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Research article

TREATMENT OF IDIOPATHIC CONGENITAL TALIPES EQUINO VARUS DEFORMITY BY PONSETI TECHNIQUE IN RURAL POPULATION

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ABSTRACT

Background: Congenital talipes equinovarus is one of the commonest congenital anomaly of the foot with an incidence of 1 to 2 per 1000 live births. Most of the Clubfoot deformities are not recognized at birth and when recognized, there is no treatment available due to lack of awareness among the people. Nonoperative correction of the Clubfoot by Ponseti is an effective modality of treatment with excellent results. **Methods:** 38 feet of Idiopathic Congenital Talipes Equinus Varus Deformity were treated in children between the age group of 1 month- 1.8 months. The severity of foot deformity was assessed as per the Pirani scoring system. **Results:** 16 Males (66.66 %) and 8 Females (33.33 %) patients were included in the study with 10 (41.7%) Unilateral and 14 (58.3 %) bilateral cases. The mean of Pirani scores after the final cast was 3.02 and at 1,2 and 6 months are 0, 0 and 0.08 respectively. Standard deviation and Standard error were 0.070 and 0.014 respectively. Therefore $p = 0.01$, that is highly significant **Conclusion:** Treatment of Idiopathic clubfoot by Ponseti technique is an effective, time tested, simple technique with a low learning curve and minimizing the need for extensive surgeries.

Keywords: Ponseti technique, Idiopathic Clubfoot

INTRODUCTION

Congenital talipes equinovarus or clubfoot is one of the commonest congenital deformities, incidence being 1-2 per thousand births. Since Hippocrates's time, the treatment of clubfoot has remained perplexing. There has been much debate in the past two decades as to whether conservative or operative treatment was more effective in the treatment of clubfoot deformity.¹

Now, most of the centers consider non operative treatment as the first choice for early cases and favor surgical corrective procedure for rigid clubfoot which does not respond to treatment by manipulation.^{2,3} The genes responsible for clubfoot deformity are actively starting from the 12th to the 20th weeks of fetal life and lasting until three to five years of age¹⁻³. Idiopathic

clubfoot, when detected early can be treated by a simple conservative method of ponseti technique requiring minimal or no surgical intervention at the end of the treatment.

MATERIALS AND METHOD

The present study was done in the department of Orthopaedics, Rural Medical College, Loni from the month of June 2011 to July 2012 in children between the age group of 1 month to 1.8 months after the permission of the Institutional Ethics Committee. Total 38 feet (10 unilateral, and 14 bilateral) Idiopathic Congenital Talipes Equinus varus deformity were treated. Males and Females of less than 2 years of age with Idiopathic CTEV, who have not received any other modality of treatment in the form of Conservative or Operative method or included in the present study. Resistant, Recurrent and Neglected (>2 years of Age) cases of CTEV. Pirani scoring (Table 1) of all the patients was done every week after the cast removal and noted as hind foot score, mid foot score, and total score. Manipulation and casting were done on OPD basis. The correction of the deformity as described in the literature was divided into two phases. Treatment Phase comprising of gentle manipulation and above knee casting which was done weekly holding the foot in the permitted range of abduction (Fulcrum at the

lateral aspect of the talus). The order of correction started with the cavus deformity and Equinus corrected at the last. Percutaneous tendo Achilles tenotomy was done when the Midfoot score was zero or 0.5. The suppleness of the foot was assessed before performing the tenotomy which was done in the minor operation theatre. The patient was applied above knee cast application after performing the tenotomy, 30°- 40° abduction and 10°- 20° dorsiflexion which was kept for 3weeks duration. Maintenance Phase: Consisted of use of Steenbeek abduction foot braces with 60°- 70°. External rotation and 10°-15° dorsiflexion (Unilateral cases the external rotation was kept to 35°-40°). The width of the bar between the brace was equal to the width of the shoulder and the bar was bent 5° to 10° with the convexity away from the child, to hold the feet in dorsiflexion. The measurements of the brace were taken after 3 weeks follow up of the patient (Post tenotomy) and parents were explained to use it for 23 hours a day for first 3months followed by gradual tapering the braces. Patients were regularly assessed every week for the first month, every fortnight for the second month and thereby once every month. During the subsequent follow-ups, the feet were assessed for dorsiflexion and amount of abduction achieved.



