

Scoliosi nei Bambini ed Adolescenti con Deformità della Parete Toracica Anteriore

L. MASSARI
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Malfro

Società
Medico Chirurgica
di Ferrara

in collaborazione con
UOC Formazione e
Processi della Docenza Integrata

dal 1846



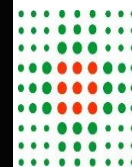
Malformazioni della parete toracica

Sabato 18 aprile 2026

Aula Magna Nuovo Arcispedale S. Anna
Cona, Ferrara

Il Segretario
Dott. M. Vason

Il Presidente
Dott. R. Zoppellari



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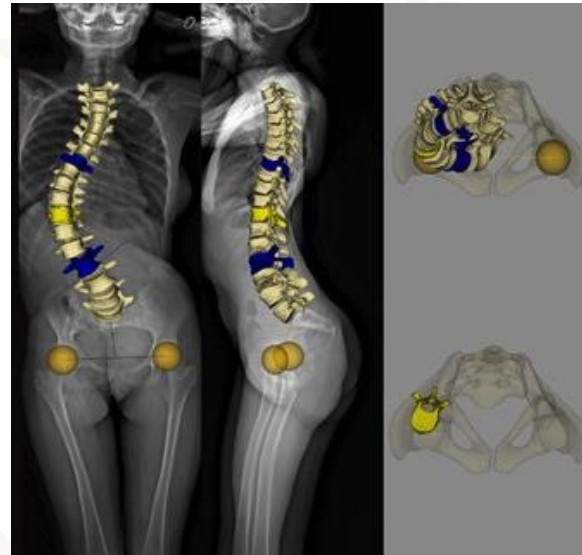
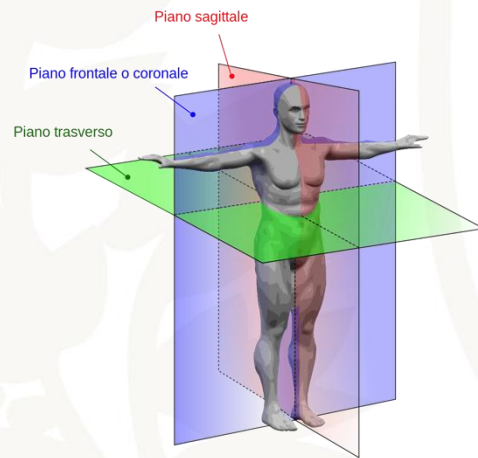
Università
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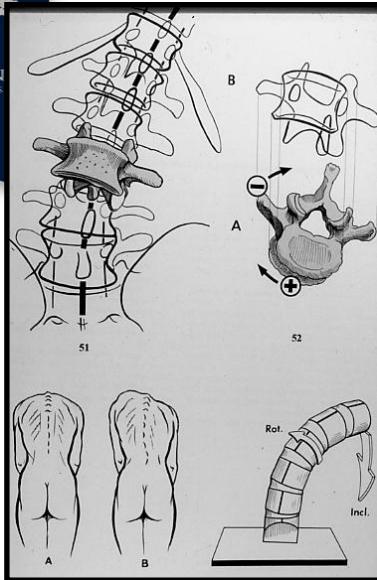


Image credit: University of Leicester

DEFINIZIONE

Complessa deformità strutturale della colonna vertebrale che si torce nei tre piani dello spazio; sul piano frontale si manifesta con un movimento di flessione laterale, sul piano sagittale con una alterazione delle curve (spesso provocandone una inversione) e sul piano assiale con un movimento di rotazione.



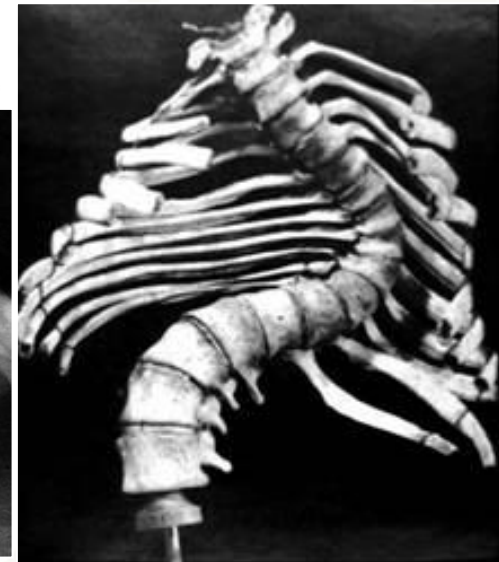
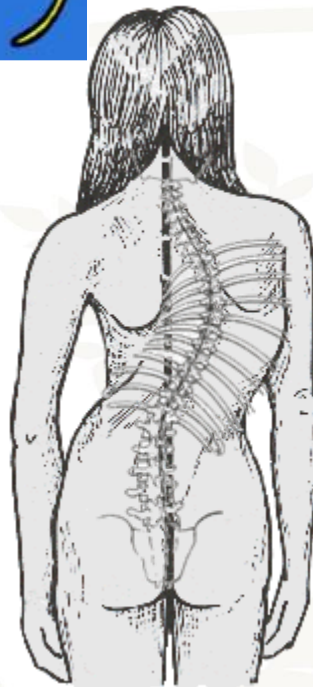
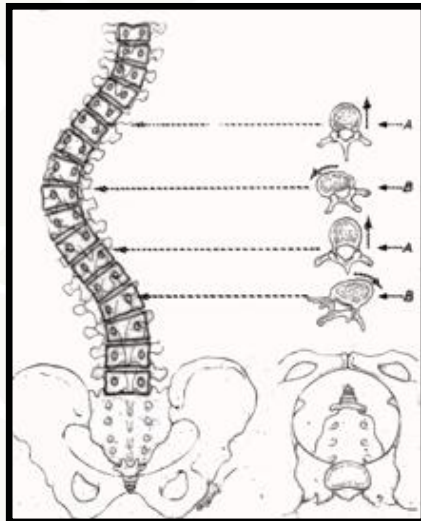


La rotazione vertebrale comporta il *trascinamento della gabbia toracica (deformazione delle coste)* e, in minor misura, dei muscoli paravertebrali lombari (*gibbi*)



Le coste sono allungate nella concavità e incurvate nella convessità

Deformazione dei corpi vertebrali a trapezio



PROGNOSI: dipende dall'entità delle curve e dal tempo presunto di maturazione scheletrica

- Maturazione scheletrica
- Età (menarca/pubertà)
- Sede
- Rotazione
- Ampiezza della curva

Max

• Toraciche





• Toraco Lombari

• Lombari

min

EVALUATION OF IDIOPATHIC SCOLIOSIS IN SUBTYPES OF PECTUS EXCAVATUM AND CARINATUM

AVALIAÇÃO EPIDEMIOLÓGICA DA ESCOLIOSE IDIOPÁTICA NOS DIFERENTES SUBTIPOS DE *PECTUS EXCAVATUM* E *CARINATUM*

DAVI DE PODESTA HAJE^{1,2} , GUILHERME ANTUNES BARRIVIERA¹ , MARCOS VINÍCIUS SANTANA SILVA¹ ,
CAROLINE KAORI MAEBAYASHI¹ 

1. Hospital de Base do Distrito Federal, Departamento de Ortopedia e Traumatologia, Brasília, DF, Brazil.
2. Centro Clínico Orthopectus, Brasília, DF, Brazil.

- Deformità Toraciche: 0,2-3% Popolazione; 1:300-1:400 nati vivi; maschi/femmine 3,5/1
- Scoliosi: 2-3% Popolazione generale; Infantile(0-3) - Giovanile(4-10) – Adolescenziale(>10)
- Scoliosi & Pectus (Car/Exc): 17,61%-28,6%

Patients with pectus associated with scoliosis had a distinct epidemiology from those with isolated pectus or isolated scoliosis, with more frequent left-convex thoracolumbar curves. Scoliosis in pectus patients was more severe in females, in those with right-convex thoracic curves, and in the LPC subtype.

Genetic Linkage Localizes an Adolescent Idiopathic Scoliosis and Pectus Excavatum Gene to Chromosome 18 q

Christina A. Gurnett, MD, PhD,*†‡ Farhang Alaei, MD,* Anne Bowcock, PhD,§
Lisa Kruse, MD,* Lawrence G. Lenke, MD,*|| Keith H. Bridwell, MD,*|| Timothy Kuklo, MD,*||
Scott J. Luhmann, MD,*|| and Matthew B. Dobbs, MD*||

■ Key Points

- Adolescent idiopathic scoliosis and pectus excavatum may have a similar genetic etiology.
- Linkage analysis demonstrated a novel locus for adolescent idiopathic scoliosis and pectus excavatum on chromosome 18 q.
- Consideration of family members with pectus excavatum as affected may increase the power of future adolescent idiopathic scoliosis genetic linkage studies.





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ORTOSTASI

Risultati: 0

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ORTOSTASI

Risultati: 0



IL BUSTO

Davies E, Norvell D, Hermsmeyer J
"Efficacy of bracing versus observation in the
treatment of idiopathic scoliosis".
Evid Based Spine Care J (2011) 2(2):25-33

«Considerata la scarsa evidenza scientifica disponibile, il busto dovrebbe probabilmente essere considerato solo se i pazienti sono coinvolti in uno studio randomizzato e controllato finalizzato a confermare la sua efficacia»

INDICAZIONI AL BUSTO:

- Curve tra i 25° e i 30° con progressione dimostrata $\geq 5^\circ$
- Curve tra i 30° e i 40°
- Pazienti immaturi (almeno 1 anno di crescita)
- Risser < 3
- Pazienti/parenti motivati

Scopo:

- (Correggere ?)
- Fermare o rallentare l'evoluzione della curva

Svantaggi:

- Scomodità / Limitazione
- Riduzione attività

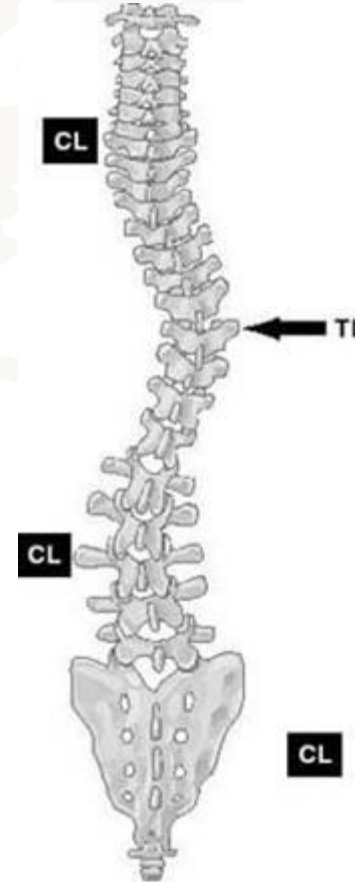
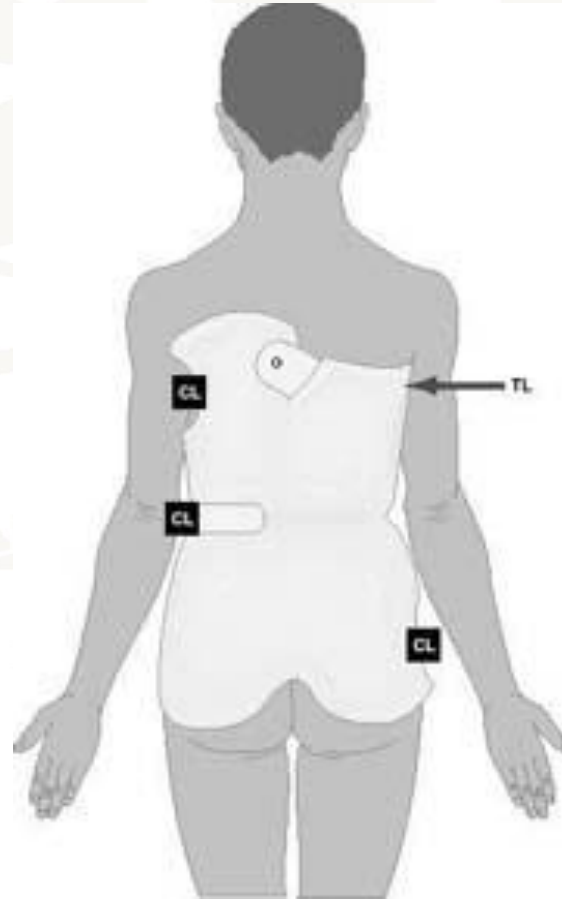
IL BUSTO

CORSETTI GESSATI



Calco in gesso





- Spinte correttive

IL BUSTO LIONESE

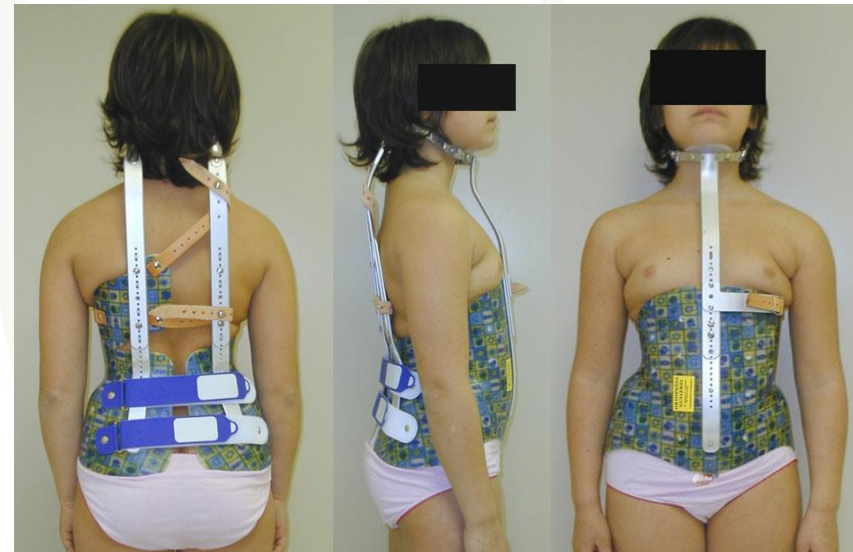
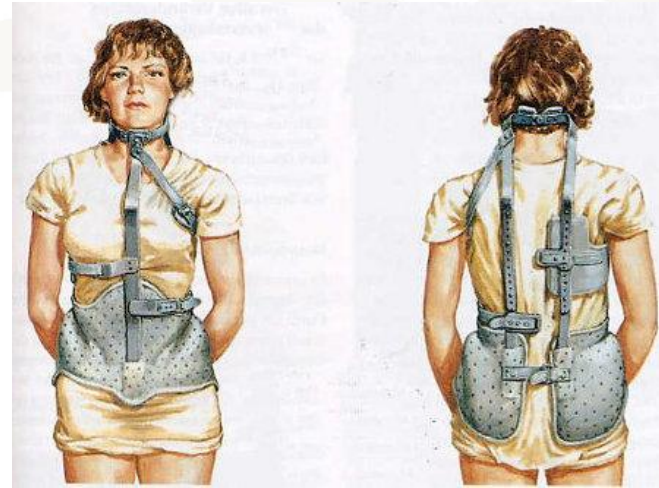
CORSETTI ORTOPEDICI



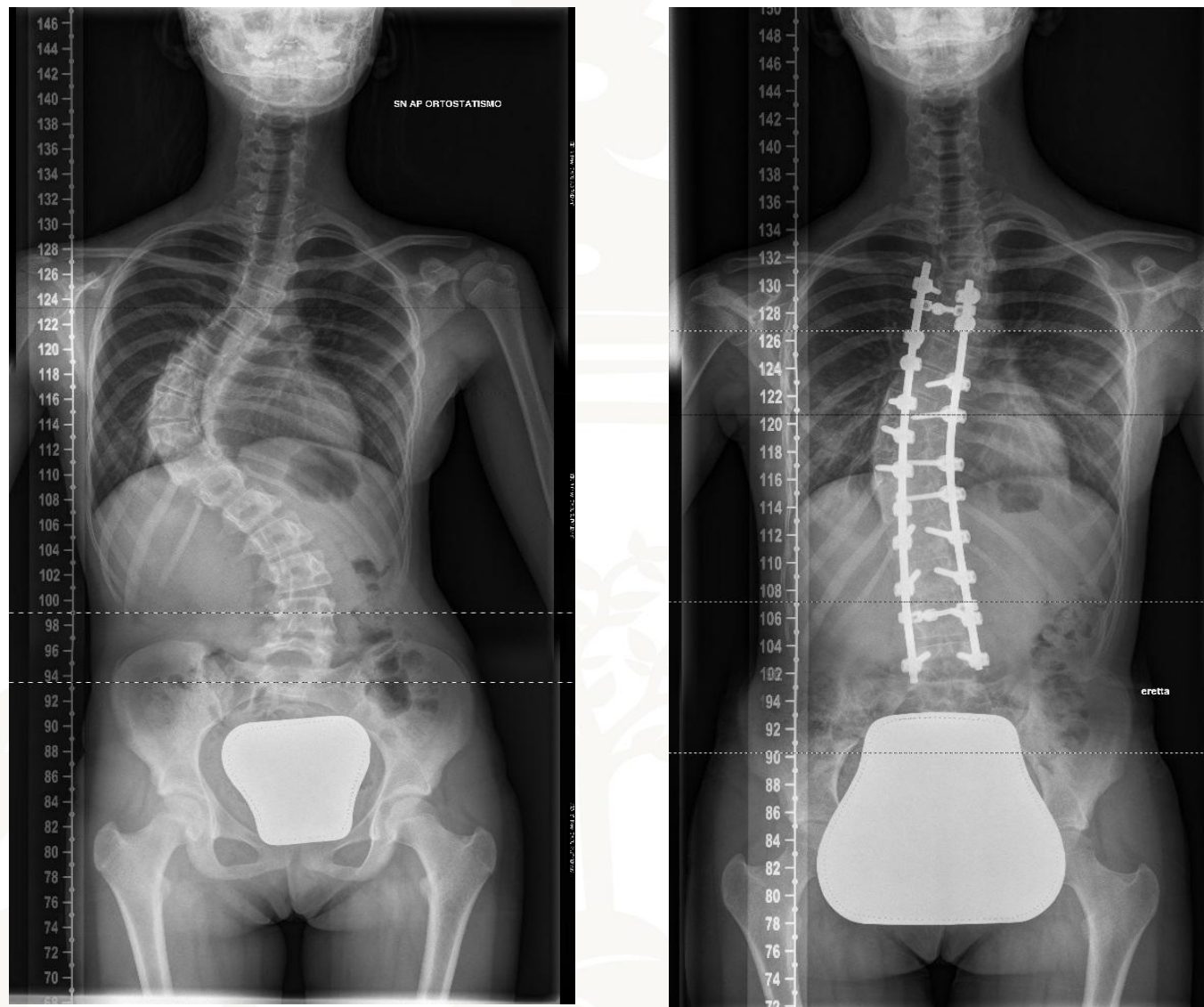


IL BUSTO MILWAUKEE

CORSETTI ORTOPEDICI

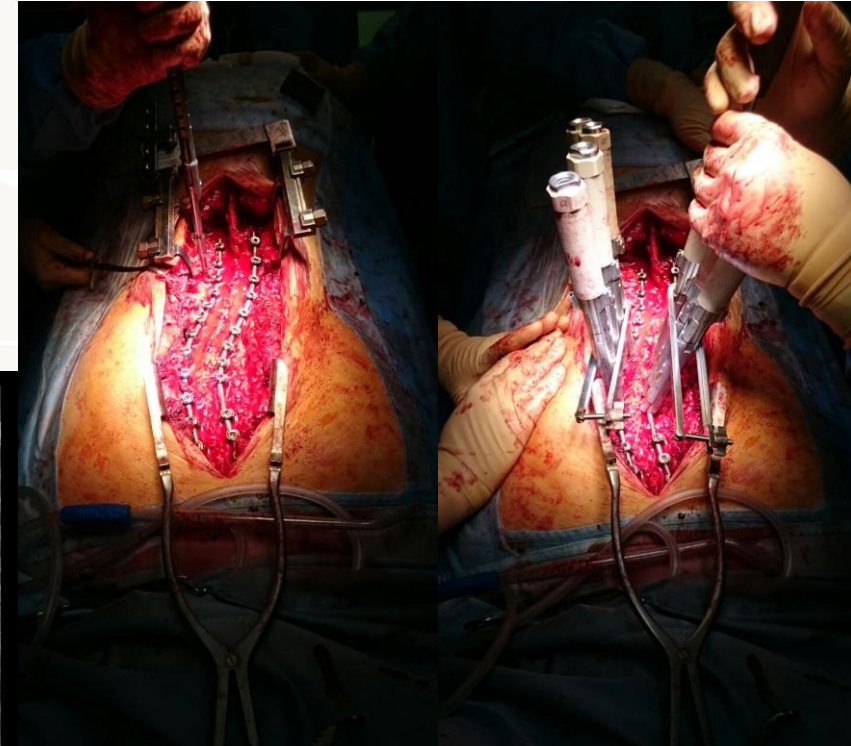
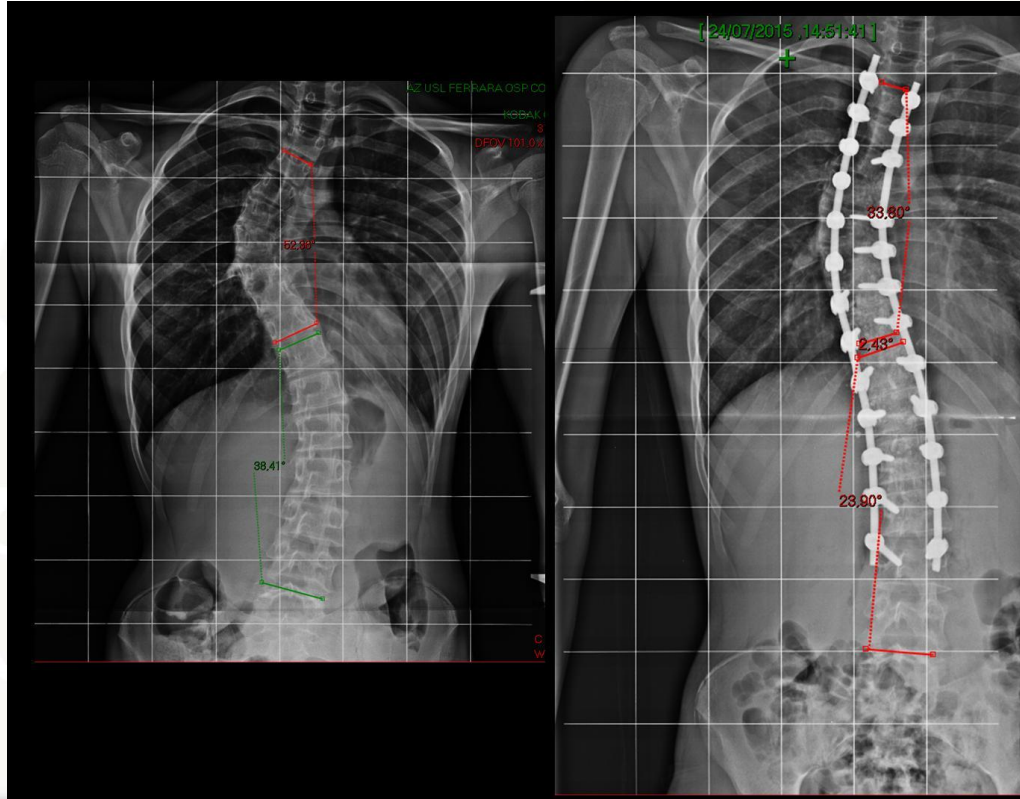


IL TRATTAMENTO CHIRURGICO: FUSION



Radiografia in antero-posteriore prima e a 2 mesi dall'intervento

IL TRATTAMENTO CHIRURGICO: FUSION





Pectus excavatum and scoliosis: a review about the patient's surgical management

Eleftherios T. Beltsios^{1,2} · Sofoklis L. Mitsos¹ · Nikolaos T. Panagiotopoulos¹

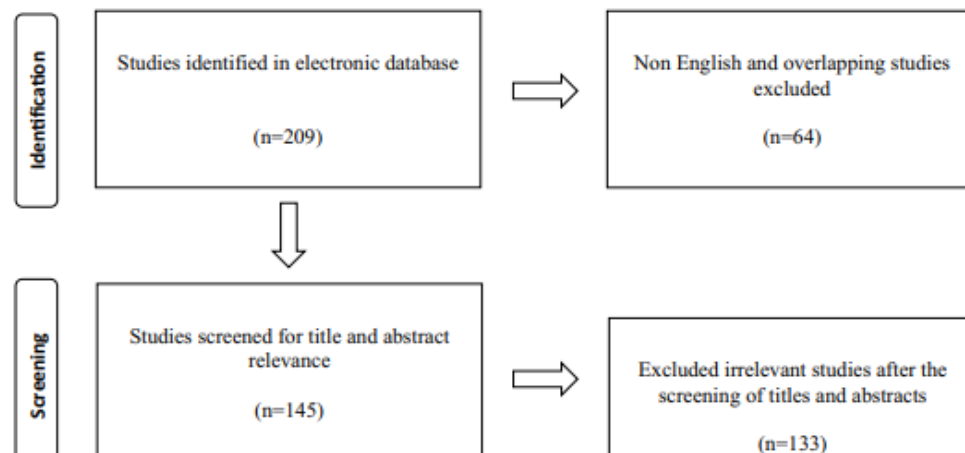
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Scoliosis first treatment

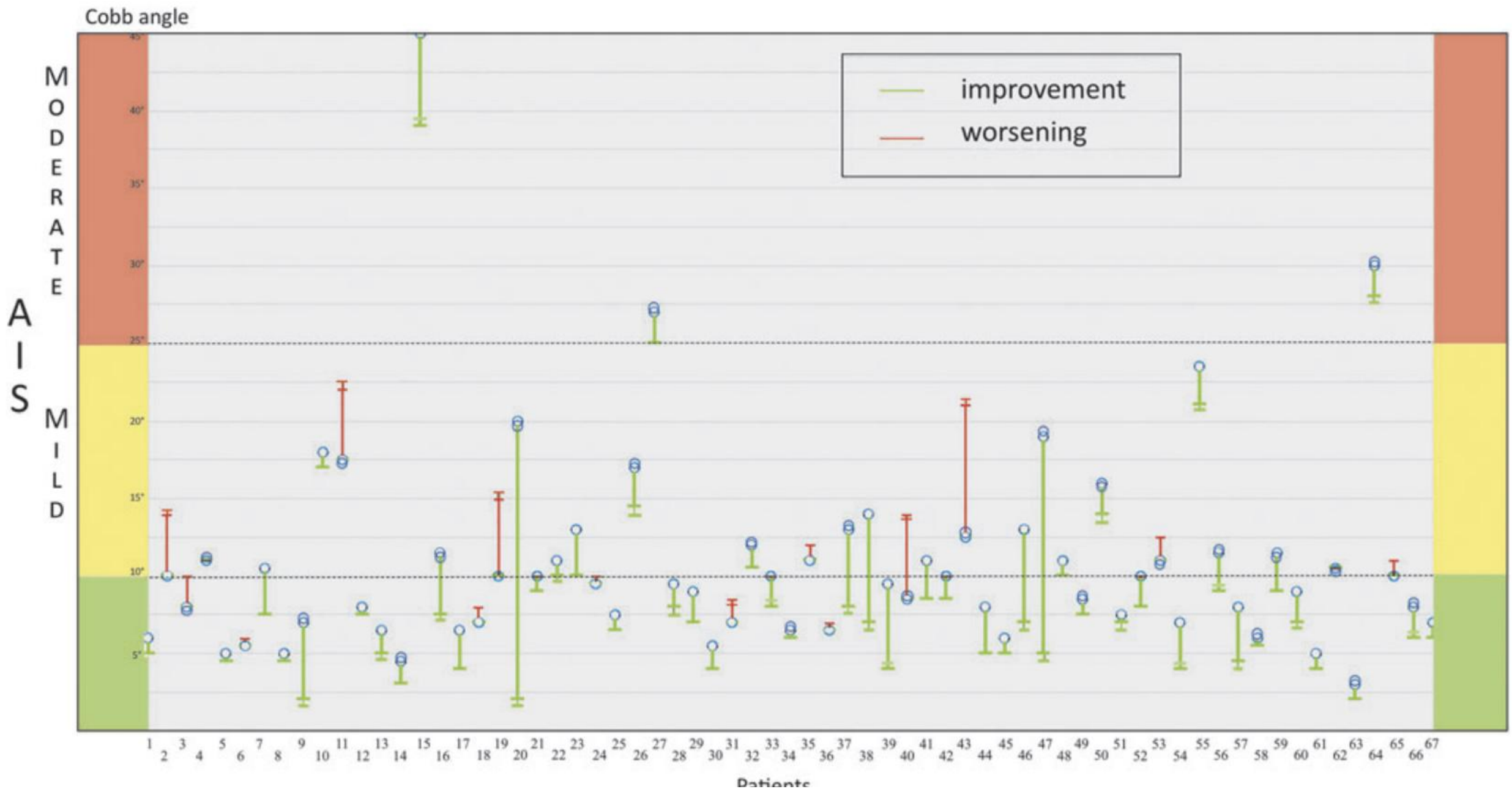
PE first treatment

Simultaneous treatment



Conclusions

To conclude, the Nuss procedure is a commonly accepted minimally invasive operation for PE treatment which influences the spine possibly due to the stress that is generated on the ribs extremities close to the spine. Nuss procedure may have a beneficial effect in thoracic scoliosis when the severity of it is mild and the procedure is timely performed. The management of such patients requires careful examination of both pectus and the spine before and after the PE correction. Further investigation, especially with long-term and prospective studies in patients with both PE and scoliosis, is needed to confirm the effects of PE correction on the thoracic spine curvature.



Cite this article as: Chung JH, Park HJ, Kim KT. Scoliosis after pectus excavatum correction: does it improve or worsen? Eur J Cardiothorac Surg 2017;52:76–82.

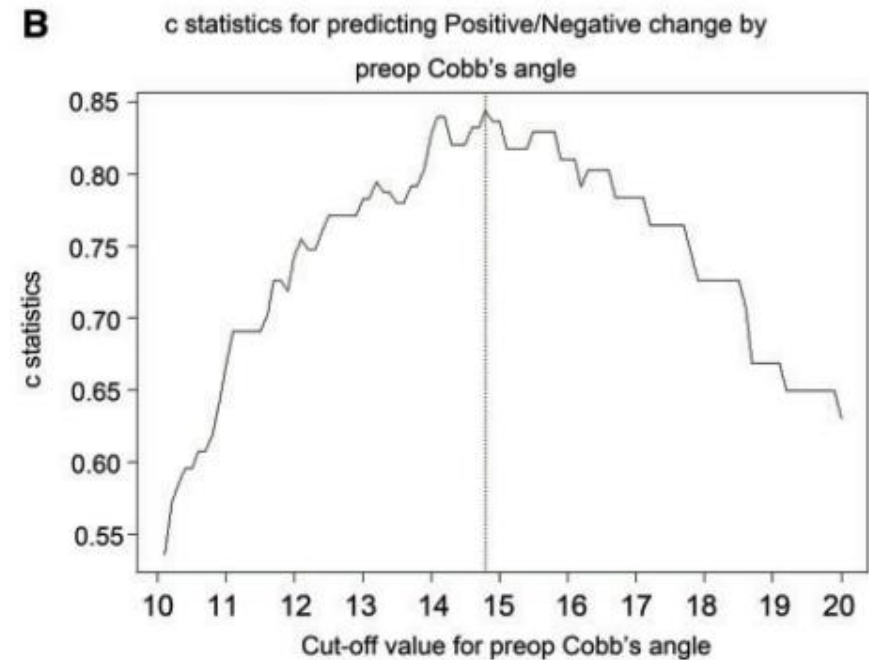
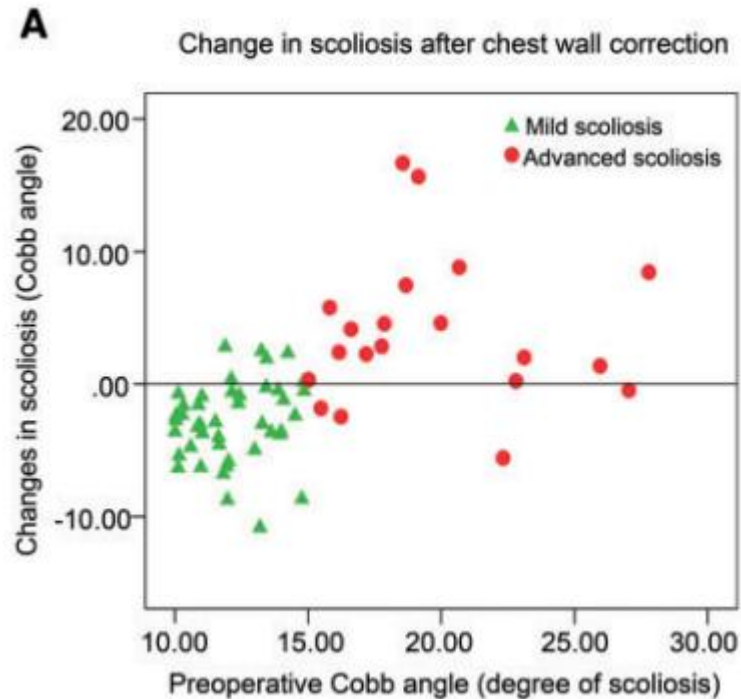
Scoliosis after pectus excavatum correction: does it improve or worsen?†

Jae Ho Chung^a, Hyung Joo Park^{b,*} and Kwang Taik Kim^a

^a Department of Thoracic and Cardiovascular Surgery, Korea University Anam Hospital, Korea University Medical College, Seoul, Korea

^b Department of Thoracic and Cardiovascular Surgery, Seoul St. Mary's Hospital, The Catholic University College of Medicine, Seoul, Korea

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Cite this article as: Chung JH, Park HJ, Kim KT. Scoliosis after pectus excavatum correction: does it improve or worsen? Eur J Cardiothorac Surg 2017;52:76–82.

Scoliosis after pectus excavatum correction: does it improve or worsen?†

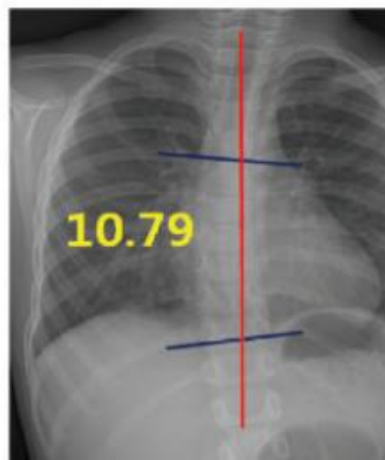
Jae Ho Chung^a, Hyung Joo Park^{b,*} and Kwang Taik Kim^a

^a Department of Thoracic and Cardiovascular Surgery, Korea University Anam Hospital, Korea University Medical College, Seoul, Korea

^b Department of Thoracic and Cardiovascular Surgery, Seoul St. Mary's Hospital, The Catholic University College of Medicine, Seoul, Korea

* Corresponding author. Department of Thoracic and Cardiovascular Surgery, Seoul St. Mary's Hospital, The Catholic University College of Medicine, Seoul 06591, Korea. Tel: +82-2-22582858; fax: +82-2-5948644; e-mail: hyjpark@catholic.ac.kr (H.J. Park).

A Mild scol



Preop.

In conclusion, pectus excavatum repair using a pectus bar may have varying effects on scoliosis according to the degree of pre-existing scoliosis. Mild scoliosis may improve after chest wall correction, but when the preoperative Cobb angle is $>15^\circ$, scoliosis may be aggravated. Therefore, pectus excavatum with concomitant advanced scoliosis requires extra caution during repair. These preliminary results should be carefully interpreted before application in clinical practice. Further investigation on the effects of chest cage remodelling on spine dynamics seems necessary.



