



BRACING FOR SCOLIOSIS AND TRUNK DEFORMITY IN CHILDREN AFFECTED BY OSTEOGENESIS IMPERFECTA

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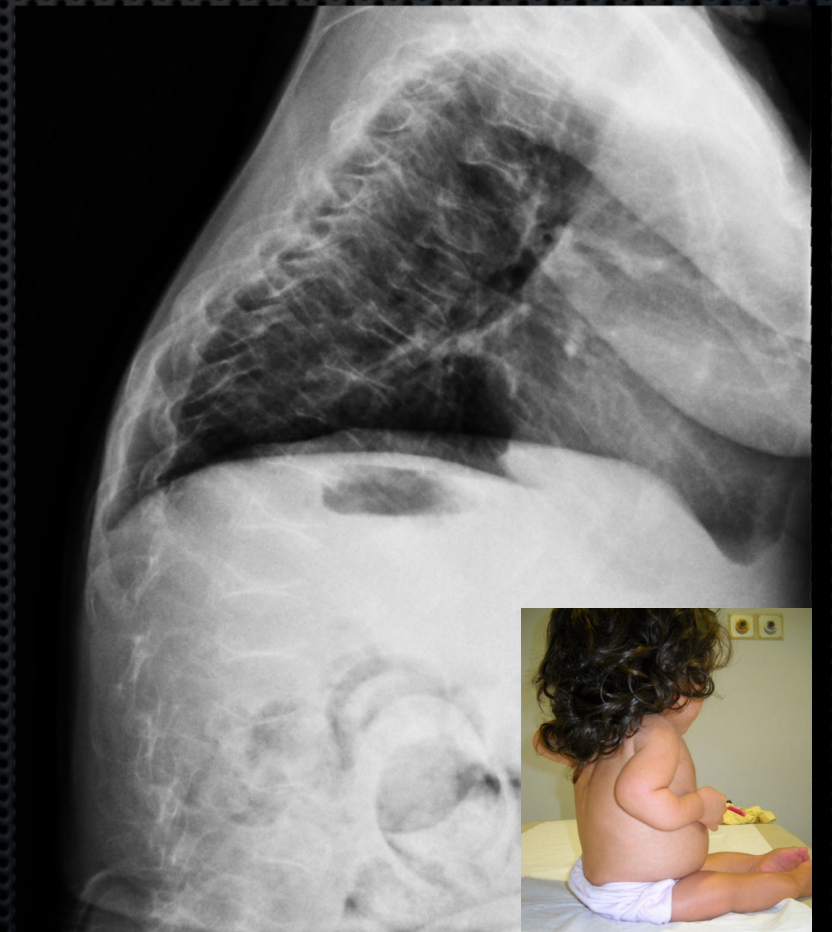
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INTRODUCTION



