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Title

First end-term results of the Maastricht brace in the treatment of primary thoracic adolescent idiopathic scoliosis

Introduction

The Maastricht brace (M-brace) was developed to improve patient compliance and associated efficacy of brace treatment in adolescent idiopathic scoliosis (AIS). The main features are an anterior closure, elastic thoracic pelotte and comfortable material use. The emphasis is on wearability and comfort for the patient, whilst retaining corrective pressure function. Initial pressure measurements in the M-brace revealed a higher corrective pressure as compared to the Boston brace, and a better patient reported quality of life as measured with the SRS 22 and Brace questionnaire. First results of the efficacy in terms of curve correction of the M-brace in AIS were promising, with an average in-brace curve correction of 48%. The aim of this study was to evaluate the end-term radiological results of the first group of primary thoracic AIS treated with the Maastricht brace, with a minimum of one year follow up after stop of brace wearing.

Methods

26 patients (mean age of 16.5 years, 6 boys) with mild to moderate thoracic AIS, who had been treated with the M-brace since January 2011, were included in this retrospective single-center study. The correction effectiveness of the brace was evaluated by comparing the primary curves on standing postero-anterior full spine radiographs, with and without M-brace, with those on supine? bending X-rays. The end-term correction of the Maastricht brace was defined as the primary curve measured on standard postero-anterior full spine radiographs taken one year after stop of brace wear. The success of bracing was defined as prevention of curve progression necessitating surgical intervention.

Results

There were 26 patients with a primary thoracic curve. The predominant Lenke classification was type 1 and 2. The average primary curve Cobb angle was 35.7° ± 9.8°. The average primary curve angle in bending x-rays was 15° ± 6.8°. In the M-brace the primary curve was 24.5° ± 8.9°. This is an in-brace correction of 54%. The average primary curve Cobb angle at end-term of bracing was 36.7° ± 11.4°. There were six patients in whom the curves progressed to surgical magnitudes during brace wear. Therefore, the succes rate of bracing primary thoracic adolescent idiopathic scoliosis with the M-brace was 77%.

Conclusions and Significance

These preliminary end-term results demonstrate an adequate in-brace and post-brace correction with the M-brace. With a probably higher compliance because of a better wearing comfort, the M-brace may be a promising new brace treatment for adolescent idiopathic scoliosis.