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Early Onset Scoliosis and Growing Spine
San-Diego, California

Comparison of Thoracic Growth and Pulmonary Function in Treated versus Untreated Early Onset Scoliosis Patients

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a. Grants/Research Support
b. Consultant
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d. Speakers' Bureau
e. Other Financial Support

Background

- *Hypothesis: anterior convex epiphysiodesis and growing transpedicular spinal instrumentation improves thoracic symmetry and PFT's in EOS patients*
- *Design: retrospective study with control group*

Materials

- *24 EOS patients*
- *1 group: 12 pts, mean age 14,1 years, index surgery at mean age 9,1 years*

  Etiology: IIS – 9, congenital scoliosis - 3
- *females – 11, males - 1*
- *Mean follow-up 4,6 years*
- *Surgeries:*

  - anterior convex epiphysiodesis, growing transpedicular instrumentation - 11pts

  - ante-posterior hemivertebra resection, growing transpedicular instrumentation – 1pt

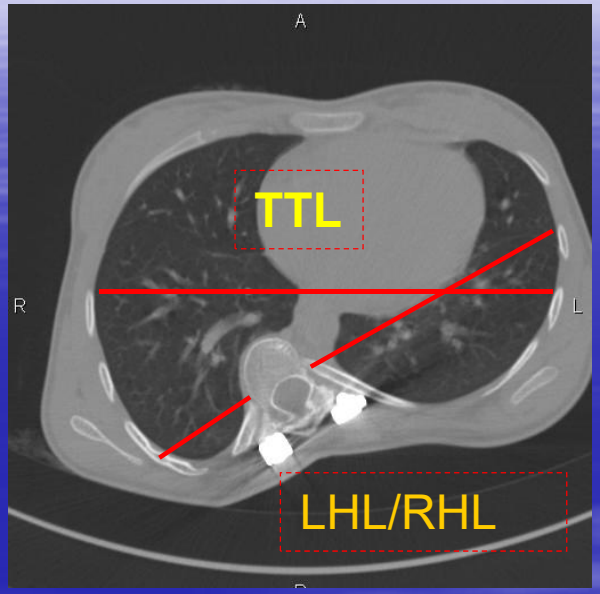
  - In 8 patients final fusion has been performed

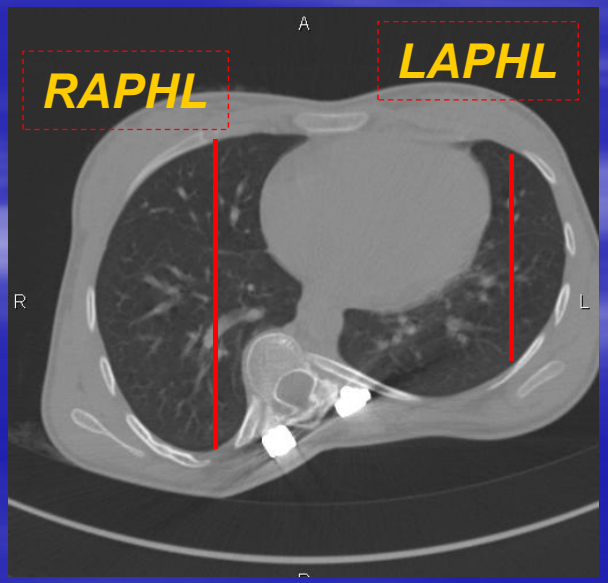
- *2 group: 12 nonoperated pts, mean age 15 years, scoliosis onset before the age of 5*

