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Result of Traction Thoracolumbosacral Orthosis in Idiopathic Scoliosis

Weon-Wook Park, M.D., Tae-Wook Nam, M.D., Seong-Jun Ahn, M.D.*,
Seong-Ho Yoo, M.D.*, Hyong-Guen Moon[§]

Spine Center, Busan Centum Hospital
*Department of Orthopedic Surgery, Dae-dong Hospital, Busan**
MS Meditec, Masan[§], Korea

– Abstract –

Study Design : A retrospective study of the effectiveness of traction thoracolumbosacral orthosis (TLSO) in idiopathic scoliosis.

Objective : To compare the results of traction TLSO and conventional TLSO.

Summary of Literature Review : No report has been published about longitudinal traction and lateral force before cast molding in the nonoperative treatment of idiopathic scoliosis.

Materials and Methods : Twenty-one cases of traction TLSO (group I) and 17 cases of conventional TLSO (group II) were studied. Traction TLSO was made as follows:

1. Cervical traction was applied to the patient standing under the frame with application of lateral force with compression pad.
2. Cast molding.
3. Fabrication of plastic jacket and application of pads.

The mean age of group I was 12 years and of group II, 13 years. We evaluated the effectiveness of traction TLSO with Cobb's angle reduction, trunk pain and dyspnea.

Statistical analysis was made with SPSS.

Results : In group I, mean pre-brace Cobb's angle was 31.1 ° and in group II, 29.6 °. Flexibility of the curves was 78% and 75%, respectively. Mean reduction rate of Cobb's angle after 3 days of brace application was 59.5% and 15.4%, respectively. One year later, reduction of Cobb's angle was 15.4 ° in group I and 2.7 ° in group II. Reduction rate of Cobb's angle after 1 year of brace application was 54.2% and 7.9%, respectively. Post-brace pain and dyspnea were similar in both groups.

Conclusion : Traction TLSO was superior to conventional TLSO in terms of angle reduction, but was similar in subjective symptoms.

Key Word : Idiopathic scoliosis, Traction thoracolumbosacral orthosis

Address reprint requests to

Weon-Wook Park, M.D.

Department of Orthopaedic Surgery, Spine center, Busan centum Hospital

1077-1, Kwangan-3dong, Suyoung-gu, Pusan 613-812, Korea

Tel: 82-51-750-5000, Fax: 82-51-751-1095, E-mail: pww@scoliosis.co.kr

(17.~41.) , group II 29. (20.~43.)
 group I 78%(56~124%) group II 75%(61~117%)
 group I 17.9. (6.~34.) , group II
 4.7. (-1 ~10.) group I
 가 1 group I
 15.4. (3.~32.) group II 2.7 (-14 ~8)
 group I 가
 group I 59.5%(14~95%)
 group II 15.4%(-5~32%) , 1
 group I 54.2%(12~100%) group
 II 7.8%(-70~25.8%)
 가 (P 0.05).
 group I mild 가 4 , group II
 mild 가 3 group I moder-
 ate 가 1 , mild 가 3 , group II
 mild 가 3 .

가

가

TLSO)

가
 halter

가
 (Traction

6~9 kg head halter

가
 plastic molding
 (Fig. 1).

(group I)

21

Group I 2 , 19 17 (group II)
 , group II
 2 , 15 group I 12
 (10~13) group II 13 (11~14)
 1

(severe, moderate, mild, none)

(severe, moderate, mild,

none)

SPSS

Student t-test P 0.05

가 ..

: Risser grade 0,1,2,3

Cobb 가 20 ~50 °

1945 Blount ¹⁾

가

1960 ~1970

²⁾ (1) neck ring , 가
 (longitudinal

distratation)

(active stimulation) (2) 가 occipital
 pad (passive longitudinal



Fig. 1. Tractional TLSO : cervical traction is applied to the patient who stand under the frame with application of lateral force with compression pad.

group I 31.

