The efficacy of balloon kyphoplasty about correcting local kyphosis

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T11 fracture

First visit　80y F

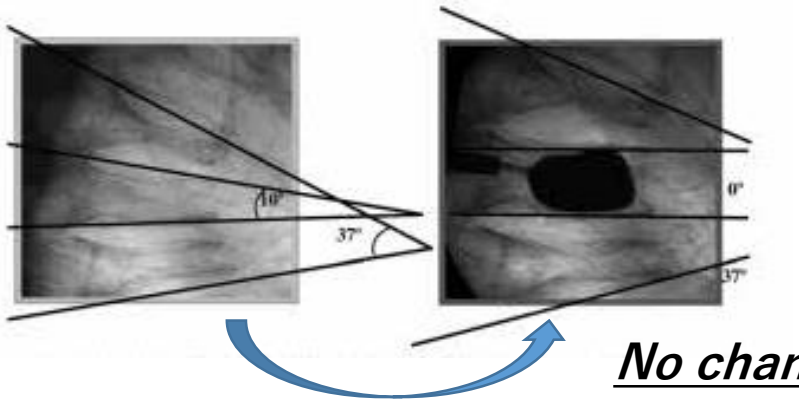
After 1 year

Progressing kyphosis

Should be performed balloon kyphoplasty(BKP)?

However,

Correcting fractured vertebra by BKP is not necessarily correct local kyphosis



Pradhan BB, et al. 2006 Spine

- Disc height reduction
- Adjacent fracture

No change

We need to take into account these attenuating factors

Purpose

Investigate whether the progression of local kyphosis is suppressed by BKP compared to conservative treatment

Retrospective study

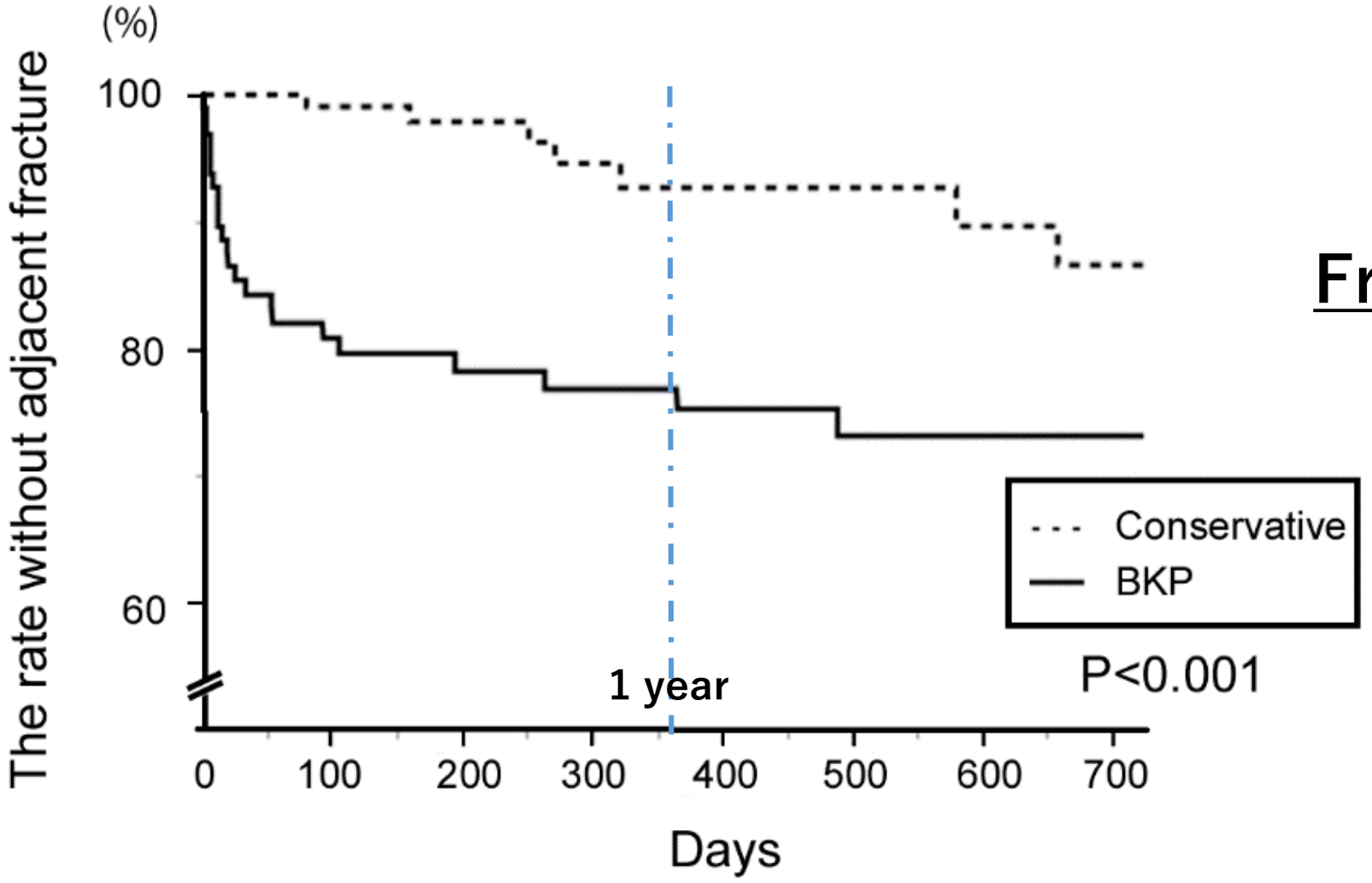
Methods

In comparison with conservative treatment and BKP

- Investigate the rate of adjacent fracture using Kaplan-Meier analysis
- Evaluate the progression of local kyphosis by lateral X-p in supine position after 1 year

・*Restricted the patients to those with adjacent vertebra on at least one side having no history of fracture*

The rate of adjacent fracture



Fracture rate at 1 year

7.3%
Conservative(n=129)

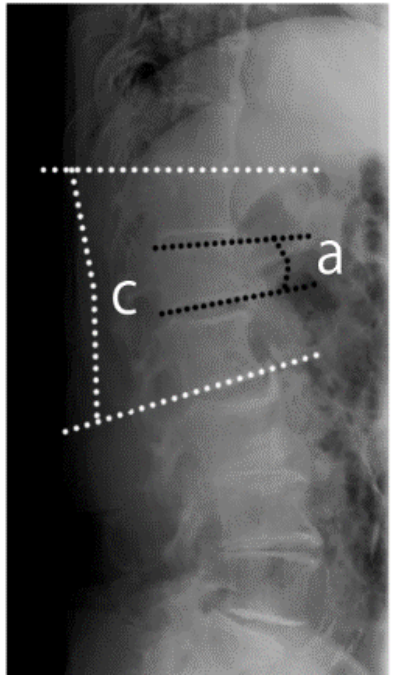
vs

23.2%
BKP(n=95)

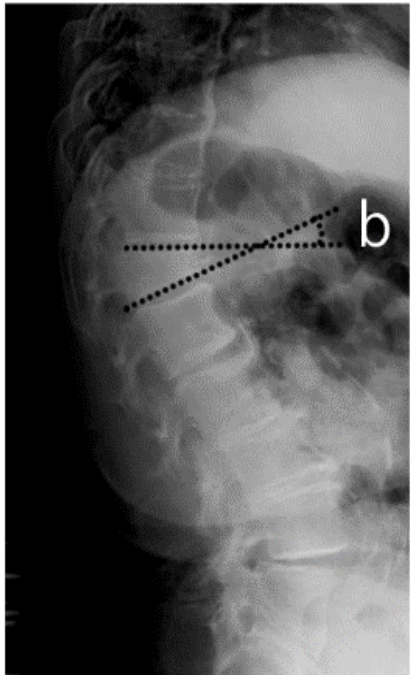
Methods of analysis

- ## Progression of local kyphosis

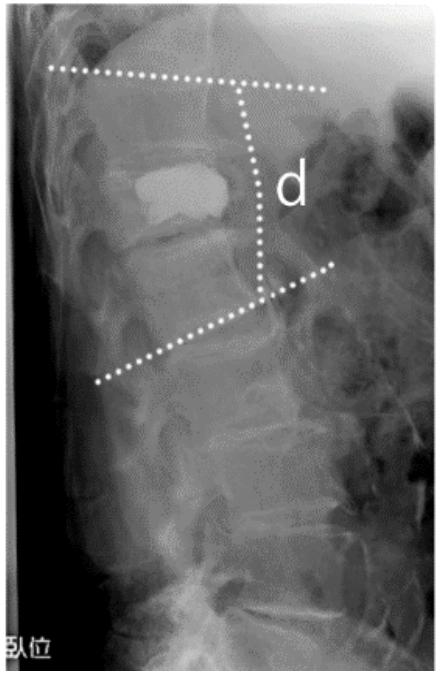
We concluded the adjacent fracture was a complication of BKP, so local kyphosis was measured by including the change of adjacent vertebra.



First visit
supine position



First visit
sitting position



After 1 year
supine position

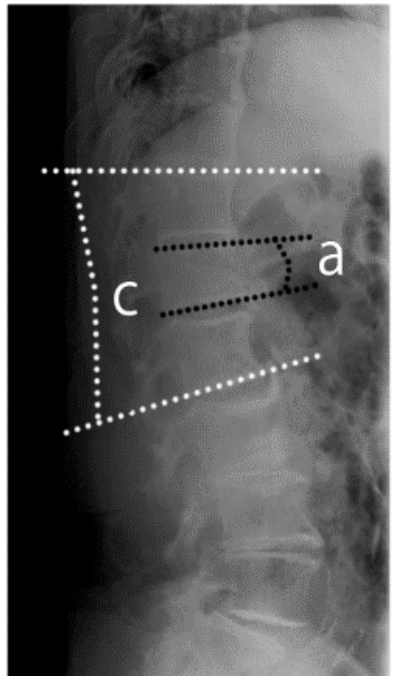
Progression of local kyphosis = **(d-c)**

