

Initiation of Ponseti Casting is Not Urgent & No Differences in Outcomes between the Early Casting Group (<4 Weeks Old) and Late Casting Group (1 to 6 Months Old)

Jacob Foster Schulz, Jordan Christopher Giordano, Jessica Johnstone, Katherine Joyce Meurer, Edina Gjonbalaj¹, Alexa J Karkenny, Leila Mehraban Alvandi, Melinda Sharkey

¹Montefiore Medical Center

INTRODUCTION:

The Ponseti method is the standard of care for treatment of congenital clubfoot. It includes a series of manipulations, casts, and a percutaneous Achilles tenotomy, followed by use of foot abduction orthoses. Most literature suggests that casting should be initiated within approximately a week of age for best outcomes. The goal of this study is to determine if there are statistically significant differences between Pirani scores of patients who started Ponseti casting before 4 weeks of age and those who started between 4 weeks and 6 months of age.

METHODS:

This is a retrospective study of patient data collected between 2011-2021 at a tertiary children's hospital. Inclusion criteria were patients with idiopathic clubfoot treated with the Ponseti method and a minimum of 1-year follow up. The number of Ponseti casts, severity of clubfoot deformity (Pirani score), and the age at initiation of casting were recorded. Patients were grouped by age at first cast: Group 1 (< 4 weeks) and Group 2 (4 weeks to 6 months). Outcomes of interest included the number of casts, recurrence rates, Pirani scores, and bracing compliance. Statistical analyses included unpaired nonparametric Mann-Whitney U t-test. A p-value of <0.05 was used to determine statistical significance.

RESULTS:

A total of 87 patients were studied: 60 patients in Group 1 and 27 patients in Group 2. The mean initial Pirani scores between Group 1 and Group 2 were 5.03 ± 1.25 and 4.81 ± 1.18 ($p=0.46$) respectively. The mean final Pirani scores were 0.78 ± 0.77 for Group 1 and 0.76 ± 1.01 for Group 2 ($p=0.92$). The mean total number of casts required between the groups was 7.21 ± 3.69 and 8.05 ± 5.91 ($p=0.32$). The recurrence rate after casting were 36.70% for Group 1 and 35.70% for Group 2. Non-compliance rates for bracing and casting were 43.40% for Group 1 and 46.40% for Group 2.

DISCUSSION AND CONCLUSION:

No significant difference was found between the two groups in the number of casts required, initial or final Pirani score, recurrence rate, or brace compliance. When parents are confronted with treating their child for clubfoot, they may be hesitant to initiate treatment at the first visit. Social determinants of health and complex medical conditions requiring prolonged NICU stays and/or prioritized interventions may also delay access or presentation to pediatric orthopaedic care. Our data suggests that delay of initiation of Ponseti casting by several weeks is unlikely to cause any detrimental effects.

Clubfoot assessment of patients who initiated Ponseti casting before 4 weeks and those between 4 weeks and 6 months.

	Group 1 (casted before 4 weeks)	Group 2 (casted between 4 weeks and 6 months)	P value
Total number of casts required:Mean(SD)(n)	7.21(3.69)(95)	8.05(5.91)(39)	0.32
Initial Pirani Score:Mean(SD)(n)	5.027(1.25)(73)	4.81(1.18)(24)	0.46
Pirani Score at End of Treatment:Mean(SD)	0.783(0.76)(69)	0.762(1.008)(21)	0.92