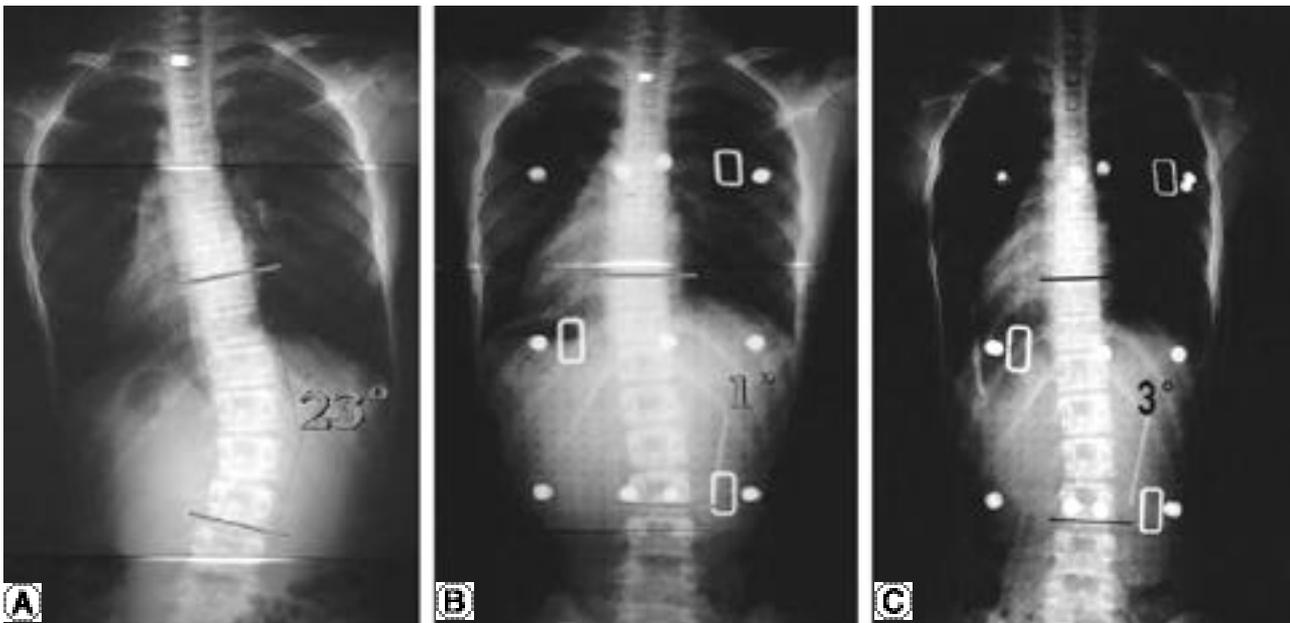


Fig. 2. A. Right thoracolumbar curve of 23 degrees in the prebrace.
 B. Traction TLSO was fitted with excellent correction to 1 degree after 3days.
 C. Traction TLSO was fitted with excellent correction to 3 degrees after 1year.

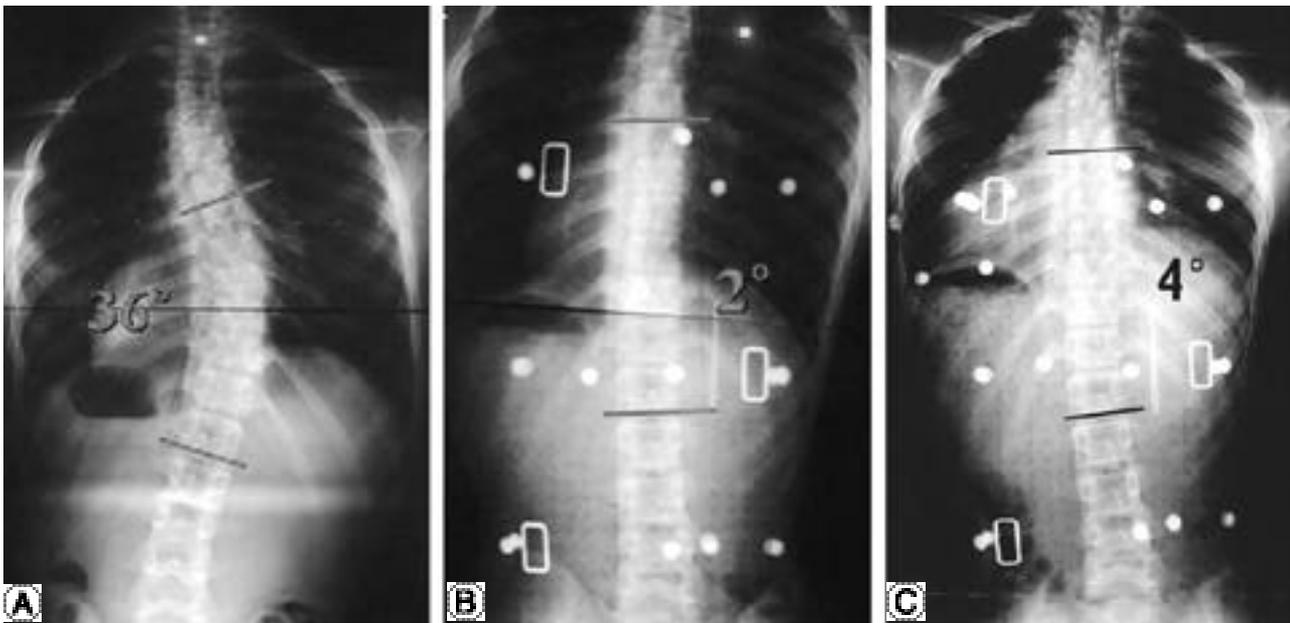


Fig. 3. A. Right thoracic curve of 36 degrees in the prebrace.
 B. Traction TLSO was fitted with excellent correction to 2 degrees after 3days.
 C. Traction TLSO was fitted with excellent correction to 4 degrees after 1year.

distration) (3)		Miller	
pelvic girdle	(4) 3		pelvic girdle
(3-point pressure principle)			throat mold
(passive transverse corrective force)	.		
가	가	3,4,5,6가	
Boston brace ⁷⁾	1971 Hall		. Boston brace
			(2) 3
			(1)
			(3-point pressure

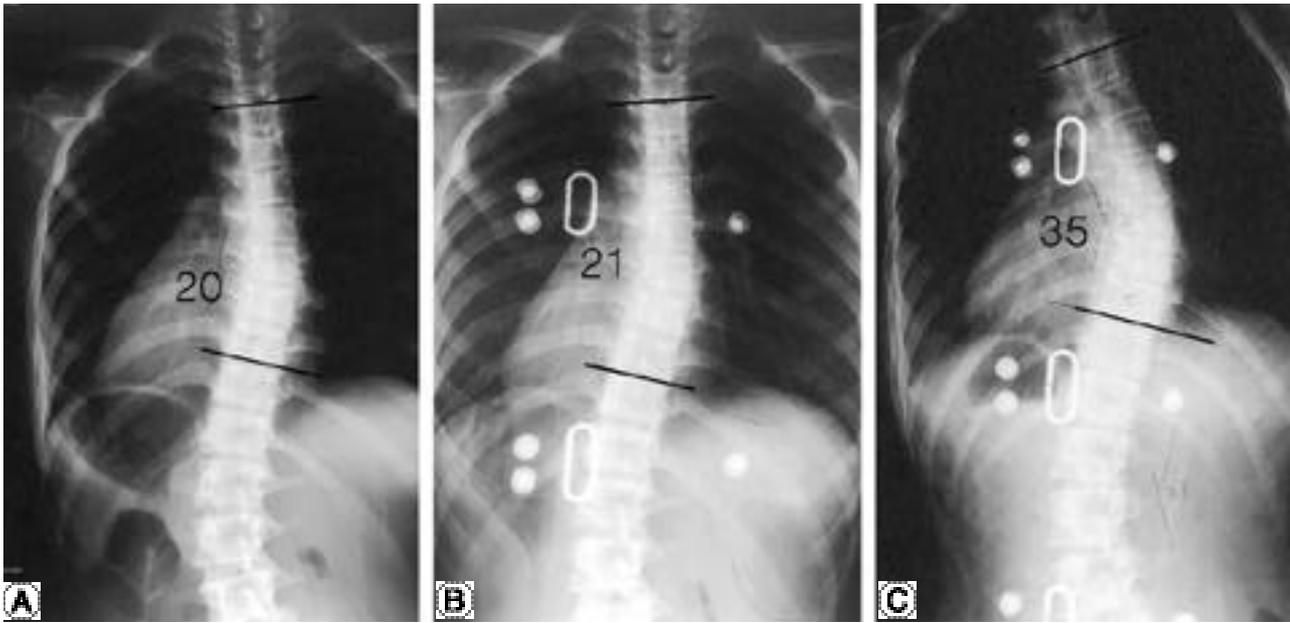


Fig. 4. A. Right thoracic curve of 20 degrees in the prebrace.
 B. The Cobb 's angle was 21 degrees after 3days in the treatment with classic orthosis.
 C. The Cobb 's angle was increased to 35 degrees after 1year in the treatment with classic orthosis.

Table 1. Summary of cases of group I

No.	Name	Sex	Age	level	Pre Brace	Post Brace	Reduction Angle	Correction Rate(%)	After 1 Year		
									Last Follow up	Reduction Angle	Correction Rate(%)
1	S.H.R.	F	11	T5-T12	30	4	26	86	0	30	100
2	L.H.R.	F	12	T4-T10	29	9	20	68	15	14	48
3	H.D.R.	F	13	T6-T11	24	10	14	58	4	20	83
4	K.D.J.	F	13	T4-T9	25	18	7	28	15	10	40
5	L.B.R.	F	13	T12-L4	40	16	24	60	17	13	32
6	A.J.H.	F	13	T6-T11	31	20	11	35	16	15	48
7	J.S.M.	F	13	T7-L2	17	1	16	94	0	17	100
8	J.E.H.	F	12	T12-L3	41	35	6	14	28	13	31
9	H.S.A.	F	11	T5-T10	34	15	19	55	25	9	26
10	K.D.J.	M	12	T6-T12	26	10	16	61	7	19	73
11	K.S.A.	F	12	T11-L3	27	0	27	100	9	18	66
12	L.A.R.	F	12	T4-T9	39	26	13	33	27	12	30
13	K.Y.J.	F	12	T12-L3	30	24	6	20	23	7	23
14	K.H.R.	F	13	T10-L3	26	3	23	88	5	21	80
15	N.D.W.	M	10	T4-T11	37	24	13	35	13	3	12
16	N.S.J.	F	13	T8-L2	28	12	16	57	18	10	35
17	H.E.Y.	F	13	T10-L4	40	17	23	57	18	12	30
18	K.H.S.	F	12	T5-T10	35	13	22	62	13	22	62
19	J.J.H.	F	10	T6-L1	36	18	18	50	20	16	44
20	P.E.M.	F	10	T7-L1	36	2	34	94	4	32	88
21	L.K.A.	F	11	T10-L3	23	1	22	95	3	20	87
Average				12	31.14	13.24	17.90	59.52	13.33	15.38	54.19

Table 2. Summary of cases of group II

No.	Name	Sex	Age	level	Pre Brace	Post Brace	Reduction Angle	Correction Rate(%)	After 1 Year		
									Last Follow up	Reduction Angle	Correction Rate(%)
1	K.K.A.	F	12	T12-L3	25	21	4	16	23	2	8
2	C.N.S.	F	13	T11-L3	20	16	4	20	18	2	10
3	H.J.T.	F	13	T4-12	30	28	2	6.7	26	4	13.3
4	L.M.A.	F	13	T6-11	35	30	5	6	32	3	8.5
5	P.E.Y	F	14	T6-11	36	33	3	8.3	34	2	5.5
6	P.K.S.	F	14	T10-L2	29	24	5	17.2	26	3	10.3
7	N.M.H.	F	12	T6-L1	28	21	7	25	22	3	10.7
8	A.D.S.	F	13	T6-12	26	23	3	11.5	22	4	15.3
9	K.M.M.	F	14	T12-L3	31	21	10	32.3	23	8	25.8
10	K.E.A.	F	13	T5-10	28	19	9	32.1	22	6	21.4
11	C.E.Y.	F	12	T7-L1	43	41	2	4.6	43	0	0
12	L.H.R.	M	11	T8-L2	25	23	2	8	22	3	13.1
13	L.J.A.	F	13	T6-11	34	30	4	11.8	30	4	11.7
14	H.E.S.	F	13	T4-9	31	26	5	16.1	27	4	11.8
15	J.Y.S.	M	14	T11-L3	31	25	6	19.4	27	4	12.9
16	J.E.Y.	F	13	T7-L2	31	21	10	32.3	23	8	25.8
17	L.E.A.	F	12	T4-T10	20	21	-1	-5	35	-14	-70
Average			13		29.59	24.88	4.71	15.43	26.76	2.71	7.89

principle) (3) total contact 가 .

(4) 가 15 . 9) 36

, Boston brace Boston 가 40% .

,) Bunnell 3)

1979 Drennen 8) tho- halo- 가 group I 54.1% .

racic suspension orthosis .

pelvic traction 가 78% group II 7.8% 가

Bunnell 3) . 1980 Risser cast 가

Cotrel molding plastic jacket 가 70% 3)

cast frame localizer . , ,

strap . strap 가 가 .

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