

The Effectiveness of Ponseti Technique in the Management of Club Foot at Two Months

MOHAMMAD RAFIQ SABIR, IRAM CHAUDHRY, MUHAMMAD KAMRAN SHAFI, ADNAN YAQUB, SYEDA QURRAH-TUL-AIN HUMAIRA RIZVI

Department of Orthopaedic & Gynaecology, B. V. Hospital, Bahawalpur

Correspondence to: Dr. Muhammad Kamran Shafi, Senior Registrar, Orthopaedic Department, B.V.Hospital Bahawalpur

ABSTRACT

Introduction: Clubfoot deformity in children is difficult to treat because of complex pathological anatomy of the growing foot. In early weeks of life the treatment of choice is always conservative. Thus, the manipulation and casting techniques of KITE and PONSETI are commonly use with good outcome. We have compared only the short-term results of these two methods by conducting a randomized control trial.

Objective: Comparison of KITE with PONSETI method for the treatment of clubfoot in means of passive range of dorsiflexion of ankle joint after treatment at two months.

Material and Methods: Randomized controlled trial conducted for eight months at Department of Orthopaedics Bahawal Victoria Hospital Bahawalpur.

Results: A total of 100 patients with grade-II clubfoot deformity were recruited and divided into two groups for comparison of both techniques. The data was collected and than analyzed. The mean age in-group A was 26.02 weeks and in-group B was 26.05. In-group A 66.67% were male and 33.33% were female while in-group B 75% male and 25% were female. In-group A 75% of the patient had > 25° passive range of dorsiflexion and in group B 89.58% had the same range of motion. In group A 25% and in group B 10.42% could not meet this criteria.

Conclusion: Conservative treatment with PONSETI technique is the best treatment option for clubfoot at an early age.

Key words: Clubfoot, Kite & Lovell's method, Ponseti's method, passive range of dorsiflexion.

INTRODUCTION

Clubfoot is one of the most common congenital Orthopaedics anomalies and was described by hippocrates in the year 400C BC ¹. However, it still continues to challenge the skills of the pediatric Orthopaedic surgeon as it has notorious tendency to relapse, irrespective of whether the foot is treated by conservative or operative means. Part of the reason that the foot relapses is the surgeon's failure to recognize the underlying pathoanatomy. Regarding treatment of clubfoot, in recent years, interest has been renewed in the ponseti casting technique, and many centers now believe that most clubfeet can be treated by Ponseti casting rather than surgery. Successful correction of clubfoot deformity generally is reported in 90% to 98% of children treated with ponseti casting. Bor et al ², Goksan et al, ³ and morcuende et al ⁴ reported that Ponseti casting can be used in children 2 years old, even after previous unsuccessful non-operative treatment.

Kite's technique is also a technique for the treatment of clubfoot. But Ponseti's technique is

getting popular among doctors and parents of the patients and some studies concluded that Ponseti's method revolutionizes clubfoot treatment. This study is conducted with the view to compare these two methods.

MATERIAL AND METHODS

A total of 100 patients with Grade-2 clubfoot deformity were studied to compare Kite & Lovell's method with Ponseti's method for the treatment of clubfoot in means of passive range of dorsiflexion at ankle joint after treatment at two months. This study was done during the years of 2007-2008 at Orthopaedics Department of Quaid-e-Azam Medical College Bahawal Victoria Hospital Bahawalpur. The patients from day 01 to one year of age, either gender and grade 2 club foot deformity are included in the study, while teratologic clubfoot, syndromic clubfoot (cerebral palsy, meningocele, arthrogyposis), Relapsed clubfoot, and Grade 1 & 3 were excluded from the study. Eligible patients were taken from out patient department and their parents were explained

regarding study procedure and its purpose in brief and verbal consent was taken. Two groups were made Group-A (Kite Method) and B (Ponsetti method). The collected data was entered and analyzed in computer software SPSS version 10. Frequency and percentage was calculated for gender mean and standard deviation was calculated for age. The end of study, the success rate was calculated on the basis of passive range of dorsiflexion at the ankle after treatment at two months in both groups (normal value is >25⁰). The difference between two groups of success was subjected to statistical significance. As the study variable was categorical so chi-square test was used as test of significance. The level of significance used was 0.05.

RESULTS

In this study, table No.1 shows the distribution of the patients according to their age group, majority of the patients 32% (n=16) were recorded between 25-30 weeks of age, 28% (n=14) were found in 19-24 weeks, 20%(n=10) in 31-36 weeks while 12%(n=6) was found in 7-18 weeks of age in Group-A.

In Group- B, majority of the patients 38%(n=19) were recorded between 25-30 weeks of age. 24%(n=12) were found in 19-24 weeks, 16%(n=8) in 7-18 weeks while 14%(n=7) was found in 31-36 weeks of age in Group-B. The mean age was recorded as 26.2 with 1.24S.D.

We analyzed gender distribution in our study, male were found in 68%(n=34) while females were found 32%(n=16) in Group-A while in Group-B, male will and 36%(n=12) were female. (Table No.2).

