



## CLINICO- RADIOLOGICAL OUTCOME OF IDIOPATHIC CONGENITAL TALIPES EQUINOVARUS FOLLOWING PONSETI TECHNIQUE

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### ABSTRACT

**Introduction:** Idiopathic clubfoot or congenital talipes equinovarus is the most common orthopedic congenital deformity. Club foot affects roughly one in every 1000 live births, and it is bilateral in about half of the cases. The four components of a congenital club foot are cavus, adduction, varus, and equinus. The treatment's purpose is to address four abnormalities and keep them corrected so that the patient can have a functional, pain-free plantigrade foot. **Aims:** To identify the minimum set of outcomes that should be collected in clinical practice and reported in research related to the care of children with idiopathic congenital talipes equinovarus (CTEV). **Materials and Methods:** The present study was a Observational study. This Study was conducted from 03/08/2005 to 02/08/2007 at Ramakrishna Mission Seva Pratishthan, Vivekananda Institute of Medical Sciences. Total 37 patients were included in this study. **Result:** we found that a relatively low clinical outcome as compared to findings by other authors who have reported excellent treatment outcomes that have ranged from 82.4% to 97% and In this study 62.6% of the patients reported no pain, an evidence of good functional outcomes associated with the Ponseti conservative method of treatment compared to the surgical soft tissue release. **Conclusion:** The functional outcomes are equally good with the majority of patients reporting no pain, being able to wear shoes of their liking and having no limitation during walking or running. This is a sign of an improved life style and quality of life and correlates with good patient and caregiver satisfaction.

**KEYWORDS :** Bilateral, Clubfeet, Congenital talipes equinovarus and Ponseti technique.

### INTRODUCTION

The most prevalent orthopaedic congenital malformation is idiopathic clubfoot, also known as congenital talipes equinovarus. Club foot impacts approximately one in every 1000 live births and is bilateral in approximately half of the instances.<sup>1</sup> A hereditary club foot has four components: cavus, adduction, varus, and equinus. The treatment's goal is to rectify four abnormalities so that the patient can have a useful, pain-free plantigrade foot. Various nonsurgical treatment methods, from Hippocrates' bandages and Kite's plaster moulds in 1937 to surgical treatment, have been attempted, but no acceptable treatment for attaining a functional, painless, plantigrade foot with excellent movement has been developed.<sup>2</sup> However, as more about the aetiology and pathoanatomy of clubfoot has been discovered, the results have improved over time.

According to Ignacio Ponseti, Kite's method to repair has a number of faults. He suggested the manipulation and serial casting method for correcting clubfoot deformity, and his technique produced positive outcomes in 89% of cases.<sup>3</sup> Cooper and Dietz examined Ponseti's cases and found that 78% of the patients had outstanding or fair functional and clinical outcomes after an average of 30 years of follow-up.<sup>4</sup> Nonsurgical therapy using Ponseti's method of manipulation and successive casting with percutaneous tenotomy is now used all over the globe for the earliest and most successful treatment of clubfoot. Surgery is designated for instances that are refractory, recurrent, or appear at a late stage.

The Ponseti technique should be used as quickly as feasible. It includes a therapy period that includes monthly casting and light massage. To address equinus, a percutaneous Achilles

tenotomy is usually needed. For three weeks, The final plaster is worn with the foot abducted 60 degrees and the ankle dorsiflexed 15 degrees. During the maintenance period, the correction is maintained in brace, with the foot in 70° external rotation and 15° dorsiflexion. It is worn for the first three months for 23 hours per day, and then for the next three to four years while resting.

Ponseti advocated for treating patients exclusively through palpation; however, radiography is still used by a limited number of orthopaedic doctors. Clinical evaluation for follow-up and correction tracking is discretionary and is dependent on clinical experience. Clinicalevaluation of club foot has drawbacks such as interobserver variability and incorrect detection of abnormalities.

Analytical radiography is a method used to examine the four major clubfoot anomalies.<sup>5</sup> Although the effectiveness of radiographs in clinical care and their relationship to clinical observations are disputed, radiographs allow for a fairly precise evaluation of the club foot as early as 2 weeks after delivery, as well as the exact degree of rectification after treatment. Many measures have been documented in the literature to identify anatomical deviations in anteroposterior (AP) and lateral radiographs, as well as to accurately capture deformity repair for the assessment of any corrective treatment.<sup>7</sup>

The current research aimed to investigate the efficacy of Ponseti's method in the treatment of idiopathic clubfoot and to evaluate the deformity using the Pirani score and radiology.