Compare the (d-c) between two groups

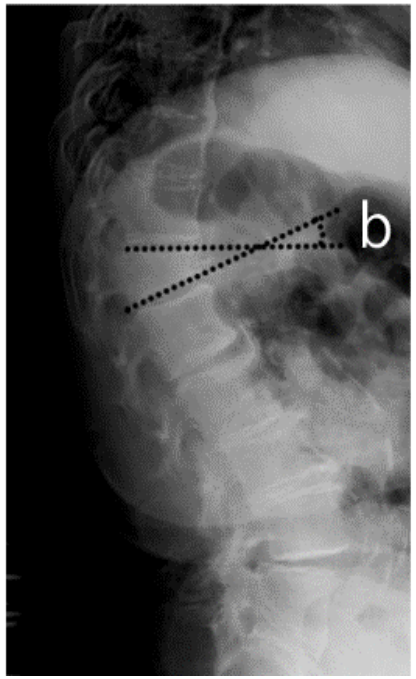
Methods of analysis

- **Instability of vertebra**

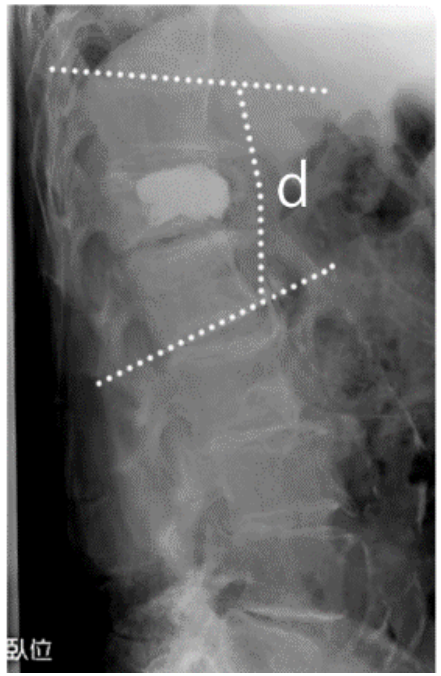
  To compare the progression of kyphosis, we investigated this factor to determine the condition of vertebra as this was a major requirement for comparing the outcome because our study had selection bias.



First visit
supine position



First visit
sitting position



After 1 year
supine position

Instability of vertebra

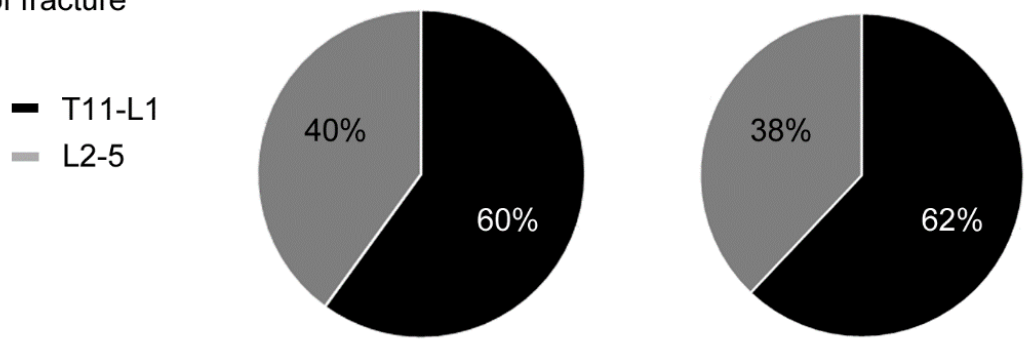
$= (b-a)$

Showing the base condition of vertebra in two groups

Progression of local kyphosis

Patients selection

	Conservative group n=45 (8 adjacent fracture)	BKP group n=58 (16 adjacent fracture)	P value
Age	77.8±12.6	80.6±6.8	0.04
Sex	M 16 F 29	M 16 F 42	0.39
The days before treatment			
Average	31.2±53.5	122.8±70.0	<0.001
Median	13	101	
Unknown	9	12	
The site of fracture			
Instability of vertebra	5.5±4.2	8.1±5.8	0.03



± = standard deviation

Patients treated by BKP passed more time after injury

Patients treated by BKP had more spinal instability

Progression of local kyphosis

	Conservative group n=45 (8 adjacent fracture)	BKP group n=58 (16 adjacent fracture)	P value
The progression of kyphosis			
(Adjacent fracture -)	(5.1±4.7)	(2.1±4.3)	0.004
(Adjacent fracture +)	(8.3±4.5)	(6.0±4.3)	0.27
	P=0.05	P=0.003	
Total	5.7±4.7	3.2±4.6	0.01

± = standard deviation

- **BKP suppressed local kyphosis**
- **Adjacent fracture attenuated the correction**

Discussion

- Patients treated by BKP had more spinal instability
- Even though, the local kyphosis was not progressed in the patients treated by BKP

→ The condition of vertebra was different, but suggested BKP could suppress local kyphosis compared to conservative treatment

- BKP can prevent kyphosis?

→ We suggested BKP suppressed progression of local kyphosis, but whether correcting local kyphosis by BKP reflect global alignment is further subject

Conclusions

Compared to conservative treatment

- **Adjacent fracture was more frequent in BKP**
- **The local kyphosis was suppressed in BKP**
- **We need to take into consideration the patients selection bias**

COI

EUROSPINE 2018 Meeting
Disclosure of Conflict of Interest

Name of first author: Keiichiro Iida

I have no COI
with regard to our presentation