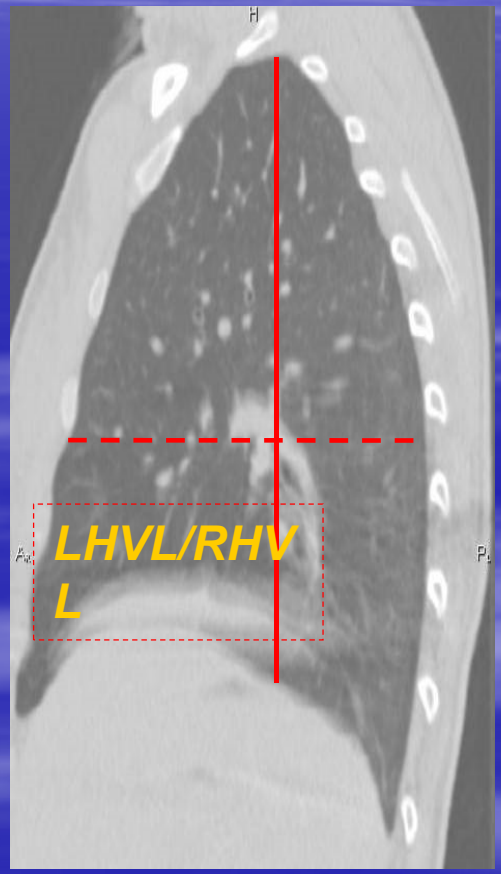
  Etiology: IIS – 6, JIS – 7, congenital scoliosis - 1
- *Females – 12.*

Methods

- *Cobb angle*
- *Left and right hemithorax length (LHL/RHL)*
- *transverse thorax length (TTL)*
- *left and right hemithorax vertical length (LHVL/RHVL)*
- *left and right AP hemithorax length (LAPHL/RAPHL)*
- *PFT: FVC & FEV1*
- *t-test*







