



EVALUATION OF OUTCOME IN IDIOPATHIC CLUBFOOT MANAGED BY ACCELERATED PONSETI METHOD

Orthopaedics

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ABSTRACT

Introduction: Clubfoot (CTEV) is a severe anomaly of foot, needs to be corrected. The recent trend for clubfoot treatment includes series manipulation, stretching, immobilization, and for the relapse and resistant cases management includes soft tissue releases, osteotomy and immobilization. **Material and Methods:** The study was conducted in Department of Orthopaedics, JLN Medical College in Ajmer (Raj). between September 2020 to August 2022 on confirmed to be idiopathic clubfoot, by ruling out any other congenital anomalies. **Results and Observations:** The management with Ponseti technique was completed with 60 patients with 90 affected foot. Most frequent age at presentation was 3.0 months. **Conclusion:** Accelerated Ponseti technique gives a painless, plantigrade, mobile and cosmetically acceptable foot.

KEYWORDS

Congenital talipes equinovarus, Accelerated Ponseti technique, Pirani score

INTRODUCTION:

The history of clubfoot comes from as early as Egyptian times. The first written description of clubfoot was given by Hippocrates in 400 B.C.¹ There are pictorial depictions of clubfoot in the Egyptian tomb paintings, and the treatment was described in India as early as 1000 B.C.². The treatment of CTEV started in the ancient times which has been conservative management in form of manipulation with strapping, casting etc. Since years it has been treated by different conservative and surgical methods.

Clubfoot, also called as "Congenital talipes equinovarus" or "CTEV". It is idiopathic and one of the commonest congenital condition. It is a severe anomaly of foot, needs to be corrected. But it has high tendency to relapse, need for repeat surgeries, extensive soft tissue handling, scarring, which ultimately gives non flexible painful foot with disabilities.

Ponseti technique is cost effective, can be done with minimal resources and can be done in peripheral rural areas³. Gartland's famous observation of clubfoot in 1964 was "We are still crippling with a problem the cause of which is not known, the pathological anatomy of which is uncertain, the behavior of which is uncertain and the treatment of which remains controversial"⁴. This stands good even today.

The methods described by J.H. Kite, Ignacio V. Ponseti and French methods are conservative. Amongst these, the technique described by Ignacio V. Ponseti which includes gradual and sequential correction of all deformities by manipulation and immobilization with cast at about weekly interval gained maximum popularity. So the study of correction of clubfoot deformity by Accelerated Ponseti technique is done to analyze its effectiveness and functional outcome in children below two years of age and without any prior treatment for the same.

The purpose of the treatment of CTEV is to reduce the deformities with painless functional plantigrade foot with good mobility without any modified shoes and within cosmetically acceptable limits. The recent trend for clubfoot treatment includes series manipulation, stretching, immobilization, and for the relapse and resistant cases management includes soft tissue releases, osteotomy and immobilization.

AIMS AND OBJECTIVES:

to study the efficacy of accelerated Ponseti method (every 5th day casting) in the management of CTEV and to study the Effect of initial Pirani score on final outcome.

MATERIAL AND METHODS:

The study was conducted in Department of Orthopaedics, JLN Medical College in Ajmer (Raj). between September 2020 to August 2022 on confirmed to be idiopathic clubfoot. The cases were confirmed to be idiopathic clubfoot, by ruling out any other congenital anomalies example spinal abnormalities, Arthrogryposis multiplex congenita or history of exposure to radiation or any teratogenic drug intake during pregnancy.

60 patients entered in the study with 90 idiopathic clubfoot, after explaining the treatment. Patient were explained for about 6 to 10 casts at weekly interval, tenotomy and wearing of foot abduction brace till 3 to 4 years of age, and then regular follow up till maturity.

Inclusion Criteria:

All cases are selected on the basis of

- From newborn babies up to children of 5 years with idiopathic clubfoot.
- Unilateral and bilateral cases.

Exclusion Criteria:

- Postural, Syndromic, Neglected, Relapsed, club foot.
- Patients above the age of 5 years.
- Patients who are unfit and noncompliant to the described technique.

Two methods for equinus correction were used : By cast application and by Percutaneous tenotomy

Earlier the age at presentation, lower the require the requirement of number of cast application, provided Pirani score should not be towards higher side. There was no apparent difference in proportion of tenotomy and cast application separately among male and female, for equinus correction

RESULTS :

Table 1 : Age Distribution

Age Group (Months)	Number	Percentage
0-6 Months	28	46.67
6-12 Months	24	40.00
12-18	8	13.33
Total	60	100.00

The minimum age at presentation for starting treatment was 10 days. The most common age at presentation was between 0-6 months, and the least common was between age >18-24 months with no patient in our study.

