

Defining Thoracic Kyphosis in Patients with Pectus Excavatum

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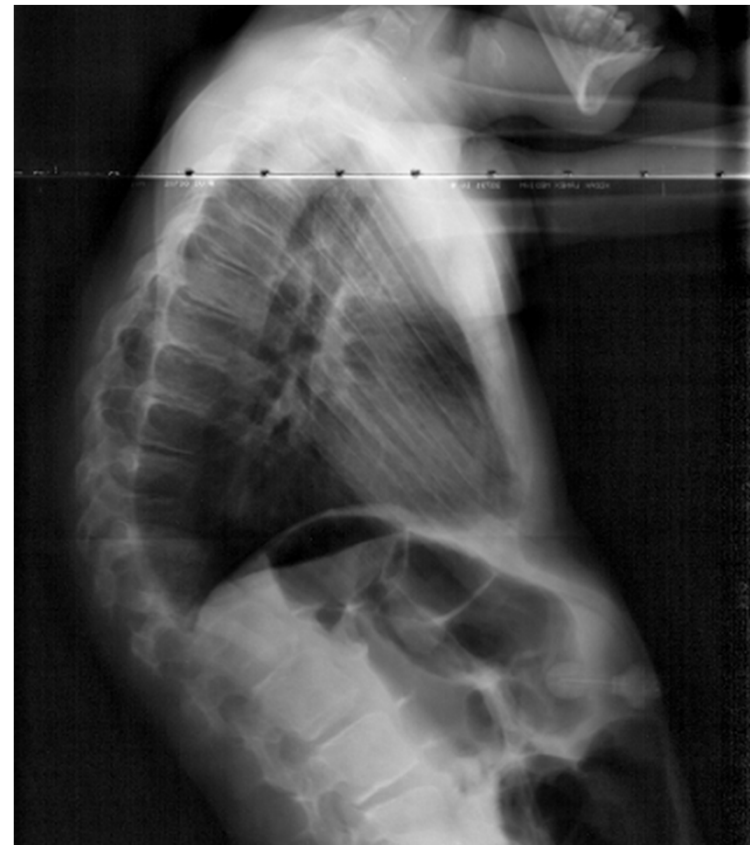
CHEST WALL & SPINAL DEFORMITY STUDY GROUP
UNIVERSITY OF MINNESOTA



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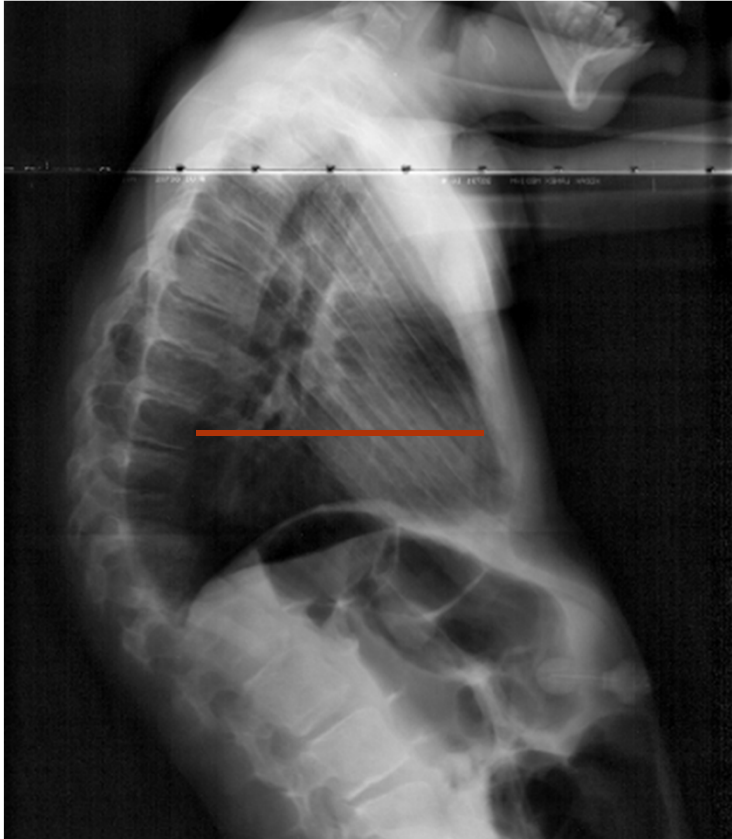
Case Presentation

- Patient LH is a 12 year old girl with kyphoscoliosis and pectus excavatum who presented to the Orthopaedic Clinic for correction of her severe kyphoscoliosis.

