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# Conventional growing rod surgery for infantile scoliosis

- Revision of 23 cases with 6 years follow-up -

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# Introduction

Some authors contest the use of conventional growing constructs in surgical treatment of early-onset scoliosis (EOS), due to:

- need of repeated surgeries
- high rate of complications
- progressive lack of flexibility of the curve after 1-2 years

## **We aim to:**

- evaluate Cobb angle variation and trunk growth during lengthening growing rod treatment.

As a secondary aim we will share our experience of resolving related complications and evaluate other surgical solutions.



# Material and Methods

We reviewed clinical and surgical data from all EOS patients treated with conventional growing devices, from 2008 to 2016.

Measure the followings before and after procedures:

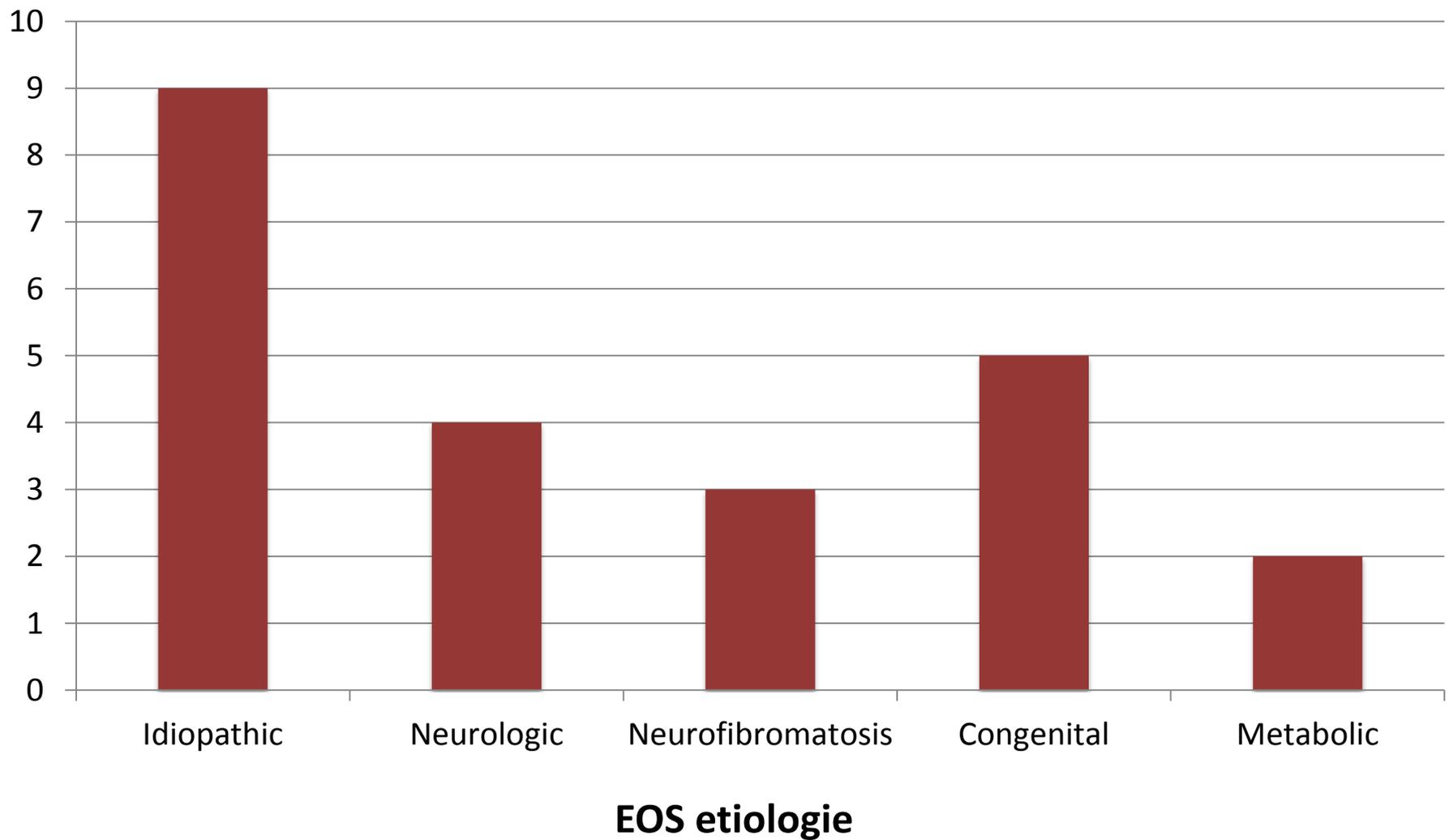
- Cobb angle
- T1-S1 distance
- Growth inside the device

The number and type of complications was also evaluated.

