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Effect of Preoperative SpineCor® Treatment on Surgical Outcome in Idiopathic Scoliosis: An Observational Study

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Background: Idiopathic scoliosis is a three-dimensional deformity of the spine. We investigated the effect of preoperative treatment with SpineCor® dynamic brace on the efficiency of surgical correction from a posterior approach in adolescent idiopathic scoliosis.

Material/Methods: This was a retrospective observational study. Participants were 53 girls who underwent surgery from posterior approach due to idiopathic adolescent scoliosis, divided into a study group (Group A, 27 girls) and a control group (Group B, 26 girls). Girls in the study group had previously undergone treatment with the SpineCor® brace. Outcome measures were amount of correction and coronal balance based on anteroposterior plain radiographs obtained prior to surgery, at 1 week after surgery, and at 12 months after surgery.

Results: In both groups, satisfactory deformity correction was achieved after surgery (Group A, 73%±12 *vs.* Group B, 68%±16) and at 12-month follow-up (75%±12 *vs.* 68%±12, respectively), with no statistically significant differences identified. Directly after surgery, patients preoperatively treated with the SpineCor® brace displayed smaller coronal balance deviation compared with the preoperative measurement, with significant differences in the outcome achieved at 1 week after surgery in Group B. At 12-month follow-up, both groups had significant coronal balance improvement.

Conclusions: This is the first study assessing the effect of dynamic brace treatment on scoliosis surgery. The study shows that a history of preoperative treatment with the SpineCor® dynamic brace does not affect the amount of the achieved correction of AIS directly after surgery or at 12-month follow-up, but it does facilitate faster restoration of normal coronal balance.

MeSH Keywords: Braces • Orthopedics • Postural Balance • Scoliosis

Full-text PDF: https://www.medscimonit.com/abstract/index/idArt/912228

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The Journal of Physical Therapy Science

Case Study

Is early treatment for mild adolescent idiopathic scoliosis superior over the traditional 'watch & wait' approach? A case report with long-term follow-up

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Abstract. [Purpose] To present a case of the complete correction of mild suspected adolescent idiopathic scoliosis in support of the argument that early aggressive treatment is superior to the traditional 'watch & wait' approach. [Subject and Methods] A 9-year-old female presented with a 14° thoracic curve indicative of early adolescent idiopathic scoliosis. The parents consented to immediate and early treatment with the SpineCor dynamic and corrective scoliosis brace. The brace was worn 20 hours per day and check-ups were performed every three months. [Results] The patient achieved complete correction of the thoracic curve within 9-months. The child was followed for 4.5 years until she approached near cessation of skeletal growth (Risser sign grade 4) at the age of 14 years, 4-months. The patient's spine remained straight throughout the follow-up. [Conclusion] This report as well as others suggests that the SpineCor bracing system is a unique and effective intervention for mild scoliosis. Further, this case illustrates an ideal outcome and supports the argument that initiating treatment at the earliest indication of suspected idiopathic scoliosis should offer superior outcomes versus the traditional 'watch & wait' approach. Last, radiation exposures associated with radiography for scoliosis treatment and management are negligible and not harmful.

Key words: Adolescent idiopathic scoliosis, Scoliosis brace, Watch and wait

(This article was submitted Dec. 12, 2017, and was accepted Feb. 7, 2018)

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ORIGINAL PAPER

Application of the SPINECOR dynamic corrective brace in treating idiopathic scoliosis

Zastosowanie gorsetu dynamicznego Spine Cor w leczeniu idiopatycznego skrzywienia kręgosłupa

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Department of Pediatric Orthopedics and Traumatology, PMU in Szczecin

Abstract

Introduction. The indication for using an orthopedic corset is idiopathic scoliosis in children and adolescents with undeveloped osteoarticular system with a Cobb angle within 20-45°. For over 10 years, apart from the TLSO corset, the Spinecor dynamic brace has also been used. Observations and reports in literature from this period prove that their effectiveness in the treatment of scoliosis is comparable or even higher than the existing methods of conservative treatment. The aim of the study is to evaluate the effectiveness of correction of scoliosis using SpineCor dynamic brace.
Materials and method. The study included 84 patients who used a dynamic corset to treat idiopathic scoliosis. The average age at the start of treatment was 12 years and 4 months. The treatment was continued for a minimum of 12 months, assessing the angle of scoliosis before treatment, when using the brace and 6 months after its discontinuation. The correction of the angle of scoliosis by more than 5° was considered to be a positive treatment outcome, as was the stabilization of scoliosis, i.e. scoliosis maintained at the same angle as before treatment (Cobb angle change less than 5°). Progression of scoliosis by an angle exceeding 5° was considered a negative treatment outcome.
Results. In the study group satisfactory results of Spinecor brace treatment were obtained in 68 patients (81%), 40 patients out of those 68 (48%) achieved scoliosis stabilization, and 28 patients achieved scoliosis correction (33%). In 16 patients (19%) treatment outcome was unsatisfactory. Three patients in the group with unsatisfactory treatment required surgical correction of scoliosis.
Conclusions. 1. In the group of 84 patients, a good outcome, correction or stabilization of scoliosis was obtained in 81% of patients receiving treatment 2. Nearly 90% of patients accepted and followed the recommendations of dynamic brace treatment.

Key words: scoliosis, dynamic brace, spinecor

Difference Between Spinecor Brace And Thoracolumbosacral Orthosis For Deformity Correction And Quality Of Life In Adolescent Idiopathic Scoliosis

2016, Nº 4 (Vol. 82/4) p.710-714
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From the Gulhane Military Medical Academy, Turkey

Abstract:

Although there are several conservative treatment options, only bracing has been found to be effective in preventing curve progression and a subsequent need for surgery in adolescent idiopathic scoliosis. The objective of this study is to compare the results of SpineCor brace and thoracolumbosacral orthosis (TLSO) for treatment of adolescent idiopathic scoliosis radiologically and clinically. Sixty-four patients with adolescent idiopathic scoliosis treated with brace included in this study. Height, T1-Coccygx distance, and gibbosity were measured. Rib hump deformity was evaluated with a scoliometer. An SRS-22 questionnaire was used to determine the quality of life of patients after the first year of brace treatment. Differences in Cobb angles and gibbosity were insignificant for both groups. SRS-22 questionnaire results showed significant differences in pain, self-image and function/activity subgroups. Patients' mental health and satisfaction scores were insignificant. These braces have a similar effect on deformity correction. The surgery rates and success rates of braces are approximately equal. The major difference between SpineCor and TLSO is health-related quality of life.

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EUR J PHYS REHABIL MED 2014;50:1-2

A prospective randomized controlled trial of the natural history of idiopathic scoliosis versus treatment with the spinecor brace

[[Sosort 2011 Award Winner]]

C. COILLARD, A. B. CIRCO, C. H. RIVARD

Sainte Justine Hospital, Montréal, QC, Canada

Aim. **The purpose of this randomized controlled trial was to evaluate the efficacy of the Dynamic SpineCor brace for early idiopathic scoliosis (15°-30°) compared to the natural evolution of the disease. 68 patients participated in this study (32 treated and 36 controls) with at least 5 years follow-up.**

Methods. **The inclusion criteria were: 1) high risk of evolution: family history and/or proven progressive; 2) no significant pathological malformation of the spine; 3) initial Cobb angle between 15° and 30°; 4) risser 0, 1 or 2. Assessment of brace efficacy included the percentage of patients who have 5° or less curve progression and the percentage of patients who have 6° or more progression at skeletal maturity.**

Results. **At five-year follow-up a correction was achieved in 50% of treated patient and only in 9.5% of controls, stabilization in 42.3% treated and 47.7% in controls and progression in 26.9% for the treated group and 42.8% for controls. For the control patients we considered as a failure if the Cobb angle worsened by more then 5° from the original angle and the patient then received treatment.**

Conclusion. **The results 5 years after the treatment suggested that the SpineCor brace reduced the probability of the progression of early idiopathic scoliosis comparing with its natural history. Moreover, the positive outcome appears to be maintained in the long term.**

KEY WORDS: Scoliosis - Braces - Spine.