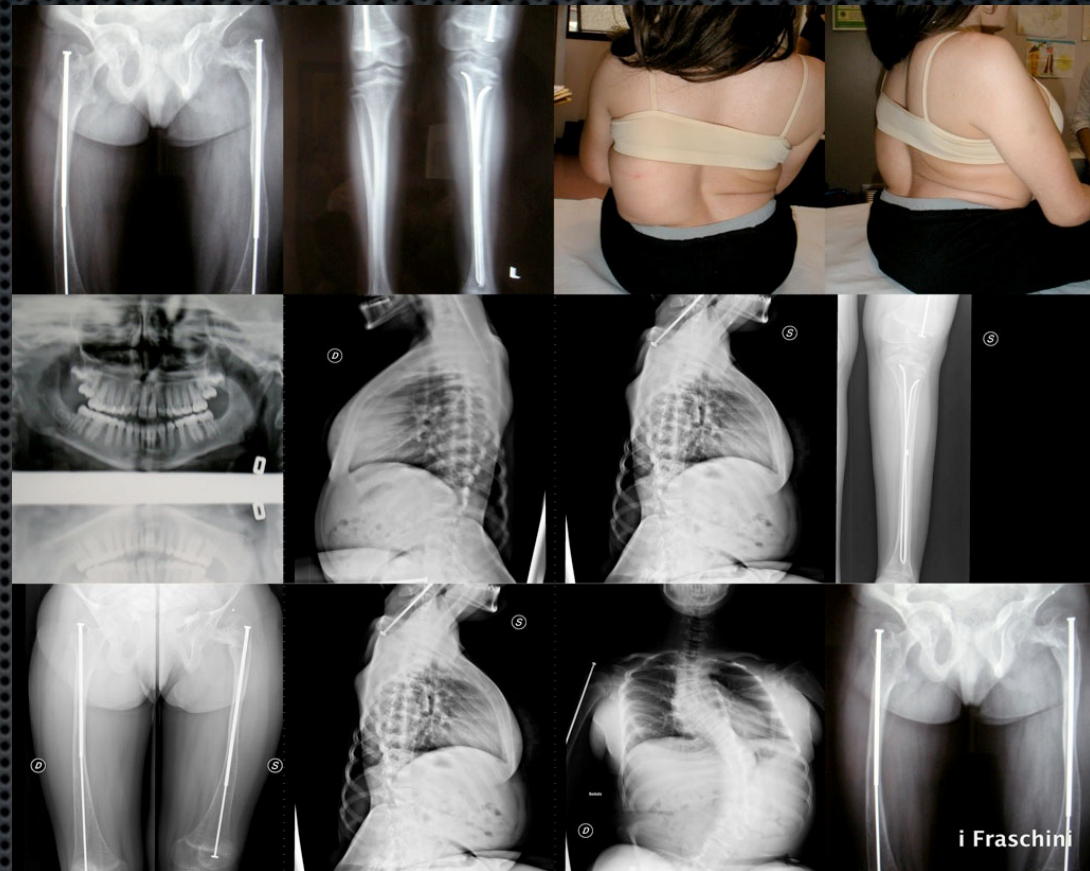
- Italian multidisciplinary team for osteogenesis imperfecta
- children with OI and spinal deformity with pain, platyspondilia, scoliosis, lumbar kyphosis or thoracic hyperkyphosis.



INTRODUCTION cont'd

Evidence on the effect of bracing spinal deformities in skeletal dysplasias is low.

Aim: to report on the results of brace treatment in patients affected by Osteogenesis Imperfecta (OI) aged 6 months to 12 years