<b>N= 23</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Age (years)</b>	6	4	9
<b>Follow-up (years)</b>	6	1	9
<b>Gender</b>	<b>Female</b>	<b>Male</b>	
	5	34	



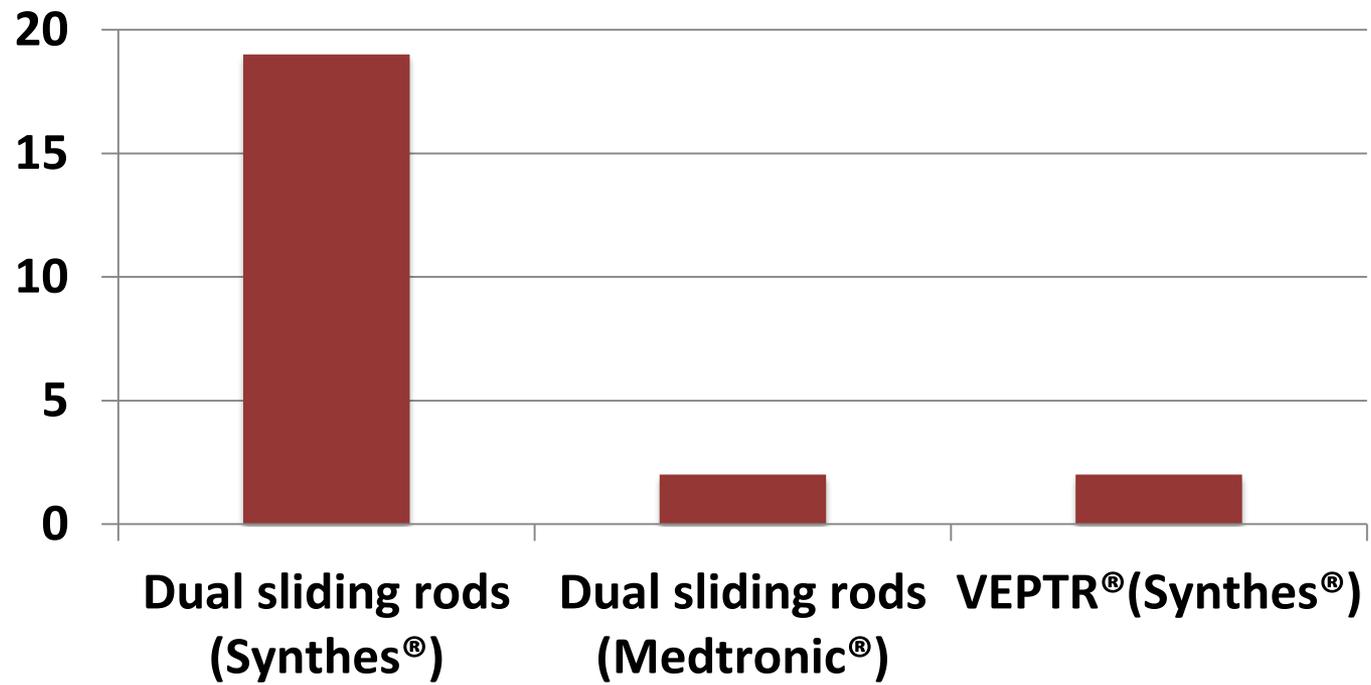
# Material and Methods





# Results

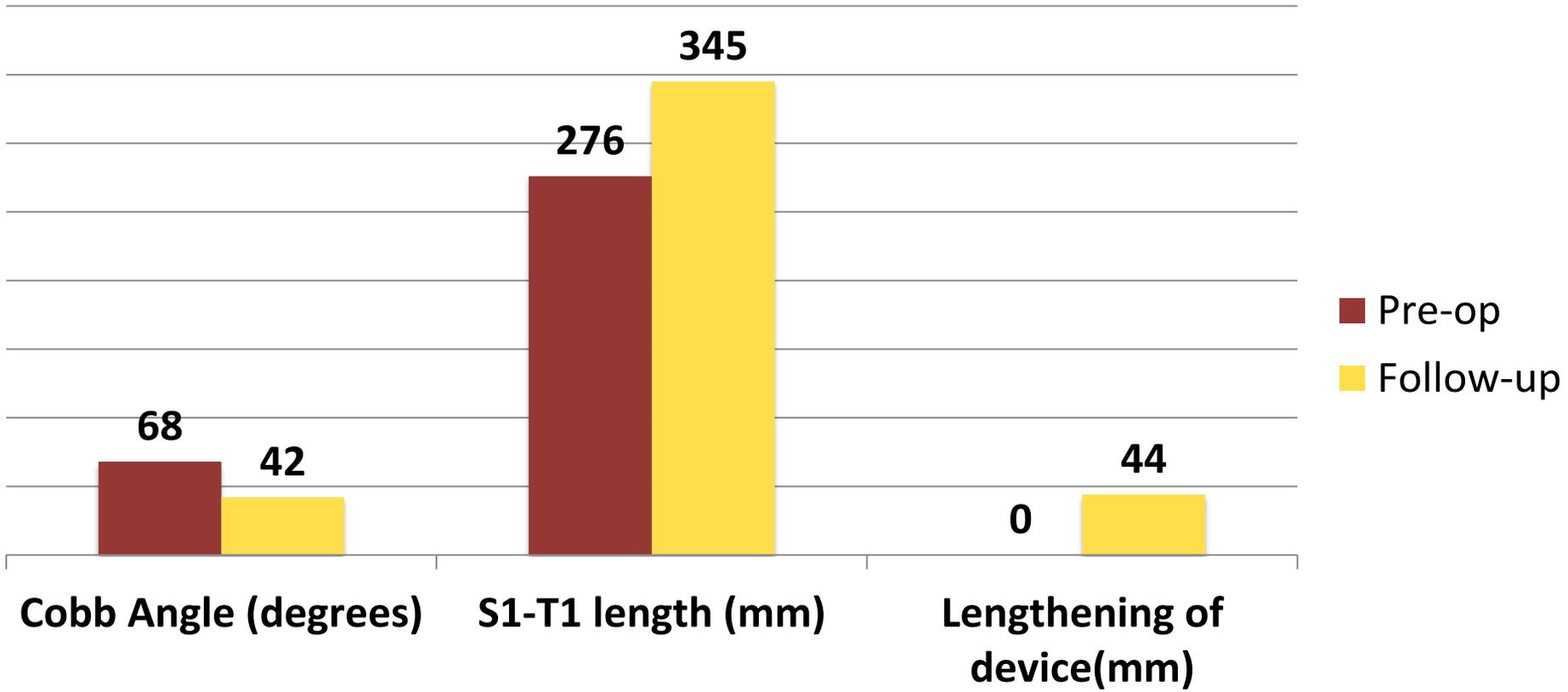