Coillard et al. Scoliosis 2013, 8(Suppl 1):O47
http://www.scoliosisjournal.com/content/8/S1/O47

Scoliosis

ORAL PRESENTATION Open Access

A prospective interventional cohort study of 175 patients treated by the SpineCor orthosis, following the Scoliosis Research Society Criteria

C Coillard*, A Circo, CH Rivard

From 9th International Conference on Conservative Management of Spinal Deformities - SOSORT 2012 Annual Meeting
Milan, Italy. 10-12 May 2012

Background
The mainstay of the conservative treatment still remains the orthosis, which was demonstrated to provide a reduction of curve progression, possibly a decrease in the need for surgery, and sometimes a correction of the existing deformity. The effectiveness of the SpineCor orthosis compared with the natural history of the disease has already been shown for milder and moderate curves[1].

Aim
To provide confirmation on the demonstrated effectiveness of the Dynamic SpineCor orthosis for adolescent idiopathic scoliosis, following the standardized criteria proposed by the SRS Committee on Bracing and Nonoperative Management[2], and to confirm the stability of the results two years after the end of the treatment.

Method
From 1993 to 2011, 390 patients treated using the SpineCor orthosis respected the criteria for inclusion recommended by the SRS committee. 198 have a definitive outcome, and 175 have at least 2 years of follow-up.

Assessment of brace effectiveness included; 1) percentage of patients who have 5 degree or less curve progression, and the percentage of patients who have 6 degree or more progression at skeletal maturity, 2) percentage of patients who have had surgery recommended/undergone before skeletal maturity, 3) percentage of patients with curves exceeding 45 degree at maturity (end of treatment) and 4) 2-years follow-up beyond maturity to determine the percentage of patients who subsequently underwent surgery.

Results
At two years post skeletal maturity, successful treatment (correction >5 degree or stabilization ±5 degree) was achieved in 100 patients of the 175 patients (57.2%) from the time of the fitting of the SpineCor orthosis to the 2 years follow-up point. 41 immature patients (23.4 %) required surgical fusion.(34 while receiving treatment and 5 in the follow-up period).

Conclusions
The SpineCor orthosis is effective for the treatment of adolescent idiopathic scoliosis. Positive outcomes are maintained after the weaning of the orthosis, since 86.1% of the patients stabilized or corrected their Cobb angle. Moreover, out of the 86.1%, 11.7 % of the patients still had correction of their Cobb angle 2 years after the end of the treatment.

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Ste-Justine Hospital, Montreal, Canada

Sarchioto *Scoliosis* 2013, **8**(Suppl 1):P11
http://www.scoliosisjournal.com/content/8/S1/P11

Scoliosis

POSTER PRESENTATION **Open Access**

First experiences in the treatment of juveniles and idiopathic scoliosis with SpineCor braces

A Sarchioto

From 9th International Conference on Conservative Management of Spinal Deformities - SOSORT 2012 Annual Meeting
Milan, Italy. 10-12 May 2012

Background

The standardized treatment of juvenile, and adolescent, idiopathic scoliosis is accepted everywhere: physiotherapy for curves until 15-20° Cobb, rigid brace between 20 and 30-35° Cobb, cast between 30 and 40-45° Cobb and surgery over 45° Cobb.

Aim

The aim of this work is to verify the efficacy and effectiveness of the SpineCor dynamic brace, in juvenile and adolescent idiopathic scoliosis with curves between 20 and 50° Cobb.

Methods

All patients (range of age 5 to 15 years) were treated with a SpineCor dynamic brace. All braces were ordered, fitted and used, following the standard canons of the appropriate procedure. A photographic control was carried out, just after fitting, a clinical control in a month, a clinical and photographic in three months, and a clinical, photographic and radiographic in six months.

Results

Over 90% of patients had a very important change in their posture and cosmetic appearance. None of them left the treatment.

Conclusion

The SpineCor dynamic brace used is efficient and effective. Because it does not limit any movement, and allows practicing all sports, (but swimming), and dance, and since it is virtually invisible under clothing, no patient has complained of the treatment. Both patients and parents were satisfied. This good result allows, and encourages, us to continue in using this brace.

Published: 3 June 2013

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ASL BN1, Benevento, Italy

Ersen et al. Scoliosis 2013, 8(Suppl 1):P8
http://www.scoliosisjournal.com/content/8/S1/P8

Scoliosis

POSTER PRESENTATION Open Access

Difference between spinecor brace and rigid brace during treatment

Ö Ersen*, B Bilekli, S Bilgic, E Oguz, A Sehirlioglu

From 9th International Conference on Conservative Management of Spinal Deformities - SOSORT 2012 Annual Meeting
Milan, Italy. 10-12 May 2012

Background
Brace treatment in idiopathic scoliosis is the only efficacious method of non operative treatment. The effectiveness of dynamic SpineCor brace with corrective movement principle has been shown, but differences between rigid braces and SpineCor brace is still unclear.

Aim
The aim of this study is to evaluate differences between rigid brace and SpineCor brace in terms of curve progression, spinal height increase, and SRS-22 questionnaire during treatment.

Methods
A total of 76 consecutive adolescent idiopathic scoliosis patients who were treated with brace were included in this study. 45 patients were treated with SpineCor brace, 31 patients were treated with rigid braces. After detailing braces and their costs, choice was made by patients' family. Patient's height, T1-Coccyx distance, gibbosity, and Cobb angles were documented at the beginning of the treatment and last control. At last visit SRS-22 questionnaire applied to the patients to evaluate clinical effect of braces.

Results
Average age of SpineCor group was 12.8±1.5 and average follow up period was 25±10.6 months. In rigid brace, the group average age was 12.2±1.3 and average follow up period was 23±6.7months. There were no differences between groups according to age, gender, height, T1-Cx distance, Cobb angles, gibbosity before brace treatment initiated. In both groups, height and T1-Cx distance increased and there were no difference. Cobb angle decreased 1.5° in SpineCor group and increased 1.1 ° in rigid brace group (p=0,137). Gibbosity decreased 0.6° in SpineCor group and increased 0.3° in rigid brace group (p=0,086). According to SRS-22 questionnaire, SpineCor brace patients' pain, self image and activity/function scores were statistically better than rigid brace patients' scores, while mental health and satisfaction from treatment scores were similar.

Conclusions
Although SpineCor brace and rigid braces have similar effects on curve correction, height and spinal height, the real benefits of SpineCor brace is less pain, less anxiety about self image and more activity, and function.

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Published: 3 June 2013

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ARTYKUŁ ORYGINALNY / ORIGINAL ARTICLE

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Ocena radiologiczna wyników leczenia dzieci z idiopatyczną skoliozą kręgosłupa za pomocą dynamicznego gorsetu SpineCor

Radiological Evaluation of Treatment with SpineCor Brace in Children with Odiopathic Spinal Scoliosis

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STRESZCZENIE

Wstęp. Celem pracy była radiologiczna ocena efektów leczenia dzieci z idiopatyczną skoliozą kręgosłupa z zastosowaniem dynamicznego gorsetu SpineCor w porównaniu z grupą kontrolną poddaną jedynie rehabilitacji w okresie 24 miesięcy. Oceniono także stosowanie się leczonych gorsetem do zaleceń lekarskich.

Materiał i metody. Prospektywnej ocenie poddano 40 dzieci leczonych gorsetem SpineCor z powodu idiopatycznej skoliozy. Grupę kontrolną stanowiło 40 dzieci poddanych obserwacji. Wiek dzieci wynosił średnio 12,0 lat, a 66 spośród nich stanowiły dziewczynki. Obie grupy były porównywalne pod względem danych demograficznych i parametrów radiologicznych skoliozy. Średnia wartość skoliozy w odcinku piersiowym wynosiła 25,3˚, a w odcinku lędźwiowym 26,1˚.

Wyniki. W grupie stosującej gorset stabilizację skoliozy lub poprawę uzyskano w 31 (78%), zaś progresję w 9 (22%) przypadkach. W grupie kontrolnej stabilizację stwierdzono w 21 (53%), a progresję w 19 (47%) przypadkach, żadne z dzieci nie spełniało kryteriów poprawy. Wykazano mniejszą zmianę kąta skrzywienia w odcinku piersiowym (R=0,34, p=0,0001), lecz nie w odcinku lędźwiowym kręgosłupa (R=0,15, p=0,18) w grupie leczonej gorsetem w stosunku do grupy kontrolnej. Spośród 40 dzieci, 38 regularnie nosiło gorsety. W 4 przypadkach dzieci te uczestniczyły w sportach na poziomie ponad rekreacyjnym.

