

Effectiveness of Orthotic and Occupational Therapy Management on Scoliosis

Loganathan Sarvesan¹, Mukesh Doshi², Ashok Trivedi³



- 1- First Author, Senior Occupational Therapist Cum Rehabilitation Administer, Jaya Rehab Center, Kutch, Gujarat, India.
2- Co Author, Prosthetist & Orthotist, Director- Jaya Rehabilitation Center, Kutch, Gujarat, India
3- Co Author, Senior Physiotherapist, Jaya Rehab Center, Kutch, Gujarat, India



Abstract

OBJECTIVES: To find the effectiveness of Orthotic and Occupational Therapy management on children with scoliosis

MATERIALS & METHOD: 14 children with scoliosis of age group 1.5 to 13 years were selected for study. Patients were assessed for scoliosis curvature, muscle power of trunk and lower extremities and ROM of trunk. Patients were moulded with custom made scoliosis correction brace, exercise program and positioning methods taught to the patients. Patients were called every 15 days once for revision of exercises. Patients were assessed before brace and after brace for COBB'S angle finding. Patients were reassessed Scoliosis (cobb's Angle) again after 6 month without brace. Patients were also assessed functional independence measures

RESULTS: Data analysis of this study was done with paired t-test. Before brace and after brace compared. There were significant difference in before and after brace in the cobb's angle (n=14, p < 0.01). There was significant difference in cobb's angle of pre and after Six Month (P<0.01)

CONCLUSION: from this study we can conclude that Orthotic and Occupational Therapy management on children with Scoliosis can get considerable improvement in the Scoliosis and prevent from surgery.

Discussion: the Patients with Cobb's Angle less than 50 degree Improved more than the patients with cobb's angle more than 50 degree Scoliosis Curvature

KEY WORDS: orthotic management, scoliosis, scoliosis brace, cobb's angle, t-test

Introduction

Scoliosis is defined as a curvature of the spine of any etiology, occurring before the age of 10 years. The magnitude of scoliosis is assessed on an anteroposterior (AP) radiograph of the spine, using the Cobb method. Scoliosis is defined as a spinal curve angle (Cobb angle) greater than 10 degrees. The most appropriate treatment option for scoliosis depends on the patient's age, the severity of the spinal curve and whether the curve is expected to worsen over time

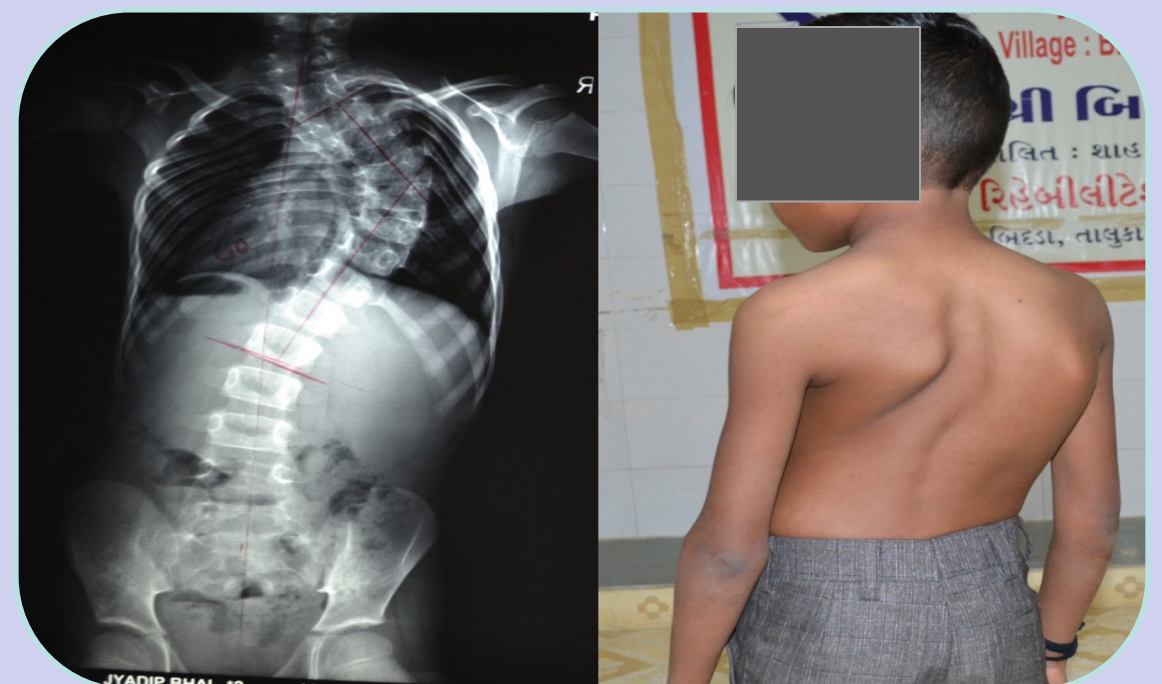


Figure-1 Scoliosis Curvature and Cobb's Angle

Customized Brace:

The Customized brace used in this Study was made according to the Primary and secondary curvature of the Patient and also added a Strap provided to correct the spinal rotational factors.



