Experience of the Club Foot Management by Ponseti Technique

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Abstract

Objectives: To find out the results of Ponseti for the treatment of clubfoot.
Design: Prospective and Experimental.
Material and Methods: Sixty patients comprising both gender (Male & Female) were included in this study, age less than 09 months with Congenital Telipes Equinovarus were evaluated by Pirani Scoring method, treated by Ponseti Technique having two years follow up.
Results: - Out of 60 Patients, males 32(53.4%) and females were 28(46.7%). In this study 24(40%) Bilateral and 36(60%) were Unilateral. According to Pirani Scoring Method; 40(66.6%) patients severely deformed and 20(33.4%) were moderately deformed, percutaneous tenotomies of tendo achillis was done in 30(50%). Three patients developed complications, two developed recurrence and operated by Posteromedial release and one developed Plaster Sore.

Keywords: - Talipes Equinovarus, Ponseti Procedure, Serial casting.

Introduction

Most common congenital and complex type of deformities is Clubfoot. Out of 1000 live births 1 to 2 are suffering from Congenital Telipes Equinovarus[1]. This complex type of deformity consists of hind foot in equinus, forefoot in adduction, heel in varus, midfoot in cavus deformities[2]. Actual cause is unknown, certain causative factors, boys are affected more than girls unilateral deformity is more common than bilateral, it could be due to germ defect, neurological disorders, neural tube defects (myelomenimgocele, spinal dysraphism, Arthrogryposis, Postural deformity caused by tight uterus.

Most of the agreements regarding the treatment of clubfoot are in favor of conservative treatment by Ponseti procedure in its initial stage, range from gentle manipulations to less invasive surgical treatment. Surgical management is predominated by Ponseti because it is considered as a method that could obtain full and long-lasting correction[3]. Extensive soft-tissue releases can result in scarring which may lead to stiffness, recurrent deformity, and pain[4].

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It was this observation along with the promising results of the Ponseti method [5, 6] that shifted treatment of idiopathic clubfoot towards a more conservative approach consisting of manipulations and serial casting, and frequently minimal invasive surgery. Open surgery is usually reserved for more severe cases that failed serial casting. However, even in these cases, current surgical procedures are less aggressive than procedures performed three decades ago.

Clubfoot treatment by Ponseti Procedure is more effective having better results than other procedures with least complications[7]. Nowadays most of the centers are in the favor of conservative treatment like Ponseti procedure than surgical methods because it is more result oriented[8]. The Ponseti procedure is also important for developing countries due to minimal operative facilities in their rural population. The trained physicians and technicians can also treat the patients with conservative and minimal invasive surgical treatment[9] and the aim was to assess the results with Ponseti technique[10].

Material and Method

Total Sixty Patients of either sex having age less than 09 months were included in this study, neurological disorders, neural tube defects myelomeningiocele, spinal dysraphism, Arthrogryposis were excluded from this study. Pirani Scoring Method was used to assess the patient's severity. We used Mid Foot Score and Hind Foot Score as advised by Ponseti to assess

the severity. It means that if the score is Zero then that is normal, if score is 0.5 deformities is moderately abnormal, if the score is one deformity is severely abnormal. Each Clubfoot was scored weekly. Total score was obtained by addition of Mid foot score and Hind Foot score. Hind Foot score consists of posterior crease, rigid equinus and empty heal, and Mid Foot score consists talar head coverage, lateral border and medial crease. After written consent from parents, scoring was done and recorded on Ponseti Proforma, then foot was manipulated and abducted without touching the heal. Assistant maintained the foot in maximum corrected position after application of thin layer of cotton by toes and pressure over the talus head. After application of POP from toes to below knee and then extended above knee. Four to five turns of cast were applied over the toes, foot, and fingers of the assistant then extended below knee. Afterward we extend the POP cast above knee up to proximal thigh. During molding the Plaster, light pressure was applied over the head of talus and the assistant held foot in corrected position. When head of the talus covered mid foot score was less than one and Hind foot score was more than one, subsequently tenotomy was done. After that cast removed after two weeks and after last cast Denis Brown Shoes (Brace) applied. In Bilateral Clubfeet Brace applied 60◦-70◦ External rotation at either side but in unilateral deformity normal side 40◦ and Clubfoot side 70◦ external rotation maintained. After applying brace fortnightly follow up was conducted for 1st four months and monthly follow up for two years.