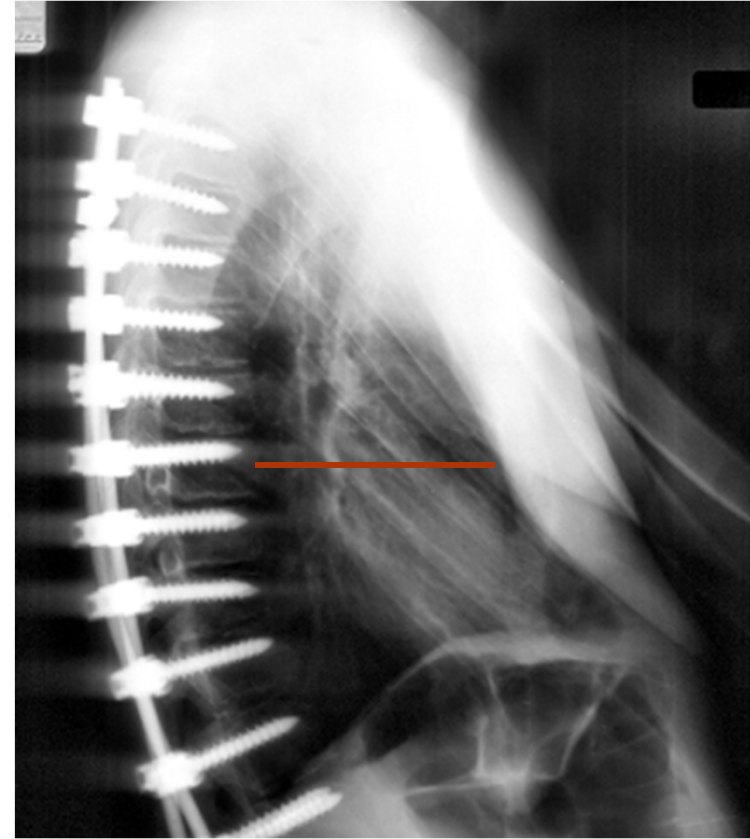




- After surgical correction of her kyphoscoliosis her pectus excavatum deformity was enhanced. She was severely symptomatic with the acute decrease in her thoracic volume.



Before correction of kyphoscoliosis



Increased pectus excavatum deformity

- With the acute decrease of space in her mediastinum after correction of her kyphosis this 12 year old was unable to ascend a flight of stairs without severe shortness of breath.
- This lead to the formation of a multidisciplinary study group.

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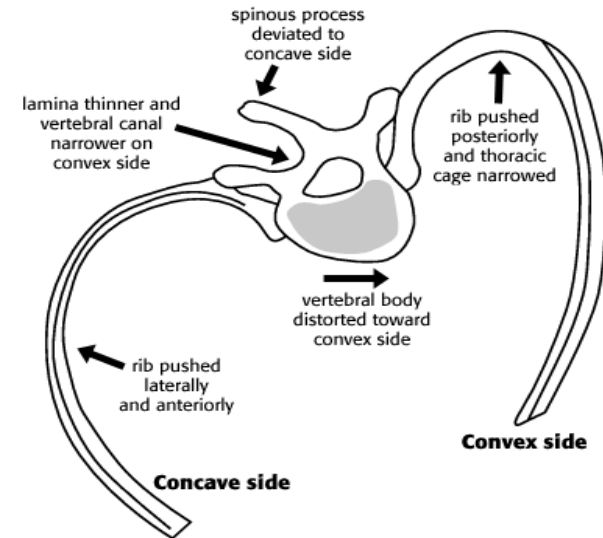
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Background

- Moderate scoliosis (greater than 30°)
1 out of 300 children
- Pectus malformation
1 out of 300-400 children
- While scoliosis and pectus deformities are the most common malformations in children the interrelationship of spine and chest wall is not understood.