Wnioski. 1. Leczenie idiopatycznej skoliozy kręgosłupa u dzieci za pomocą dynamicznego gorsetu SpineCor istotnie częściej prowadzi do stabilizacji lub korekcji skoliozy, w płaszczyźnie czołowej i horyzontalnej, zwłaszcza w odcinku piersiowym kręgosłupa. 2. Stwierdzono także wysoki (95%) odsetek współpracy z chorymi dziećmi.

Słowa Kluczowe: skolioza idiopatyczna, gorset SpineCor, leczenie zachowawcze, wyniki, RTG

SUMMARY

Background. This paper reports on a radiological evaluation of the outcomes of treatment with the SpineCor brace in children with idiopathic spinal scoliosis vs. a control group who had only received 24 months of rehabilitation. The compliance of the SpineCor-treated patients with medical instructions was also assessed.

Material and methods. A prospective evaluation encompassed a group of forty (40) children, treated with a SpineCor brace for idiopathic scoliosis. A control group included forty (40) children who were followed up. The mean age of the children was 12.0 years and sixty-six (66) of the patients were girls. The study group and the control group were comparable in terms of demographic data and radiological parameters of scoliosis. The mean scoliosis angle was 25.3˚ and 26.1˚ in the thoracic and lumbar spine, respectively.

Results. In the (SpineCor-treated) study group, stabilisation or improvement of the scoliosis was obtained in 31 (78%) patients, while progression was noted in 9 (22%). In the control group, stabilisation was found in 21 (53%) patients and progression in 19 (47%), while none of the children met improvement criteria. In the brace-treated group, a smaller change in the thoracic curvature angle was observed (R=0.34, p=0.0001) than in the control group, while no such difference was identified at the lumbar spine level (R=0.15, p=0.18). Out of the 40 treated children, 38 used the brace regularly. Four of the children were active in sports above recreation level.

Conclusions. The treatment of idiopathic spinal scoliosis in children by means of the SpineCor dynamic brace solution significantly more frequently led to stabilisation or correction of scoliosis as measured by Cobb's angle. A high compliance of the children and their parents was also observed.

Key words: idiopathic scoliosis, SpineCor brace, conservative treatment, results, radiography

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Original Article

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Clinical assessment of the efficacy of SpineCor brace in the correction of postural deformities in the course of idiopathic scoliosis

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Summary

Background: The objective of the study was to perform a clinical, comparative assessment of the degree of postural deformities before and after the treatment of idiopathic scoliosis in patients treated with SpineCor brace compared to the control group.

Material/Methods: A group of 90 children with idiopathic scoliosis (including 74 girls) at the average age of 12.2 was subject to prospective observation. Average pre-treatment Cobb angle was 24.9° in the thoracic spine and 25.8° in the lumbar spine. The group actively treated with the SpineCor brace consisted of 45 children, while the control group consisted of the remaining 45 children with the natural course of the disease.

Results: Both groups did not differ significantly in terms of age, gender, height, body weight, Risser sign of skeletal maturity and baseline clinical and radiological parameters of scoliosis. Significant reduction of rib hump was observed upon 2-year SpineCor brace treatment (P=0.04) compared to the group treated by physiotherapy only (P=0.91). Similarly, improvement in lumbar prominence was observed in the actively treated group (P=0.009), with a trend towards worse results in the control group (P=0.07) In the group treated with the SpineCor brace, significant reduction in pectoral and hamstring muscle contractures as well as reduction in shoulder asymmetry and reduction in anterior and posterior vertical deviation were observed.

Conclusions: Treatment using the SpineCor dynamic brace leads to a clinical improvement in posture, particularly to reduction in rib hump, lumbar prominence and muscular contractures.

THE SPINECOR BRACE IN THE TREATMENT OF SCOLIOSIS: THE PERTH EXPERIENCE

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INTRODUCTION

Bracing is a generally accepted form of treatment for scoliosis in skeletally immature individuals with Cobb angle of more than 20 deg. The efficacy of bracing is rather more controversial, mainly due to issues with study design and methodology. Compliance is also a major concern with the rigid bracing systems such as the Boston brace. We present our experience with the SpineCor bracing system, which is a low profile system that is also less restrictive. This dynamic system relies on the patients' corrective movements and also offers rotational correction.

METHODS

This is a retrospective case-note and radiological study with prospective data collection. Data collected include Risser scores, Cobb angles and conversion rates to rigid braces and to surgery. The SpineCor cohort is compared to a rigid brace cohort used as a historical case control series. All patients were treated in one institution by 2 surgeons and were under the care of 1 orthotist throughout their duration of treatment.

RESULTS

A total of 29 patients have completed treatment with this brace at the time of this study. Risser score at start of treatment was 2 or less in almost all patients. Average time in brace was 16 months (4-38). Only 4 out of the 29 patients went on to progress by more than 5 deg (13.8%). 5 patients ended up requiring surgery (17.2%). 9 patients were converted to a rigid brace and 3 of these went on to have a surgical correction and fusion. The average correction in the group that was treated exclusively with the SpineCor brace was a decrease in Cobb angle of 5.6 deg (-26 to 8).

CONCLUSIONS

Our progression rate of 13.8% compares favourably with the expected progression rate of 68% in this group. Our surgical conversion rate was also low at 17.2% - which compares favourably to the expected rate of 60%. Our control group, which was treated with a modified Boston type rigid brace showed a progression of more than 5 deg in 13 out of 32 patients (40.6%) and a surgical conversion rate of 11 patients (34.4%). We conclude that the SpineCor brace is an effective device for the brace management of scoliosis in a select group of patients. It is also potentially less restrictive and hence could encourage better compliance rates.

(Unpublished Paper - 2013)

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RESULTS OF SPINECOR DYNAMIC BRACING FOR IDIOPATHIC SCOLIOSIS

Szwed A, Kołban M.

Source

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Abstract

Background:
Orthopedic bracing is used in conservative treatment of spinal curvatures. Apart from rigid braces, SpineCor dynamic braces with a flexible design have recently become available. The idea behind dynamic bracing is that derotational and correcting forces are transmitted via a system of corrective bands. The essence of this technique is maintenance of spine mobility while effecting a position in which all components of the three-plane deformity are corrected.The aim of this study is to evaluate early outcomes of SpineCor dynamic brace treatment for idiopathic scoliosis according to SRS methodology and criteria.

Material And Methods:
The study group included 50 patients who were using SpineCor braces due to idiopathic scoliosis. The indication for bracing was the finding of a >15° spinal curvature in skeletally immature patients (Risser grade 0-3). Correction or stabilization of the scoliosis (Cobb angle change of ±5°) were recognized as positive outcomes, while a negative outcome was defined as progression of the curve of more than 5° or to a value necessitating operative treatment. The study group was divided in to subgroups at enrollment, according to gender and degree of scoliosis.

Results:
In the entire study group, correction was demonstrated in 24 patients (48%), stabilization in 14 (28%) and progression in spite of bracing occurred in 7 patients (14%). Five patients in the entire study group (10%) required operative treatment due to rapid curvature progression.

Conclusions:
SpineCor bracing leads to stabilization of scoliosis in the majority of the patients. Introducing the SpineCor brace in patients with a scoliosis angle over 20° and Risser grade 0-3 very effectively prevented curve progression.

Herrero and Herrero *Scoliosis* 2012, **7**(Suppl 1):O39
http://www.scoliosisjournal.com/content/7/S1/O39

Scoliosis

ORAL PRESENTATION **Open Access**

SpineCor treatment – the Spanish experience. First results

C Herrero*, E Herrero

From 8th International Conference on Conservative Management of Spinal Deformities and SOSORT 2011 Annual Meeting
Barcelona, Spain. 19-21 May 2011

Purpose of the study

The purpose of this study was to evaluate the effectiveness of the Dynamic SpineCor brace as a new treatment for adolescent idiopathic scoliosis [1,2].

Materials and methods

117 scoliotic patients at our clinic accepted the SpineCor brace and 34 (30 females and 4 males) have already finished the treatment. Assessment of brace effectiveness included percentage of patients who have 5° or less curve progression and the percentage of patients who have 6° or more progression at skeletal maturity. We employed the SRS22 and CAVIDRA questionnaire for the evaluation of patients' quality of life while using the SpineCor System.

Results

Success of the treatment (stabilisation or correction) was achieved in 88.3% of patients and only 11.7% had a progression of their Cobb angle. Out of 34 patients, 18 (52.9%) had a correction and 12 (35.3%) had a stabilisation of their initial Cobb.

Conclusions

The SpineCor brace is an effective treatment for the adolescent idiopathic scoliosis. Even though until now we have a small number of patients treated, the results are extremely promising.

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Scoliosis

ORAL PRESENTATION Open Access

A prospective randomized study of the natural history of idiopathic scoliosis versus treatment with the SpineCor brace

C Coillard*, A Circo, C Rivard

From 8th International Conference on Conservative Management of Spinal Deformities and SOSORT 2011 Annual Meeting
Barcelona, Spain. 19-21 May 2011

Background
The purpose of this randomized study was to evaluate the effectiveness of the Dynamic SpineCor brace [1,2] for early adolescent idiopathic scoliosis (15°-30°) compared to the natural evolution of the disease. 47 patients participated in this study (26 treated and 21 controls).

Material and methods
The inclusion criteria where: 1) High risk of evolution: family history and/or proven progressive 2) No significant pathological malformation of the spine; 3) Girl or boy; 4) Initial Cobb angle between 15° and 30°; 5) Risser 0, 1 or 2. Assessment of brace effectiveness included; 1) percentage of patients who have 5° or less curve progression and the percentage of patients who have 6° or more progression at skeletal maturity, 2) percentage of patients who have had surgery recommendation/undergone before skeletal maturity.

Results
At three years follow up a correction was achieved in 50% of treated patient and only in 9.5% of controls, stabilization in 23.1% treated and 33.4% in controls and progression in 26.9 % for the treated group and 59.1% for controls. Three immature patients required surgical fusion while receiving treatment (11.5%) as well as 3 control patients (14.3%). For the control patients we considered as a failure if the Cobb angle worsened by more then 5° from the original angle and the patient then received treatment.

Conclusions
The SpineCor brace is effective for the treatment of early adolescent idiopathic scoliosis comparing with its natural history. Moreover, the positive outcome appears to be maintained in the long term.

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ORAL PRESENTATION Open Access

Effectiveness of the SpineCor treatment for large scoliotic curves compared to moderate and small curves

C Coillard*, A Circo, C Rivard

From 8th International Conference on Conservative Management of Spinal Deformities and SOSORT 2011 Annual Meeting
Barcelona, Spain. 19-21 May 2011

Background
The purpose of this retrospective cohort study was to evaluate the effectiveness of the Dynamic SpineCor brace for large adolescent idiopathic scoliosis (40°-50°) compared to moderate (30°-40°) and small curves (15°-30°) [1,2].

Materials and methods
657 consecutive scoliotic patients that accepted the treatment and had a definite outcome were included in this study. We divided the patients in tree groups depending on the initial Cobb angle: 15-29° (n=378), 30-39° (n=207) and 40-50° (n=72).

Assessment of brace effectiveness included; 1) percentage of patients who have 5° or less curve progression and the percentage of patients who have 6° or more progression at skeletal maturity, 2) percentage of patients who have had surgery recommendation before skeletal maturity.

Results
Success of the treatment (stabilisation or correction) was achieved in 80.8% of patients with small curves compared to 62.9% for moderate and 46% for large curves. Progression of curves was observed in 14% of small curves compared with 28.9% for moderate and 48.5% for large curves. Two years follow-up post treatment 24.2% (for small), 17% (moderate) and respectively 16% (large) of patients that finished the treatment still corrected their Cobb angle without wearing the brace.

Conclusions
The SpineCor brace is effective for the treatment of large adolescent idiopathic scoliosis comparing with moderate curves. Moreover, the positive outcome appears to be maintained in the long term.

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Scoliosis

ORAL PRESENTATION Open Access

SpineCore treatment for idiopathic scoliosis: updates and follow-up results

Christine Coillard, Alin B Circo, Charles-Hilaire Rivard*

From 7th International Conference on Conservative Management of Spinal Deformities
Montreal, Canada. 20-22 May 2010

Introduction

The purpose of this prospective interventional study was to evaluate and confirm the effectiveness of the Dynamic SpineCor brace for idiopathic scoliosis and to evaluate the stability of the spine after the weaning point.

Material and methods

From 1993 to 2009, 949 patients were treated by the SpineCor brace. 576 patients had a definite outcome and 373 are still actively being treated. The assessment of brace effectiveness was done following the outcome criteria recommended by the SRS.

Results

The 576 patients with a definite outcome followed the same pattern of result presented before, 36.3% corrected their Cobb angle with at least 5° and 31.3% had a stabilization of their Cobb angle. Out of all patients with a definite outcome, 16.1 % of patients had surgical recommendation before skeletal maturity and only 9.7% had a progression of their Cobb angle. Looking at the stability of the curves after the end of the treatment, out of the patients that finished the treatment and had at least 2 years of follow-up, 14.5% continued their correction even without the brace and it seems that the correction continues more with time because 33.3% of those patients who had at least 5 years follow-up still corrected their Cobb angle after the weaning of the brace.

Discussion

Comparing the natural history of the disease and the already published literature these results tend to confirm that it is possible to obtain a correction and a stabilization of the pre-treatment Cobb angle and it seems possible to maintain and improve the success 2 and even 5 years after the weaning point. This findings suggest that the SpineCor Bracing System can alter the natural history of the AIS and its use in the conservative treatment of this disease is justified.

Conclusion

In conclusion, the SpineCor brace is effective for the treatment of idiopathic scoliosis. Moreover, the positive outcome appears to be maintained and even improved in the long term.

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Scoliosis

RESEARCH Open Access

SpineCor treatment for Juvenile Idiopathic Scoliosis: SOSORT award 2010 winner

Christine Coillard[1,2], Alin B Circo[1,2], Charles H Rivard[1,2*]

Abstract

Introduction: Juvenile idiopathic scoliosis is a condition used to describe patients who are least 4 years of age but younger than 10 when the deformity is first identified. In these patients, the condition is usually progressive and those that are diagnosed at five years or younger have a high chance of progression to a large curve, with additional pulmonary and cardiac complications. The main form of conservative treatment for juvenile scoliosis is the use of a bracing system. This prospective interventional study was conducted to evaluate the effectiveness of the Dynamic SpineCor orthosis for juvenile idiopathic scoliosis as well as to evaluate the stability of the spine after the weaning point.

Material and Methods: For this study, 150 juvenile patients were treated by the SpineCor orthosis between 1993 and 2009. Of these, 67 patients had a definite outcome and 83 are still actively being treated. To determine the effectiveness of the brace the **OUTCOME** criteria recommended by the SRS was used.

Results: The results from our study showed that of the 67 patients with a definite outcome, 32.9% corrected their Cobb angle by at least 5° and 10.5% had a stabilization of their Cobb angle. Within the patients with a definite outcome, 37.3% of patients where recommended for surgery before authorized end of treatment. For this group of patients, surgery was postponed. Looking at the stability of the curves 2 years after the end of the treatment, we found 12.5% of the patients continued their correction without the brace being used and 71.4% remained stable.

Discussion: From our study we can clearly see that the effectiveness of the SpineCor orthosis in obtaining and maintaining the neuromuscular integration of the corrective movement can be achieved effectively for juvenile patients. Over 75% of all patients that finished the treatment had remained stable with a few continuing to correct their Cobb angle after the use of the SpineCor orthosis was discontinued.

Conclusion: Our conclusion from this study is that the SpineCor orthosis is a very effective method of treatment of juvenile idiopathic scoliosis. The results obtained also indicate that treatment outcomes are better with early bracing. Most encouraging perhaps is the fact that the positive outcome appears to be maintained in the long term, and that surgery can be avoided or at least postponed.

ORIGINAL ARTICLE

A Comparison of Thoracolumbosacral Orthoses and SpineCor Treatment of Adolescent Idiopathic Scoliosis Patients Using the Scoliosis Research Society Standardized Criteria

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Background: SpineCor is a relatively new bracing system that uses dynamic bracing concepts in the treatment of adolescent idiopathic scoliosis (AIS). Limited data are available regarding its effectiveness. This study compared treatment outcomes of 2 groups of AIS patients treated via either a conventional rigid thoracolumbosacral orthoses (TLSO) or a SpineCor nonrigid orthosis.

Methods: We identified 2 scoliosis patient cohorts: 35 patients treated with a TLSO and 32 patients treated with a SpineCor orthosis. All patients included in these groups conformed with the Scoliosis Research Society (SRS) standardized criteria for AIS bracing: (1) Risser ≤ 2, (2) curve magnitude 25 to 40 degrees, (3) age ≥ 10 years. Outcomes were SRS standardized with failure being defined as curve progression ≥ 6 degrees, or ever exceeding 45 degrees, or having surgery recommended before skeletal maturity. All patients were followed through the completion of brace treatment or attainment of other treatment end points. The Yates corrected χ^2 test and unpaired t test were used for data analysis.

Results: The 35 patients (32 girls, 3 boys) in the TLSO group had an average age of 13 years (range: 11.1-16.8) and an average primary curve magnitude of 33 degrees (range: 25-40 degrees). Follow-up averaged 2 years (range: 8-61 m) from the beginning of brace treatment. The 32 patients (28 girls, 4 boys) in the SpineCor group had an average age of 13 years (range: 11-15.2) and an average primary curve magnitude of 31 degrees (range: 25-40 degrees). Follow-up for this group averaged 2 years and 6 months (range: 13-73 mo) from the beginning of brace treatment. No significant difference ($P = 0.75$) was found using the more strict outcome measure (≤ 5-degree curve progression) as the success rates were 60% (21/35) for TLSO and 53% (17/32) for SpineCor. Similarly, no significant difference ($P = 0.62$) was found using the more liberal outcome measure (never reached 45 degrees) as the success rates were 80% (28/35) for TLSO and 72% (23/32) for SpineCor.

Conclusions: We were unable to identify any significant differences in brace treatment outcomes when comparing TLSO and SpineCor treated patients.

Key Words: scoliosis, TLSO, SpineCor, Sainte-Justine brace, outcomes

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Initial results of SpineCor treatment of Adolescent Idiopathic Scoliosis in Seville, Spain

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Objective

The objective of this study was to determine the effectiveness of the SpineCor brace in patients with adolescent idiopathic scoliosis treated in Seville, Spain.

Background

The SpineCor brace is used at St. Justine Children's Hospital in Montréal. Their results claim that SpineCor is an effective treatment for AIS. We chose to study the effect of this brace on our patients and see if it was similar to the Montreal results.

Methods

Thirty seven patients were treated using the SpineCor Brace in Seville. Of the 37, 33 patients met criteria of the SpineCorporation international multicenter study treatment protocol. These patients were still under treatment and had not yet achieved a definitive outcome (two years follow-up post brace treatment). The girls were premenarchal or less than 1 year postmenarchal. Effectiveness was looked at using the following parameters: (1) a percentage of patients with an initial Cobb angle reduction of 5 degrees or greater; (2) percentage of patients with an initial Cobb angle increase or decrease of less than 5 degrees; (3) percentage of patients with an initial Cobb increase of 5 degrees or greater; (4) the number of cases progressing to require surgery or undergone surgery.

Results

At the end of the first year, successful treatment (correction > 5 degrees, or stabilization +/- 5 degrees) was achieved in 32 of the 33 patients studied from the time of fitting of the SpineCor Brace to the point at which that last Cobb angle was measured during bracing. This meant an overall correction and stabilization for 97% of the patients in Seville, Spain during their first year of treatment. 1 out of 33 patients (3%) had curve progression of more than 5 degrees and underwent surgery.

Conclusion

The SpineCor Brace is a potentially effective treatment for adolescent idiopathic scoliosis. We need to continue our study over a longer period until patients achieve a definitive result. However, these initial results seem promising and are similar to the initial results originally achieved at St. Justine Children's Hospital.

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New results for 495 patients with adolescent idiopathic scoliosis treated with the SpineCor brace

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Objective

The purpose of this prospective interventional study was to confirm the effectiveness of SpineCor treatment for patients with adolescent idiopathic scoliosis and to demonstrate the stability of the spine after the end of the brace treatment.

Study design

From 1993 to 2009, 840 AIS patients were treated using the SpineCor brace. 495 fitted patients had a definitive outcome, and 405 patients finished the treatment with the SpineCor brace. 225 patients had a follow-up period of at least 2 years, and 94 patients had 5 years or more of follow-up. The assessment of brace effectiveness included the following: percentage of patients who had a 5° or less curve progression and the percentage of patients who had 6° or more progression; percentage of patients who have been recommended for or have undergone surgery before skeletal maturity; percentage of patients with curves exceeding 45° at maturity (end of treatment); 2-years follow-up beyond maturity to determine the percentage of patients who subsequently underwent surgery; percentage of patients that corrected or stabilized their Cobb angle 5 years after the weaning point.

Results

As demonstrated before, the SpineCor brace does alter the natural history of adolescent idiopathic scoliosis. This study showed that 71.2% of patients (353 out of 495) corrected or stabilized their initial Cobb angle, and only 52 patients (10.5%) had 6° or more progression of their initial Cobb angle without an indication for surgery. 74 immature patients out of 495 (14.9%) required surgical fusion while receiving treatment. Only 16 patients (3.2%) withdrew from the treatment.

Conclusion

The SpineCor brace is effective for the treatment of adolescent idiopathic scoliosis. The positive outcomes are maintained even after weaning of the brace. Moreover, one third of the patients still maintained their Cobb angle correction in the five-year period after the end of the treatment.

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SpineCor treatment for adolescent idiopathic scoliosis - 5 years follow-up after weaning of the brace

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Objective

Knowing that any apparent correction of a scoliosis curve that occurs during rigid brace treatment for adolescent idiopathic scoliosis (AIS) can be expected to be lost over time, the purpose of this prospective interventional study was to evaluate the stability of the spine 5 years after the weaning point of the SpineCor brace.

Study design

From 1993 to 2009, 840 patients were treated for AIS using the SpineCor brace. 495 fitted patients had a definitive outcome, and 405 patients finished the treatment with the SpineCor brace. 94 patients had at least 5 years of follow-up. The assessment of brace effectiveness included the following: percentage of patients who had a 5° or less curve progression and the percentage of patients who had 6° or more progression; percentage of patients who have been recommended for or have undergone surgery before skeletal maturity; percentage of patients with curves exceeding 45° at maturity (end of treatment); 2-years follow-up beyond maturity to determine the percentage of patients who subsequently underwent surgery; percentage of patients that corrected or stabilized their Cobb angle 5 years after the weaning point.

Results

Looking at the stability of the curves after the end of the treatment, 29% of the patients still continued their correction after the weaning point, 63.5% remained stable, and only 7.5% progressed by more than 5° (4.3% of them had a surgery recommendation after the weaning point).

Conclusion

The SpineCor brace is effective for the treatment of adolescent idiopathic scoliosis. Positive outcomes are maintained 5 years after the weaning of the brace. Moreover, one third of the patients still maintained correction of their Cobb angle in the five-year period after the end of the treatment.

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SpineCore treatment for early scoliosis: 15° to 24°

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Athens, Greece. 3–5 April 2008

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Purpose

The purpose of this prospective observational study was to evaluate the effectiveness of the Dynamic SpineCor brace for early adolescent idiopathic scoliosis following the outcome SRS criteria.

Methods

From 1993 to 2007, 615 patients were treated by the SpineCor brace. 238 patients had a Cobb between 15°–24° and respected the inclusion criteria and 123 finished their treatment. For those 123 patients the assessment of brace effectiveness included; 1) percentage of patients who have 5° or less curve progression and the percentage of patients who have 6° or more progression at skeletal maturity, 2) percentage of patients who have had surgery recommendation/undergone before skeletal maturity, 3) percentage of patients who progressed beyond 45° at maturity and 4) 2-years follow-up beyond maturity to determine the percentage of patients who subsequently undergo surgery.

Results

Successful treatment (correction >5° or stabilization ± 5°) was achieved in 88.6% (comparing with 82.7% for the 25°–40° cohort) of patients from the time of the fitting of the SpineCor brace to the point in which it was discontinued. 2 immature patients required surgical fusion while receiving treatment. From the total of 123 patients with a definite outcome, 76 have 2 years and 35 have 5 years follow-up.

Conclusion

The SpineCor brace is effective for the treatment of early adolescent idiopathic scoliosis, and it seems that the results are better with an early bracing. Moreover, the positive outcome appears to be maintained in the long term.

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Oral presentation

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The use of the SpineCor Dynamic Corrective Brace in Greece: a preliminary report

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Aim

The purpose of this observational study was to quantify the efficacy of the SpineCor Dynamic Corrective Brace for patients who were still actively being treated in Greece. It also, evaluated the effectiveness of the Brace for adolescent idiopathic scoliosis in accordance with the new standardized criteria proposed by the Scoliosis Research Society (SRS) [1].

Methods

From 2003–2007, 109 patients were treated. 82 patients met the inclusion criteria proposed by the SpineCorporation [2]. 26 patients met the criteria for inclusion proposed by the SRS [1]. There were no patients with an outcome. Assessment of the brace effectiveness included (1) percentage of patients who had an initial Cobb angle reduction of 5° or greater; (2) percentage of patients who had an initial Cobb angle increase or decrease of less than 5° (3) percentage of patients who had an initial Cobb increase of 5° or greater and (4) the number of cases progressing to require surgery or undergone surgery.

Results

Successful treatment (correction >5°, or stabilization +/- 5°) was achieved in 79 of the 82 patients and 25 of the 26 patients studied from the time of fitting of the Brace to the point which last Cobb angle was measured. This meant 96% correction/stabilization. Two out of 82 patients (2,4%) had curve progression and 1 patient (1,2%) underwent surgery. 1 patient out of 26 (3,8%) had a curve progression and has been recommended surgery.

Conclusion

The SpineCor Brace is an effective for the treatment of adolescent idiopathic scoliosis.

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Medical Rehabilitation 2008, 12 (2), 1-6

The early results of the treatment of idiopathic scoliosis using the dynamic SpineCor brace

Wczesne wyniki leczenia skolioz idiopatycznych z zastosowaniem gorsetu dynamicznego SpineCor

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Key words
idiopathic scoliosis, conservative treatment, dynamic brace

Summary
Introdcution: Idiopathic scoliosis is a three-dimensional deformation of the spine. Treatment of this condition depends on many factors, with curve magnitude (Cobb angle) and skeletal maturity (Risser sign) being the most important indices. In progressing curves of <40°, bracing is recommended. Different types of braces are available, most of them are of a rigid type. The SpineCor dynamic brace is a system of elastic bands designed to directly correct the spinal column deformity without restricting motion of the spine.
Aim of the paper: The aim of this paper is to present early results of adolescent idiopathic scoliosis treatment with the SpineCor brace.
Material and methods: Inclusion criteria for brace the application included the presence of a progressing curve in a skeletally immature child (Risser 0 – 3). The SpineCor brace was applied according to the principles of the method. The study group comprised 42 patients: 36 girls, 6 boys. The mean age at brace application was 11.9 years. The mean follow-up was 11 months. The mean initial curve size in the whole group was 33.1° in the thoracic spine and 29.4° in the lumbar spine. The evaluated group was subsequently divided into different subgroups depending on: initial curve size, curve type and sex. Results were classified as correction (decrease of curve size of >=5°), stablisation (curve change +/- 5°) or progression (increase of curve size of >=5°).
Results: Mean curve size at the final follow-up was 29.7° in the thoracic spine and 25.5° in the lumbar spine. Twenty one patients improved (50%), 14 had curve stabilisation (33.3%) and 7 progressed (16.6%). The best results were achieved in curves lower than 25° Cobb angle ($p < 0.05$) - 60% of patients improved. In contrast, in the over-45° group, only 37.5% of patients improved. No significant differences were found between treatment results with regard to sex.
Conclusion: SpineCor brace seems to be a good alternative for rigid braces, especially in minor curves. It enables preservation of motion of the spine. This type of brace is easily accepted by young patients. Further follow-up is needed to present long-term results.

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A new concept for the non-invasive treatment of Adolescent Idiopathic Scoliosis: The Corrective Movement© principle integrated in the SpineCor System

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Abstract

Purpose. To evaluate the change in spinal curvature and posture of Idiopathic Scoliosis patients when a curve specific 'Corrective Movement© Principle' (CMP) is applied.

Methods. This prospective interventional study was carried out on a group of 639 patients (92.3% females) having idiopathic scoliosis treated with the SpineCor brace. All girls were premenarchal or less than 1 year postmenarchal. Assessment of brace effectiveness followed the SRS outcome criteria for bracing. The clinical, radiological and postural evaluations assisted to define the patient classification, which guided the unique application of the CMP to each type of curvature.

Results. A total of 583 patients met the outcome criteria. Overall, 349 patients have a definitive outcome. Successful treatment was achieved in 259 (74.2%) of the 349 patients from the fitting to the weaning of the brace. Some 51 immature patients (14.6%) required surgical fusion while receiving treatment. Eight mature patients out of 298 (2.7%) required surgery within 2 years of follow-up beyond skeletal maturity.

Conclusion. The SpineCor brace is effective for the treatment of adolescent idiopathic scoliosis. Moreover, positive outcomes are maintained after 2 years because 151 (93.2%) of 162 patients stabilized or corrected their end of bracing Cobb angle up to 2 years after bracing.

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ORIGINAL ARTICLE

Effectiveness of the SpineCor Brace Based on the New Standardized Criteria Proposed by the Scoliosis Research Society for Adolescent Idiopathic Scoliosis

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Abstract: The purpose of this prospective observational study was to evaluate the effectiveness of the Dynamic SpineCor brace for adolescent idiopathic scoliosis in accordance with the standardized criteria proposed by the Scoliosis Research Society Committee on Bracing and Nonoperative Management. They proposed these guidelines to make the comparison among studies more valid and reliable. From 1993 to 2006, 493 patients were treated using the SpineCor brace. Two hundred forty-nine patients met the criteria for inclusion, and 79 patients were still actively being treated. Overall, 170 patients have a definitive outcome. All girls were premenarchal or less than 1 year postmenarchal. Assessment of brace effectiveness included (1) percentage of patients who have 5 degrees or less curve progression, and percentage of patients who have 6 degrees or more progression; (2) percentage of patients who have been recommended/undergone surgery before skeletal maturity; (3) percentage of patients with curves exceeding 45 degrees at maturity (end of treatment); and (4) Two-year follow-up beyond maturity to determine the percentage of patients who subsequently underwent surgery. Successful treatment (correction, >5 degrees, or stabilization, ±5 degrees) was achieved in 101 (59.4%) of the 170 patients from the time of the fitting of the SpineCor brace to the point in which it was discontinued. Thirty-nine immature patients (22.9%) required surgical fusion while receiving treatment. Two (1.2%) of 170 patients had curves exceeding 45 degrees at maturity. One mature patient (2.1%) required surgery within 2 years of follow-up beyond skeletal maturity. The conclusion drawn from these findings is that the SpineCor brace is effective for the treatment of adolescent idiopathic scoliosis. Moreover, positive outcomes are maintained after 2 years because 45 (95.7%) of 47 patients stabilized or corrected their end of bracing Cobb angle up to 2 years after bracing. Therapeutic study—investigating the results of treatment: level II.

Key Words: adolescent idiopathic scoliosis, conservative treatment effectiveness, SpineCor brace, standardized criteria

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COMPLIANCE OF THE BOSTON BRACE *vs* THE SPINECOR IN ADOLESCENT IDIOPATHIC SCOLIOSIS

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PURPOSE: To compare the compliance of the Boston brace versus the SpineCor in patients with adolescent idiopathic scoliosis (AIS).

METHODS: Patients in our centre with AIS who satisfied Scoliosis Research Society (SRS) criteria for bracing were included for study. Demographic data and brace type were captured at chart review. From telephone interviews we enquired about brace compliance and recorded any issues with the brace. These interviews were carried out no sooner than 3 months after brace commencement.

RESULTS: Between Jan 2008 and Dec 2009, 53 female patients (mean age 12) were recruited for study and advised to wear the brace 20 hours daily. There were 20 patients who chose the SpineCor, and 33 who chose the Boston brace. The average time of wear for the SpineCor was 17.1 hours (range 8-20; SD 5.17) while that for the Boston brace was 9.79 hours (range 1-20; SD 4.37); this was statistically significant ($p=0.000$). Our patients who chose the SpineCor said that this brace was more acceptable to them: it was not excessively warm, allowed for some flexibility and can be discreetly worn under clothing.

CONCLUSION: Compliance with the SpineCor was significantly better. Efficacy studies will help us understand whether improved brace compliance translates into better stabilization of scoliosis.

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Analyse de survie d'une cohorte consécutive de 365 patients scoliotiques traités par le corset dynamique SpineCor à l'hôpital Sainte Justine.

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Résumé

Modèle de l'étude. Une étude prospective a été réalisée sur 365 adolescents ayant une scoliose idiopathique traitée par le corset SpineCor.

Objectif. Évaluer l'efficacité du corset SpineCor dédié au traitement de la scoliose idiopathique de l'adolescent.

Sommaire de la littérature. Les articles traitant du traitement conservateur de la scoliose idiopathique de l'adolescent ont été revus avant d'effectuer cette étude; le traitement par corsets rigides classiques tel le corset de Boston, Wilmington, Milwaukee, Charleston et TLSO ainsi que le corset orthopédique SpineCor (corset souple et dynamique).

Méthodes. Une cohorte de 365 adolescents scoliotiques traités par le corset SpineCor a été suivie au centre d'évaluation des pathologies du rachis à l'hôpital Sainte Justine de Montréal. La cohorte de patients a été divisée en deux groupes distincts selon leur angle de Cobb initial, le premier ayant une courbure de 15 à 29° et le second ayant une courbure de 30° et plus. Une analyse de survie a été effectuée afin d'évaluer la probabilité cumulative de succès durant le traitement par corset et pendant le suivi post-corset. Pour être qualifié de succès, il devra avoir une stabilisation (± 5°) ou bien une correction (de plus de 5°) de l'angle de Cobb initial. L'échec sera caractérisé par une aggravation de l'angle de Cobb initial de plus de 5°.

Résultats. L'analyse de survie indique une probabilité cumulative de succès qui est stable pour les patients en traitement avec corset
(Année 1: 1.00, 0.97;
Année 2: 0.96, 0.89;
Année 3: 0.85, 0.80;
Année 4: 0.65, 0.70 pour le groupe 1 et 2 respectivement) et qui est maintenue pendant la période de suivi post-corset
(Année 1: 0.97, 0.88;
Année 2: 0.94, 0.88;
Année 3: 0.91, 0.84;
Année 4: 0.79, 0.84;
Année 5: 0.67, 0.84 pour le groupe 1 et 2 respectivement). Le traitement orthopédique a été un succès pour 84.6 % des 120 patients ayant un suivi post-corset minimal de 1 an. 26 patients ont été suivis pendant 5 ans après l'arrêt du corset. 65.4% de ces sujets ont obtenu une correction permanente de leur angle de Cobb initial, 30.8% ont stabilisé leur courbure et seulement 3.8% se sont aggravés sans avoir recours à une intervention chirurgicale.

Conclusion. Cette étude prospective montre que le corset souple SpineCor est efficace pour le traitement conservateur de la scoliose idiopathique de l'adolescent.

Mots clés : Scoliose Idiopathique de l'Adolescent - Traitement Conservateur - Corset SpineCor -Corset Dynamique de Correction

Abstract

Study Design. A prospective study was conducted on 365 patients with adolescent idiopathic scoliosis treated with the Dynamic SpineCor Brace.

Objectives. To evaluate the effectiveness of the Dynamic SpineCor Brace for the treatment of adolescent idiopathic scoliosis among those with milder and more severe curves.

Summary of Background Data. Prior to this study, we did an exhaustive literature review on traditional rigid braces available on the market such as Boston, Wilmington, Milwaukee, Charleston and TLSO as well as the Dynamic SpineCor Brace (flexible and dynamic brace).

Methods. A group of 365 adolescents with idiopathic scoliosis were followed during the course of their treatment with the SpineCor Brace. The cohort of patients was divided into two groups according to their initial Cobb angle: 1) milder group: having a curve between 15° and 29° and 2) a more severe group: having a curve of 30° or more. A survival analysis was performed to estimate the cumulative probability of success during treatment and at post-treatment follow-up period. To be qualified as a success, the patient must have either a stabilization (± 5°) or a correction (more than 5°) of their initial Cobb angle. Failure was defined as a worsening of more than 5°.

Results. The survival analysis indicated a cumulative probability of success which is relatively stable for the patients in treatment with the SpineCor brace (Year 1: 1.00, 0.97;
Year 2: 0.96, 0.89;
Year 3: 0.85, 0.80;
Year 4: 0.65, 0.70 for group 1 and 2 respectively) and which is maintained for the post-treatment follow-up period
(Year 1: 0.97, 0.88;
Year 2: 0.94, 0.88;
Year 3: 0.91, 0.84;
Year 4: 0.79, 0.84;
Year 5: 0.67, 0.84 for group 1 and 2 respectively). The conservative treatment was a success for 84.6% of the 120 patients who had 1 year post-bracing follow-up. Twenty-six patients were followed for 5 years after the end of the treatment by the Dynamic SpineCor Brace. Of these, 65.4% obtained a permanent correction of their initial Cobb angle, 30.8% stabilized their Cobb angle and only 3.8% worsened without having recourse to the surgery.

Conclusion. The SpineCor Brace is effective for the treatment of adolescent idiopathic scoliosis. Moreover, the positive outcome appears to be maintained in the long turn.

Key words : Adolescent idiopathic scoliosis - Orthopaedic treatment - Dynamic SpineCor Brace

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Scoliosis

ORAL PRESENTATION Open Access

SpineCor in the treatment of adult scoliosis

Louise Marcotte

From 7th International Conference on Conservative Management of Spinal Deformities
Montreal, Canada. 20-22 May 2010

Introduction

Adult patients with scoliosis are offered little hope for rehabilitation and pain relief by health care professionals. Long term use of AINS and pain medication has proven harmful; rigid bracing is only rarely used due to its often disappointing results; surgery is only reserved for the most serious cases and mainly to preserve vital functions. Conservative management has also had poor outcome often due to long-term patient compliance.

Long-term treatment of Adult Scoliosis with The SpineCor Pain Relief Back Brace deserves more attention. SpineCor offers a wide variety of combinations to improve posture. Its primary therapeutic goal is the relief of pain while reducing the mechanical strain on the neuromusculoskeletal system, which would only with time, aggravate of the condition. The brace acts as a dynamic support to offload the spinal joints, therefore protecting the misaligned spine from the compressive forces of gravity, while the resistive elastic bands reinforce the core musculature to an overall better postural alignment.

Methods

A preliminary long-term study was made on 30 adult scoliosis patients, 26 females and 4 males, aged between 18 and 69. All suffered enough chronic back pain to seek treatment and were fitted with a SpineCor Pain Relief Back Brace according to the SpineCor® Protocol. The data over an 18 to 28 months time frame was collected while the patients were actively wearing their brace anywhere from 10 to 130 hours/week.

Results

The overall improvement in the perception of pain by the adult scoliotic patients was 77%, and appeared to remain stable with time (78%, 83% and 76% on subsequent visits). Half of them reported having complete resolution of their symptoms.

Although the brace had no significant effect on reducing the pathological curvature of the spine, as would be expected in mature skeletons, it was subjectively noticed both by the evaluator and the patient themselves that they had a better overall postural alignment while they were wearing their brace.

Conclusion

These results suggest that the SpineCor Pain relief Back Brace is a promising conservative method for the long-term management of scoliosis in the adult population as it significantly reduces their pain status and improves their wellbeing

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Scoliosis

BioMed Central

Oral presentation

Open Access

Treating adult scoliosis and back pain with the SpineCor Pain Relief Back Brace

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from 6th International Conference on Conservative Management of Spinal Deformities
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Objective

The main objective of this study was to explore the issues of treating adult scoliosis and pain by conservative means. We present two case studies of different types of adult scoliosis successfully managed with the SpineCor brace.

Background

Management of pain in adult scoliosis represents a significant clinical challenge. Both adolescent scoliosis in the adult (ASA) and degenerative de-novo scoliosis (DDS) can cause significant pain. Over recent years, the SpineCor brace has been used by practitioners in the treatment of painful adult scoliosis. To date, SpineCor has been used clinically in adult treatment in hundreds of cases, and the empirical results seem positive.

Methods and results

Patient A, a 26 year old female with painful ASA, had pain prior to SpineCor treatment that averaged 7/10 (10 being the worst). Using the SpineCor brace daily for 8 to 12 hours for 3 months, she had a gradual improvement of her pain to an average of 1-2/10. The initial x-ray showed a 32° right thoracic scoliosis. In the SpineCor brace 1 month after fitting, the x-rays showed an improvement of 8° to 24°. Her pain relief (1-2/10) and spinal correction have been maintained for over 2 years by using the SpineCor brace part-time. Patient B, a 47 year old female with a DDS, had pain prior to treatment that averaged 8/10. In the SpineCor brace, she had an immediate relief of her pain to 3/10. The initial x-ray showed a 40° degenerative lumbar scoliosis curve. In the SpineCor brace, x-rays showed an improvement of 7° to 33° in her curve. Her pain relief (0-3/10) and spinal correction have been maintained for over 2 years by using the SpineCor brace daily. Also of note is the improved left lateral shift showing "spinal off loading".

Outcome

Both patients achieved significant pain reduction over a 2 year period, demonstrating that in these cases, the SpineCor brace has been an effective treatment for pain related to ASA and DDS.

Conclusion

Prospective research in a large population is required to determine the overall effectiveness of the SpineCor brace, but early results seem positive.

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Oral presentation

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The treatment of adult scoliosis utilizing the SpineCor Dynamic Corrective Brace

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Introduction

Scoliosis and spinal deformities offer little hope for rehabilitation in the adult population. Pain and viscerosomatic dysfunction are frequently encountered, and conventional medical care uses rigid bracing, medication and surgery in the most serious cases. The treatment of adult scoliosis with The SpineCor® Dynamic Corrective Brace deserves more attention. It offers a great variety of combinations to improve spinal alignment and posture, and depending on the curve type, its severity and rigidity. The main therapeutic goal is to reduce pain and the strain on the neuromusculoskeletal system. The brace acts as a dynamic support against compressive loading on the inter-vertebral joints, while creating a corrective movement in the spine which produces neuromuscular integration.

Methods

Seventy three adult scoliosis patients, 63 females and 10 males (ages between 18 and 93 years), with Cobb angles of 15° to 93° and curves of all types and many different etiologies, were fitted with a SpineCor® Brace.

Results

Of the 65 who have actively been wearing the SpineCor® Brace between 10 to 154 hrs/week, 29 have seen complete resolution of their symptoms while in the brace, 14 of which originally had a Numerical Pain Scale (NPS) of 5/10 and over. Although the brace had little effect on the curve itself, especially in older patients, and while there has been 1 reported case of aggravation in leg radiculopathy, we found an overall 60% improvement in the pain status of these patients who have been actively wearing their brace.

Discussion

These results suggest that the SpineCor® Dynamic Corrective Brace is a promising conservative method for the treatment of scoliosis in the adult population, as it improves the pain status and wellbeing of patients.

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Oral presentation

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The treatment of Hyperkyphosis utilizing the SpineCor® Dynamic Corrective Brace: some preliminary results

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Introduction

Hyperkyphosis has long been reported to be associated with many health disorders, both psychological and patho-mechanical. Very few options for the management of this condition are available in medicine, while conservative treatment like chiropractic and physiotherapy can only offer limited structural rehabilitation. Although originally designed for the treatment of AIS, The SpineCor® Dynamic Brace offers a great variety of options for the treatment of Hyperkyphosis. According to our morphologic classification of hyperkyphotic thoracic curves: Upper Thoracic (UT) (often associated with an anterior thoracic translation relative to pelvis), mid-thoracic (MT) (often associated with hyperlordosis and no significant ribcage translation), and lower thoracic (LT) (often associated with posterior translation of ribcage). Many combinations of brace fittings have been designed for the creation of vectors that create a specific corrective movement for the patient's spine and posture.

Methods

Sixteen adult hyperthoracic kyphotic patients, 12 males and 4 females (aged 19 to 81 years), were fitted with a SpineCor Dynamic Brace according to the morphology of their curves: UT (6 patients), MT (4 patients), and LT (6 patients). Postural comparative evaluation was made with PosturePrint® software which provides a Posture Index, and radiologic measurements were made with a posterior tangent method using segmental angles and then compared to the Harrison Sagittal Spinal Model (HSSM).

Results

The UT group received significant pain relief from 2.4 to 1/10, while their posture index went from 15.3 to 12.2. Pain in the MT group decreased from 3.75 to 2/10, while the posture index was reduced significantly from 17.75 to 12.75. The LT group seemed to benefit the most from the brace, as their overall pain decreased from 5.7 to 2.2/10, although their posture index actually increased slightly from 14.7 to 17.3. Although their overall sagittal balance was better, none of these groups benefited from a significant change in their thoracic lateral curve, as is to be expected in adults.

Discussion

These results suggest that the treatment of adult thoracic hyperkyphosis with the SpineCor® Dynamic brace appears to be promising. It should imperatively be applied to younger patients who have the potential to grow out of their deformity.

Scoliosis

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Oral presentation

Adult scoliosis and the SPINECOR® dynamic brace: some early results on efficiency

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Background

Scoliosis offers little hope for rehabilitation in the adult population. Pain and viscerosomatic dysfunction are frequently encountered. Conventional medical care uses rigid bracing, medication and surgery for the most serious cases.

The treatment of adult scoliosis with the SpineCor® Dynamic Brace deserves more attention. This brace offers a variety of combinations to improve spinal alignment depending on the type, severity and rigidity of the curve. The main therapeutic goal of this brace is to reduce the strain on the neuromusculoskeletal system. The brace acts as a dynamic support against compressive loading on the vertebral joints while creating a corrective movement in the spine.

Methods

Seventeen adult scoliosis patients aged between 21 and 69, whose curves had a Cobb angle 18 to 78 degrees, were fitted with a SpineCor® Dynamic Brace in a Chiropractic practice in Montréal, Canada. 13 of them were actively wearing it from 10 to 70 hrs per week.

Results

Thirteen of the 8 have complete resolution of their symptoms while in brace, 3 of which had a Numerical Pain Scale (NPS) over 6/10, and 2 had never experienced any pain before or after the treatment. It is important to make note that 8 of the 13 patients were concomitantly receiving CBP® Chiropractic care.

Conclusion

These results suggest that the SpineCor® Dynamic Brace is a potential, promising conservative method for the treatment of scoliosis in the adult population. In this study, utilization of this brace improved patient pain and sense of wellbeing.

Scoliosis

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Oral presentation

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A retrospective study of twenty-three adults treated for scoliosis using the Spinecor Orthosis

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Objective

To determine if non-surgical treatment using the Spinecor brace can effectively reduce adult scoliosis curvature magnitude.

Study design

Twenty-three adults between the ages eighteen and sixty-five years, seeking treatment for adolescent onset idiopathic scoliosis (AIS) were fitted with the Spinecor Orthosis [1] after being exposed to an anterior-posterior (AP) full spine and lateral full spine radiograph, with a minimum of three months between exposures and a maximum of one year. Measurements of the radiographs were performed using a digital inclinometer in order to reduce error and all projections were exposed without the orthosis.

Results

Patients were separated into three groups based on curvature location: Thoracic (T), Thoracolumbar (TL) and Lumbar (L). T-tests were performed using the initial and follow-up Cobb measurements of AP radiographs for each of the three groups. The maximum (T) reduced from 94 degrees to 77 degrees (-12.2%) following a minimum of three months of treatment. The maximum (TL) measurement reduced from 31 degrees to 23 degrees (-13.4%), and the (L) minimum reduced from 17 degrees to 11.1 degrees (-15.3%). The patients in the "Thoracic" group (n = 20) had a mean average change of -5.27 degrees. The "Thoracolumbar" group (n = 3) had a mean average change of -6.0 degrees. The Lumbar group (n = 15) had a mean average change of -4.40 degrees.

Conclusion

These findings suggest the use of a flexible strapping orthosis (Spinecor) is an effective tool in the management of adult scoliosis. Long term studies are necessary to determine the sustainability of these early positive results.

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