**197 procedures → 8,6 per patient**

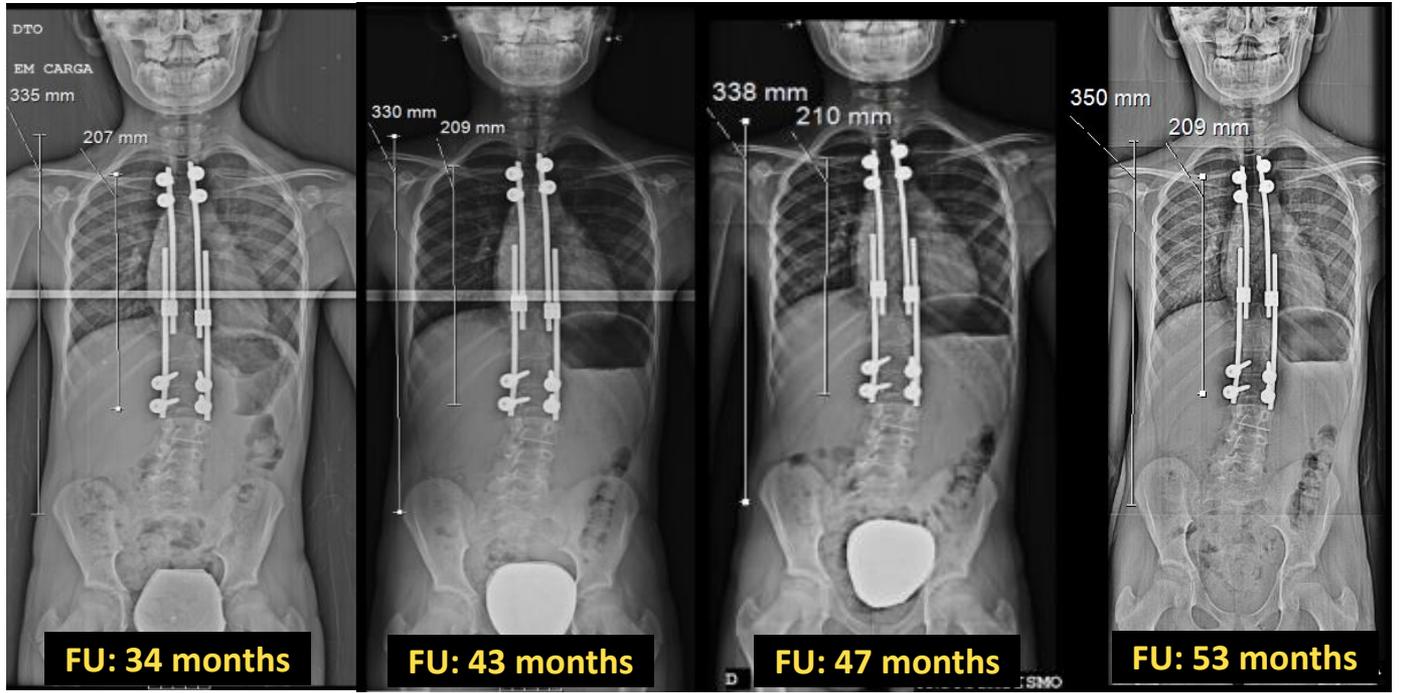
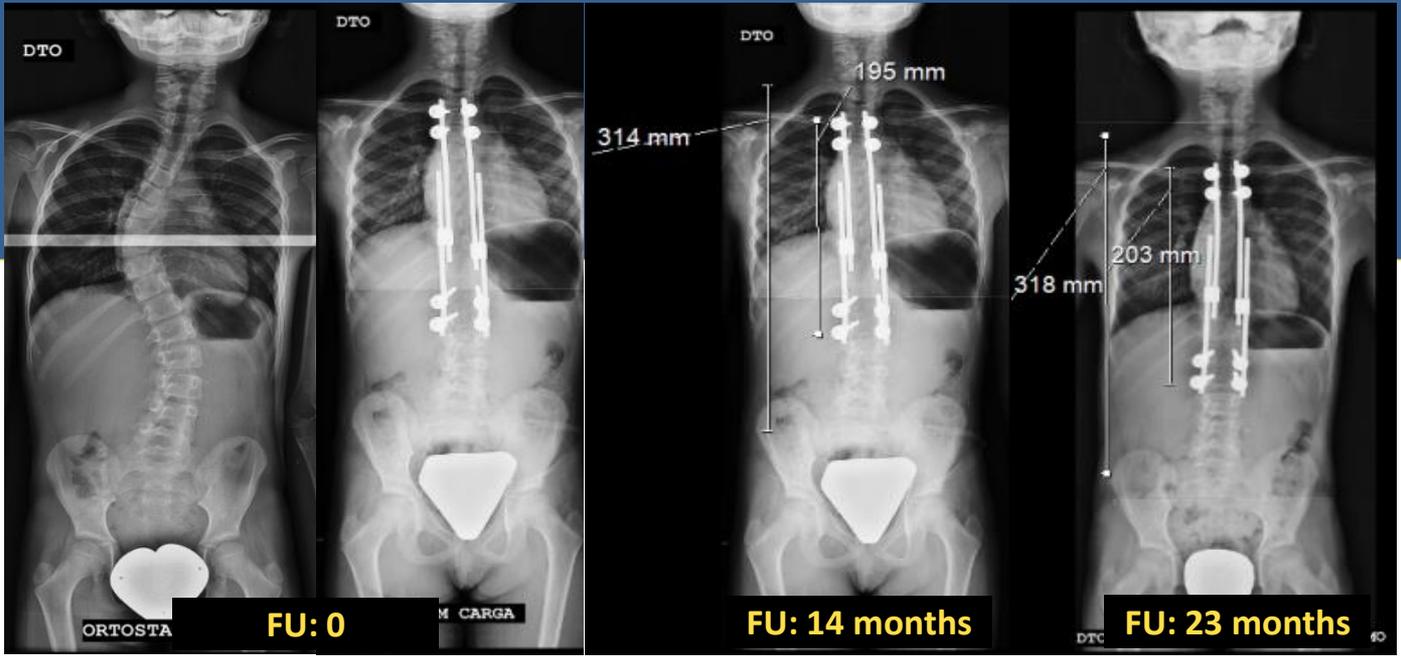




