Does fascial manipulation and myofascial surgery reduce spasticity and improve function of upper limb in cerebral palsy?

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Background and Purpose: A generalized increase in extracellular connective tissue has been demonstrated in spastic muscles. Increased connective tissue in a contracted muscle is known to reduce its compliance and could reduce the threshold for stimulation of spindle receptors in the muscle. Increased stretch-induced stimulation of spindles in muscles with stiffer connective tissue has been postulated to contribute to spasticity. Hence, the objectives of this study were to evaluate the effectiveness of Fascial Manipulation (Stecco Method) and Myofascial Surgery on Spasticity, Range of Motion, Strength and Function of the upper limb in children with cerebral palsy (CP).

Methods: 30 children with CP, aged between 6 to 16 years were recruited for the study and were conveniently divided into 3 groups. Group A, underwent Fascial Manipulation which involved releasing specific centres of coordination (CCs) and centres of fusion (CFs) of some of the major segments based on the specific local findings during the examination by a Fascial Manipulation trained Physiotherapist. Conventional rehabilitation (CR) designed specifically for CP was also performed. Group B, underwent modified Orthopaedic Selective Spasticity Control Surgery (OSSCS), comprising of intramuscular tendon lengthening, controlled sliding tendon lengthening, release of deep fascia, myofascia and inter-tendinous fascia, followed by CR. Group C underwent CR alone. Tardieu scale, Functional Spasticity Scale, Goniometer, Dynamometer and Melbourne Assessment of Unilateral Upper Limb Function (MAUULF) were measured.

Results: The reduction of spasticity by Tardieu (P<0.05), Functional Spasticity Scale (p<0.05) and Goniometer – wrist extension (p<0.05) and elbow extension (p<0.05) were statistically significant in the Group A and B compared to Group C. The strength (grip) and hand function scores measured using Dynamometer (p<0.05) and MAUULF (P<0.05) respectively were statistically significant in Group B, compared to Group A and C. In the follow-up evaluation, the obtained outcomes were maintained for the Group B. For Group A, except the parameter of ROM, the other parameters for spasticity were maintained.

Conclusion: OSSCS and Fascial Manipulation was effective in reducing spasticity and improving range of motion, strength and function of the upper limb in children with CP, compared to conventional rehabilitation alone.

References: