HEMIVERTEBRA RESECTION VIA POSTERIOR APPROACH IN YOUNG CHILDREN WITH CONGENITAL DEFORMITIES

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INTRODUCTION

- ✓ **Scoliosis, kyphosis, and kyphoscoliosis due to hemivertebra usually require surgical treatment, as their progression potential is high.**

Combined A+P

- ✓**Longer surgery**
- ✓**Morbidity of anterior surgery**
- ✓**Comparable correction rates**
- ✓**Less neurological complications**

Posterior only

- ✓**Technically more demanding**
- ✓**Recurrence & Pseudoarthrosis**
- ✓**Comparable correction rates**
- ✓**More neurological complication**

Jatanko T Spine 2010

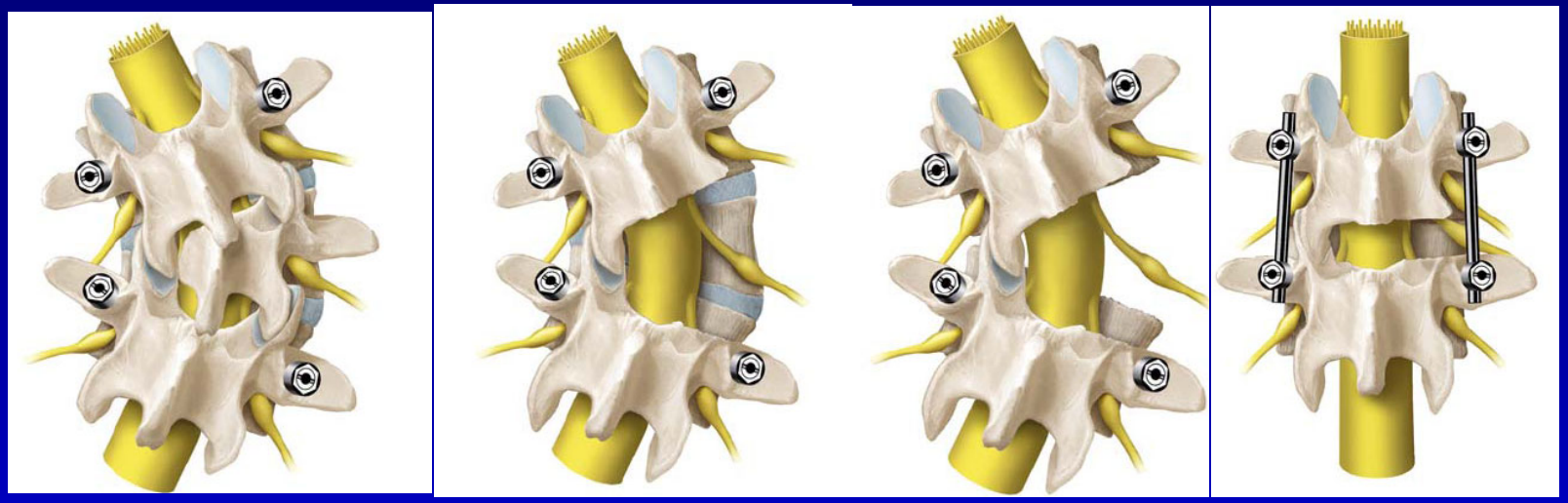
PURPOSE

- ✓To evaluate the results of resection of hemivertebra via a posterior approach and pedicle screw instrumentation

MATERIALS & METHODS

- ✓ Retrospective analysis
- ✓ Thirty-eight consecutive patients
- ✓ Radiographic examination
  - ✓ Pre, post op and follow-up
  - ✓ Coronal plane Cobb measurement
  - ✓ Sagittal plane local kyphosis
- ✓ Chart review
  - ✓ complications

SURGICAL TECHNIQUE



- ✓Under neuromonitorization
- ✓Short segment instrumentation by using pedicle screws
- ✓Complete resection with adjacent discs
- ✓Titanium mesh cages were usually used rather than shorthening spinal column
- ✓Postop hip-spica cast under age 6 years for 3 months

RESULTS

- ✓ Average age 4.5 years (2-10)
- ✓ Six had two different levels ipsilateral hemivertebrae
- ✓ Eight (21%) had SCM
  - ✓ Type I 5
  - ✓ Type II 3
- ✓ Location of hemivertebrae
  - ✓ Thoracic spine (T3-T11) 20
  - ✓ Thoracolumbar spine (T12-L1) 11
  - ✓ Lumbar spine (L2-L5) 13

RESULTS

- ✓Mean follow-up 46 months (24-108)
- ✓Mean level of instrumentation 3.8 (2-6)
- ✓Mean operation time was 5.8 hours
- ✓Mean blood loss was 383 ml

- ✓Five patients with type I SCM underwent same stage neurosurgical intervention.

RESULTS

- ✓20 patients had scoliosis
  - ✓ 32.1 degrees (22 – 48)
- ✓3 patients had kyphosis
  - ✓ 53.3 degrees (43 - 68)
- ✓15 patients had kyphoscoliosis
  - ✓Scoliosis 36.9 degrees (20 - 55)
  - ✓Kyphosis 34.9 degrees (11 - 85)

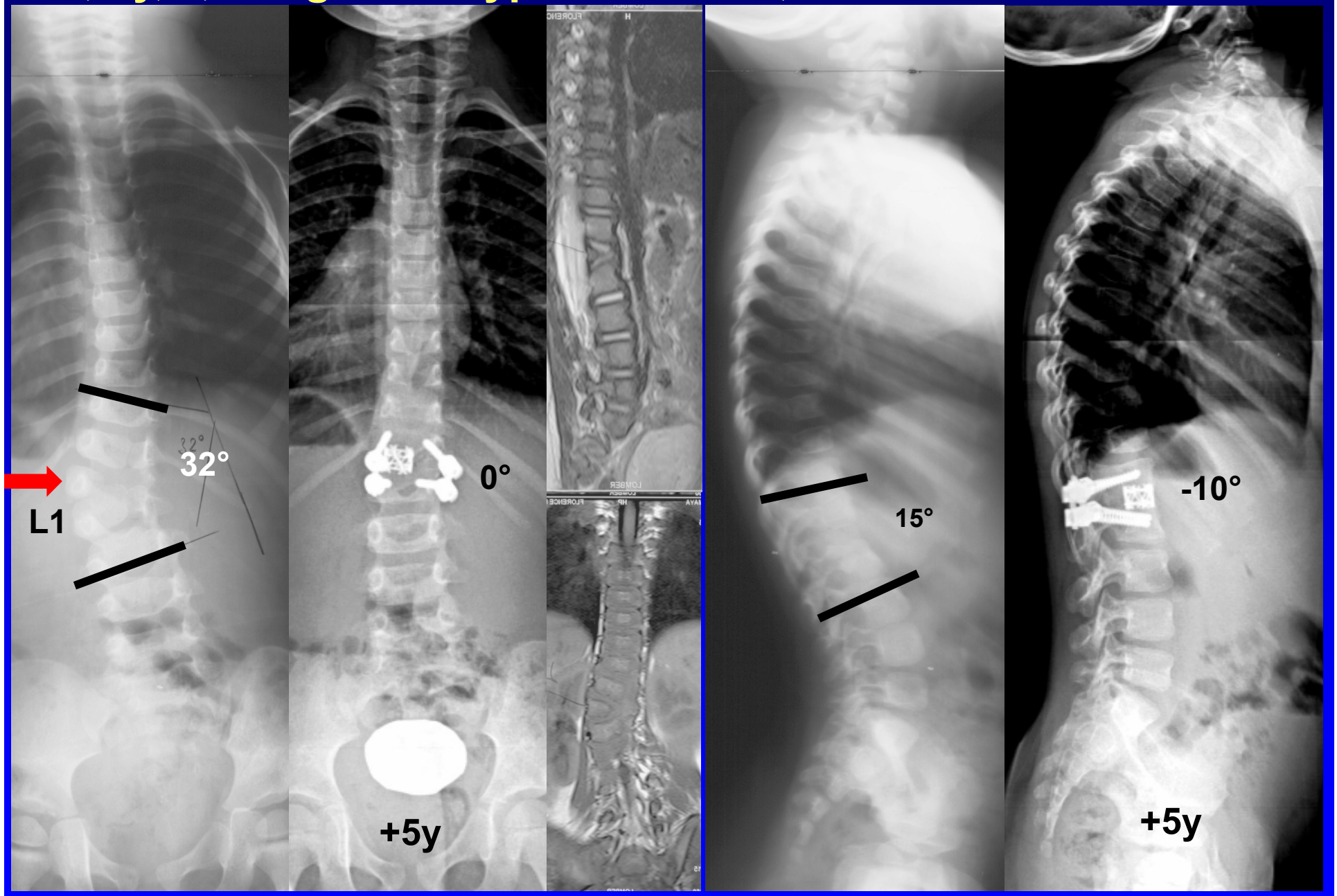
RESULTS

- ✓ Scoliosis corrected to 5 degrees (84%) and was 5.9 degrees at final follow-up.
- ✓ Kyphosis corrected to 3 degrees (94%) and was 5 degrees at final follow-up.
- ✓ Coronal plane imbalance in 18 patients and sagittal plane imbalance in 14 patients improved.

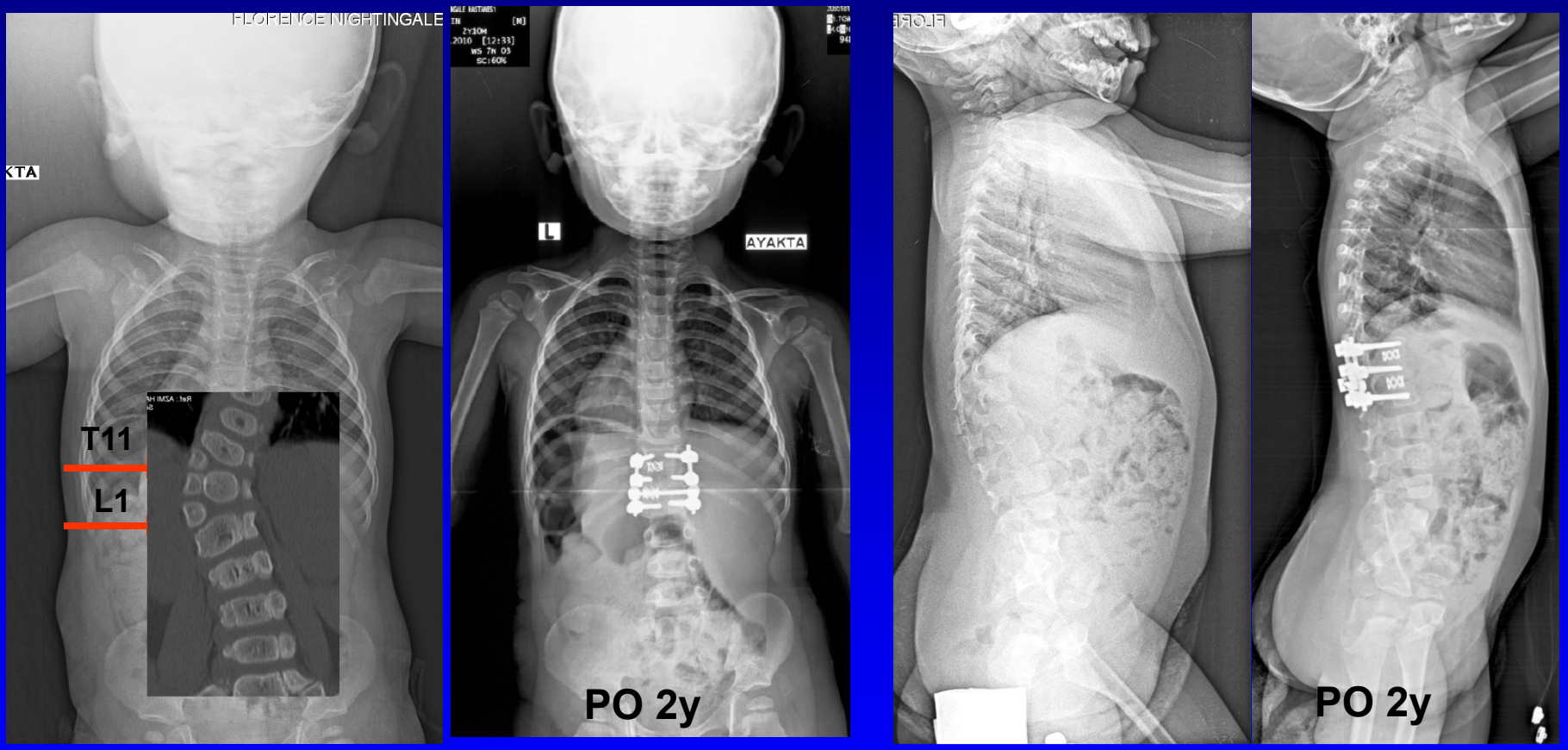
RESULTS

- ✓ Two patients (ages 3 and 4) with long sweeping deformity and fused shortly after resection developed C shaped curves in the early follow-up with coronal imbalance
- ✓ No neurological complications.
- ✓ One dural tear
- ✓ 3 patients with superficial infection
- ✓ No pseudoarthrosis or implant failure

