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Title

Cervical Thoracic Orthosis (CTO) for Treatment of Antecollis and Pisa syndrome in Parkinson disease: A Case report

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Summary

Proper adjustment of the CTO could reduce the angle in Antecollis and Pisa syndrome in Parkinson disease.

Introduction/ basics

This article demonstrates the efficacy of orthosis for treatment of Antecollis and Pisa syndrome in Parkinson disease. The spinal orthosis has rarely been used in dystonia due to the complexity and challenges in applying force that is appropriate to correct the spinal misalignment. Overapplying the force can potentially hinder movements or aggravate dystonia. After deep brain stimulation, the CTO need to readjust based on the dystonic features.

Material method; implementation/ process

Case description and methods:

A 61-year-old man with Parkinson disease had Antecollis and Pisa syndrome for 5 years. Antecollis did not respond well to botulinum toxin injections and levodopa. The neck flexion was not different between OFF- and ON-medication states, while the lateral trunk bending was response in the ON-medication state. The cervical thoracic orthosis (CTO) was designed as the easily adjustable orthosis to find the optimum correction while maintaining regular movements in daily living. The adjustment was carefully performed to balance proper alignment and the patient's comfort. The neck flexion and lateral trunk bending were measured during walking by 2D motion analysis software from video recording, immediately after the orthosis application. After 8 months, the deep brain stimulation(DBS) was done. The degrees of neck flexion and PISA angles were in similar degrees but easy to correct and the spinal alignment was improved by adjusting only the neck angle.

Results

With the CTO application, the immediate neck flexion was decreased from 72 to 30 and 90 to 35 degrees after 5 months. The Pisa angle was reduced from 30 to 14 degrees with similar degrees between immediate and before the DBS process.

After DBS, the CTO was made by low thermoplastic materials and control only the neck flexion degree from 72 degrees to 15 degrees.

After correction the cervical alignment, the PISA was improve to near neutral position. However, the correction at lateral bending angle could not improve the neck flexion angle.

Discussion/ conclusion; conclusion for the practice

Adjustable CTO with the careful assessment could reduce the angle in Antecollis and Pisa syndrome in Parkinson disease.

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