Figure-II Customised Brace



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Methods:

Randomly selected 14 children with Scoliosis in the age group of 2 to 13 (mean Age: 7.11) included in this study both male and female (8 male, 6 Female) were included. Patients were assessed for scoliosis curvature, muscle power of trunk and lower extremities and ROM of trunk and Functional Independence measures. Scoliosis measured with Cobb angle on the X Ray. Customised Low thermoplastic Brace made with derotation strap on the Curve apex part. Those Patient who had two curvature, two Derotational Strap given on the opposite Direction. Patients Scoliosis cobb's angle were assessed after wearing the brace to ensure the corrections



Figure-III Scoliosis Curve With Brace and Without Brace

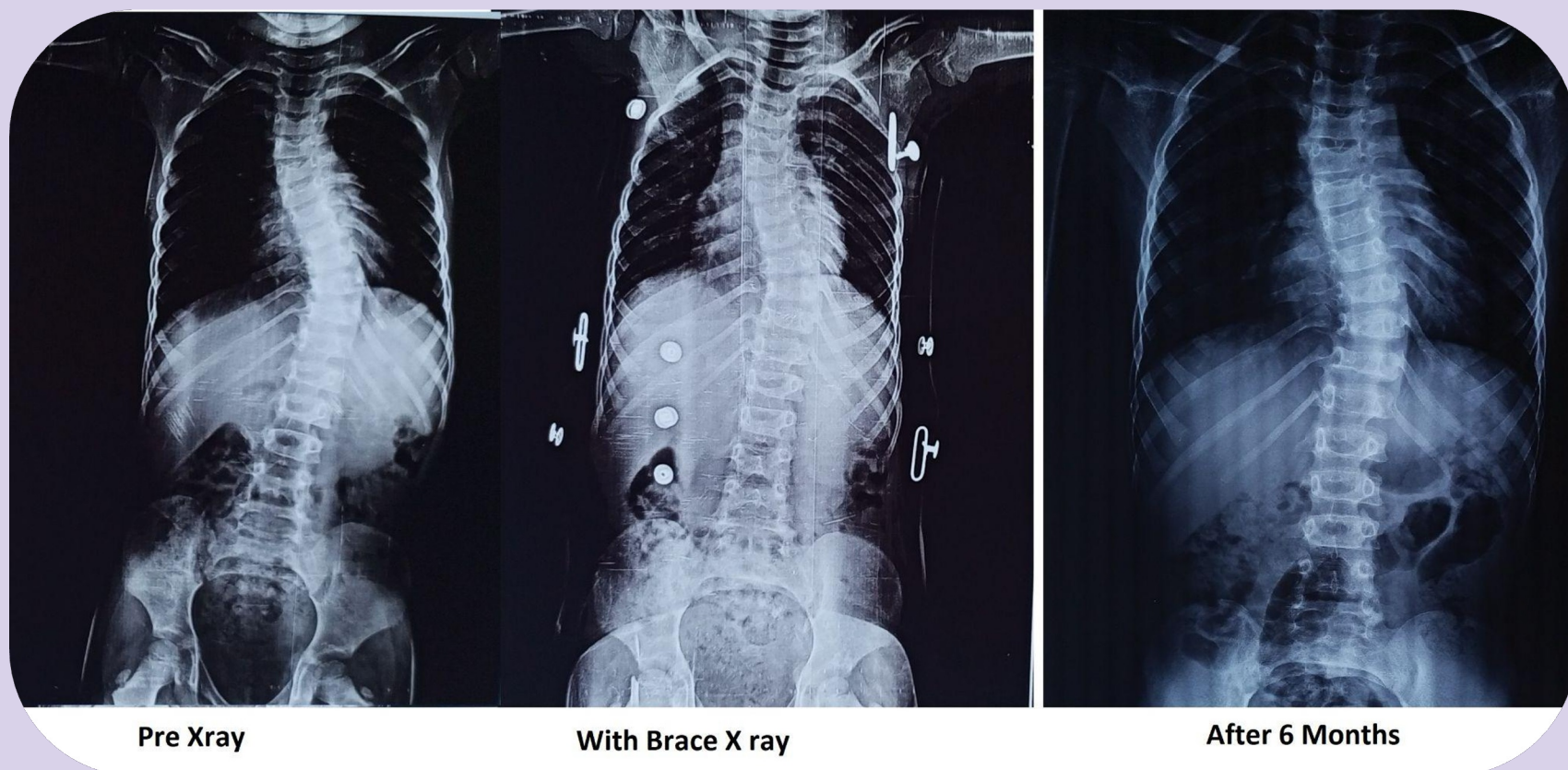
