

**PROSPECTIVE STUDY OF IDIOPATHIC CLUBFOOT MANAGEMENT BY PONSETI TECHNIQUE IN TERTIARY CARE HOSPITAL****Dr. V. Swanthana**

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KEYWORDS :**INTRODUCTION**

Congenital talipes equinovarus (CTEV) is one of the most common congenital deformity encountered in day to day practice of Orthopaedics. It is also known as Clubfoot, which is a complex deformity and challenging to correct. The incidence of CTEV is 1 in every 1000 live births, and most of the cases are bilateral¹. Mainly it has four components: cavus, adduction, varus and equinus.

Most of the CTEV cases are idiopathic in origin, but few are associated with neuromuscular diseases like spina bifida, syndromes like arthrogryposis or amniotic band syndrome. Postural Clubfoot is purely due to the position of the baby in the uterus². Clubfoot is diagnosed in utero by sonographic assessment. Many grading systems assess the deformity, but the Pirani grading system is more reliable and uses only clinical examination for assessing the severity of the deformities³.

The management of Clubfoot is both operative and non-operative. A non-operative treatment designed by Ignacio Ponseti uses serial casts to correct the deformities with or without percutaneous tenotomy followed by application of foot abduction bracing⁴. The success rate of Ponseti's method is over 90% with long term follow up. In this dissertation, we tried to assess the effectiveness of the Ponseti method using Pirani scoring in our study population of CTEV.

AIMS & OBJECTIVES

1. To study the results of the Ponseti technique in idiopathic clubfoot management in children in terms of functional and cosmetic outcome.
2. To discuss the technique, compliance and progressive correction of deformity from serial cast applications.
3. To study the outcome and residual deformities requiring soft tissue release and bony procedures following Ponseti technique.

MATERIALS AND METHODS

- **Study Design:** Prospective observational study
- **Study Period:** 21 months (Jan 2019 to September 2020).
- **Study Area:** Government General hospital, Anantapur
- **Study Population:** Infants and children attending Government General Hospital, Anantapur.

Inclusion Criteria

- 1 Newborn children up to 12 months of age
- 2 Idiopathic Clubfoot
- 3 Unilateral and bilateral cases
- 4 Parents consenting to participate in the study and follow up.

Exclusion Criteria

- 1 Age > 12 months
- 2 Syndromic Clubfoot
- 3 Feet treated previously by other methods.
- 4 Non-compliant parents

- **Sample Size:** The sample size was 25. (21 babies were included in which 4 babies had bilateral clubfoot accounting for total of 25 feet were enrolled in this study.

Pirani-Scoring System

The Pirani score has 2 components midfoot and hindfoot scores.

Midfoot Score

Three signs comprise the Midfoot Score (MS), grading the amount of midfoot deformity between 0 and 3.

- Curved lateral border
- Medial crease.
- Talar head coverage

Hindfoot score

Three signs comprise the Hindfoot Score (HS), grading the amount of midfoot deformity between 0 and 3.

- Posterior crease
- Rigid Equinus
- Empty heel

Depending on the severity each component was given a score of

- 0 if it is normal,
- 0.5 if moderately abnormal
- 1.0 if severely abnormal

The Clubfoot undergoing treatment was assessed for Pirani scoring every week and given a score from 0-6. 0 was normal, and 6 was severe deformity. The scoring was classified into 3 groups.

- Excellent-score- 0
- Good-score- <1
- Poor- >1

The Pirani score was recorded at the time of initial presentation and thereafter every week and during follow up visits.

Ponseti Method;

The treatment under the Ponseti method was in 2 stages.

Initial Phase: Correction of the deformity is done by weekly serial casting.

Maintenance Phase: Maintaining the corrected deformity by bracing.

OBSERVATION AND RESULTS

Table 1: Total Number Of Clubfeet In The Present Study According To Their Age Groups.

