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RESEARCH ARTICLE

Treatment of Idiopathic Clubfoot with Ponseti Technique.

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Abstract

Introduction: Idiopathic congenital alipesequinovarus (Club Foot) is a complex deformity that is difficult to correct. The goal of treatment is to reduce or eliminate its four components so that the patient has a functional foot and leads a normal life.

Material and Methods: We have treated 30 patients with 41 idiopathic clubfoot deformity using Ponseti method. The severity was assessed by Modified pirani Scoring.

Results: The mean number of casts that were applied to obtain correction was 7.02 (range four to nine casts). Tenotomy was done in 39 feet. Thirty nine feet had good results. One patientdeveloped recurrence of the deformity due to non-compliance of the use of orthrotics.

Conclusion: The Ponseti method is a safe and effective treatment for congenital idiopathic clubfoot and radically decreases the need for corrective surgery. Non compliance with orthotics main factor causing failure of the technique.

INTRODUCTION

Idiopathic clubfoot is a complex deformity which is difficult to correct[1] The deformity has four components: forefoot equinus, hindfootvarus, forefootadductus and midfootcavus. The surgical treatment has multiple complications[2]. Treatment by PonsetiMethod involves serial casting ,percutaneous tenotomy and application of braces. Due to conservative nature of the treatment method and fewer complications associated with it ,the treatment method has become popular[3].

The method has been reported to have short-term success rates approaching 90% and the long-term results have been equally impressive[1].The aim of this study is to present the author's experience with the Ponsetitechnique in correcting clubfoot and to stress the importance of percutaneous tenotomy in management.

Materials and Methods:

This Study was done at Government Medical College,Jammu. Fourty one feet in 30 children were studied. Study design was a prospective case series study. Only idiopathic cases of both gender less than 1 year were included. Syndromic, relapsed, neglected, resistant and recurrent cases were excluded.

After a thorough clinical examination and confirmation of diagnosis, photographs of the deformity were taken (Figure1). Severity was assessed by Pirani scoring system. Manipulation of foot and long leg plaster of paris application was done(Figure2). In all patients, the cavus is corrected first by supinatingthe forefoot and dorsiflexing the first metatarsal. To correct the varus and adduction, the supinated foot was abducted with counter pressure applied with the thumb against the head of the talus. Four to nine long leg casts, changed weekly after proper manipulation of the foot, were usually sufficient to obtain good correction(Figure 3). Casting was stopped when midfoot and hindfoot scores were zero with 70 degrees of abduction of the forefoot. With abduction of 70 degrees if dorsiflexion was less than 10 degrees then percutaneoustenotomy of the Achilles tendon was performed. All cases

were done in operation theatre under local anaesthesia. Patients were monitored for 1hour post operatively. A long leg cast was applied in 70 degrees of abduction and maximum available dorsiflexion immediately after tenotomy and maintained for further 3 weeks to allow healing of the tendon.After 3 weeks cast was removed(Figure 4) andDennis Brown Splint was applied (Figure 5). Children were reviewed every month andPirani scores were documented. Dennis brown Splint was worn for 23 hours during first three months after casting and then at night until child is about 4 years old.

Each parameter was scored according to the Modified Pirani Score.Six clinical signs are each scored 0 (normal), 0.5 (mildly abnormal) or 1 (severely abnormal).Thus, each foot can receive a Midfoot score between 0-3 and a hindfoot score between 0-3 and a total score between 0-6. (Table 1)

Results

Components of Pirani Severity Score

Midfoot
Curved lateral border
Medial Crease
Talar Head Reducibility
Hindfoot
Posterior crease
Rigid equines
Empty heel

Table 1. States the components of Pirani Severity Score

The average age of the patients was 2 months and 3 days (range,3 days to 9 months of age). Of the 30 infants, 19 had unilateral clubfoot while as 11 had bilateral clubfoot(41 feet). Average Pirani score was 4.92 (range 3.5 to 6). The mean number of cast that were applied to obtain correction was 7.2(range four to nine casts). More number of casts was required to obtain correction in very severe deformity. Thirty nine of the 41 clubfeet required percutaneous tendoAchilles tenotomy to correct the residual equinus deformity .The average follow-up was for 1.5 years (range 1 to 2 years).

Thirty nine feet were treated successfully using the Ponsetimethod. These patients obtained complete correction of the deformity with dorsiflexion of >20° and plantar flexion of >40° (Figure 6). In the patient with poor result, correction was obtained after tenotomybut the deformity relapsed. The family of this patient had not complied with the use of orthosis due to inconvenience.

