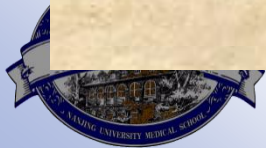


# Preoperative Shoulder Directionality Depends on the Profile of Main Thoracic Curve in Lenke Type 2 Adolescent Idiopathic Scoliosis Patients

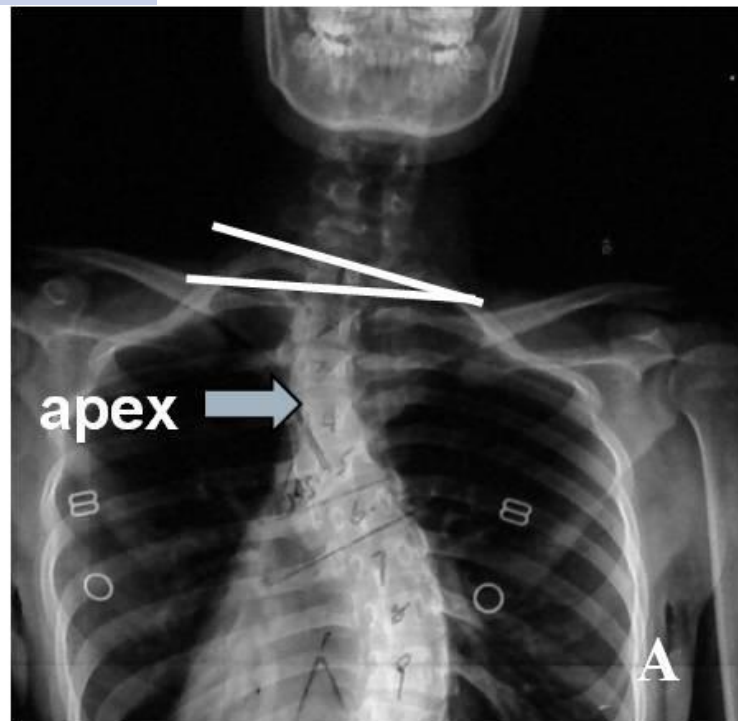
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Yang Yu, and Ze-zhang Zhu**

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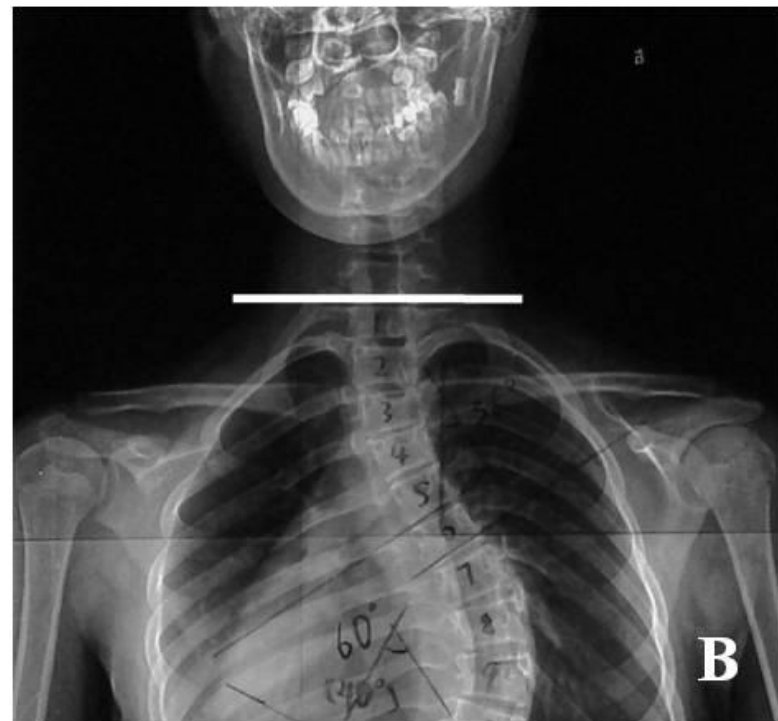


# Backgrounds

## Two different kinds of proximal thoracic curves



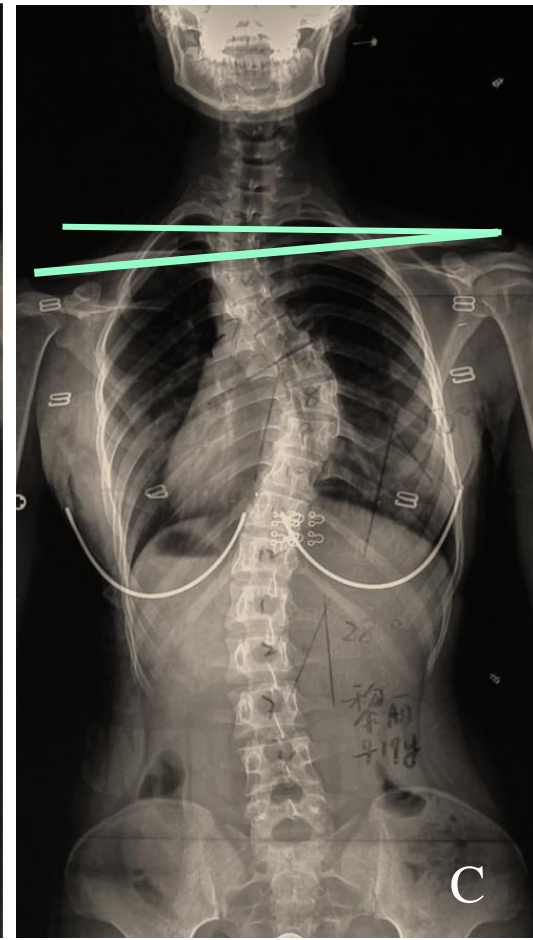
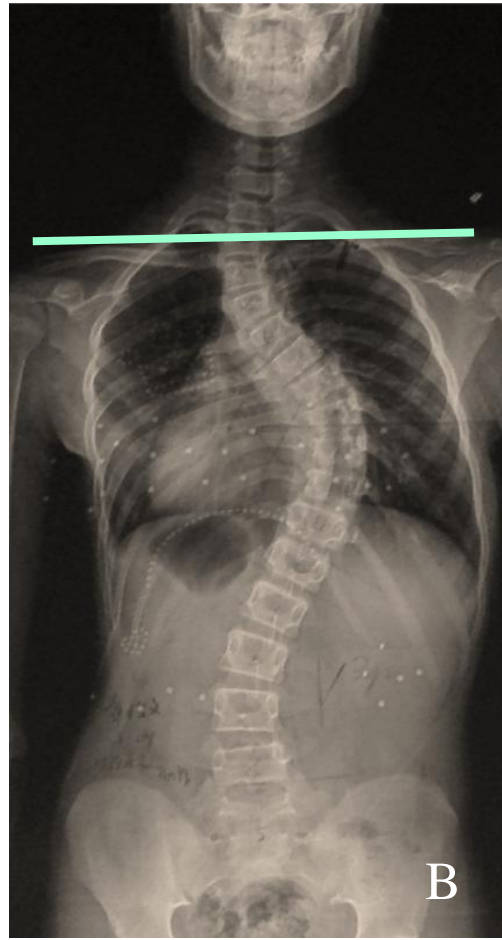
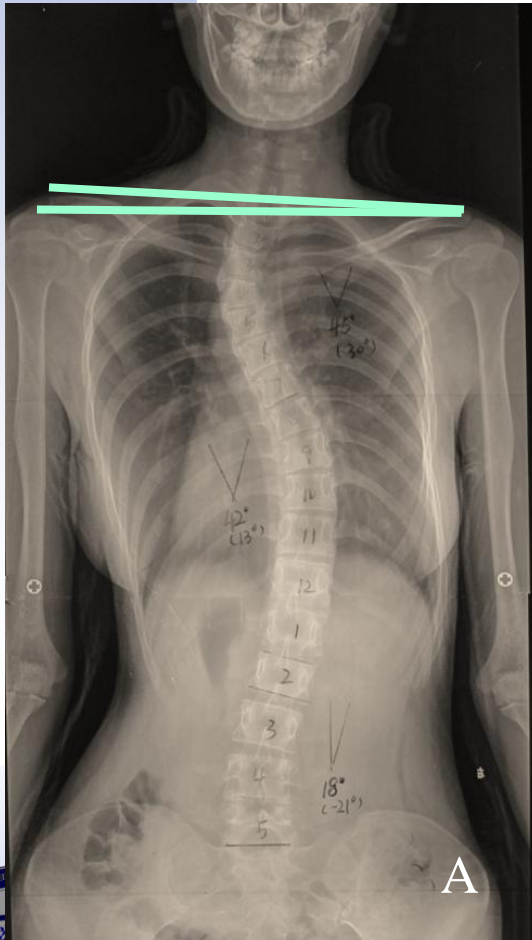
Lenke type 2 AIS  
(T1 positive tilt)