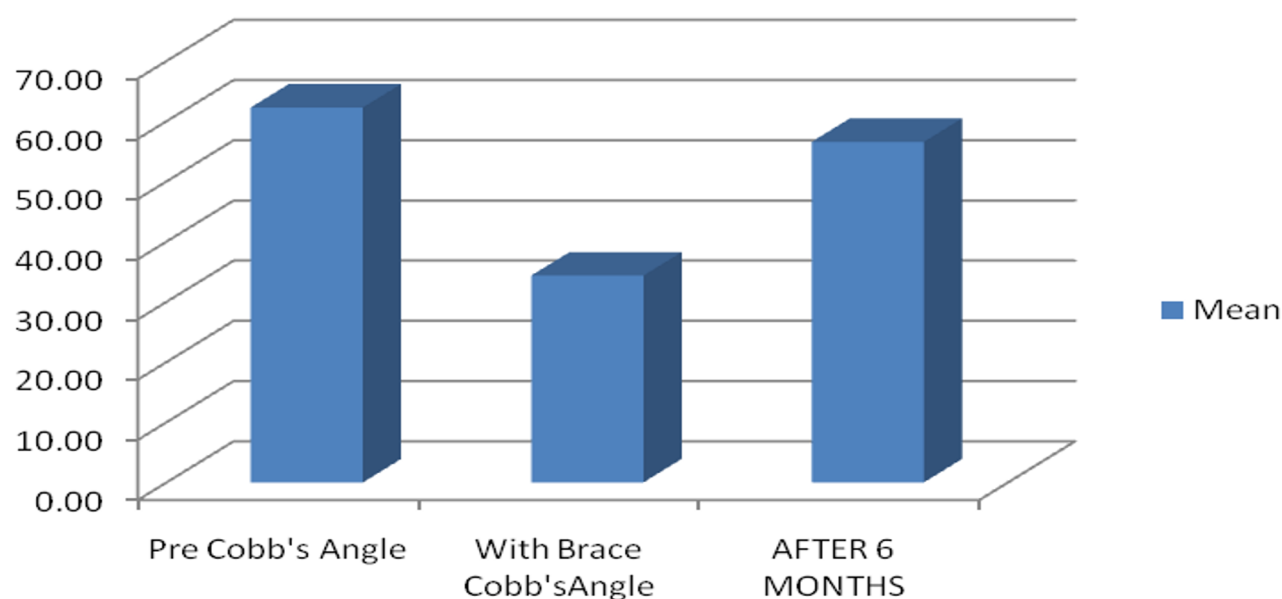


Figure-IV Pre X-ray, With Brace X-ray and After six months X-ray



Graph-I Comparison of Pre, after wearing brace and after six months Cobb's Angle of Scoliosis

	N	Mean	Std. Deviation	t-test	p-value
Pre	14	62.29	20.64	5.096	<0.001
Post	14	56.57	22.67		

Table-I Comparison of Pre and post Cobb's Angle of Patient with Scoliosis

Every patient was taught Home exercise Program .

Home exercise Program: Self stretching exercise ,Strengthening Exercises, Trunk rotation exercises. Each patient taught body posture and seating methods.

Brace wearing Schedule: Patients were advised to wear Brace at night. Day time maintain the Seating methods and Body postures.

Patients were called 15 days once for ensuring brace fitness and revision of home program.

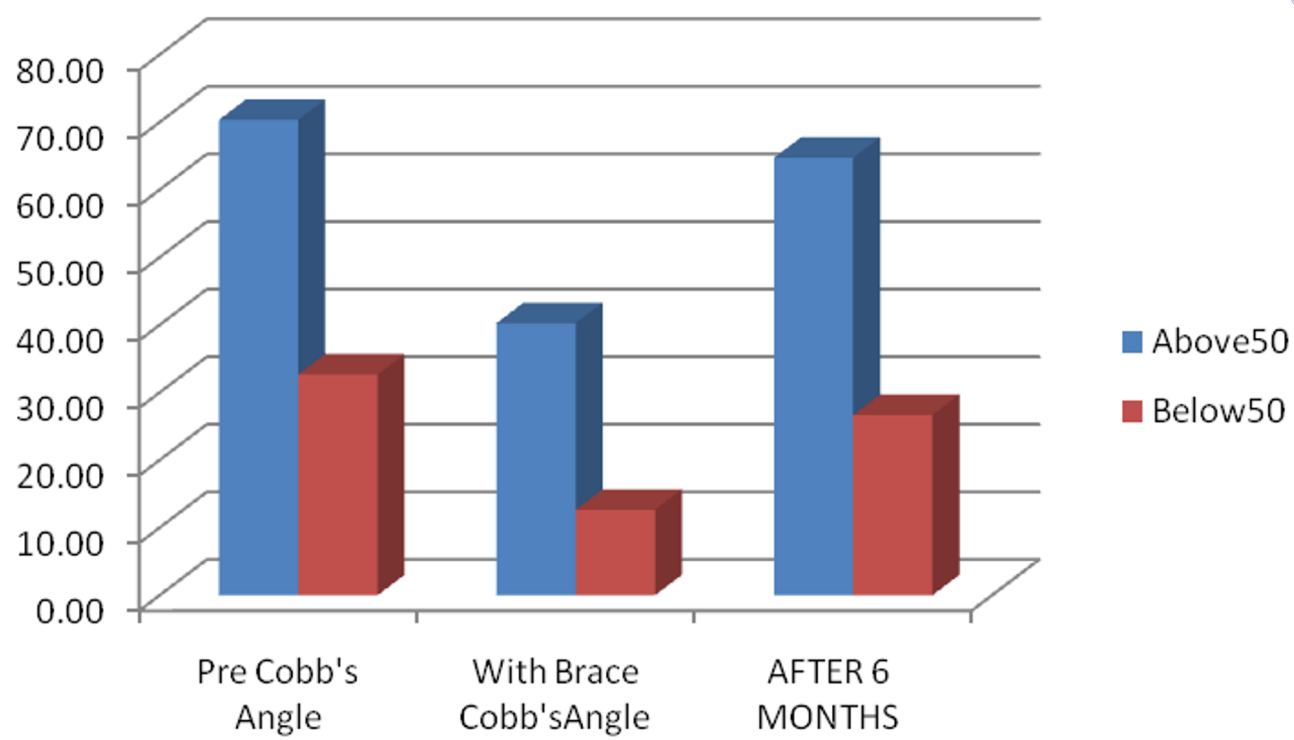
After six months Patients were reassessed with measuring the Cobb's angle.

Pre and Post Interventional Cobb's angle were compared with Paired t-test.

Results

Graph-I Shows the Significant Difference between Pre Cobb's Angle , with Brace Cobb's Angle and after 6 months Cobb's Angle.

Table-I Shows the Comparison of Pre and After Six months Cobb's Angle of Scoliosis Patients. There was significant Difference Between Pre and Post Means of Cobb's angle(p<0.001)



Graph-II shows the Comparison of Cobb's angle Above 50 Degrees and Below 50 Degree. There were More Improvement in below 50 degrees Group than Above 50 Degree Group (t-value: 4.74, $P < 0.001$). When compared Male with Female there was no significant Difference in Post Cobb's Angle (t-value: 0.96)

Graph-II Comparison Means of Above 50 and Below 50 Cobb's Angle of Scoliosis Patient

Discussions

The Graph I Shows there was Significant Improvement in the Post Scores of Cobb's angle of Scoliosis Patients. The Table I shows the Pre and Post Cobb's angle Score comparison, Significant Difference in the Pre and Post t-test ($p < 0.001$). There is considerable Reduction in the Means of Pre and Post Cobb's angle.

The Independent t-test comparison of patients with Above 50 degree curvature with Patients with Below 50 degree Curvature shows Significant Difference. The Graph II shows the Patients below 50 Degree curvature improved better than Patients with above 50 Degree Curvature.

Conclusion:

The Children with Scoliosis can be improved with orthotic Management and Occupational therapy Management and Prevent the Need for Surgery.

The Patients with Below 50 Degree curvature can be benefitted more than the Patients with Above 50 Degrees.

Patient needs to come for Regular Follow up for the Correction and Revision of Occupational Therapy Home Programs to Prevent the Relapse of Curvature.

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