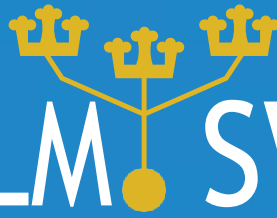




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PODIUM PRESENTATION ABSTRACTS

134. BRACING IMPROVES CURVES AND AESTHETICS IN RISSER3-4 ADOLESCENTS WITH 30 TO 45° CURVES. RETROSPECTIVE RESULTS FROM A COHORT OF 1104 CONSECUTIVE PATIENTS

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Hypothesis

Bracing can help Risser 3-4, 30-45° adolescents with idiopathic scoliosis (AIS) to achieve 1) curve reduction (with reduced risks in adulthood) and 2) improved aesthetics.

Design

Retrospective analysis of prospective clinical data (2003 to 2021).

Introduction

The SRS (Richards 2005) developed criteria that provided the minimum standards for bracing research, but 1) they could not be standard for clinical practice, and 2) research should test new hypotheses. The SOSORT-SRS research criteria (Negrini 2014) state that, when surgery is avoided, the aim of treatment is to achieve at the end of growth a curve below or as close as possible to 30° Cobb to minimize risks in adulthood (progression, pain).

Methods

Inclusion: IS, age 10-18, primary curve 30-45°, females > 1-year post menarche, first consultation at our Institute. Exclusion: still in treatment. Treatment: brace (SPoRT concept) ≥18 hours/day w/o Physiotherapeutic Scoliosis Specific Exercises (PSSE) (SEAS school). Controls: PSSEs or continuing brace weaning. Outcome measures: °Cobb, °ATR, TRACE index (aesthetics). Observations: start and end of treatment; in and post brace. Statistics: paired t-test for continuous variables and Chi-square for proportions. Level of significance $p < 0.05$.

Results

Of a cohort of 1104 consecutive AIS, 14 did not accept inclusion and 248 were in treatment (IT). We found 78 controls (9%) and 764 treated, but 176 dropped out (DO 23%). At baseline, controls showed less pathology and risk (age +1 year, -3° Cobb). Results showed curve and aesthetics statistically significant improvements (-4.2° Cobb, -2.2° ATR, -2.6/11 TRACE) and clinically significant positive changes (52% reduction ≥5° Cobb) greater in all groups than in controls (Table). At the end of observation, DO and IT had the same results as treated.

Conclusion

Bracing provides curves' reduction and aesthetics improvement of 30-45° Risser 3-4 AIS more than control (PSSEs or continued brace weaning), even if the drop-out rate is important. Of note: controls were older (more stable) and with less curve than other groups. In a previous identical study of Risser 0-2 patients, we found similar in-brace but better end results due to correction hold during weaning at a younger age. Results show in the treated group average improvements and clinically significant positive changes greater than in the control group in all parameters.

		Braced		Controls		Drop-out		In treatment	
		Average (SD)	# (%)	Average (SD)	# (%)	Average (SD)	# (%)	Average (SD)	# (%)
Baseline	Age	14.5 (1.4)	15.0 (1.3)	<0.001	14.5 (1.3)	NS	14.8 (1.8)	NS	
	Age menarche	12.8 (0.8)	13.0 (0.7)	NS	12.8 (0.7)	NS	12.8 (0.8)	NS	
	Main thoracic curve	32.0 (2.1)	31.0 (2.0)	NS	32.0 (2.1)	NS	32.0 (2.1)	NS	
	Main lumbar curve	30.0 (2.0)	30.0 (2.0)	NS	30.0 (2.0)	NS	30.0 (2.0)	NS	
	Incl. angle	18.0 (1.5)	18.0 (1.5)	NS	18.0 (1.5)	NS	18.0 (1.5)	NS	
	Weight	53 (12)	53 (12)	NS	53 (12)	NS	53 (12)	NS	
Cobb degrees	Start	37 (3)	34 (4)	<0.001	37 (3)	NS	37 (3)	NS	
	In-brace	28 (1)	28 (1)	NS	28 (1)	NS	28 (1)	NS	
	Post-brace	31 (2)	31 (2)	NS	31 (2)	NS	31 (2)	NS	
	End	31 (2)	31 (2)	NS	31 (2)	NS	31 (2)	NS	
	#	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
	Improved >5°	30.0 (2.1)	30.0 (2.1)	<0.01	30.0 (2.1)	NS	30.0 (2.1)	NS	
	Progressed >5°	4.0 (1.0)	4.0 (1.0)	NS	4.0 (1.0)	NS	4.0 (1.0)	NS	
	End <30°	20.0 (2.0)	20.0 (2.0)	NS	20.0 (2.0)	NS	20.0 (2.0)	NS	
	End <45°	34.0 (2.0)	34.0 (2.0)	NS	34.0 (2.0)	NS	34.0 (2.0)	NS	
ATR degrees	Start	11 (4)	8 (3)	<0.001	11 (4)	NS	11 (4)	NS	
	Post-brace	8 (3)	8 (3)	NS	8 (3)	NS	8 (3)	NS	
	End	8 (3)	8 (3)	NS	8 (3)	NS	8 (3)	NS	
	#	<0.001	NS	<0.001	<0.001	<0.001	<0.001		
	Improved >2°	30.0 (2.1)	34.0 (2.1)	<0.01	30.0 (2.1)	NS	30.0 (2.1)	NS	
	Worsened >2°	10.0 (2.0)	10.0 (2.0)	NS	10.0 (2.0)	NS	10.0 (2.0)	NS	
Aesthetics (TRACE points)	Start	7 (2)	6 (2)	<0.001	7 (2)	NS	7 (2)	NS	
	Post-brace	4 (2)	4 (2)	NS	4 (2)	NS	4 (2)	NS	
	End	4 (2)	4 (2)	NS	4 (2)	NS	4 (2)	NS	
	#	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		
	Improved >3p	30.0 (2.1)	34.0 (2.1)	<0.01	30.0 (2.1)	NS	30.0 (2.1)	NS	
	Worsened >3p	2.0 (1.0)	2.0 (1.0)	NS	2.0 (1.0)	NS	2.0 (1.0)	NS	
Average results	Cobb in	deg	-11.8 (5.4)	-12.2 (5.5)	NS	-11.7 (5.4)	0.0001		
	Cobb post	deg	-12.8 (5.4)	-12.8 (5.5)	NS	-12.7 (5.4)	0.0018		
	Cobb end	deg	-12.2 (5.1)	-12.2 (5.2)	<0.01	-12.2 (5.1)	0.1330		
	ATR	deg	-2.2 (1.1)	-2.2 (1.1)	<0.001	-2.2 (1.1)	0.0001		
	TRACE	points	-2.6 (1.1)	-2.6 (1.1)	<0.001	-2.6 (1.1)	0.1330		