METHODS

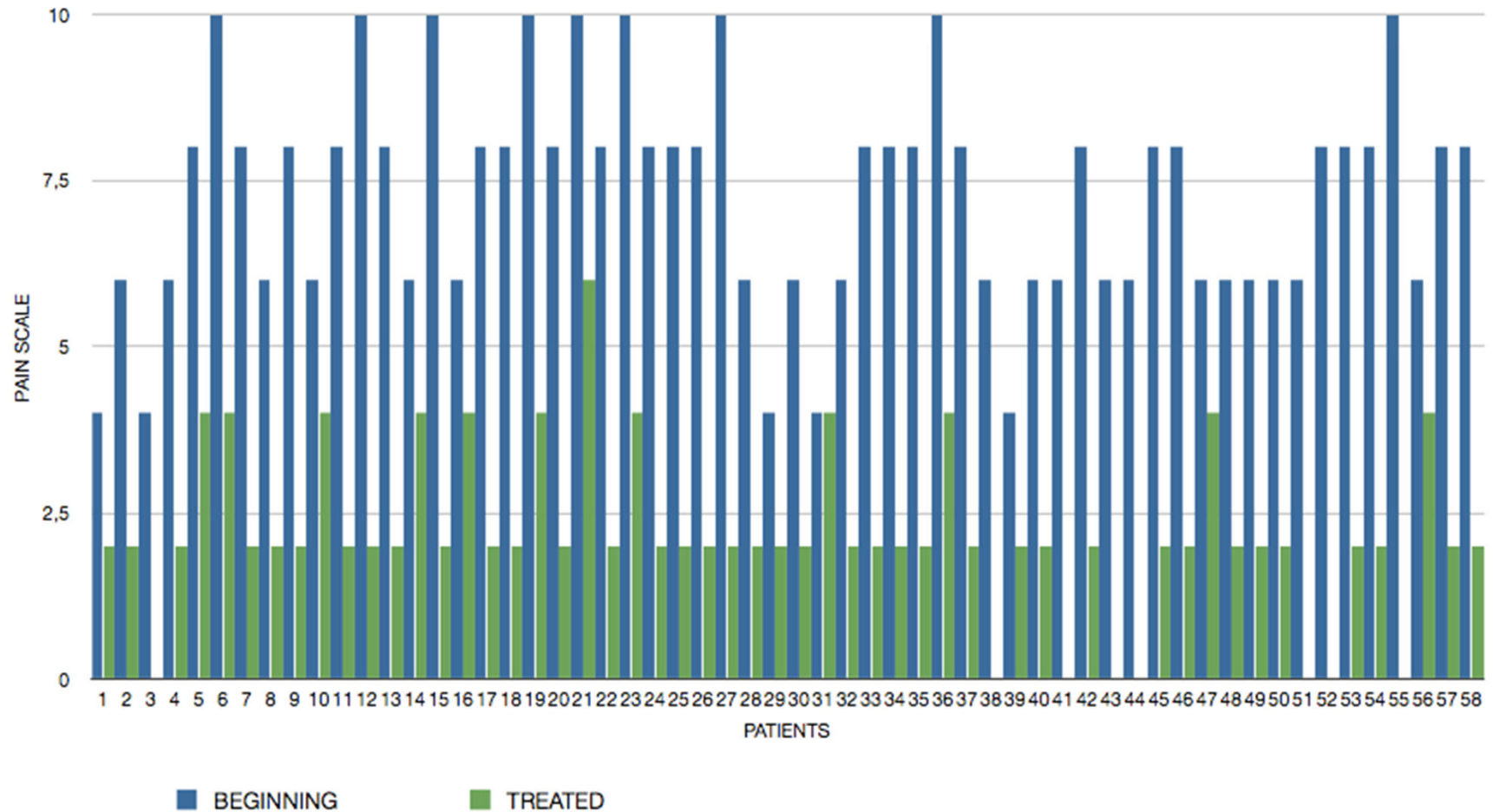
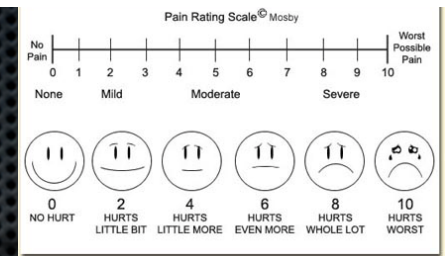
- 58 children aged 6 months to 12 years were treated because of sagittal vertebral deformity and pain in OI.
- The minimum follow-up was 1 year

METHODS cont'd

- The brace realized after a scan measure of the patients with head traction and specific side corrections built in Podialene (R)
- Brace used for 8 - 18 hours/day in association with physiotherapy or swimming and bisphosphonates



RESULTS



Pain in a 0-10 Mosby pain Rating Scale decreased from a level of 8 (+ 1 SD) at the beginning of treatment to 2 (+ 2 SD) at the end of treatment.

Sagittal deformity



Thoracic kyphosis improved from a mean initial Cobb angle of $65 (+ 5^{\circ} \text{ SD})$ to $40^{\circ} (+ 2.5^{\circ} \text{ SD})$. Lumbar kyphosis disappeared in 80% when present.

Coronal deformity

- Scoliosis in OI is characterized by high frontal deformities with minimal rotation.
- 22 patients aged 6 to 12 years with mild OI (Types I and IV) and scoliosis from 20° to 30° has been treated with brace for at least three years.

Results in bracing mild OI scoliosis

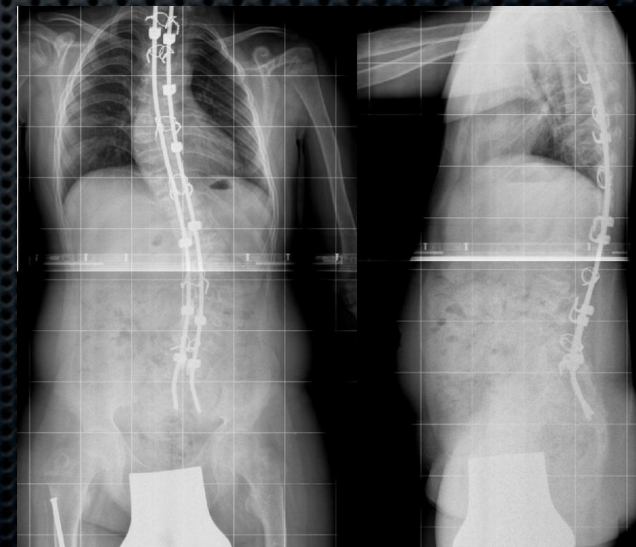
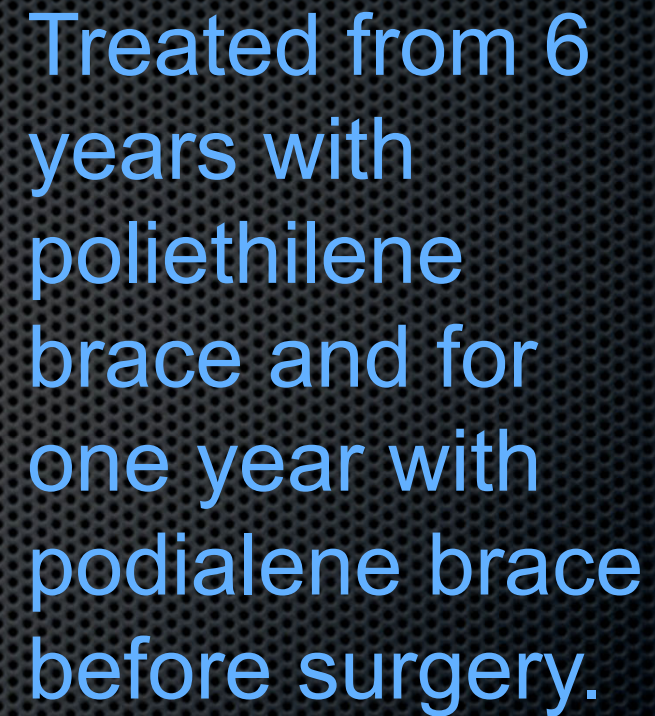
- 15 patients had progression of spine deformity and needed surgical correction however bracing with podialene brace had better compliance, postural and symptomatic results than polyethylene classical braces.
- In 7 patients podialene bracing was effective in arresting progression at the end of bone growth: they had curves above 20° and mainly in OI type I.

