

# **Sagittal balance in thoracolumbar or lumbar congenital spinal deformity with a minimum 10-year follow-up after surgery**



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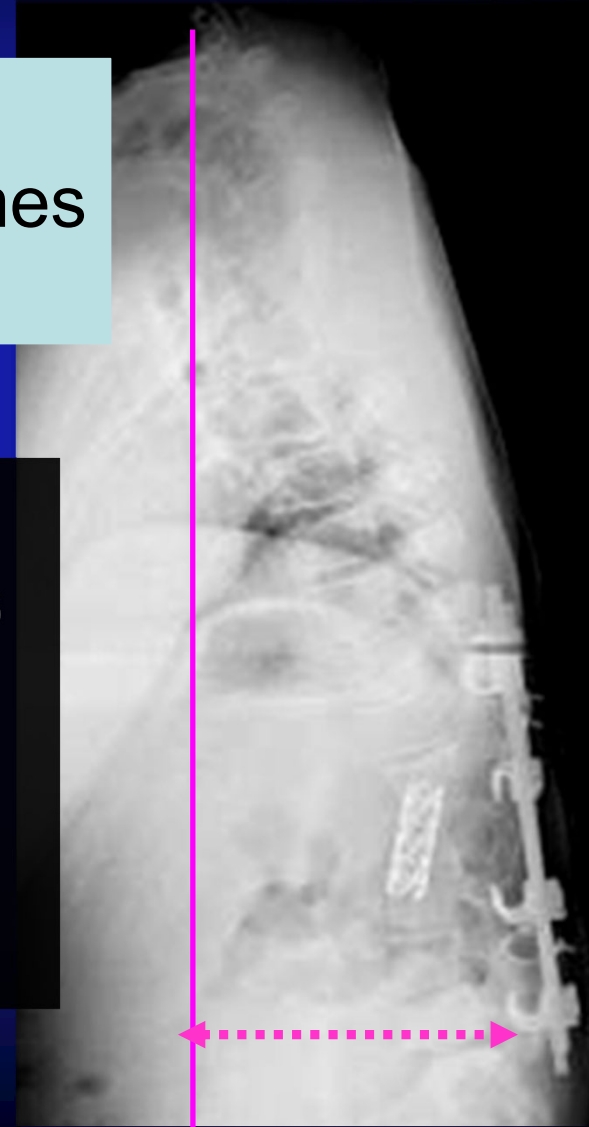
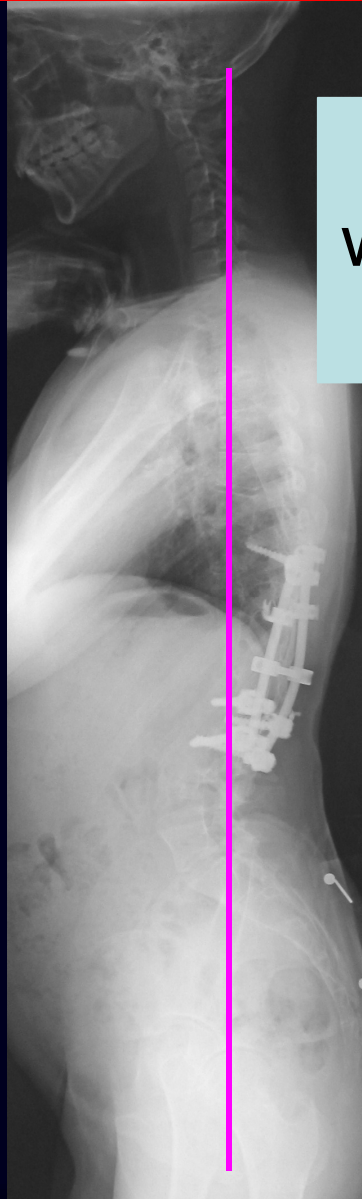
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# Purpose

There is almost no report which described long term outcomes especially in sagittal balances

The retrospective analysis of long term surgical outcomes of 31 patients with congenital thoracolumbar or lumbar kyphosis and kyphoscoliosis in a multicenter study.



