

Outcomes of Charcot-Marie-Tooth Disease Cavovarus Surgical Reconstruction

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INTRODUCTION: Charcot-Marie-Tooth (CMT) disease is a progressive inherited neurologic disorder causing muscle weakness and lower extremity deformity. The goal of foot and ankle surgical treatment is to create a stable, plantigrade foot, with the potential elimination of brace-wear for ambulation. The aim of this study was to report baseline CMT patient function and subsequent outcome improvement from surgical treatment, as determined by PROMIS physical function (PF), pain interference (PI), and mental health/depression (D) scores.

METHODS: IRB-approved, prospective cohort data was collected on consecutive CMT patients receiving surgical treatment by a single surgeon from 2018 to 2022. Each patient completed PROMIS preoperatively, and post-operatively after all surgical treatment was completed. Prospective clinical and radiographic data was collected to describe complications and correlation to outcome.

RESULTS SECTION: 64 patients (95 feet) were included for analysis. Mean follow-up was 21 months (range, 12-31) with 100% minimum 1-year follow-up. CMT patients have worsened baseline scores in all domains except PROMIS-D compared to population. Significant improvements were identified in all PROMIS domains with surgical treatment. Mean PROMIS-PF increased (40 to 45, delta = 4.9, $p < 0.001$). Mean PROMIS-PI decreased (59 to 52, delta = 7.1, $p < 0.001$). Mean PROMIS-D decreased (50 to 47, delta = 3.0, $p = 0.004$). Subgroup analysis was performed for patients with severe radiographic deformity and those treated with arthrodesis in an attempt to predict outcome based on disease severity. Three unplanned additional surgeries, and 9 complications are reported.

DISCUSSION: Surgical treatment for CMT patients provides significant clinical improvement in all measured outcome domains. CMT patients can be restored to normal population physical function and pain interference outcome scores. Patients with more severe deformity have similar improvement from surgical treatment, although their ultimate functional improvement is blunted due to a lower baseline.

SIGNIFICANCE/CLINICAL RELEVANCE: CMT is a progressive neurologic disease causing foot deformity. Many orthopedic surgeons and some neurologists only treat these deformities with braces, thinking surgery has no significant benefit to the patient. This study shows that short-to-medium term follow-up demonstrates clinically important improvement in outcomes for these patients.

IMAGES AND TABLES:

