Format: Abstract

Pediatr Pulmonol. 2020 Feb 3. doi: 10.1002/ppul.24664. [Epub ahead of print]

Impact of scoliosis surgery on pulmonary function in patients with muscular dystrophies and spinal muscular atrophy.

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Abstract

BACKGROUND: Scoliosis is a common complication of severe neuromuscular diseases. The aim of this study is to determine the impact of posterior spinal fusion on pulmonary function parameters in patients with severe neuromuscular disease at our medical center.

METHODS: Retrospective chart review of all patients with severe neuromuscular disease who had posterior spinal fusion between 2012 and 2017 at Texas Children's Hospital. Patients with growing rods, brain injury or malformation, and/or spina bifida were excluded. Pulmonary function measures before and after spinal surgery were determined.

RESULTS: A total of 20 eligible patients were identified, 7 with Duchenne muscular dystrophy, 6 with spinal muscular atrophy, 3 with merosin deficient muscular dystrophy, 2 with Charcot-Marie-Tooth, 1 with central core disease, and 1 with dystroglycanopathy. The mean change in vital capacity from pre- to postspine surgery was a loss of 0.63 L for the spinal muscular atrophy patients, a loss of 0.36 L for the Duchenne muscular dystrophy patients, and a gain of 0.23 L for the merosin deficient patients. The difference between spinal muscular atrophy and merosin deficient patients was statistically significant (P = .02) CONCLUSION: In this single-center retrospective study, we found that after spine surgery for scoliosis, all patients with spinal muscular atrophy and most patients with Duchenne muscular dystrophy lost vital capacity, while the patients with merosin deficient muscular dystrophy gained vital capacity. These differences were not associated with differences is respiratory strength, body mass index, or surgical outcomes.

KEYWORDS: neuromuscular disorders; pulmonary function testing (PFT)

PMID: 32012473 DOI: 10.1002/ppul.24664

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