# Material

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Between 1989 and 2001

No. of patients	31
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Gender (F:M)	16:15
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Kyphosis : Kyphoscoliosis	5:26
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Age at initial surgery	11.8 ± 6.2y.o.
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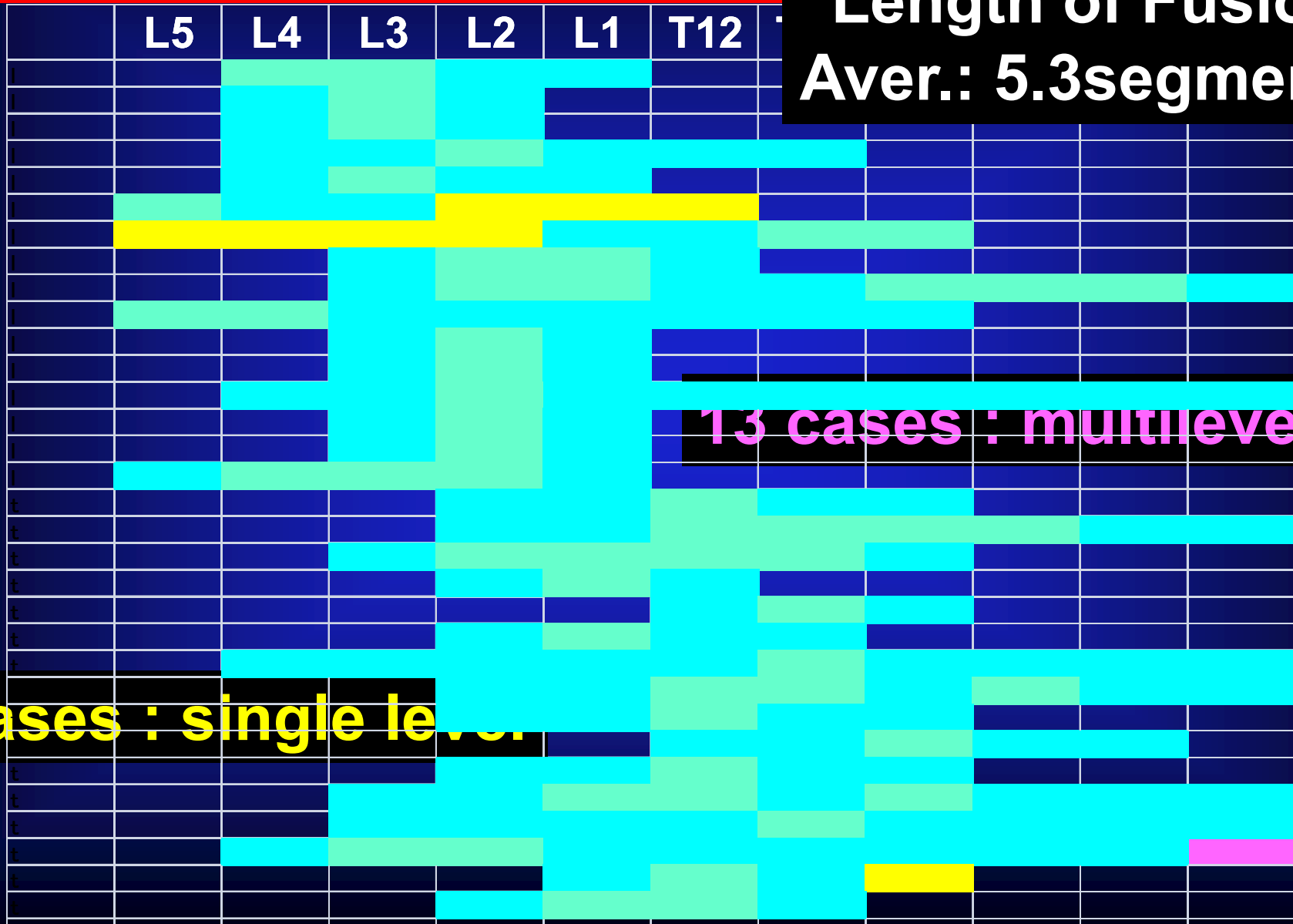
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Duration of follow-up	13.1 ± 3.1yrs
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# Location of Congenital deformity

Length of Fusion  
Aver.: 5.3segments



13 cases : multilevels

18 cases : single level

# Surgical procedure

31 cases		
Posterior only 10 cases	Anterior+Posterior 21 cases	
	One-stage 17 cases	Two-stage 4 cases



## Additional surgery

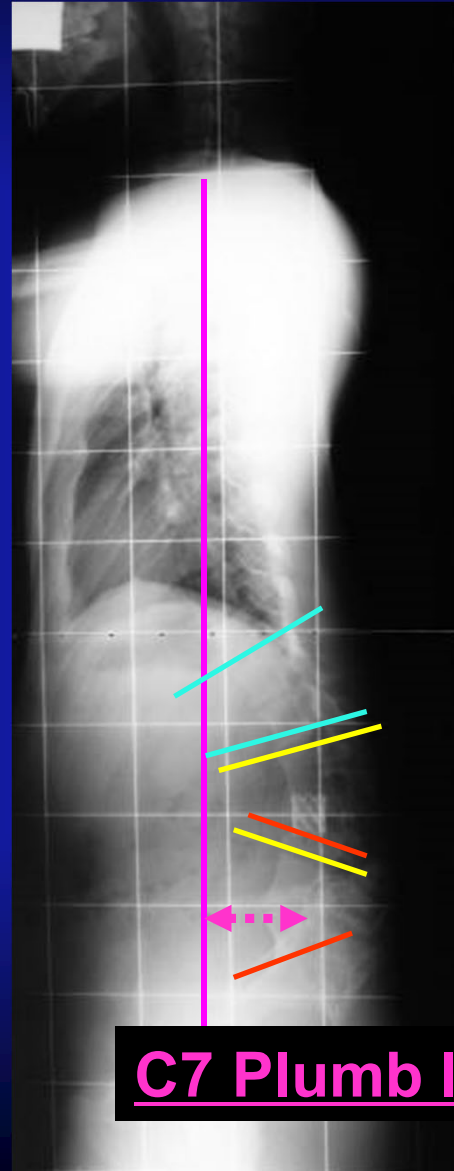
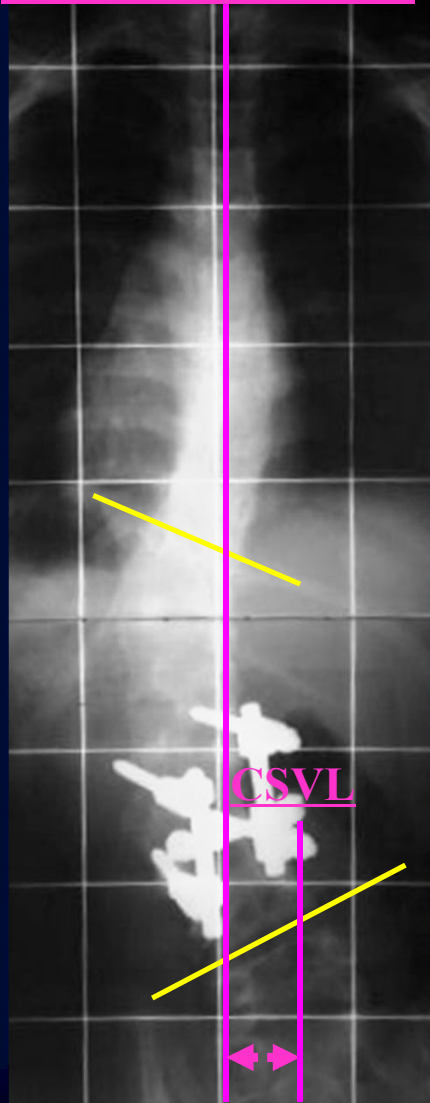
6 cases

Pseud 1 case

Decompensation 5 cases

# Radiographic outcomes

## C7 Plumb line



## C7 Plumb line

### Coronal plane

- The main curve
- Coronal balance

### Sagittal plane

- Local kyphosis
- Lumbar lordosis
- Sagittal balance

# Main Curve (Kyphoscoliosis)

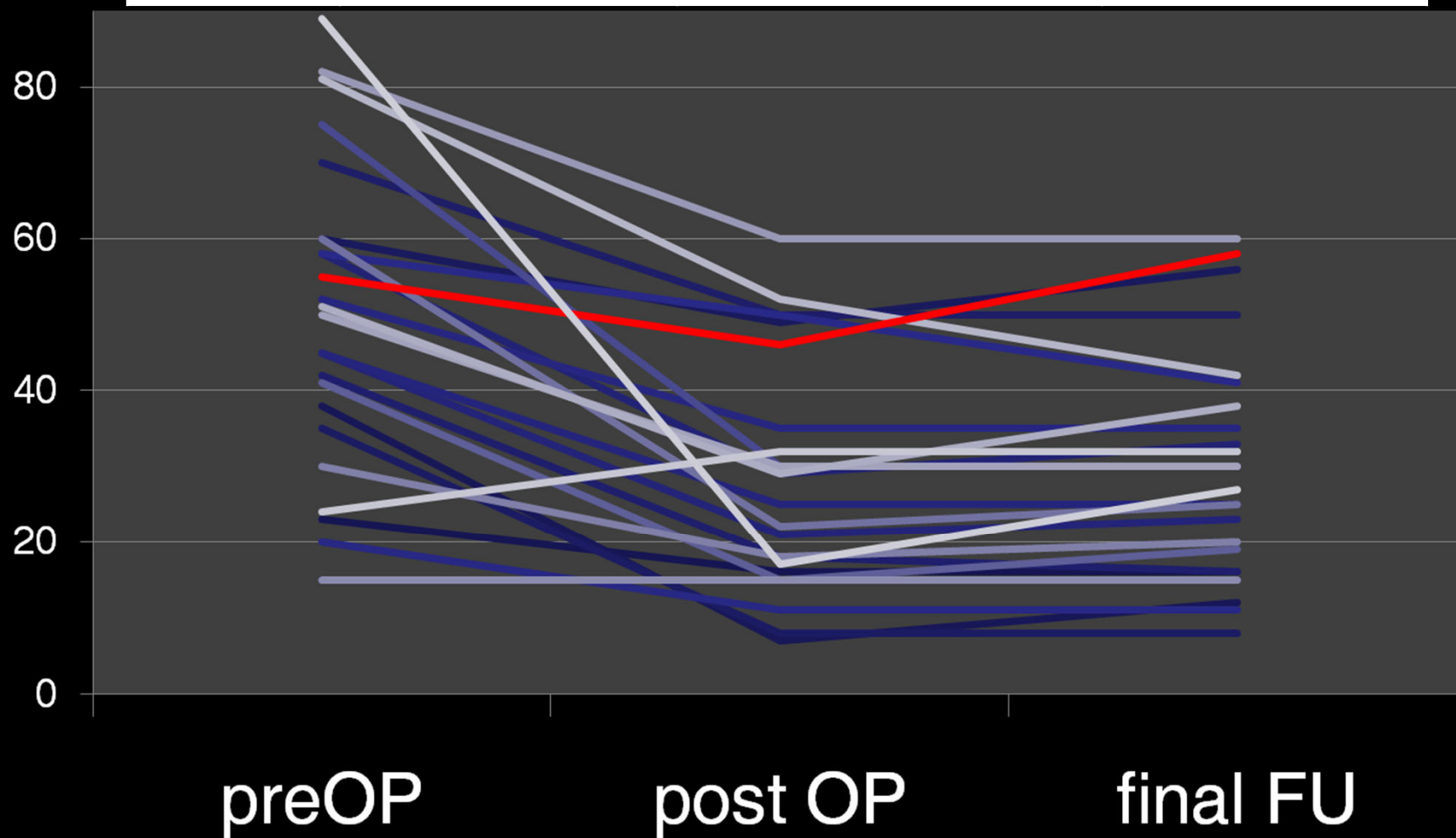
degree

Aver.