Result

Out of 60 patients males were 32(53.4%) and females were 28(46.7%). 24(40%) had Bilateral while 36(60%) were Unilateral. Minimum age was One week and maximum was 36 weeks. According to Pirani Score there were 40(66.6%) Patients Severely abnormal, 20(33.4%) Patients were moderately abnormal during 1st POP cast. At the 2nd POP cast all these were in same severity. At the 3rd POP cast moderately deformed were 35(58.33%) and severely deformed were 25(41.66%). At 4th POP cast 40(66.6%) were normal and 20(33.4%) were severely deformed. At 5th POP cast 50 Patients (83.4%) were normal, 07 Patients (11.6%) were moderately deformed and 3 Patients were severely deformed. At 6th POP cast only 10 Patients remained on the POP cast and Fifty went on Bracing (Denis Brown) Shoes. Out of 10 Patients, 07(11.5%) were normal and 03(5%) Patients needed 7th POP cast. Achilles Tenotomy was done on 30(50%) Patients after Tenotomy, cast were applied for 02 weeks. Most of the Patients followed Bracing Protocol. Only 03 Patients developed complications 02 Patients produced recurrence they were operated with Posteromedial release. One Patient produced Plaster Sore at proximal thigh that healed after removal of cast for one week.

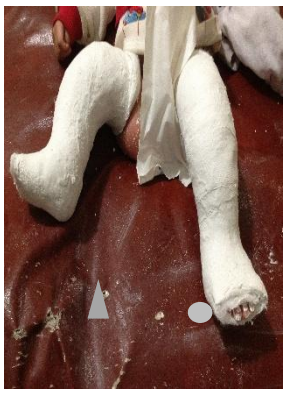

Figure 1: Showing Serial Casting

Figure 2: Showing Tenotomy

Figure 3: After Correction

Figure 4: Patient Wearing DB Shoes

Table 1: Showing Sex Distribution

	Male	Female	Total
	32	28	60
Percentage	53.3%	46.7%	100%

Table 2: Showing Unilateral and Bilateral Involvement

	Unilateral	Bilateral	Total
	36	24	60
Percentage	60%	40%	100%

Table 3: Functional Out Come in 60 Patients

Result	1st Cast	2nd Cast	3rd Cast	4th Cast	5th Cast	6th Cast	7th Cast	1st Visit	2nd Visit	Last Visit
Normal	0	0	0	35(58.33%)	50(83.4%)	7(11.6%)	3(5%)	60(100%)	58(96.66%)	58(96.66%)
Moderate	20(33.4%)	20	35(58.33%)	20(33.4%)	7(11.6%)	3(5%)	0		02(3.33%)	0
Sever	40(66.6%)	40(66.6%)	25(41.66%)	5(8.33%)	3(5%)	0	0			02(3.33%)

Discussion

Ponseti procedure for the management of Congenital Talipes Equinovarus has gained wide spread acceptance and parents can expect the good and excellent results, if the Physician and Parents follow particulars of this procedure and follow all the rules without alteration. In our study out of 60 patients, males were 32(53.4%) and females were 28(46.7%). In the study of Mohammad Arif out of 30 Patients 16(53.3%) were males and 14 were females (46.7%)[1]. In this study bilateral were 24(40%) while 36(60%) were Unilateral, in the study of Mohammad Arif there were 30% Bilateral while in Otrmski et al[11] study Bilateral were 50% and stated more than 30% by Yamamoto et al[7]. In our study 96.6% were treated conventionally and in the study of Mohammad Arif et al[1] conservatively treated were 83.3%. In our study only 02 Patients (3.33%) produced recurrence after the Brace and Final follow up of two years that was due to not properly application of Brace and follow up. Richard et al[12] had compared the Ponseti Technique with Physiotherapy method he concluded that Ponseti Technique was best due to initial correction rates 94.4% by Ponseti Technique. 29 patients were studied by Eberhardt et al[13] with 41 clubfeet were managed by Ponseti technique classified with Pirani's score. His study showed excellent result. Hegazy et al[14] study the overall results were satisfactory in 31 out of 32 feet. All these study are comparable to our study and this shows that the Ponseti technique is best when started early in the management of congenital clubfoot.

Conclusion

Our experience for the treatment of clubfoot by Ponseti Technique was excellent for Parents as well as Physicians due to less invasive procedure, less cost effective and more acceptable procedure for parents.

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