Lenke type 1 AIS  
(T1 level or negative tilt)

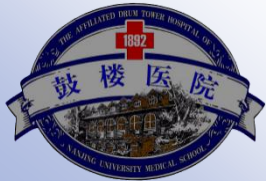
# Backgrounds

The same pattern (Lenke type 2), but different shoulder heights



# Purposes

- ❑ The shoulder directionality seems to be independent of the profile of proximal thoracic curve
- ❑ To evaluate the differences of radiographic characteristics between Lenke type 2 (double thoracic curve) AIS patients with different preoperative directionalities of shoulder tilting



# Materials and Methods

## Subjects included and parameters measured

- 130 Lenke type 2 AIS patients
- All had a complete PT curve characterized as a positive T1 tilt
- Grouped by the preoperative shoulder height
- 78 cases with RSH less than 0 cm in Group A and 52 cases with RSH equal to 0 cm or more than 0 cm in Group B
- **Parameters:** T1 tilt; PT Cobb angle; MT Cobb angle; the apical level of PT curve; the apical level of MT curve and radiographic shoulder height (RSH)



# Materials and Methods

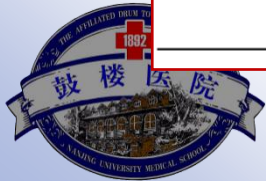
- All of these radiographic parameters measured were compared between these 2 groups by independent-t test.
- Correlation analysis was used to determine a Pearson coefficient (r) between RSH and the other parameters.



# Results

**Table 1. Radiographic differences between patients with different preoperative shoulder tilting**

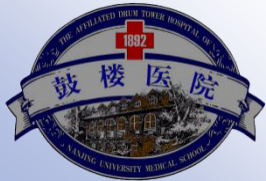
	Group A (n=78)	Group B (n=52)	P value
Age (yr)	14.4 ± 2.9	15.9 ± 4.1	0.020*
Gender(F/M)	71/7	44/8	0.262
T1 tilt(°)	8.1 ± 4.2	10.7 ± 4.5	0.001*
PT Cobb angle(°)	41.1 ± 9.4	43.2 ± 7.5	0.162
MT Cobb angle (°)	55.2 ± 11.6	50.2 ± 11.5	0.017*
Apical level of PT curve	3.1 ± 0.4	3.2 ± 0.6	0.467
Apical level of MT curve	8.9 ± 0.8	9.4 ± 1.1	0.014*
PT Cobb angle/MT Cobb angle	0.8 ± 0.2	0.9 ± 0.2	0.001*
RSH (mm)	-12.0 ± 5.5	4.0 ± 5.6	<0.001*



# Results

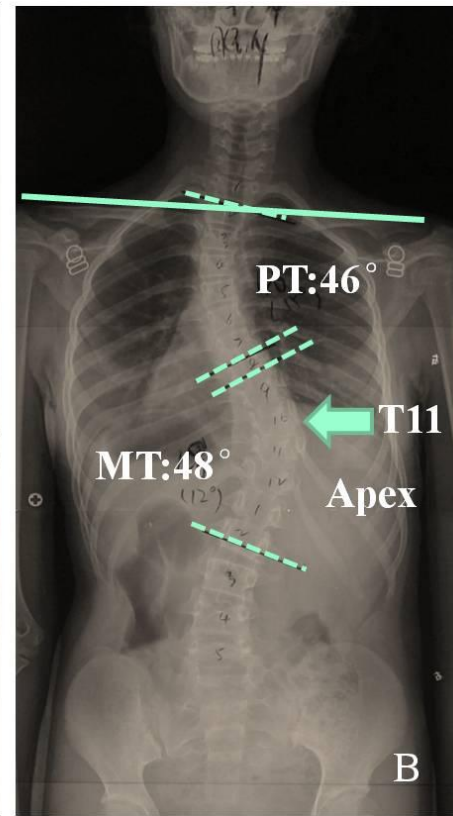
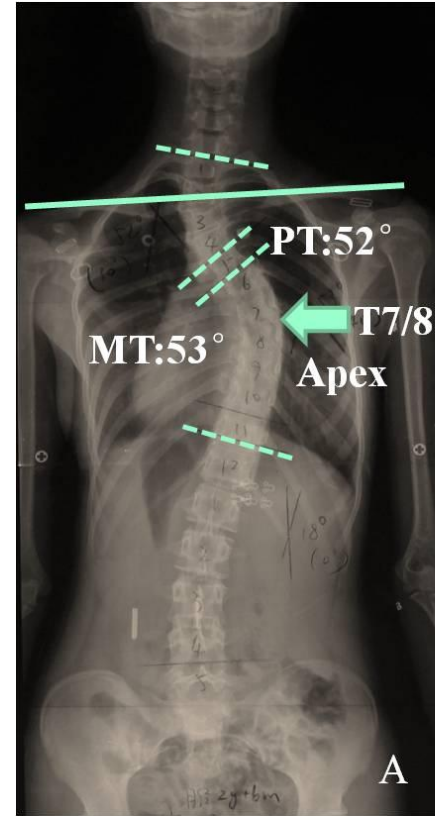
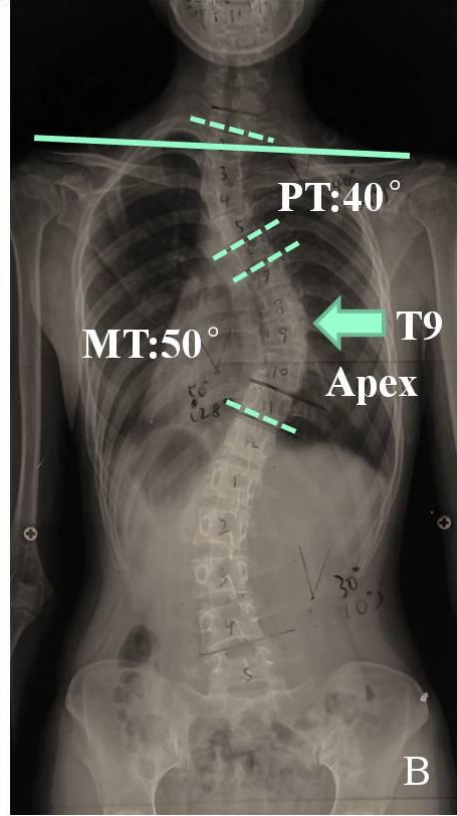
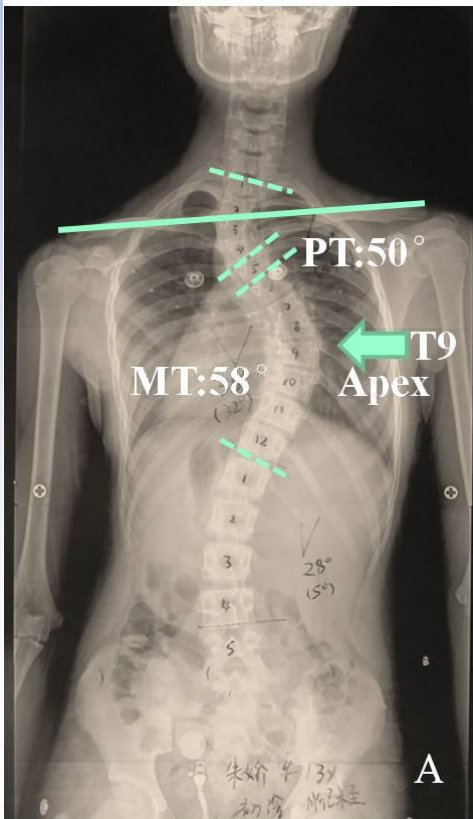
**Table 2. Correlations between RSH and other radiographic parameters**

	r value	P value
T1 tilt	0.391	<0.001*
PT Cobb angle	0.109	0.216
MT Cobb angle	-0.215	0.014
Apical level of PT curve	0.094	0.287
Apical level of MT curve	0.217	0.013*
PT Cobb angle/MT Cobb angle	0.302	<0.001*





# Results



Large MT curve

Small MT curve

High MT apex

Low MT apex

# Discussion

1

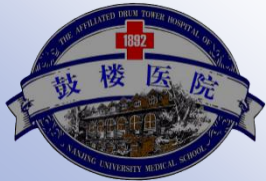
The characteristics of MT curve is the major factor determining the preoperative directionality of shoulder tilting in Lenke type 2 AIS patients

2

Only a few Lenke type 2 AIS patients had a preoperative left-elevated shoulder and most of them had a right higher shoulder

3

An accurate examination of preoperative shoulder tilting is necessary to avoid unnecessary extension of proximal fusions in these patients



# Disclosure information

Jun Jiang	No conflict of interest
Bang-ping Qian	No conflict of interest
Yong Qiu	No conflict of interest
Bin Wang	No conflict of interest
Yang Yu	No conflict of interest
Ze-zhang Zhu	No conflict of interest