Postop. 5 yrs

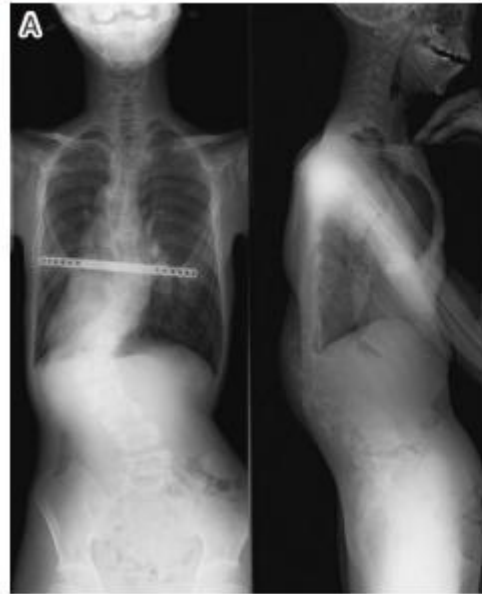
Clinical Characteristics and Thoracic factors in patients with Idiopathic and Syndromic Scoliosis Associated with Pectus Excavatum

Ryoji Tauchi¹⁾, Yoshitaka Suzuki²⁾, Taichi Tsuji¹⁾, Tetsuya Ohara¹⁾, Toshiki Saito¹⁾, Ayato Nohara³⁾, Kazuaki Morishita¹⁾, Ippei Yamauchi¹⁾ and Noriaki Kawakami¹⁾

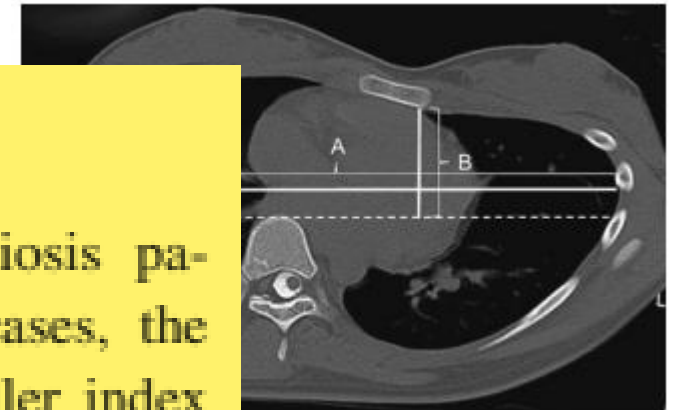
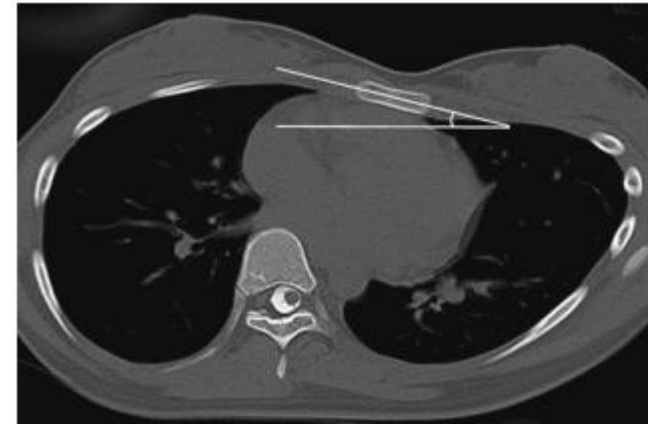
1) Department of Orthopedic Surgery, Meijo Hospital, Aichi, Japan

2) Department of Orthopedic Surgery, Nagoya Daini Red Cross Hospital, Aichi, Japan

3) Department of Orthopedic Surgery, JCHO Tokyo Shinjuku Medical Center, Tokyo, Japan



Sternal Tilt



Conclusion

We evaluated 70 idiopathic or syndromic scoliosis patients who also had pectus excavatum. In most cases, the sternum was located on the left side, and their Haller index scores were higher than the normal population. Prone positioning, the corrective force applied during scoliosis surgery, and the thoracic cage compression that occurs during cast or brace treatment might negatively affect cardiac function in patients with both scoliosis and pectus excavatum.

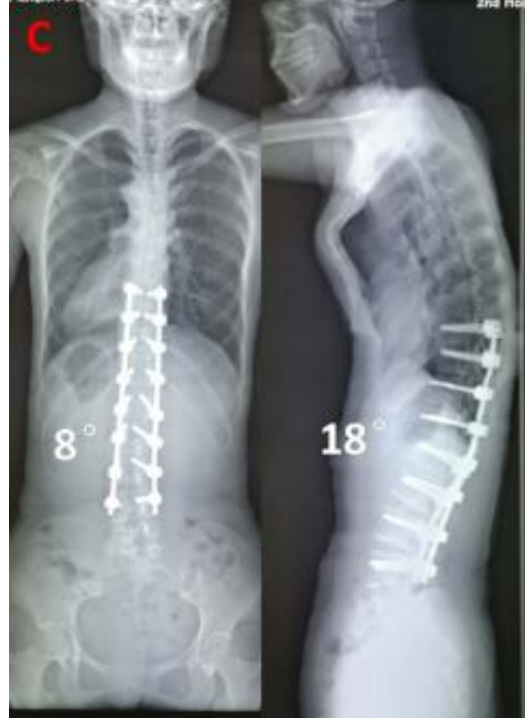
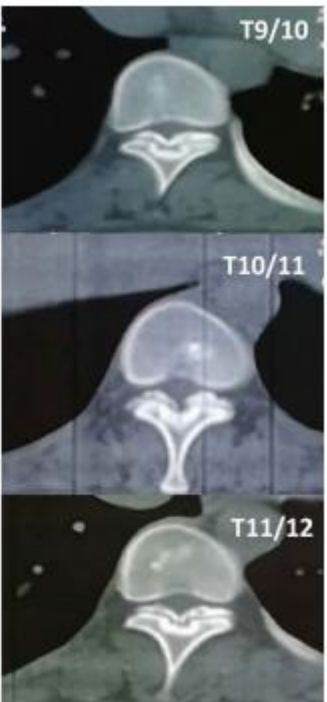
CASE REPORT

Open Access

Pectus excavatum, kyphoscoliosis associated with thoracolumbar spinal stenosis: a rare case report and literature review



Sheng Zhao, Xuhong Xue*, Kai Li and Feng Miao



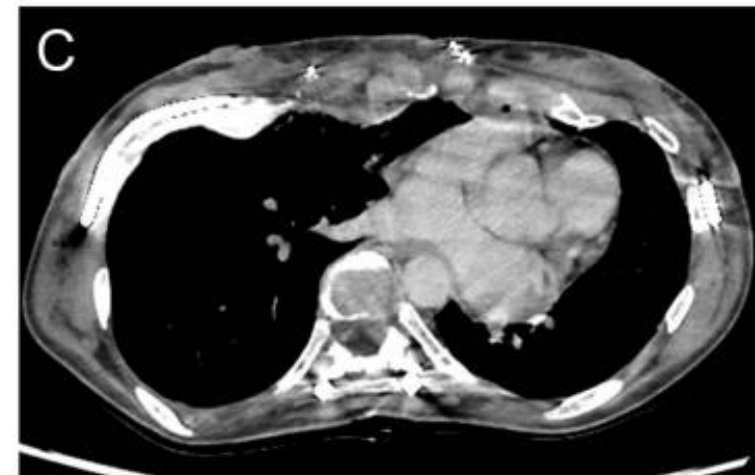
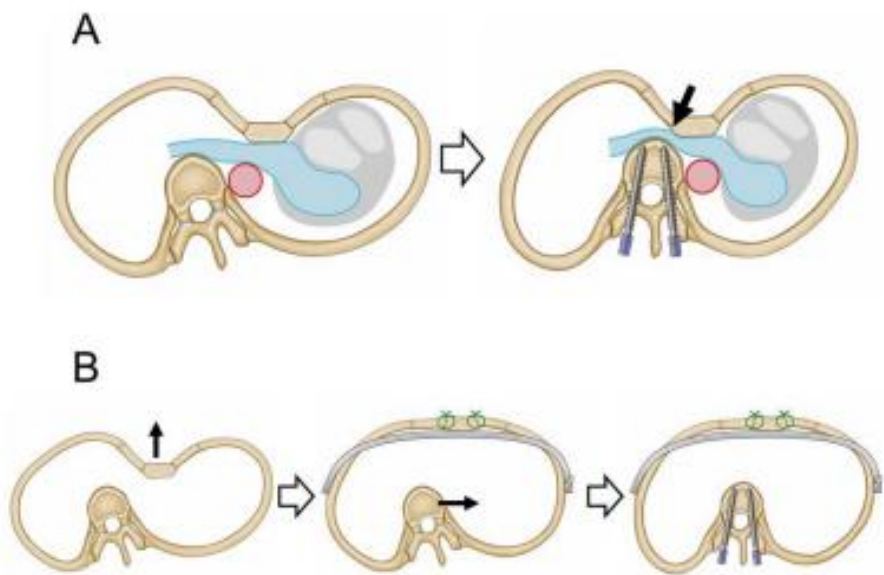
Case Report

