통증 및 근골격재활
발표일시 및 장소 : **10 월 26 일(금) 15:05-15:15 Room B(5F)**

OP1-2-6

The Clinical Efficacy of a Lordotic Curve Controlled Spinal Traction Device

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Background
A standard spinal traction (ST) device was designed to straighten the spine and improve spinal alignment to relieve pain in patients with disk disease. Although it was theoretically expected to have an effect on spinal decompression, its clinical effects have been disappointing. Because previous ST devices decompress the whole spinal structure equally without maintaining the lordotic curve, unnecessary pain could develop. Thus, our study was aimed at evaluating geometrical changes using radiography when spinal traction was applied by Lordotic Curve Controlled Traction device (LCCT), a device developed by the authors.

Methods
Herein, 40 patients with or mild non-radicular low back pain (LBP) were included. The participants were scheduled to receive LCCT or ST in random order. Anterior and posterior intervertebral distance and the ratio of anterior-to-posterior intervertebral distance (A/P ratio) during traction were calculated. Lordotic angles of intervertebral bodies (L2~L5) were measured by radiography.

Results
Mean intervertebral distances were greater during LCCT than those measured before applying traction ($p < 0.05$). Mean A/P ratio was also significantly greater during LCCT than during ST or before applying traction ($p < 0.05$). In particular, for the L4/5 intervertebral segment, which is responsible for most of the lordotic curve, the mean LCCT angle was similar to mean lordotic angle in the standing position (10.9°).

Conclusion
Based on the measurements of radiologic geometrical changes, the newly developed LCCT appears to be a useful traction device for evenly increasing the intervertebral disk space while maintaining the lordotic curve in the clinical setting.

Table 1. The demographic data of the participants General characteristics of the participants (N=40)

Variables	Male(n=13)	Female(n=27)
Age (years)	38.38±10.53	41.22±16.79
Height (cm)	171.84±3.99	161.44±3.28
Weight (kg)	75.30±7.15	52.62±4.86
BMI	23.66±4.02	20.26±2.29

All values are mean±standard deviation

Abbreviation: BMI: Body mass index

*p< 0.05

Table 2. Multicomparison in A/P ratio in L4/5 among initial, LCCT and ST.

(I)group	Difference of mean	Standard Deviation	p-value
Initial-ST	0.11300	0.04119	0.026*
Initial-LCCT	-0.00777	0.04119	0.982
LCCT-ST	0.12077	0.04119	0.016*

*p< 0.05

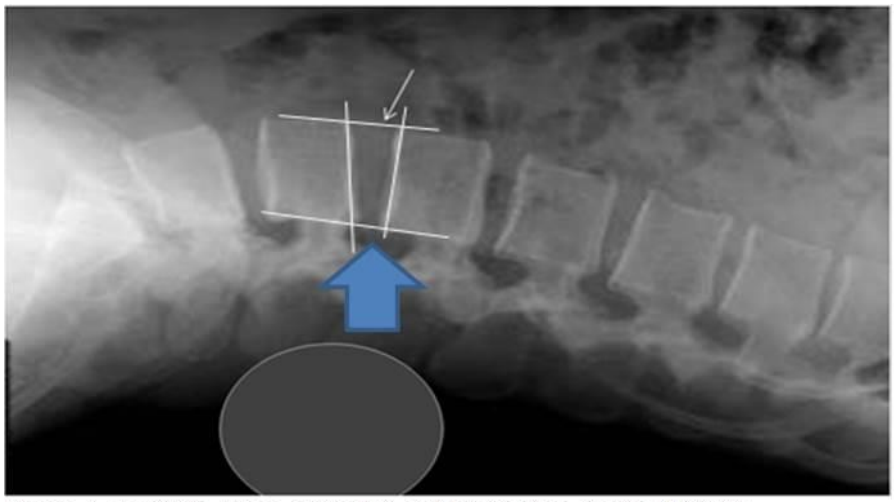

Figure 1. Lordotic curve controlled spinal traction device (LCCT)

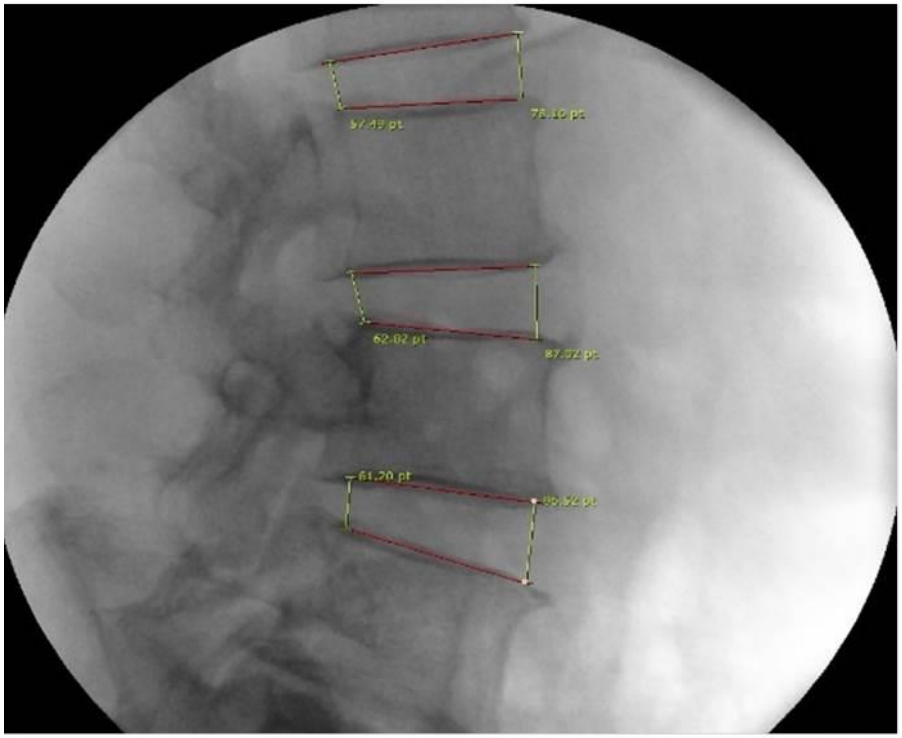

Figure 2. Measurement of intervertebral distance, distance ratio and in lateral view