1st group: Infantile idiopathic scoliosis, 8 yo

2007

2007

2013

2013

1st group: Infantile idiopathic scoliosis, 8 yo

2007

2007

2013

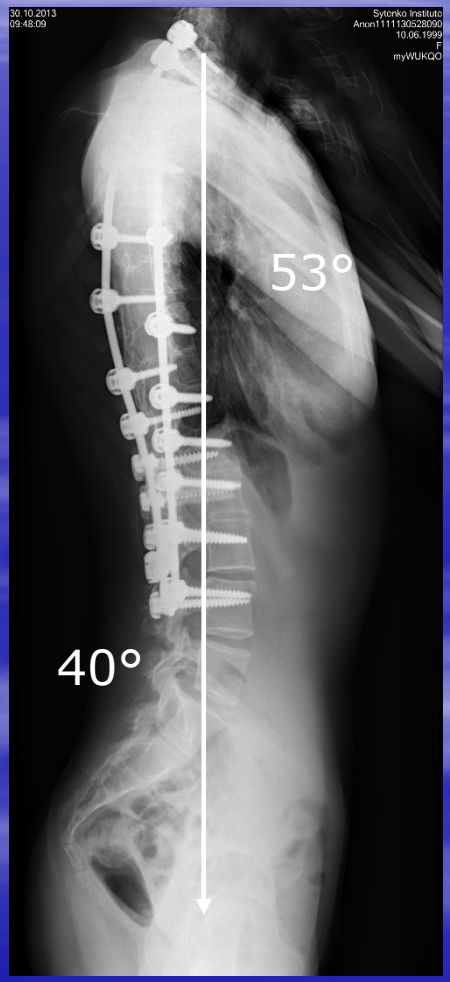
2013

1st group: Infantile idiopathic scoliosis, 8 yo

2007

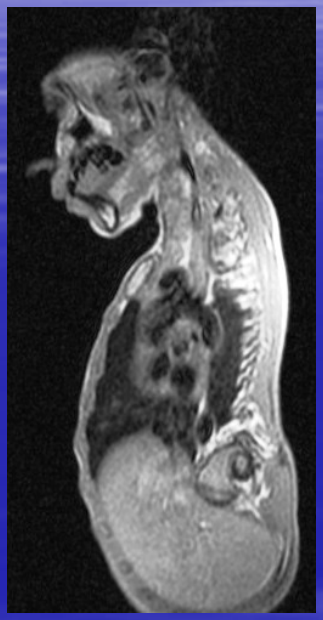
2007

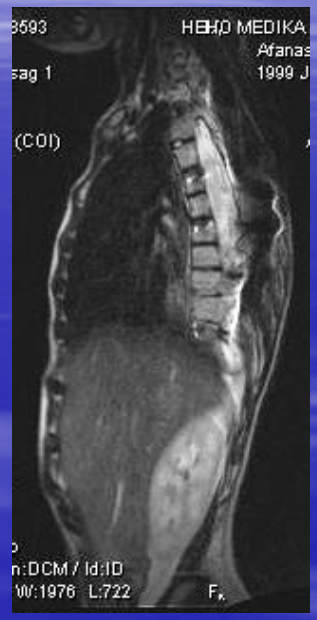
2012



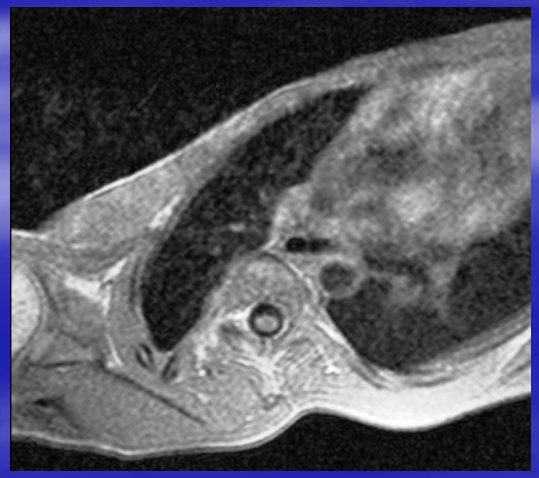
2013

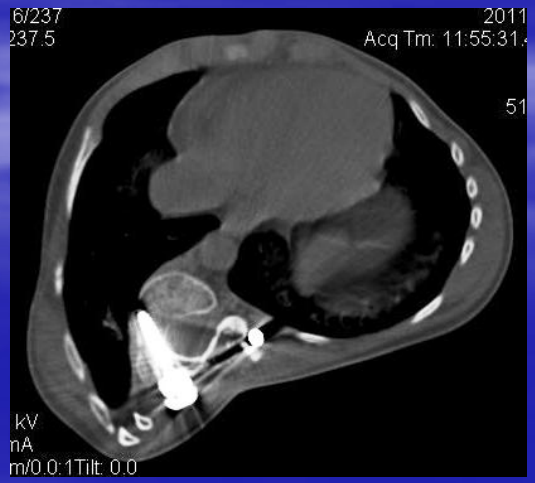
1st group: Infantile idiopathic scoliosis, 8 yo