Table-1: Distribution of the Patients According to their Age

Age (In weeks)	No. Of Patient	
	Group-A	Group-B
0-6	02	03
7-18	06	08
19-24	14	12
25-30	16	19
31-36	10	07
>36	02	01
Total	50	50
Mean & S, D.	26.2 ± 1.24	

In table No. 3, we recorded outcome of both the procedures at two months follow-up, in Group-A success rate was recorded in 76%(n=38) and failure was 24%(n=12) while in Group-B, 90%(n=45) were found success with > 25⁰ passive range of dorsiflexion at ankle while only 10%(n=5) could not meet this criteria.

Table-2: Distribution of the Patients According to their Gender

Gender	No. Of Patient	
	Group-A	Group-B
Male	34	38
Female	16	12
Total	50	50

Table-3: Distribution Of The Patients According To Their Outcome

Out Come	No. Of Patient	
	Group-A	Group-B
Successful	38	45
Failure	12	05
Total	50	50

DISCUSSION

Since 2002, several studies have surfaced demonstrating the successful use of the Ponsetti method in clubfoot correction, ⁹ so much so that the method is becoming an accepted treatment of idiopathic clubfoot all over the world. Laaveg and Ponseti reported that 90% of their patients were satisfied with the function and appearance of their feet on long-term follow-up (average 19 years). ¹⁰

Some of these patients who were followed up for 30 years showed no deterioration of the function or appearance of the feet.¹¹ it has been written rather convincingly by Cummings that he found Ponseti’s method to be more effective in treating congenital clubfoot non-operatively, even though he had used Kite’s technique successfully to correct this deformity. ¹²

This method has reported not only clinical correction, but has also shown correction of the individual tarsal anlage as well as their relationships on magnetic resonance imaging. ¹³. Having used both techniques in our study, it became evident that the success rate with Ponseti’s method was significantly higher. It also corrected very severe feet in a significantly shorter time period, thereby reducing the agony and distress to patients as well as parents. Superior results may be attributed to correcting all

deformities simultaneously, correcting the cavus in the supinated position (called the magic move of Ponseti).¹⁴

In our series, we included 50 patients in each group with grade 2, we found 90% success results in patients treated with Ponseti's method while 76% results were recorded in patients with Kite's method, which shows higher success rate in Ponseti's method.

Our results are in agreement with a local study conducted by Shahabud Din, Shakeel Ahmed Shah, Sikander Hayat,¹⁵ at Peshawar, they recorded 81.24% excellent results with Ponseti's method.

We find Ponseti's method to be far superior in correcting all deformities in a shorter period of time, thereby reducing the requirement of surgical intervention. Encouraged with the results of short-time study, we will not hesitate to offer Ponseti's method of management as the first line of conservative treatment to the patients attending our clubfoot clinic.

CONCLUSION

Conservative treatment is the best option of treatment for congenital Talipes Equino Varus (clubfoot), which starts at an early age. Prevents future deformity in children and lessens the burden over the society.

REFERENCE

1. Kite JH. The Clubfoot. Grune and Stratton: New York; 1964.
2. Bor N, Herzenberg JE, Frick SL. Ponseti management of Clubfoot in older infants. Clin Orthop Relat Res 2006; 444:224.
3. Goksan SB, Bursali A, Bilgili F. Ponseti Technique for the correction of idiopathic clubfeet presenting up to 1 year of age. A preliminary study in children with untreated or complex deformities. Arch Orthop Trauma Surg 2006; 126:15.
4. Morcuende JA, Dolan LA, Dietz FR, Ponseti IV: Radical reduction in the rate of extensive corrective surgery for clubfoot using the Ponseti method. Pediatrics 2004; 113:376.
5. Herzenberg JE, Radler C, Bor N. Ponseti Versus traditional method of casting for idiopathic clubfoot. J pediatr Orthop 2002;22:517-20.
6. Ippolito E, Farsetti P, Caterini R, Tudisco C. Long-term comparative results in patients with congenital clubfoot treated with two different protocols. J Bone Joint Surg 2003; 85A(7):1286-1294.
7. Lehman WB, Mohaideen A, Madan S.A method for the early evaluation of the Ponseti (Iowa) technique for treatment of idiopathic clubfoot. J Pediatr Orthop (B) 2003;12:133-140.
8. Morcuende JA, Abbasi D, LA Dolan, Ponseti IV. Results of an accelerated Ponseti protocol for clubfoot. J Pediatr Orthop 2005;25:623-626.
9. Segev E, Keret D, Lokiec F, Yavor A, Wientroub S, Extra E, Havek S. Early experience with the Ponseti method for treatment of congenital idiopathic clubfoot. Isr Med Assoc J 2005; 7:307-10.
10. Laaveg SJ, Ponseti IV. Long-term results of treatment of congenital clubfoot. J Bone Joint Surg 1980;62-A:23-31.
11. Cooper DM, Dietz FR. Treatment of idiopathic clubfoot-a 30-year follow-up note. J Bone Joint Surg 1995; 77-A: 1477-1489.
12. Cummings RJ. Letter to editor. J Bone Joint surg 2002; 84-A: 1890.
13. Pirani S, Zeznik L, Hodges D. MRI study of congenital clubfoot treated with Ponseti method. J Pediatr Orthop 2001;21:719-25.
14. Scher DM. The Ponseti method of treatment of clubfoot. Curr Opin Pediatr 2006;18:22-28.
15. Shahabud Din, Shakeel Ahmed Shah, Sikander Hayat, Conservative treatment of congenital talipes Equino Varus (Clubfoot) J Postgrad Med Inst 2004; 18:368-72.