$48 \pm 21$

$28 \pm 15$

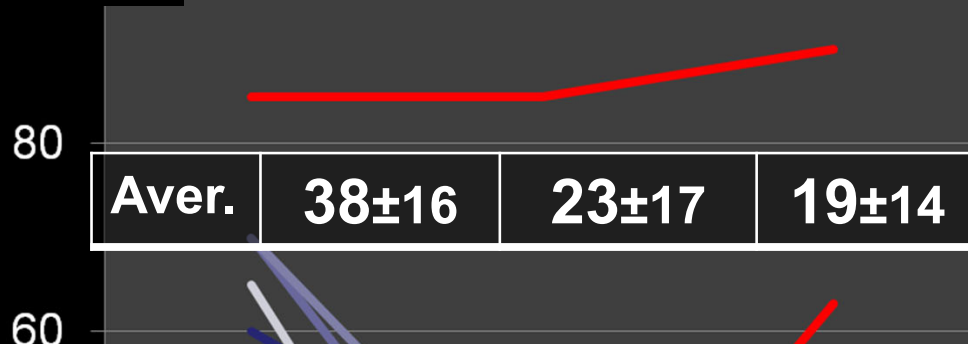
$30 \pm 15$



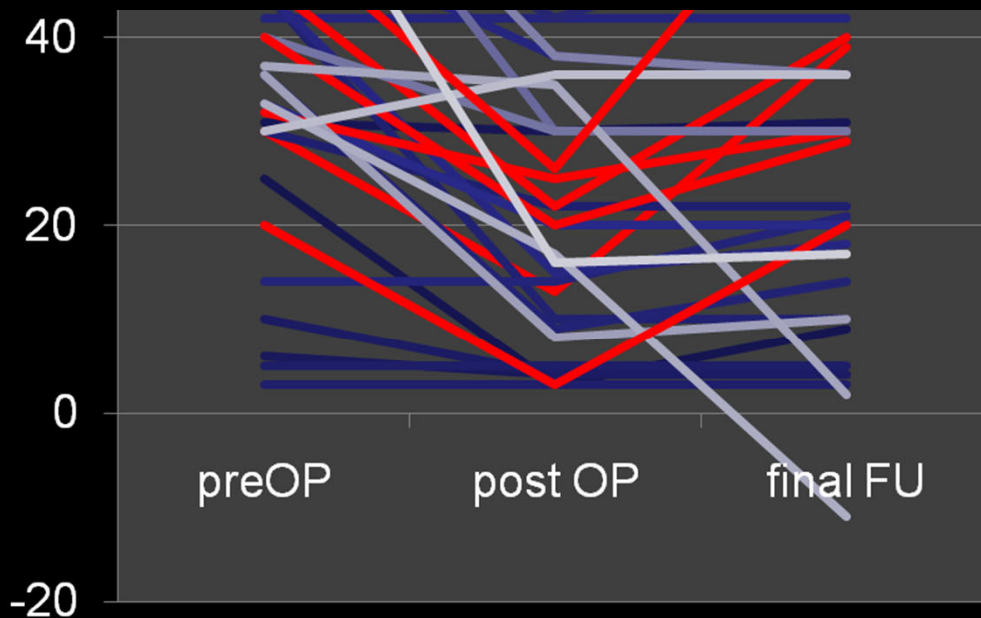
# Segmental Kyphosis

# Lumbar lordosis

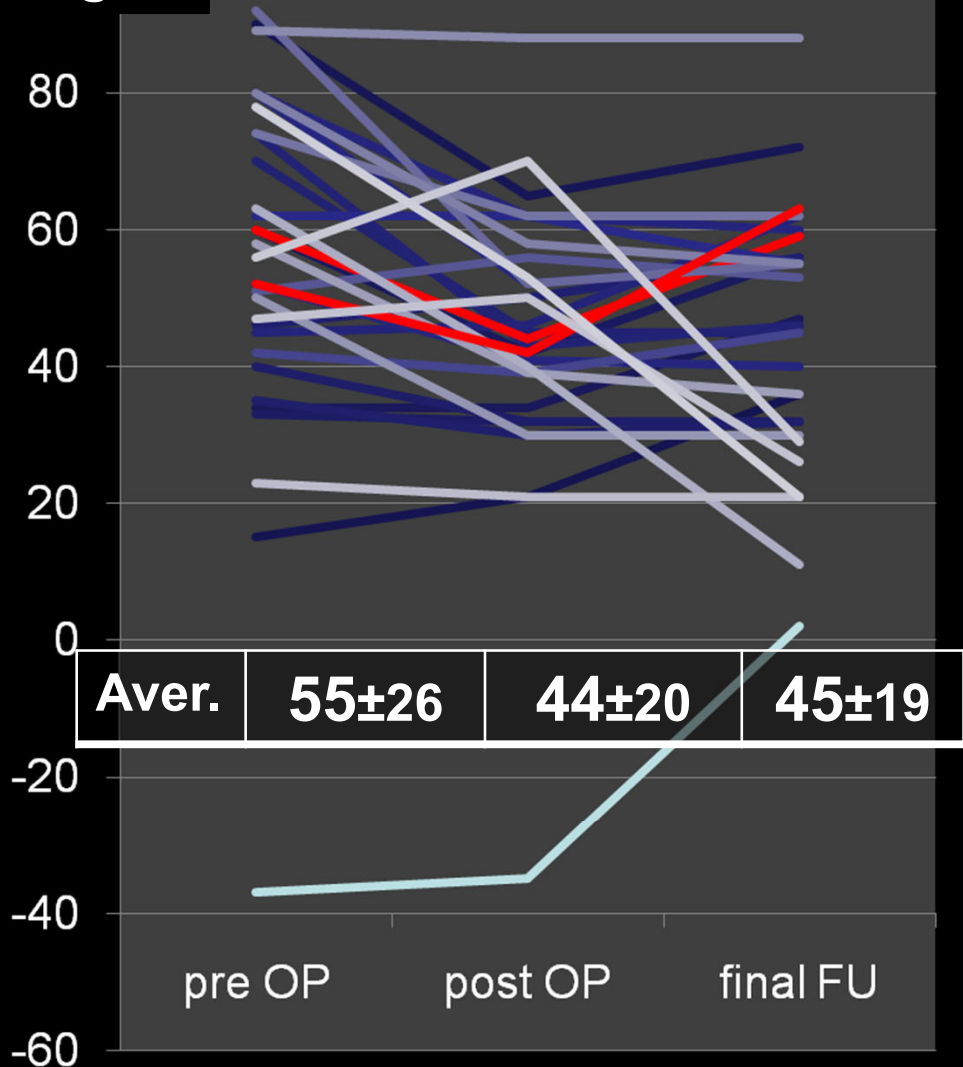
degree



**Severe correction loss: 7 cases**

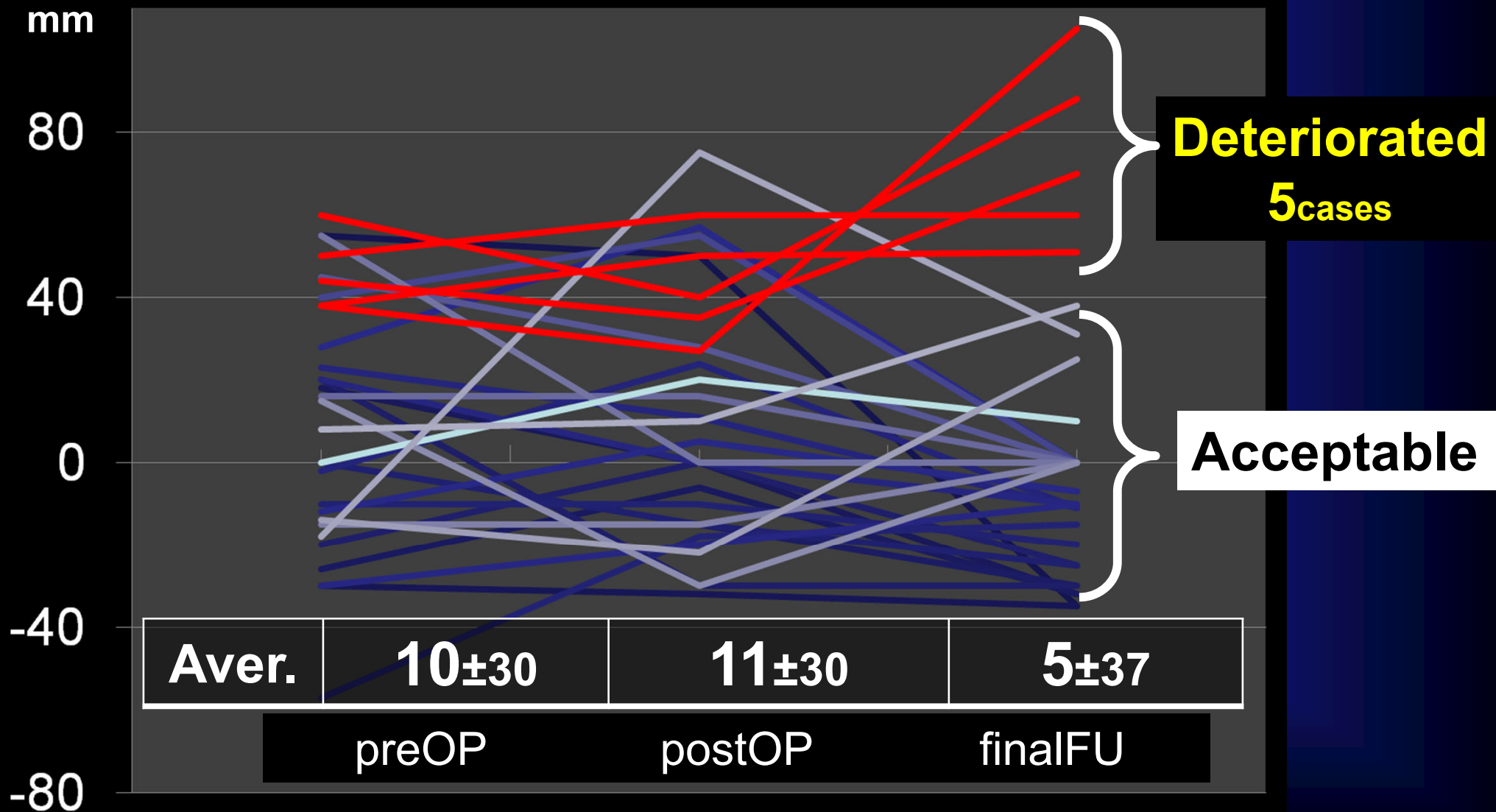


degree





# Sagittal balance



# Correlation between SB at final follow-up and preoperative parameter

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## Pearson's correlation

	r	P-value	
<b>Sagittal balance at final follow-up</b>	<b>0.36</b>	<b>0.04</b>	<b>Kyphosis before op</b>
	<b>0.47</b>	<b>0.0007</b>	<b>Sagittal balance before op</b>
	0.14	0.46	Location of hemivertebrae

# Review

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## Sagittal Balance

**Ruf. et al**  
**Spine2003**

preop

postop

Final f/u

**24<sub>mm</sub>**

**17<sub>mm</sub>**

**19<sub>mm</sub>**

**21 patients** **6.2 year f/u**  
**single level**

**Our study**

**10 $\pm$ 30<sub>mm</sub>** **11 $\pm$ 30<sub>mm</sub>** **5 $\pm$ 37<sub>mm</sub>**

**31 patients** **13.1 year f/u**  
**18 single +13 multilevel**

# Summary

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- 1. The long term surgical outcomes of 31 patients with congenital kyphosis and kyphoscoliosis were evaluated.**
- 2. Of the 31 cases, 26 cases demonstrated satisfactory sagittal balance for more than 10 year follow up.**
- 3. The magnitude of kyphosis and the sagittal balance before surgery were significant correlations with the final sagittal balance after surgery.**