# Results

**197 procedures → 8,6 per patient**



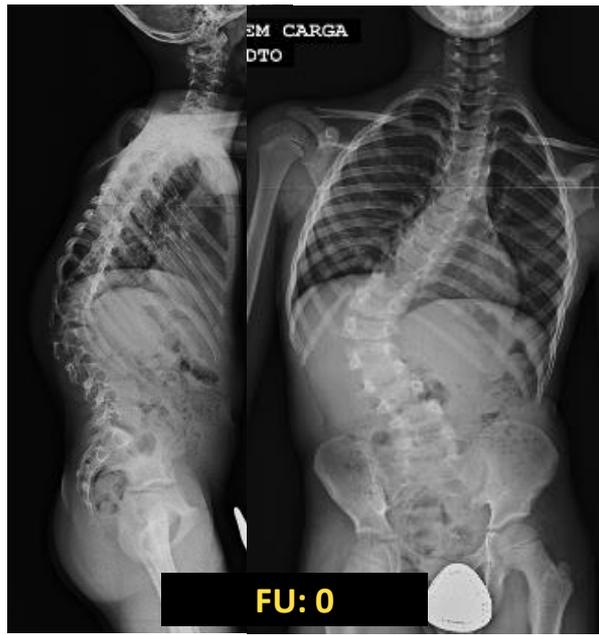


# Results

**45 complications → 2,0 per patient**

- rod/screws breakage
- hooks pullout

**11 unplanned surgeries** (3 device exchange)





# Discussion/Conclusion

In comparison to results of new growing devices, particularly in difficult cases of EOS, the use of conventional fusionless "growing" devices:

- gives good results
- Allows a relative simpler treatment of complications,
- Has lower costs (namely in countries with a lower economic status.)

When associated with apical kyphosis, coronal deformity requires specific strategy difficult to deliver with magnetic rods. Conventional rods can be easily bent to accommodate the deformity.



# Discussion/Conclusion

Using this technique we were able to achieve a good Cobb correction (68° to 42°) as well as good S1-T1 length increase (69 mm).

It is difficult to determine the amount of distraction that you should apply in each surgery. We hypothesize that a more delicate distraction can help to avoid a rapid loss of the curve's flexibility.



# Discussion/Conclusion

## **In conclusion:**

**Conventional growing techniques are a good surgical option for severe progressive EOS cases, despite the elevated complication and reoperation rates.**

## References

- Teoh K; Winson D, James S et al. Do magnetic growing rods have lower complication rates compared with conventional growing rods? *The Spine Journal* (2016).
- Kamaci S, et al. The Effect of Dual Growing Rod Instrumentation on the Apical Vertebral Rotation in Early-onset Idiopathic Scoliosis. *Journal of Pediatric Orthopaedics* (2014).
- T.Odenta et al. Fusionless surgery in early-onset scoliosis. *Orthopaedics & Traumatology: Surgery & Research* (2015).