Combined Ravitch and Nuss procedure for pectus excavatum with dyspnea following scoliosis repair

Naoyuki Oka, Kyohei Masai ^{ORCID}, Yu Okubo, Kaoru Kaseda, Tomoyuki Hishida, Keisuke Asakura ^{ORCID}

Division of Thoracic Surgery, Department of Surgery, Keio University School of Medicine, Tokyo, Japan

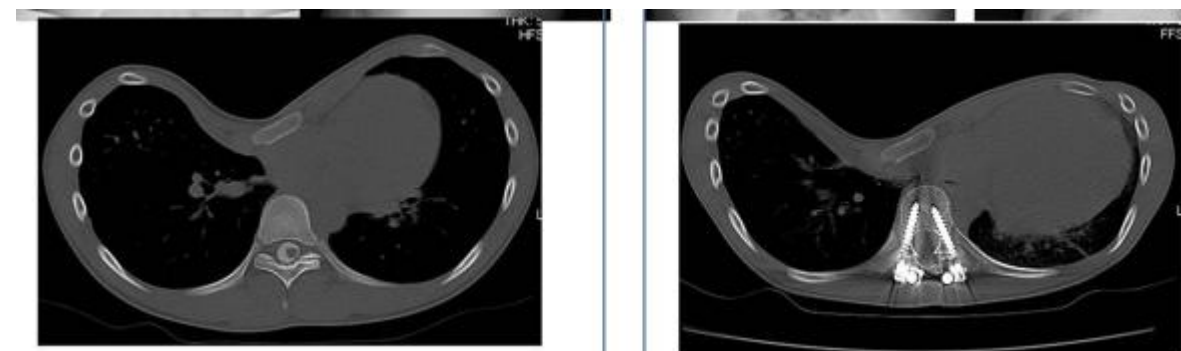
*Corresponding author. Division of Thoracic Surgery, Department of Surgery, Keio University School of Medicine, 35 Shinanomachi, Shinjuku-ku, Tokyo 160-8582, Japan. E-mail: kyoheimasai@keio.jp



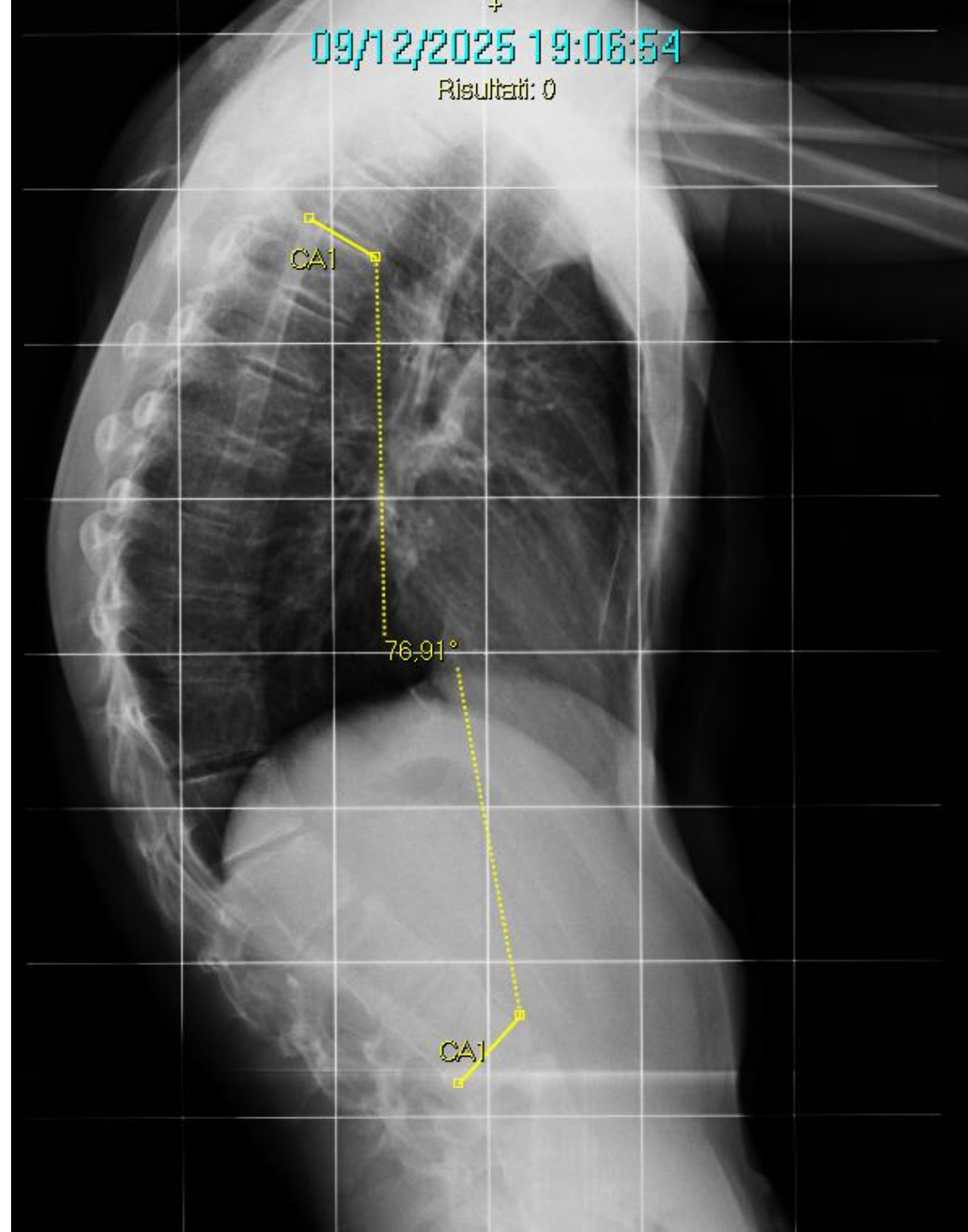
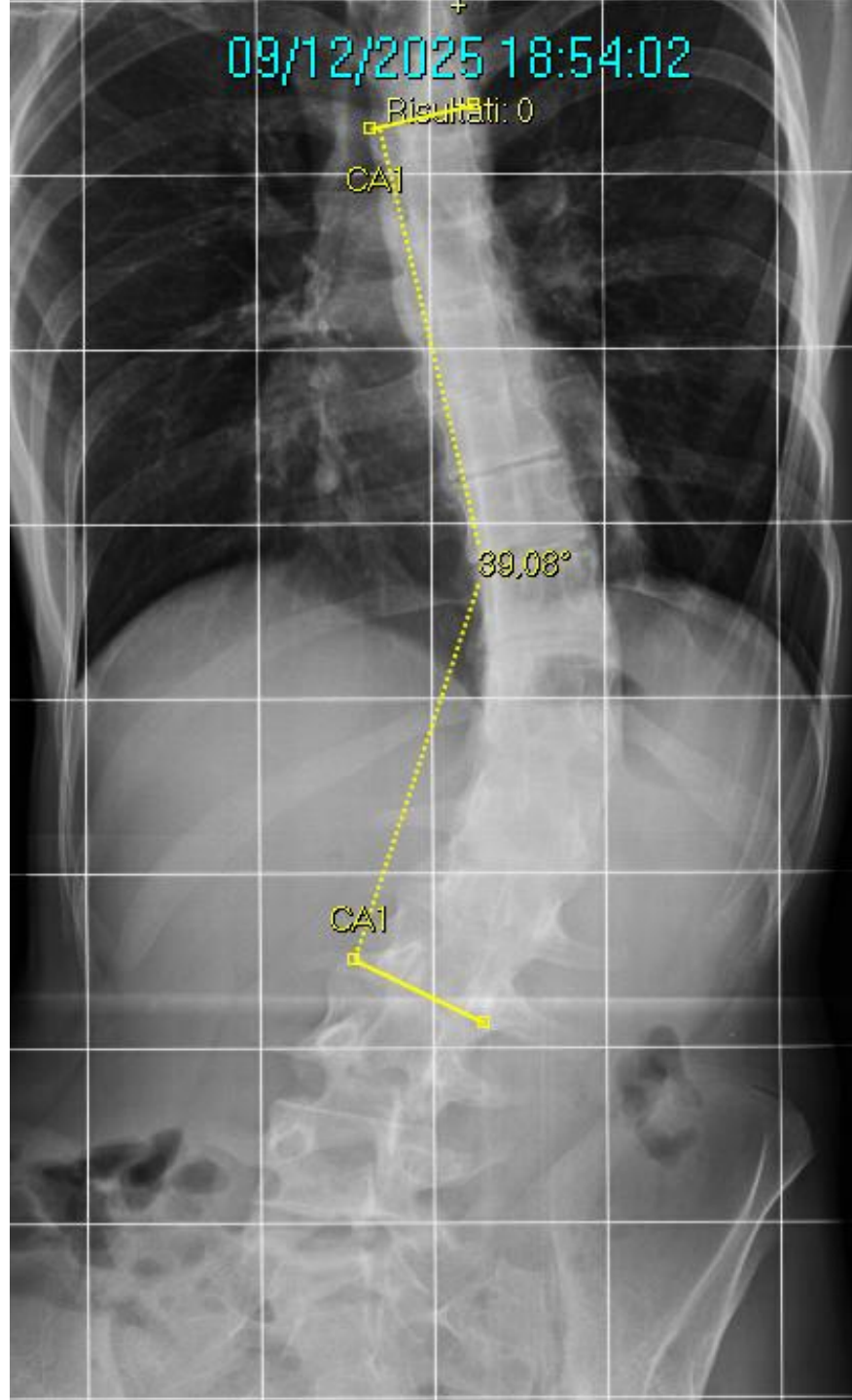
Evaluation of thoracic factors after scoliosis surgery in patients with both scoliosis and pectus excavatum