Fig.1: Initial cast



Fig.2: After final (5th) cast

RESULTS

16males (66.66%) and 8 females (33.33%) patients were included in the study with 10 (41.7%) unilateral and 14 (58.3%) bilateral cases. The average number of casts applied was between 5-7 (One patient required 9 cast applications). The end results were assessed on the basis of Pirani scoring and the mean of initial Pirani score and the final Pirani score was .575 and 0 respectively. Mean at 1,2 and 6 months are 0,0 and 0.08 respectively. The standard deviation was 0.070 and the standard error was 0.014. Therefore $p=0.01$ and it is highly significant.

Table.1 : Pirani scoring

Hind foot score			
Score name	Mild (0)	Moderate (0.5)	Severe (1)
Posterior crease	Multiple fine creases	One or two deep creases	Deep creases change contour of the arch
Rigidity of Equinus	Normal ankle dorsiflexion	Ankle dorsiflexes upto neutral	Ankle dorsiflexes beyond neutral
Empty Heel	Tuberosity of the calcaneum easily palpable	Tuberosity of calcaneus more difficult to palpate	Tuberosity of calcaneus not palpable
Mid foot score			
Curvature of lateral border of foot	Straight	Mild distal curve	Curve at calcaneocuboid joint
Severity of medial crease	Multiple fine creases	One or two deep creases	Deep creases change contour of arch
Palpation of lateral part of head of talus	Navicular completely “reduces”; the lateral talar head cannot be felt	Navicular partially “reduces”; lateral headless palpable	Navicular does not “reduce”; lateral talar head easily felt

DISCUSSION

The goal of the treatment in CTEV is to obtain functional, pain free, normal looking, plantigrade foot with good mobility and requiring no

modification with shoes. Correction of the idiopathic clubfoot deformity by poinsettias method, requires dedicated and tiring efforts on

the part of both, the treating surgeon as well as the parents. Ponseti treatment for clubfoot has been gaining in popularity due to the good results demonstrated by Ponseti and other institutions⁴. The percutaneous tenotomy which is done for the correction of the equines deformity forms an integral and important part of the treatment. The guidelines regarding patient selection and treatment protocol vary between investigators^{5,6,7}. In our study we started the treatment as early as 1 month of age. In the babies who presented to us before the age of 1 month, gentle manipulation was taught to the mother who was asked to do it 4-6 times a day preferably during feeding the baby. In the series, the male to female ratio is high (2:1) in comparison to the series of Cowell and Wein¹ and Yamamoto³ (3:1). The reason for such a variation can be due to the fact that more attention is being given to the males as compared to the female counterparts in our area. In our study, 1 patient had been applied 9 casts, the reason for which can be noncompliance from the parents regarding proper care of the plaster casts.

CONCLUSION

Although it was a small study with the sample size of only 38 feet, yet the results of the Ponseti methodology for the treatment of Idiopathic clubfoot is very effective with very low recurrence when the technique is used effectively. Ponseti and Smoley⁸ reported that open surgery was avoided in 89% of cases by this technique of manipulation, casting and limited surgery. Kite^{9,10} illustrated his method of clubfoot correction in 1964. He suggested that the abduction of the foot can be corrected if the fulcrum is kept at the calcaneocuboid joint. Ignacio Ponseti, in the year 1948 described a technique in which the whole foot is held in supination and in flexion, it can be gently and gradually abducted under the talus secured against rotation in the ankle mortise by applying counter-pressure with the thumb against the

lateral aspect of head of the talus¹¹. The correction of deformity can start from 4 to 6 weeks from birth & the treatment phase can end in 3 to 4 months from the beginning of treatment followed by Steenbeck abduction foot brace use till 3-4 years of age.

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