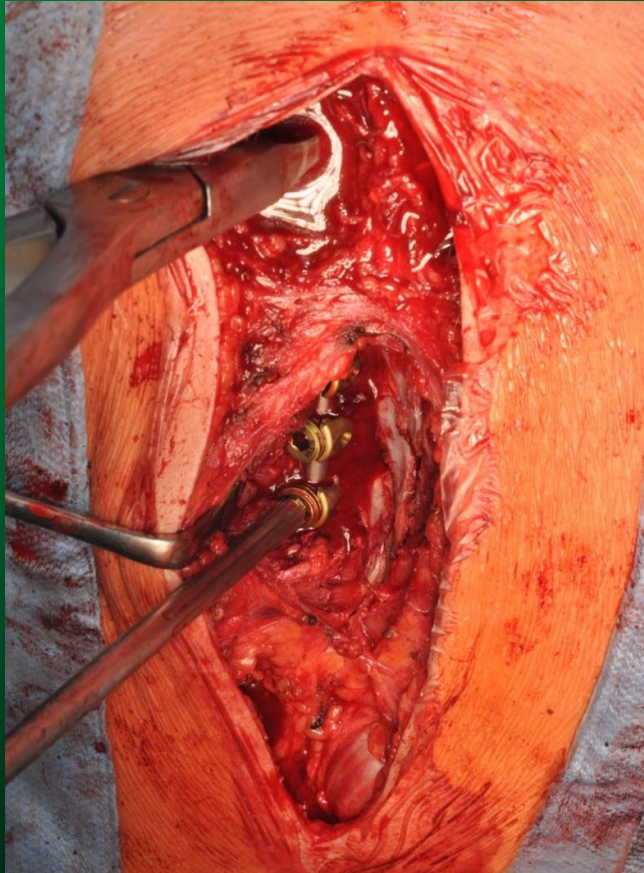


Bending of the rods

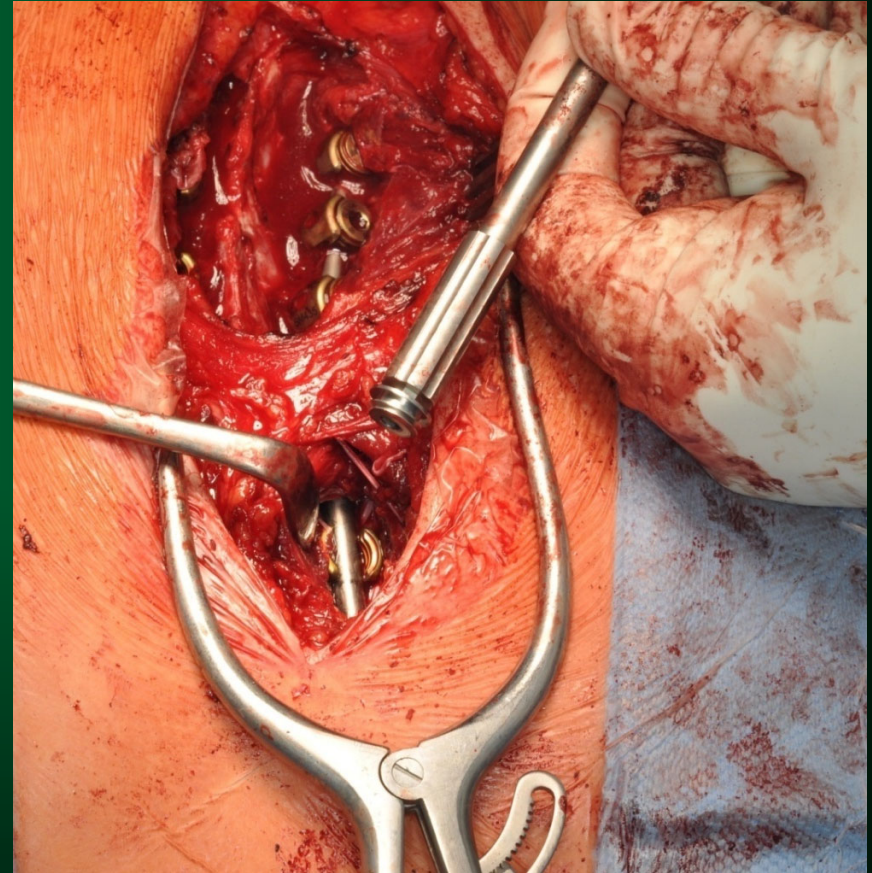


Implantation of the rods

Surgical technique



Correction of deformity and locking of the **apex** screws using usual locknut



Locking of the **cranial** and **caudal** screws using special locknut enabling sliding of the rod in the screw head

Material

4 patients

System Score (Novaspine)

An average age 8,5 y.

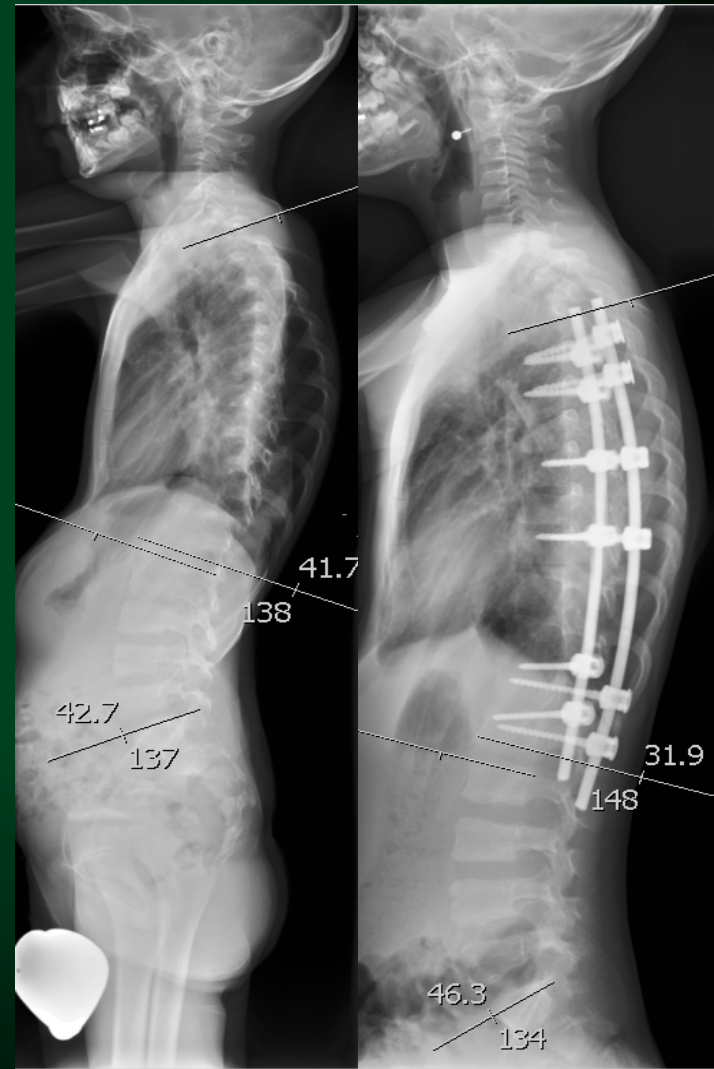
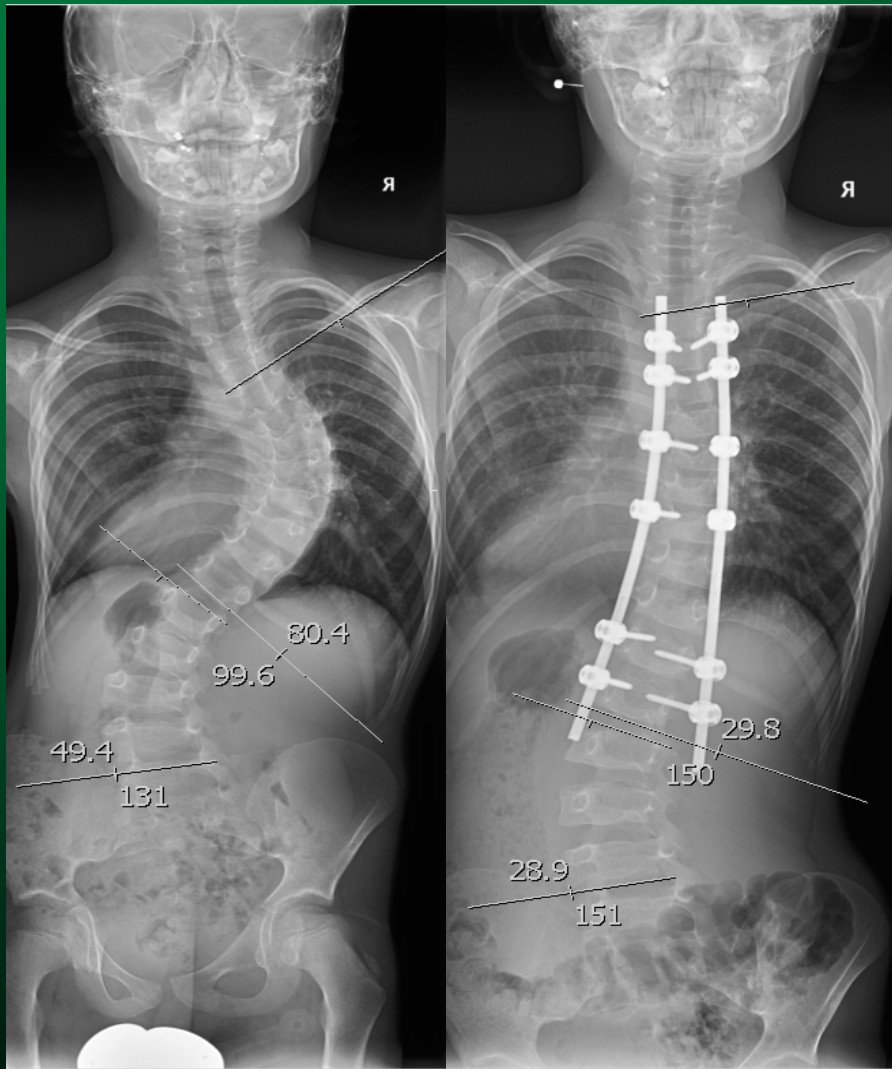
Type of deformity

- paralytic 1
- axial hypotony 1
- meningomyelokela 1
- Coffin-Lowry syndrome 1

Follow up minimum 6 month

Results

Growing rods	Grades before surgery	Grades after surgery	Correction rate
Frontal profile main curve	90 (80-108)	23 (14-29)	75%
Frontal profile secondary curve	54 (49-60)	18 (10-28)	67%
Sagittal profile thoracic kyphosis	+60 (+40-+81)	+44 (+37-+62)	
Sagittal profile lumbar lordosis	-47 (-23-58)	-37 (-23-54)	



Conclusions

Single-stage growing rods implantation makes excellent curve correction possible.

Possibility of early orthosis leave and repetitive distraction surgeries exclusion are also very important advantageous points.

Anyhow long-term result assessment is necessary.