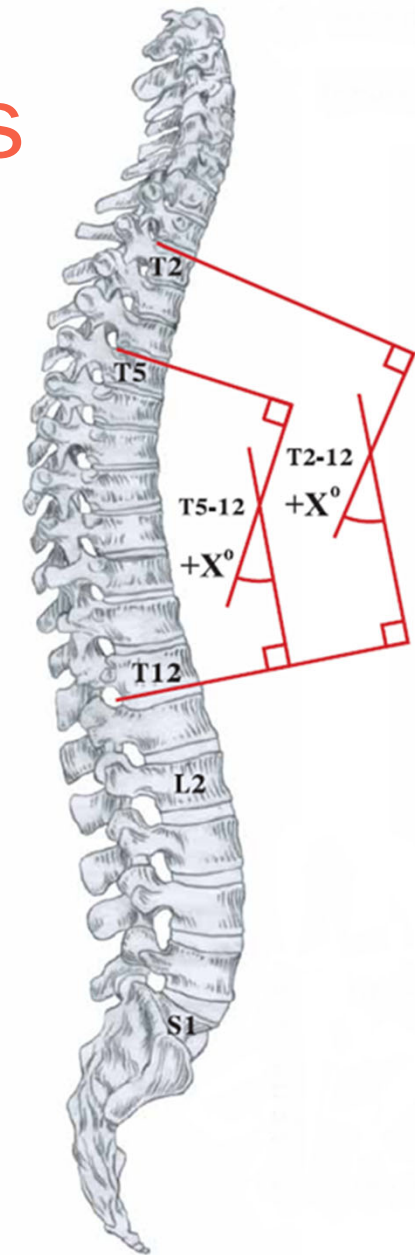


Our current study

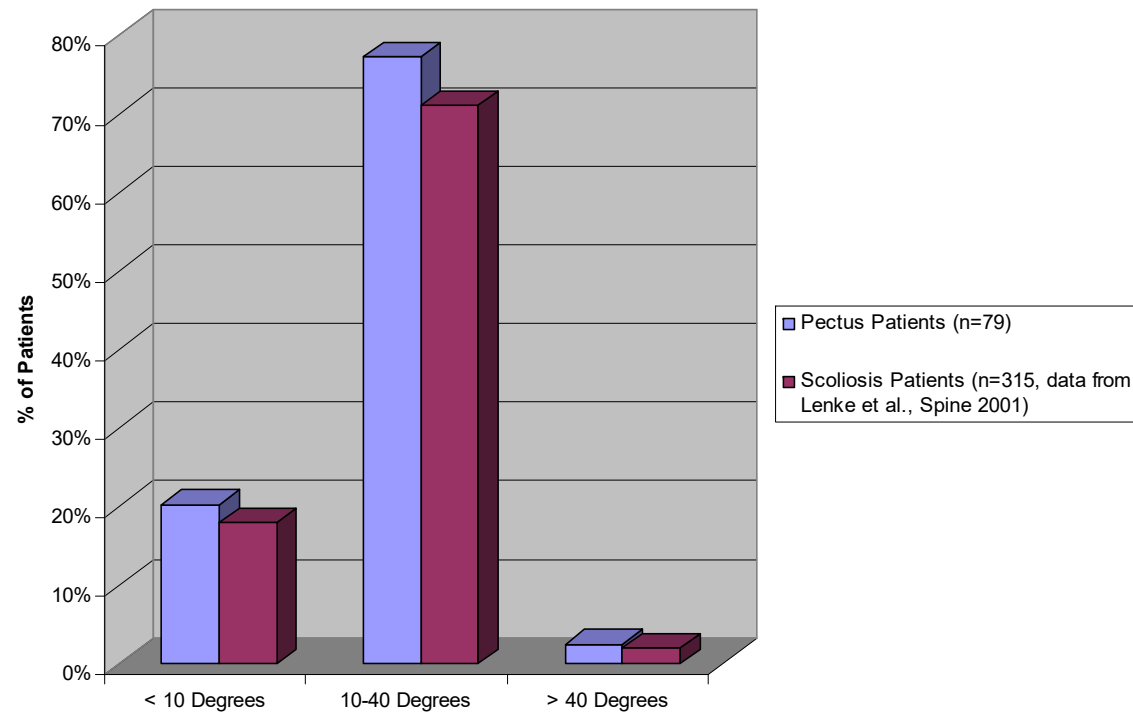
- Hyperkyphosis may be a potential compensatory mechanism for increasing the thoracic volume in patients with pectus excavatum.
- Retrospective review 238 consecutive patients with pectus excavatum
- 79 patients with lateral chest x-rays

Measurement of Kyphosis

- Measure the Cobb angle from T5 to T12
- 238 consecutive patients
 - 79 with standing lateral chest x-rays
- Compared to data from patients with adolescent idiopathic scoliosis



Thoracic Kyphosis in Pectus and Scoliosis Patients



Thoracic
Hypokyphosis (<10°)
16/79 = 20%

Normal Thoracic
Kyphosis (10-40°)
61/79 = 77%

Increased Kyphosis
(>40°)
2/79 = 3%

Conclusions

- The thoracic kyphosis of patients with pectus excavatum is similar to that of scoliosis patients.
- Pectus deformity appears to exist independent from thoracic sagittal contour abnormalities.

Future Directions

- Evaluating the coronal plane alignment in patients with pectus
- Defining the prevalence of pectus deformity in children with scoliosis

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