Ryoji Tauchi¹ · Noriaki Kawakami¹  · Taichi Tsuji¹ · Tetsuya Ohara¹ · Yoshitaka Suzuki¹ · Toshiki Saito¹ · Ayato Nohara¹

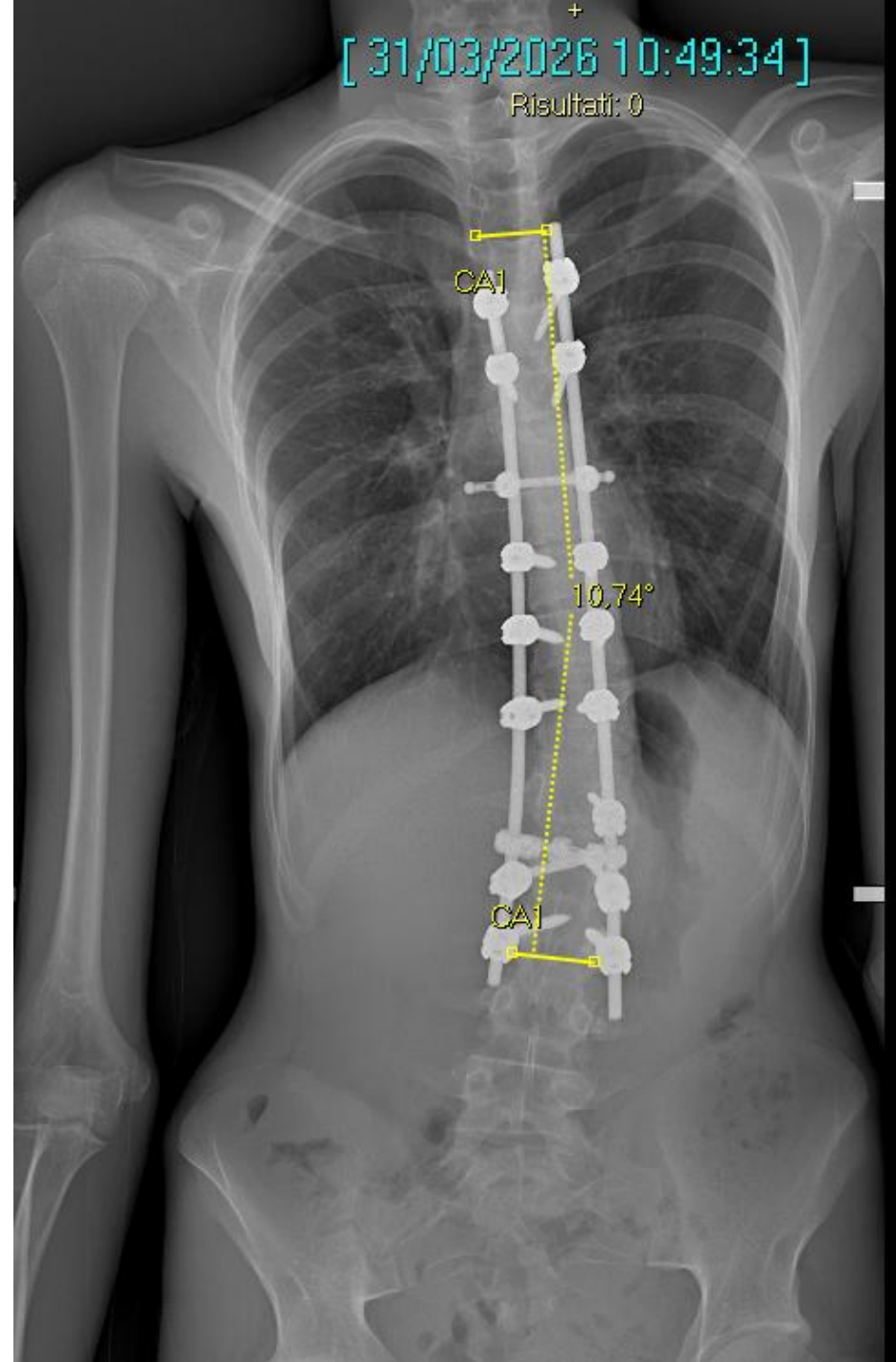
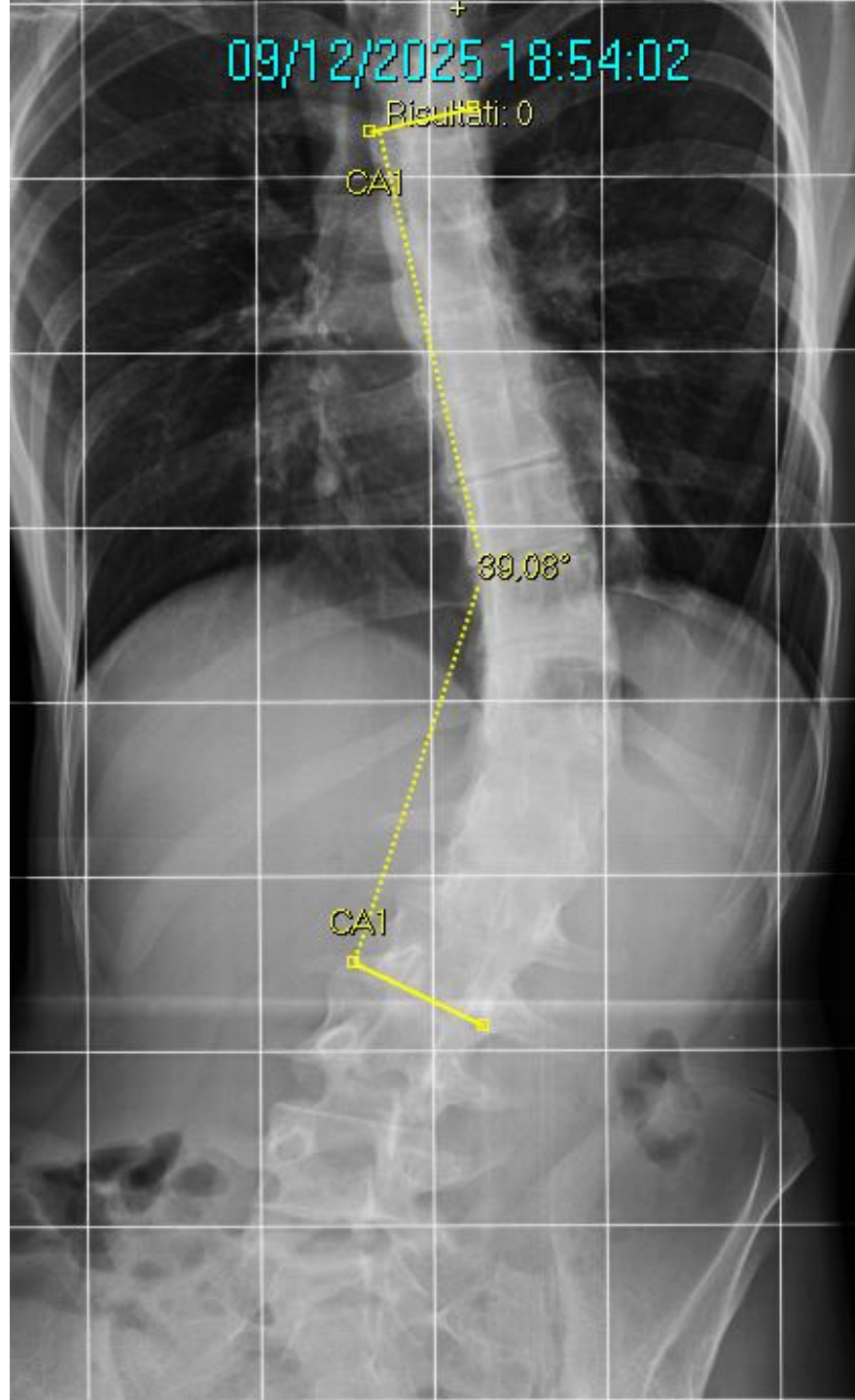
Received: 29 November 2015 / Accepted: 21 August 2016 / Published online: 27 August 2016
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M.A.
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75,54°

CA1

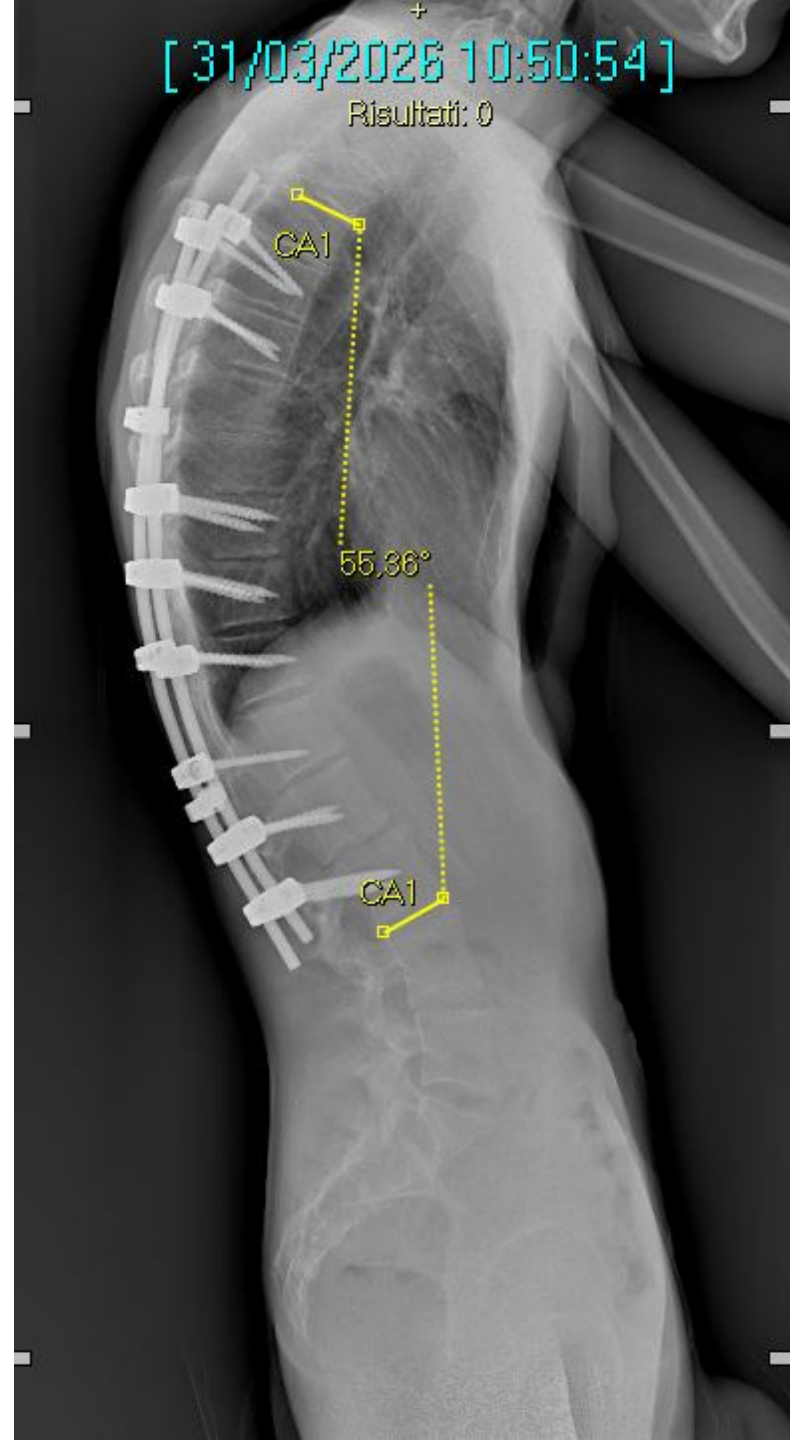
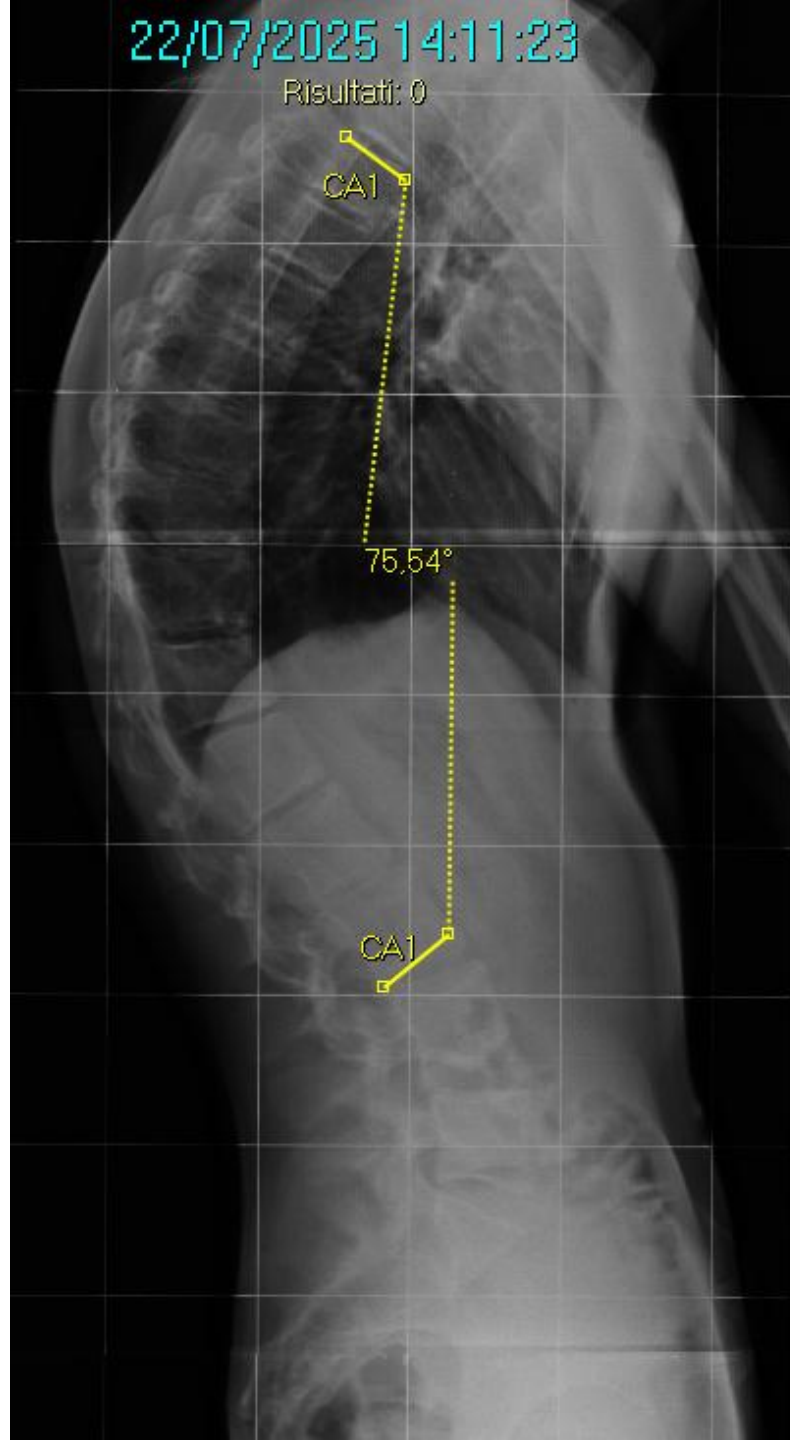
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CA1

55,36°

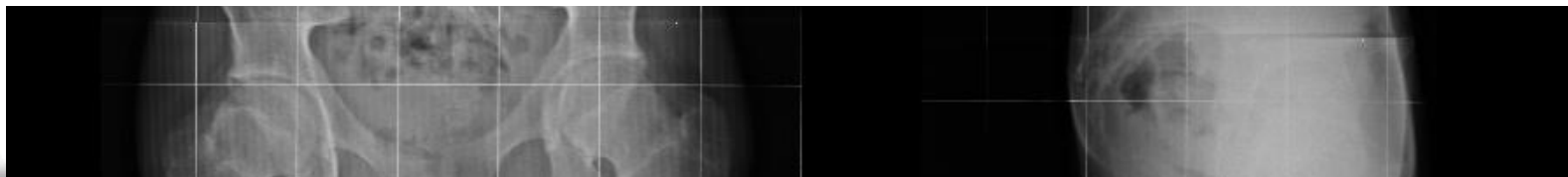
CA1







- **La associazione Scoliosi-Deformità della Parete Toracica è abbastanza frequente;**
- **Più frequente l'associazione con Pectus Escavatum;**
- **Più frequente nel sesso maschile;**
- **Verosimile alterazione genetica;**
- **Trattamento Conservativo della Scoliosi quando non supera I 25° Cobb**
- **Pianificazione Correzione Chirurgica (prima Rachide, prima Parete Toracica, Contemporaneità);**
- **Assolutamente necessarie ed indispensabili Multidisciplinarietà e Multiprofessionalità.**



Scoliosi nei Bambini ed Adolescenti con Deformità della Parete Toracica Anteriore

Grazie

L. MASSARI
F. ARTIOLI
G. CARUSO

laborazione con
Formazione e
la Docenza Integrata



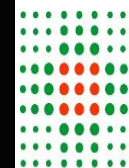
lezioni
toracica

Sabato 18 aprile 2026

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Il Segretario
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Il Presidente
Dott. R. Zoppellari



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