MS, 2y, F, congenital kyphoscoliosis, hemivertebra

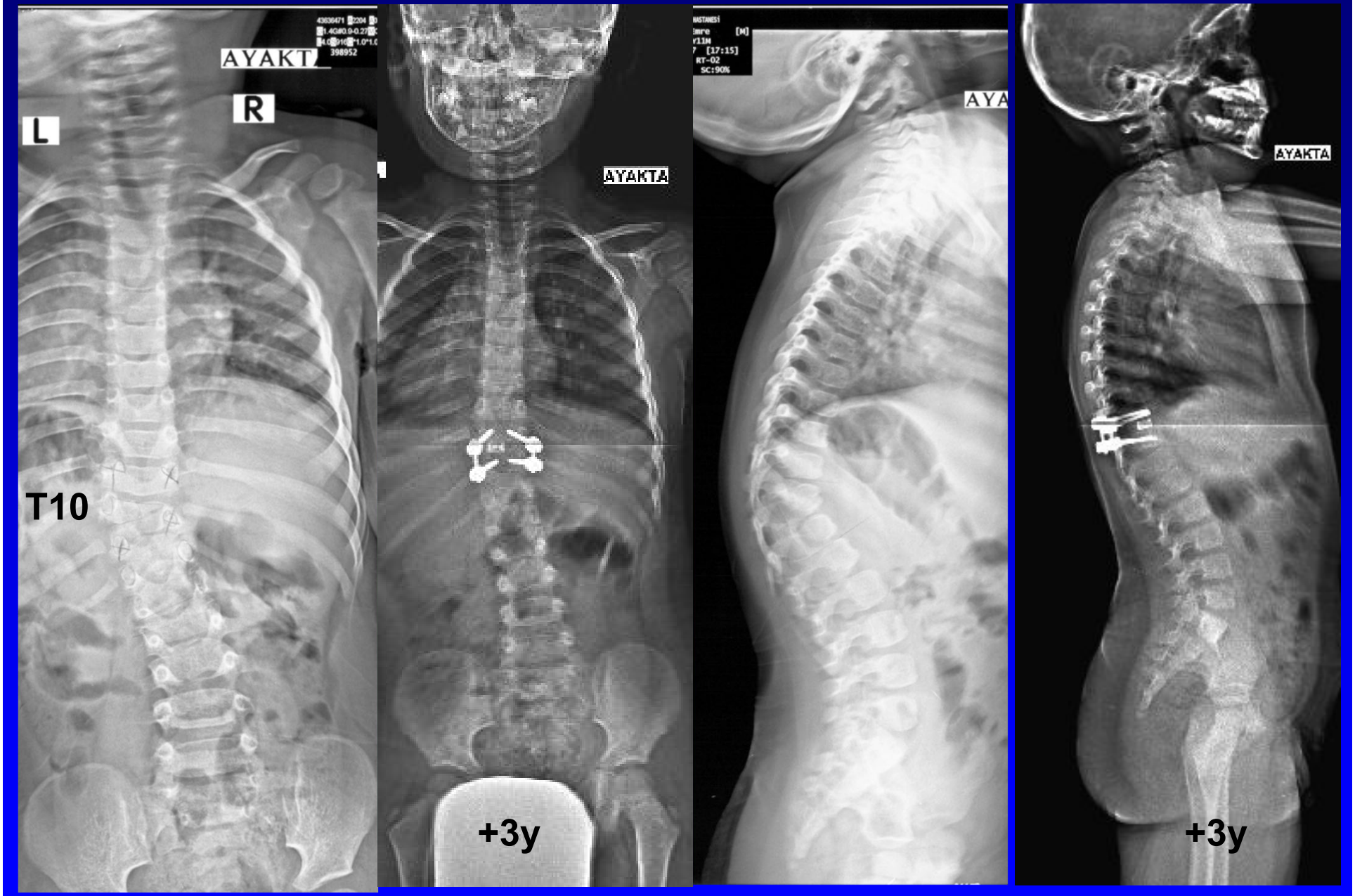


YD, 1,5y, M

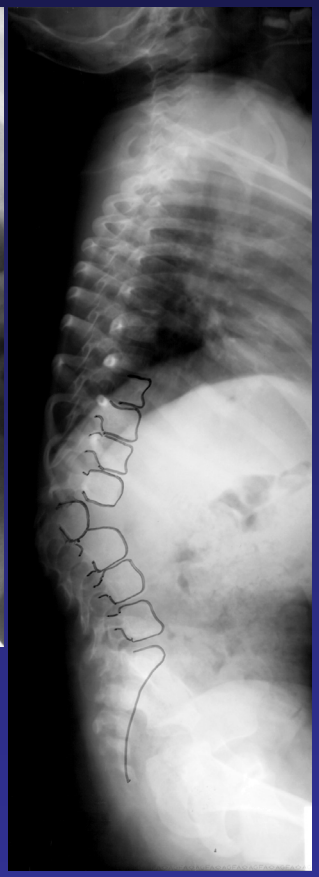


Hemivertebra excision via posterior only approach

