

통증 및 근골격재활

발표일시 및 장소: 10 월 19 일(토) 14:20-14:30 Room A(5F)

OP1-3-3

The Functional and Morphological Changes of the Cervical Intervertebral Disc after Applying Traction

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Object

The newly developed cervical lordotic curve-controlled traction (C-LCCT) appears to be an ideal method to improve the treatment outcome in patients with cervical intervertebral disc disease.

Purpose

The purpose of this study was to investigate the treatment outcomes of C-LCCT including the functional and morphological changes of the cervical intervertebral disc compared to traditional traction (TT) with randomized controlled trial design.

Methods

A total of 40 patients with cervical intervertebral disc disease at the C5/6 level confirmed by magnetic resonance imaging were recruited and assigned to either the C-LCCT group or the TT group. The comprehensive health status changes of the patients were recorded using pain and functional scores (Visual Analogue Scale, Oswestry Disability Index) and morphological changes (cervical lordosis, cervical central canal area) before and after the traction treatment.

Results

Both groups showed a significant improvement in pain scores after traction ($p < 0.05$). The functional score and morphological changes improved significantly after treatment in the C-LCCT group. However, there was no significant improvement in the TT group ($p < 0.05$). The C-LCCT showed significant pain, functional, and morphological improvement compared to TT.

Conclusion

C-LCCT could be effective in improving the treatment outcomes of the traction technique in patients with cervical intervertebral disc disease.

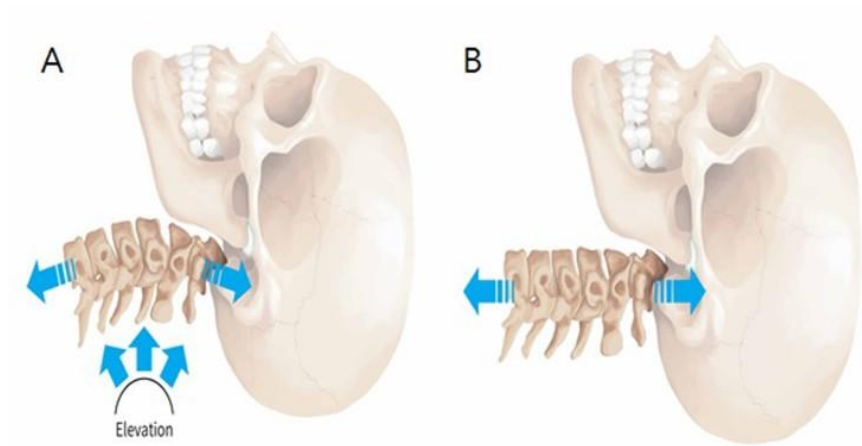


Figure 1 Technique of cervical traction

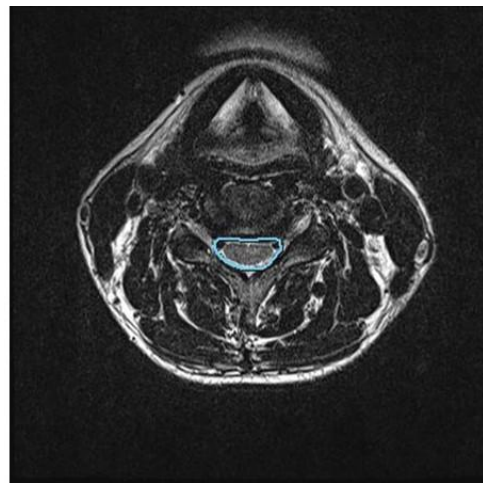
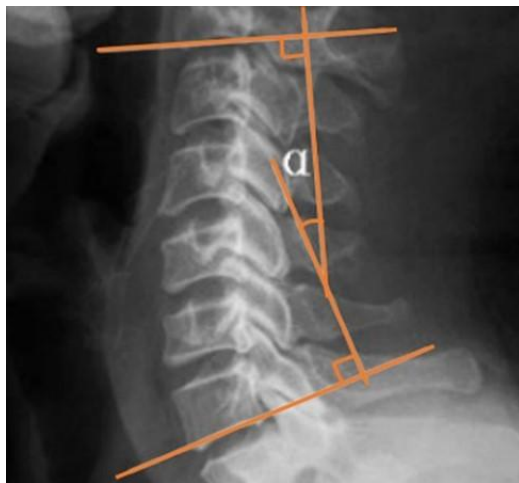


Figure 2 Cobb angle of cervical lordotic curve, Figure 3 Central canal area in axial view of cervical spine MRI

Table 1 Demographic characteristics of participants

Variables	All (n = 40)	C-LCCT (n = 20)	TT (n = 20)	p Value
Age (years)	46 ± 14.6	48.8 ± 13.3	43.2 ± 16.2	0.684
Height (cm)	165.0 ± 8.2	163.6 ± 7.5	167.6 ± 9.2	0.628
Weight (kg)	63.3 ± 11.4	62.4 ± 11.2	64.9 ± 12.0	0.713
BMI	23.1 ± 3.2	23.2 ± 3.4	23.0 ± 3.0	0.669
Duration of cervical pain (mean, months)	15.5 ± 13.4	16.5 ± 12.8	13.5 ± 15.1	0.541
Initial VAS	6.7 ± 0.4	6.8 ± 0.8	7.0 ± 0.0	0.852
Initial ODI (%)	29.2 ± 10.2	29.9 ± 15.7	28.5 ± 4.6	0.788

All values represent mean ± standard deviation; BMI: Body mass index; VAS, Visual analogue scale (0 = no pain; 10 = worst pain ever); ODI, Oswestry Disability Index (0 = no disability; 100 = maximum disability possible).

Table 2. Pain and functional scores in C-LCCT versus TT group.

Variables	Before Treatment	After Treatment	p Value
A. C-LCCT group			
VAS	6.78 ± 0.8	3.33 ± 0.8	<0.001 *
ODI (%)	29.85 ± 15.6	20.15 ± 11.8	0.003 *
B. TT group			
VAS	7.0 ± 0.0	4.27 ± 0.9	0.006 *
ODI (%)	28.48 ± 4.6	26.87 ± 11.1	0.470

All values represent mean ± standard deviation; VAS, Visual Analogue Scale (0 = no pain; 10 = worst pain ever); ODI, Oswestry Disability Index (0 = no disability; 100 = maximum disability possible); * $p < 0.05$.

Table 3. Morphological changes (Cobb angle and central canal area) in C-LCCT versus TT group.

Variables	Before Treatment	After Treatment	p Value
A. C-LCCT group			
Cobb angle at C2-7 (°)	4.8 ± 10.9	16.9 ± 12.7	<0.001 *
Central canal area (mm ²)	130.9 ± 40.5	136.0 ± 43.2	<0.001 *
B. TT group			
Cobb angle at C2-7 (°)	5.2 ± 8.6	4.9 ± 9.8	0.781
Central canal area (mm ²)	137.9 ± 37.6	136.7 ± 41.4	0.549

* $p < 0.05$.

Table 4. Comparison of changes between C-LCCT and TT groups.

Variables	C-LCCT	TT	T	p Value
VAS	-2.7 ± 1.5	-2.7 ± 1.0	-1.6	>0.05
ODI (%)	-9.7 ± 9.8	-1.6 ± 7.1	-2.3	<0.05 *
Cobb angle	10.1 ± 4.5	-0.3 ± 5.3	7.6	<0.001 *
Central canal area (mm ²)	5.1 ± 5.3	-2.5 ± 5.8	3.7	<0.001 *

* $p < 0.05$.