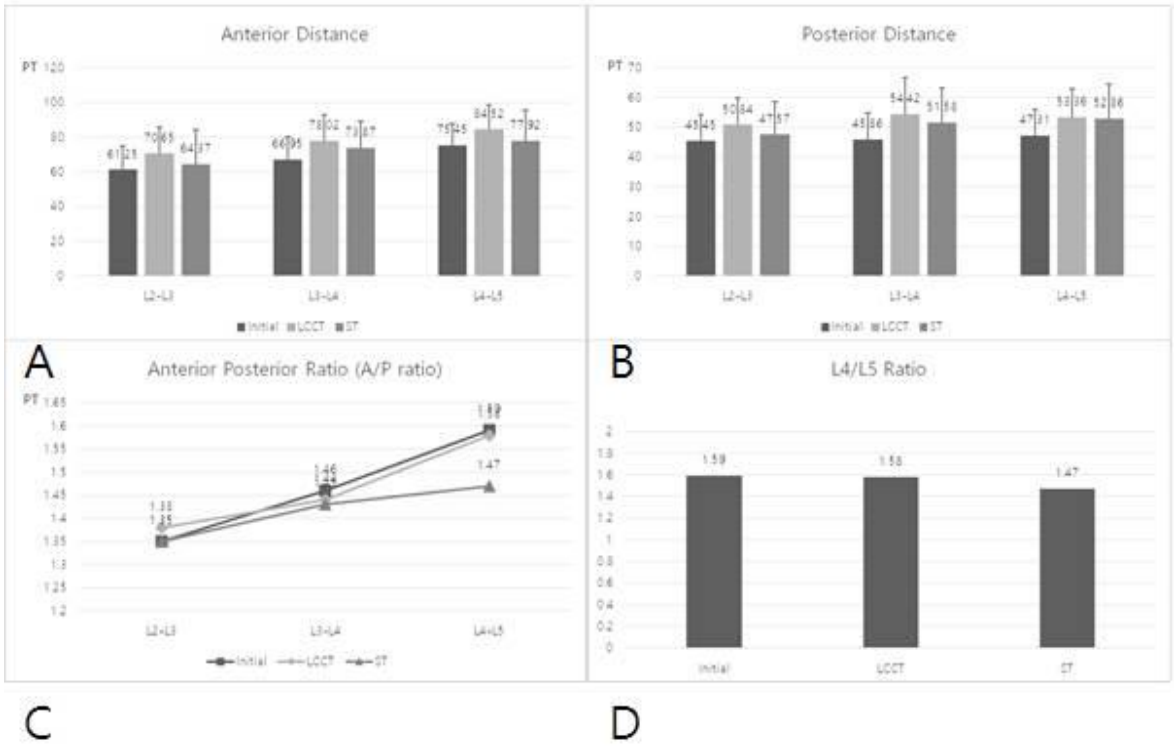

Figure 3. The intervertebral disk distances (A) in anterior and (B)posterior side in each vertebra. (C) The ratios of anterior and posterior distance in each vertebra and (D) The ratios of anterior and posterior distance in L4/5 level.
Abbreviation: initial indicated pre operative position; LCCT, lordotic curve controlled traction device ; ST , standard traction

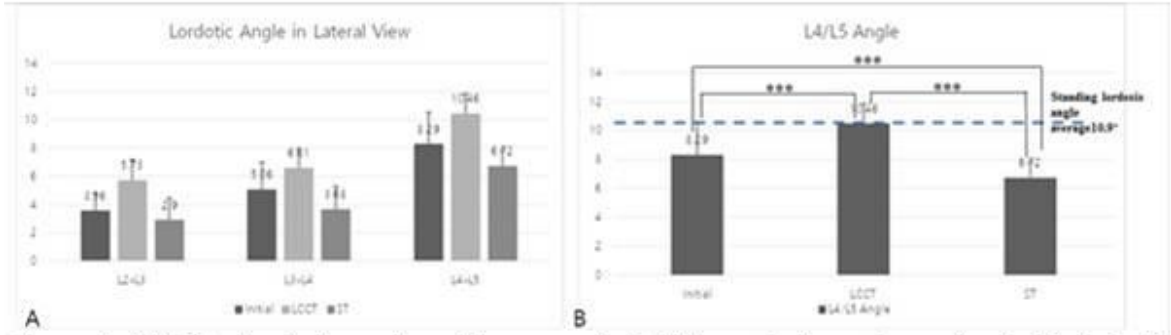

Figure 4. (A) The lordotic angle and intervertebral disk angle in each vertebral. (B) in L4/5 level in three condition. Standing lordosis angle average is 10.9. Our patient who is initial group has the lowest L4/L5 angle and LCCT group has the highest L4/L5 angle. It has statistic significant among initial, LCCT and ST. (p=0.000***)