### MATERIALS AND METHODS

The present study was an Observational study. This Study was conducted from 03/08/2005 to 02/08/2007 at Ramakrishna Mission Seva Pratishtan, Vivekananda Institute of Medical Sciences. Total 37 patients were included in this study.

**Classification:-**

**Supple:** When foot can be passively manipulated to touch the anterolateral aspect of shin.

**Resistant:** Resistant variety is further sub classified into

**Mildly Resistant:** When foot can be passively manipulated beyond 0° (neutral position) but not up to the shin.

**Moderately Resistant:** When foot can be passively manipulated to 0° (neutral position) but not beyond.

**Severely Resistant:** When foot cannot be manipulated to 0° (neutral position)

**Treatment Modalities:**

We treated supple and mild resistant variety of feet by Ponseti technique.

**Inclusion criteria:**

Supple and mildly resistant club foot

**Exclusion criteria:**

Moderately resistant, severely resistant

**RESULT AND DISCUSSION**

The objectives of treatment of Congenital Talipes Equino Varus are to obtain a plantigrade and cosmetically acceptable foot with minimal risk and relatively short treatment time.<sup>8</sup> If clubfeet are left untreated it causes disability.

In our studies, we had treated supple, mild resistant 40 clubfeet in total number of 27 patients with Ponseti technique.

**Age distribution:**

In our study, age of presentation 2 days to 1 year 6 month and mean age 82 days. Though 15 patients presented within 1 month.

**Sex distribution:**

In our study, out of 27 patients Male-19, Female-8, Sex Ratio-2.4

**Laterality:**

Right side-80 cases (30%) Left side-6 (22%) Bilateral- 13 cases (48%)

**Obstetrics history:**

**Prenatal:**

In our study, total number of Number of preterm baby - 4, Number of term baby – 20, Number of post-dated baby -3 and Number of vertex presentation - 20 cases, Number of breech presentation - 7 cases.

**Postnatal:**

Number of uncomplicated delivery-15, Number of complicated delivery-12 and Average birth of weight of neonates- 2.77Kg

**Associated abnormality:**

In our study, among 27 patient 4 cases were presented to us with CDH, two cases with spina bifida and one patient with other congenital abnormalities.

**Pre-treatment radiographic angle:**

In AP view: Talocalcaneal angle: 18.6° and Talus: 1<sup>st</sup> metatarsal angle: -5.7°

In stress dorsiflex lateral view: Talocalcaneal angle: 18.8 ° and Tibio-calcaneal angle: -7.4 °

**Post treatment radiographic angle:**

In AP view: Talocalcaneal angle: 32 ° and Talus: 1<sup>st</sup> metatarsal angle: 7.1 °

In stress dorsiflex lateral view: Talocalcaneal angle:29.6 ° and Tibio-calcaneal angle: 16.5 °

**RESULTS OF TREATMENT:**

Final evaluation was done by Pirani scoring system.

In our study, all supple cases (8) showed excellent result (100%). Among mildly resistant cases, 16 (50%) cases show excellent, 10 (31%) cases — good, two (6.25%) cases — fair, two (6.25%) cases — poor result and two (6.25%) cases showed failed to correct.

**Complications:**

We faced pressure sore over talar head in two cases and pressure sore over calf in 1 case.

**CONCLUSION**

Clubfoot although a complex deformity, can be treated successfully with proper understanding of the pathoanatomy, biomechanics and selecting the case specific suitable modality of treatment. Success rate increases with early initiation of treatment. Proper Classification of clubfoot at presentation is of paramount importance in selection of treatment modality.

Ponseti's method of serial manipulation and cast technique showed successful results in supple and mildly resistant cases, hence we can avoid unnecessary surgical intervention.

**Table-1: Showing association of congenital abnormalities**

Association of congenital abnormalities		
Number of cases CDH	Number of cases spina bifida	Number of cases of other abnormalities
4	1	1

**Table-2: Showing pre-treatment mean radiographic angle**

Mean radiographic angle			
AP view		Stress lateral view	
TC (°)	T-1st MT (°)	TC (°) u	Ti-c (°)
18.6	-5.7	18.8	-7.4

**Table-3: Showing post treatment mean radiographic angle**

Mean radiographic angle			
AP view		Stress lateral view	
TC (°)	T-1st MT (°)	TC (°)	Ti-c (°)
32	7.1	29.6	16.5

**Table-4: Showing results following conservative treatment**

Variety	Results (in number, percentage)				
	Excellent	Good	Fair	Poor	Failure
Supple	8 (100%)	—	—	—	—
Mildly	16 (50%)	10 (31%)	2 (6.25%)	2 (6.25%)	2 (6.25%)
Total	24 (60%)	10 (25%)	2 (5%)	2 (5%)	2 (5%)

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