Figure1 : Pre casting photograph

Figure 2: Ponseti cast applied

Figure 3: Ponseti cast applied

Figure 4 : post tenotomy cast removed (desired correction achieved)

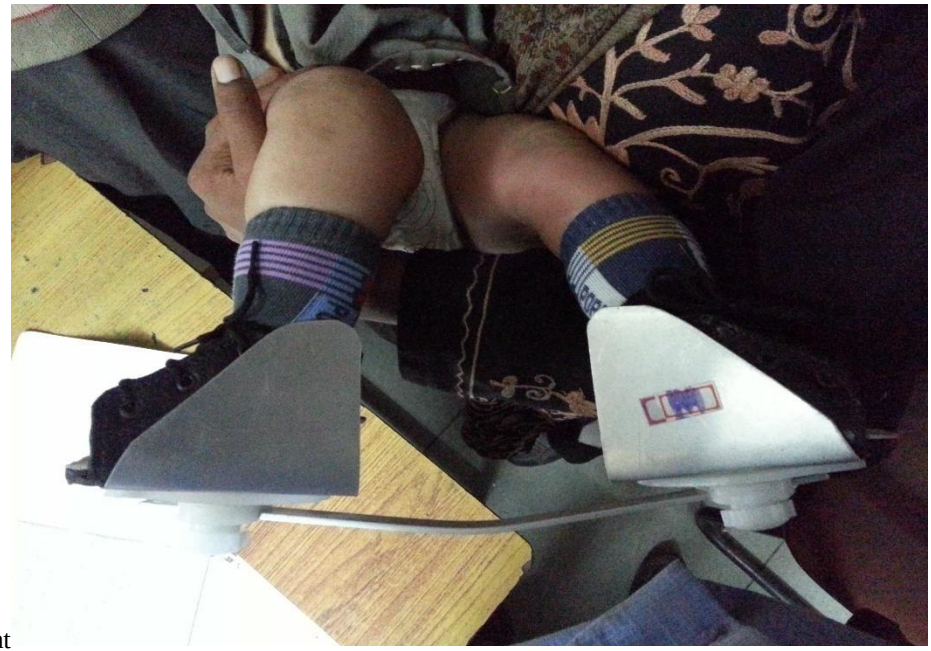

Figure 5: Dennis Brown Splint

Figure 6 : 2 year follow up

Discussion

Ponseti technique of serial manipulation and casting is being employed vastly in many of the CTEV treatingcentres. Ponseti and Smoley[4] reported that by this method of manipulation surgery was avoided in 89% of cases. In Ponseti method of management[5,6] the first element of correction is the cavus deformity by positioning the forefoot in proper alignment with the hindfoot. Cavus, which is due to the pronation of the forefoot in relation to the hindfoot requires only elevating the first ray of the forefoot to achieve a normal longitudinal arch of the foot. The forefoot is supinated not too high or too flat so that the plantar surface of the foot reveals a normal appearing arch. For subsequent correction of adductus and varus, alignment of the forefoot with the hindfoot is necessary to give an effective abduction movement of the foot. Using the stabilisedtalar head as fulcrum the foot is abducted. Pronation or eversion of the foot and external rotation of the foot to correct adduction while calcaneus remains in varus are to be avoided. Evertion of the calcaneus to correct heel varus (Kites error) is not possible unless the calcaneus is abducted (i.e., laterally rotated) under the talus. Kite[7]explained in his method of correction to abduct the forefoot against pressure at the calcaneocuboid joint which Ponseti described as Kites error. It blocked the correction of hindfootvarus and internal rotation.

Ponseti technique has been reported with 92 to 98 % successful results for the treatment of idiopathic clubfoot[3,8,9,10]. We have successfully corrected thirty nine (95.12%) of the 41 clubfoot deformities using Ponseti method. The patientwho developed recurrence of the deformity was due to non-compliance with the use of orthrotics. This reason has been widely reported to be the main factor causing failure of the technique[1,2,8,9,10]. Serious bleeding complications have been reported following percutaneous tendo-achillestenotomy[11] . However, we did not encounter any of the complications and found it very helpful in obtaining full correction. The Ponseti method is a safe and effective treatment for congenital idiopathic clubfoot and radically decreases the need for extensive corrective surgery. Longer follow-up will decide whether we can continue to match Ponseti's results.

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