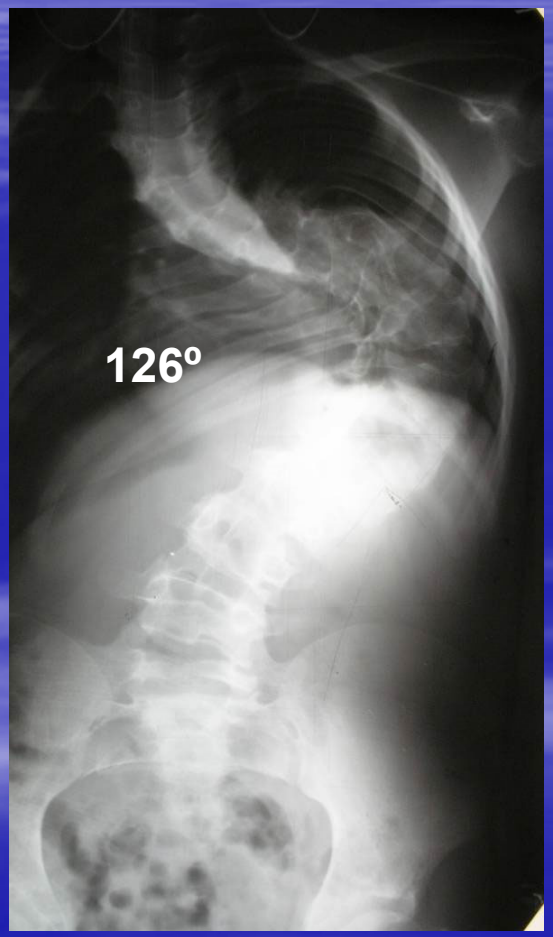
Preop

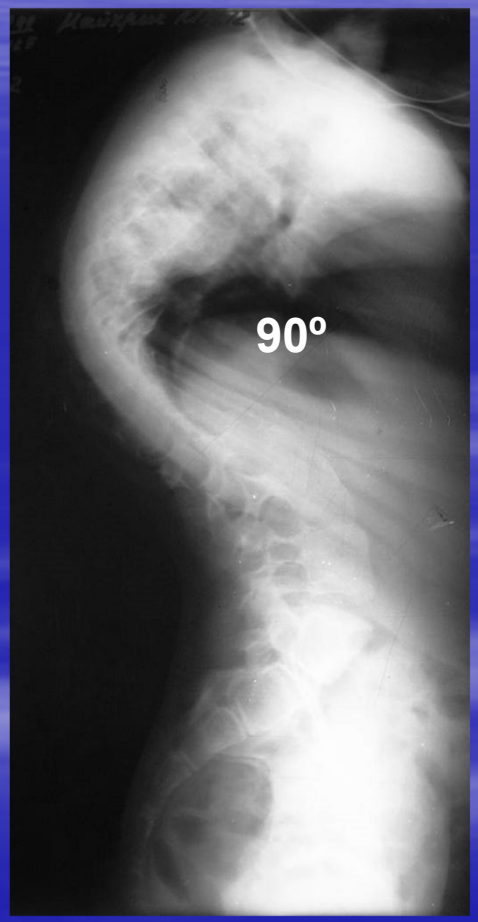


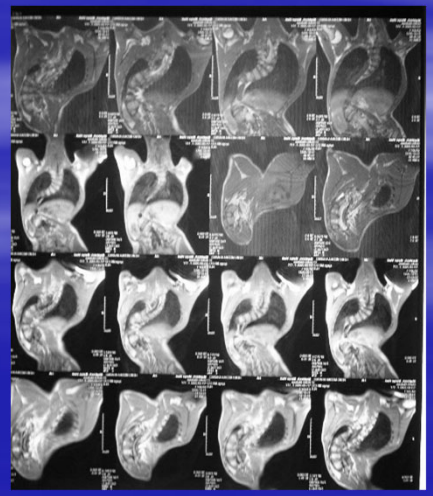


5 yrs postop

2nd group: Infantile idiopathic scoliosis, 12 yo







Results

	1st group preop	1st group end of f/u	2nd group	t-test
Cobb	74,3±3,28	31,6±2,92	121,3±12,87	5,06
Left hemithorax length	7,7±1,55	10,8±1,01	13,8±1,29	3,26
Right hemithorax length	12,4±1,29	7,3±1,01	5,0±0,51	3,12
Transverse thoracic length	14.3±1,33	19,1±1,73	16,8±1,61	2,01
Left hemithorax vertical length	8,2±1,01	13,4±1,21	12,2±1,19	1,9
Right hemithorax vertical length	10,1±1,78	12,9±1,41	9,1±0,85	3,7
Left AP hemithorax length	8,1±0,92	10,2±1,12	6,0±0,4	4,65
Right AP hemithorax length	7,6±1,11	9,6±1,05	4,1±0,32	7,24

Results

	1st group preop	1st group end of F/U	2nd group	t-test
FVC	1520±128,3 72,5% (52,3-86,7%)	3624,1±385,4 89,3% (65-129%)	2981,1±329,9 73,01% (68,7-94%)	2,76
FEV1	1470±136,7 57,7% (50,1-61,3%)	3140,8±327,7 93,46% (47-114%)	2759,7±303,11 84,57% (62-92,8%)	1,6

Conclusion

-anterior convex epiphysiodesis and posterior growing transpedicular instrumentation improve thoracic symmetry and preserve spinal growth

- actual FVC and FEV1 values and actual/predicted ratio increase during follow-up after index surgery

- PFTs are better in operated versus non-operated patients