EES, 1.5y, M

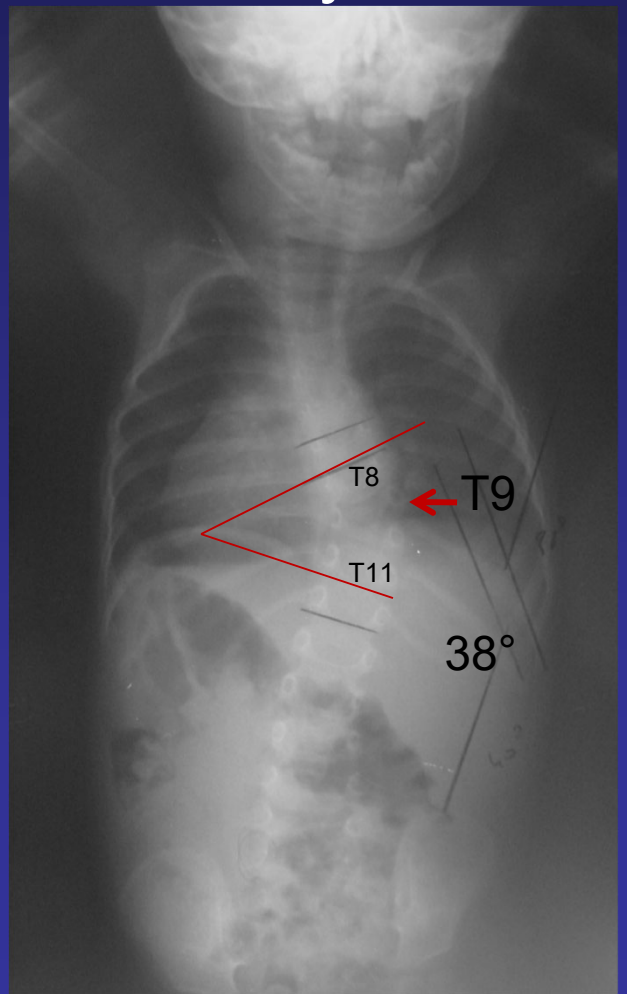


FK, 2y, F, congenital kyphosis

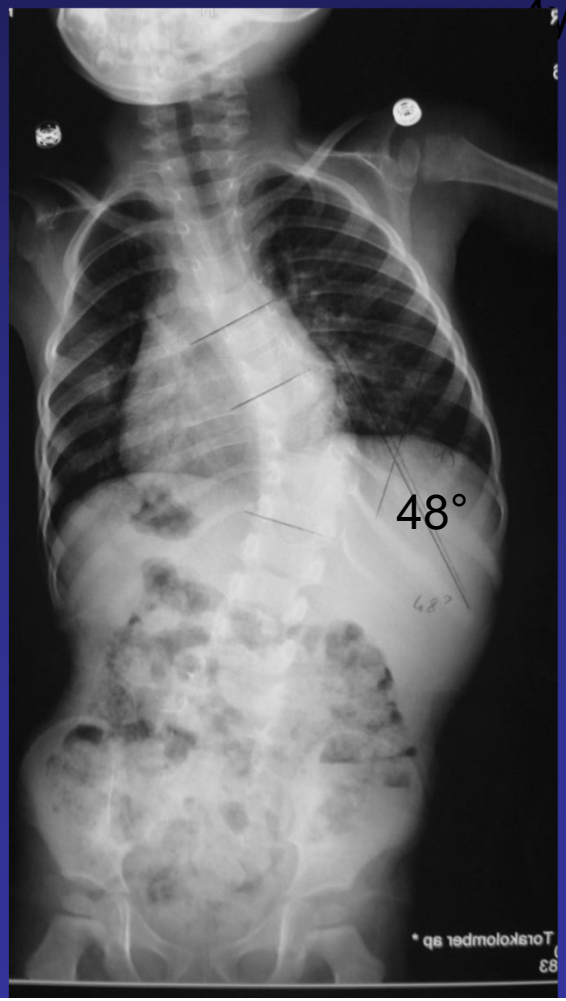


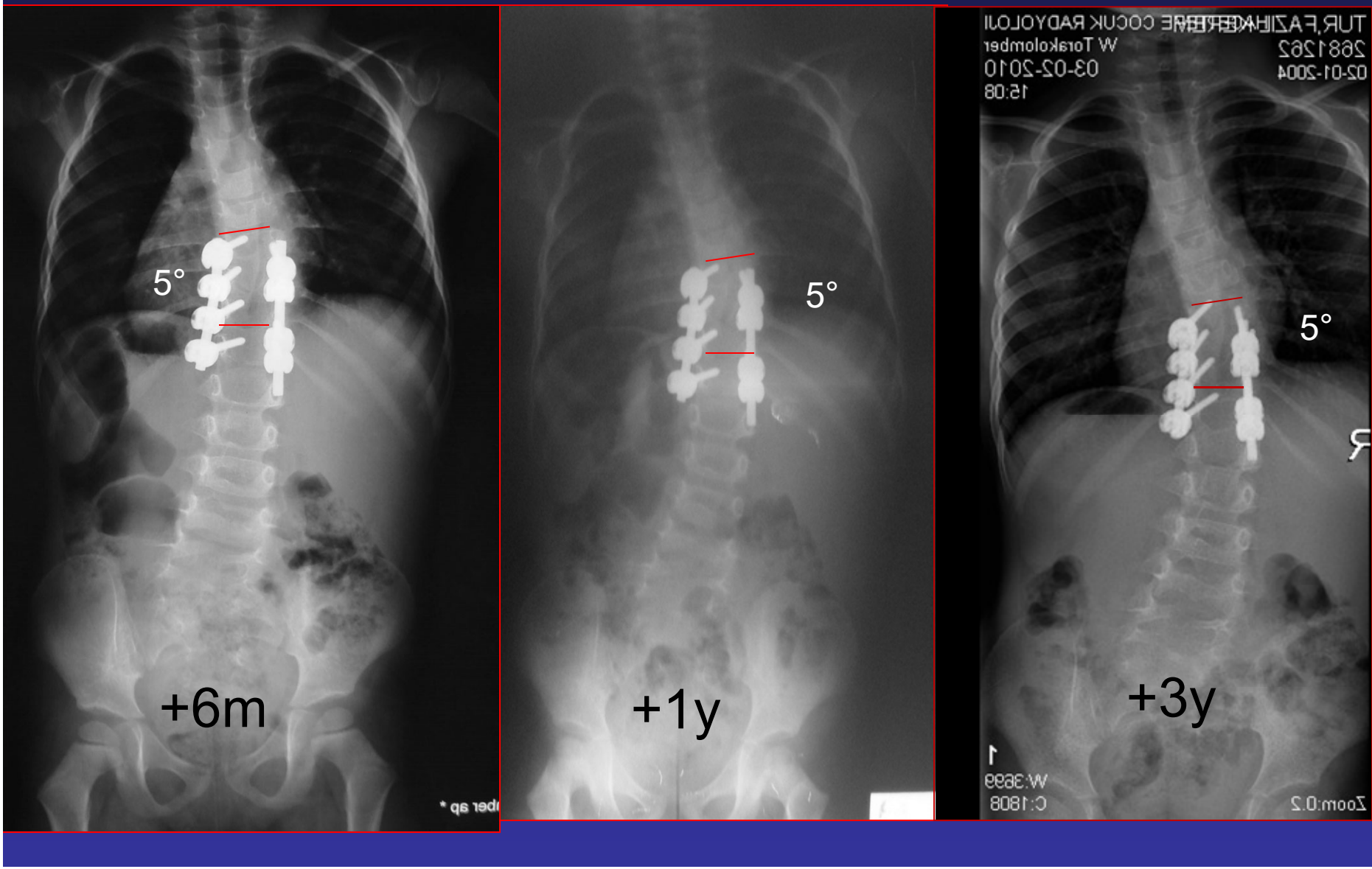
3y, T9 hemivertebrae

2 y



3 y




5°
+6m
5°
+1y
5°
+3y

CONCLUSION

- ✓ Hemivertebra resection via posterior approach is safe and effective in young children.
- ✓ Titanium mesh cages may provide potential advantages
  - ✓ Preserves spinal height
  - ✓ Increase fusion rate
  - ✓ Prevents neurological complications
- ✓ Long sweeping structural curves initiated by a single hemivertebrae
  - ✓ Postop bracing

THANK YOU