Sl.no	Age group (months)	Number of patients	laterality			Number of clubfeet
			Right	Left	Bilateral	
1	0-6	18	7	7	4	7+7+8=22
2	7-12	3	2	1	0	2+1+0=3
Total		21				25

Table 2; Pre-treatment Pirani Scoring Of The Children According To The Age Groups.

Sl.no	Age group (months)	Number of clubfeet	Minimum Value	Maximum Value	Mean
1	0-6	22	4	6	4.72
2	7-12	3	4.5	5	4.83
Total		25			4.74

Table 3; Post-treatment Pirani Scoring Of The Children According To The Age Groups.

Sl.no	Age group (months)	Number of clubfeet	Minimum Value	Maximum Value	Mean
1	0-6	22	0	0.5	0.06
2	7-12	3	0.5	2	1.33
Total		25			0.22

Table 4; Table Showing Number Of Achilles Tenotomy Performed.

Treatment	No. of feet	Percentage
Only serial casting	7	28
Casting + tenotomy	18	72
Total	25	100

Table 5; Number Of Casting Used For Correction.

Sl.no	Age group (months)	Number of clubfeet	Minimum Of casts	Maximum No of casts	Mean
1	0-6	22	4	7	5.63
2	7-12	3	6	7	6.33
Total		25			5.72

DISCUSSION

CTEV is the common congenital deformity whose aetiopathogenesis remains poorly understood. Previously the mainstay of treatment for this disease is surgery but after Ponseti published his results with nonsurgical management of Clubfoot, the management of the Clubfoot changed to non-operative treatment. Surgical options are invasive and associated with stiffness and weakness

The Ponseti method of treatment is serial casting until the correction of cavus, adduction and varus Equinus deformity is corrected either by tenotomy or casting. The present study demonstrates the effective use of the Ponseti technique with and without tenotomy and assessing the outcome of the Ponseti technique in clubfoot patients.

Age Distribution

In our study, the minimum age of presentation was 2 weeks, and the maximum age was 11 months. In a study by Saini et al., the youngest patient was of 3 weeks, and the oldest was 26 weeks

Sex Distribution

In this study, the male to female child ratio was 1.1:1 with almost equal distribution of male and female children

Number Of Castings

The minimum number of casts used in this study to correct cavus, adduction and varus was 4, and the maximum was 7. The mean for a number of casts used was 5.63 in the age group of 0-6 months. The overall mean for the number of casts used in this study was 5.72

Pirani Scoring Pre-treatment

The minimum and maximum pre-treatment values of Pirani scoring were 4 and 6 in this study. Overall mean of pre-treatment Pirani scoring was 4.74.

Post-treatment Pirani Scoring

The minimum and maximum post-treatment values of Pirani scoring were 0 and 2 in this study. Overall mean of post-treatment Pirani scoring was 0.22

Tendoachilles Tenotomy

In the present study, 72% of clubfeet underwent tendoachilles tenotomy. In a study done by Parikh, 64.62% of feet underwent tenotomy, which was near to the present study²⁷

Success Rate

The Success rate for Ponseti technique was 92% in this study. The success rate for this technique has been reported in literature ranging from 89% to 94%

CONCLUSION

1. Ponseti method is the best alternative to surgical treatment in the management of Clubfoot.
2. It avoids surgical complications and results in a painless, normal-looking, functional foot with fairly good mobility.
3. 14% of children were presented after 6 months of age in this study.
4. Earlier the child presents, easier to correct the deformity. So the parents and the society should be educated about the nonsurgical clubfoot treatment and advised to consult as early as possible after birth.
5. After starting the treatment, parents and children compliance are very important in the better execution of the Ponseti treatment protocol.
6. Proper education, motivation and persuading the parents to accept long-term brace treatment helps maintain the correction over a longer period of time and prevents relapse.
7. The Ponseti method is the best method to manage Clubfoot with a success rate of 92% according to this study.

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