Table 2 : Sex Distribution

Sex	Number	Percentage
Male	39	65.00
Female	21	35.00
Total	60	100.00

There were total 39 male and 21 female patients who entered in study and constituted 65% and 35% respectively.

Table 3 : Correlation Between Laterality And Sex For Patients

		Male	Percentage among Male	Female	Percentage among Female
Bilateral		16	41.03	10	47.62
Unilateral	Right	17	43.59	6	28.57
	Left	6	15.38	5	23.81
Total		39	100.00	21	100.00

Laterality and sex:

Among male, unilateral patient are 23 (59.07%) and bilateral are 16 (41.03%), the same among females, unilateral patients are 11 (52.38%) and 10 (47.62%) respectively.

Table 4 : Methods Of Equinus Correction In Foot

Methods of equinus correction	Frequency	Percentage
Tenotomy	69	76.67
Cast	21	23.33
Total Foot	90	100

Method of Equinus correction:

Equinus was corrected by cast or tendo achillis tenotomy. Out of 90 foot, tenotomy was done to 69 foot (76.67%), and cast correction was done for 21 foot (23.33%) foot (table 22, Graph 10).

Table 5 : Comparison Of Correction Of Equinus In The Same Age Group

Age Group (Months)	By Tenotomy	By Cast
0-6 Months	32	18
6-12 Months	30	2
12-18	7	1
> 18	0	0

Correction of equinus in the same age group:

The equinus of 0-6 month age group was only corrected by both tenotomy and casting, and in the higher age group maximum cases were corrected by tenotomy more than casting.

DISCUSSION:

In our study, the most common age range for presentation was 0-6 months. This constitutes 46.67%. The ratio of male to female in our study was 1.8:1. This similar male to female ratio was found in David A. Spiegel's study 31,70. However the ratio on different studies are different^{2,5}.

Patients with isolated right side clubfoot (40%) were more common, more than the bilaterally (43.33%) affected patients. Least common was isolated left sided clubfoot (16.66%). In general, studies shows bilateral patients to be more common than ours, as in R.A Agrwal et al's 40%⁶, Ankur G. et al's 37.66%².

S. Mageshwaran et al (2016)⁷ conducted a study and found that total of 40 children (51 feet) were treated; of which 20 children (26 feet) were treated by Standard Ponseti method and 20 children (25 feet) were treated by Ponseti method. In the standard Ponseti group 6 children had bilateral clubfoot, 8 were unilateral on left side and 6 were unilateral on right side. Among 20 children, 12 (60%) were male and 8 (40%) were female Mean age at presentation was 28.4 days. Total mean Pirani score at presentation was 4.97. Most of the cases required six casts for correction with a mean of 5.55. Tenotomy was performed in 3 cases (11.5%). The mean number of days the child was in cast was 52.8. Three cases (15%) had a relapse.

Islam MS et al (2020)⁸ conducted a study with the average number of casts required to correct all the deformities was 6.3 ± 1.2 in the standard group and 6.1 ± 1.4 in the accelerated group ($p = 0.45$). Average time spent in cast was 58.2 ± 8.3 days in the standard group and 39.5 ± 5.2 days in the accelerated group ($p < 0.001$). Percutaneous Achilles tendon tenotomy was done in 86.42% in the standard group and in 84.41% in the accelerated group ($p = 0.72$).

Kumar R et al. (2020)⁹ analyze the efficacy of accelerated Ponseti method in the management of CTEV. A total of 70 children (100 feet) were treated. In the standard Ponseti group, 15 children had bilateral clubfoot, 10 were unilateral on left side, and 10 were unilateral on right side. Among 35 children, 22 (62.86%) were male and 13 (37.14%) were female. Most of the cases required six casts for correction, with a mean of 5.77. Tenotomy was performed in 4 cases (11.43%). The mean number of days the child was in cast was 52.8. 6 cases (17.14%) had a relapse.

CONCLUSION :

The incidence in males is twice as compared to females. Right sided affection is most common. Most commonly clubfoot presents with a Pirani severity score of 3.5-4.5. The results are better if the treatment is started in younger age. The number of cast applied in Accelerated Ponseti method, increases with the increase in age at presentation and Pirani severity score. Correction of equinus is with cast is more effective in early age and low Pirani severity score. Compliance and regular visit to clinic was important.

Accelerated Ponseti method of clubfoot treatment has excellent results, with low expenditure and with minimum surgical intervention (percutaneous tenotomy). Accelerated Ponseti technique gives a painless, plantigrade, mobile and cosmetically acceptable foot. Accelerated Ponseti technique can be implemented in rural area after training plaster room attenders also, with caution.

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