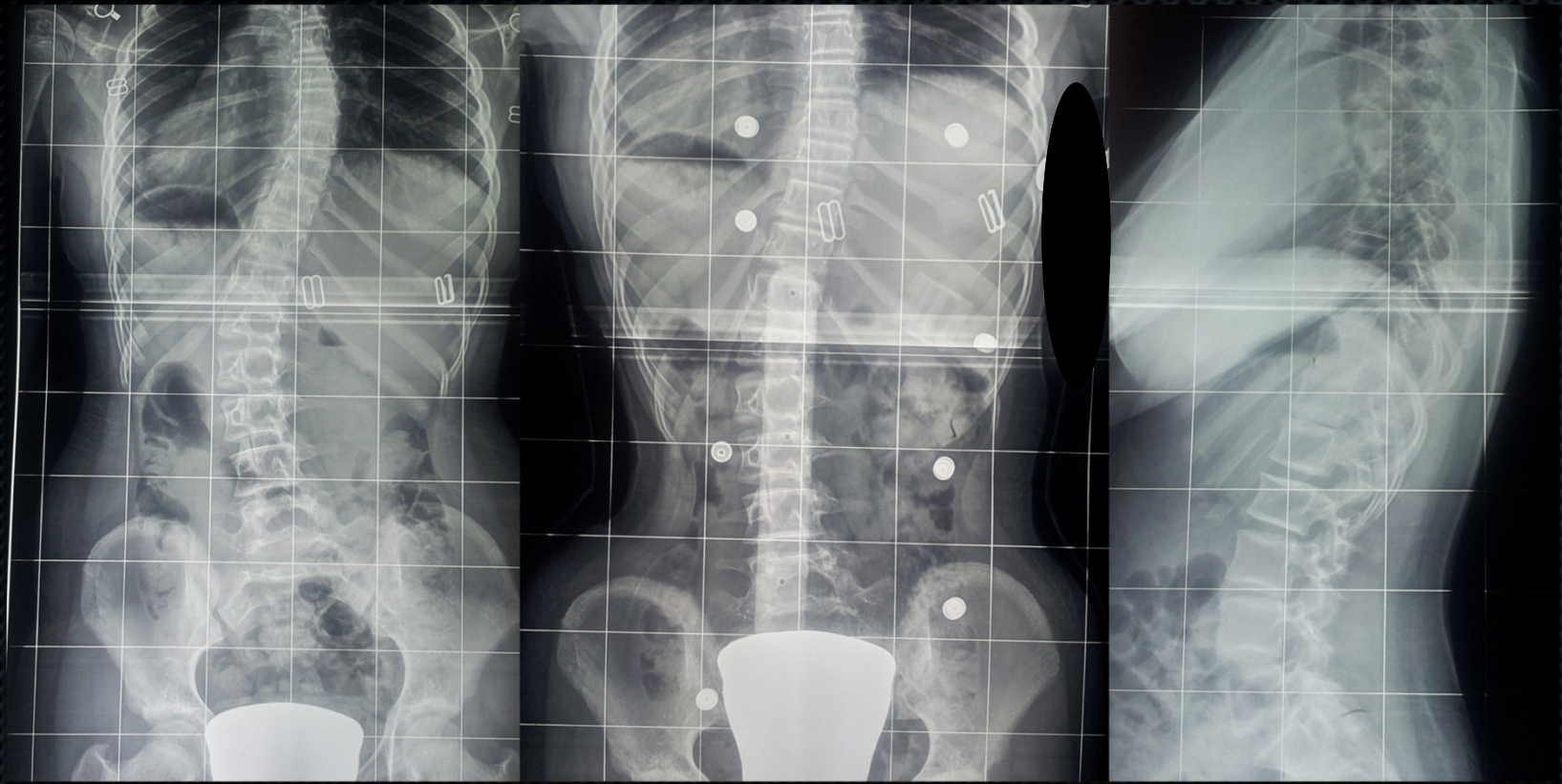
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VA1 = 4.9 cm
VA2 = 2.9 cm
HD1 = 0.3 cm
HD2 = 0.6 cm
1 cm = 0.1

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Correction in podialene brace

OI Type I



Bracing in OI type III

In severe forms of OI, bracing is ineffective in arresting the progression of scoliosis.

However in one case in which bisphosphonates treatment began in the first months of life and intensive physical training was undergone associated with short time bracing only in the first three years of life the result at twelve years was a very mild thoracic scoliosis with very good thoracic shape.

CONCLUSION

- In OI, Back pain and sagittal deformities can be treated with soft braces which have good traction effect and skin and bone compression.
- Results in scoliosis are less effective using soft or rigid bracing.
- Stiffness and crash deformities in OI spine is an early mayor problem and is one of the main reasons for unsuccessful conservative treatment in OI patients with scoliosis.