

To Assess the Complications and their management associated with this Ponseti method of manipulation for treatment of rigid, neglected, recurrent cases of Clubfoot when used in older age group

**Authors: Dr. Vishal Ahke¹, Dr. Gaurav Akhand², Dr. Nitin kiradiya³, Dr. Ranjeet Badole⁴
Dr. Sachin parmar⁵**

Corresponding Author: Dr. Ranjeet Badole⁴

1. Assistant professor, Dept. Of Orthopaedics N.S.C.G. Medical college, khandwa M.P.

2. Assistant professor, Dept. Of Orthopaedics N.S.C.G. Medical college, khandwa M.P.

3. Associate professor, Dept. Of Orthopaedics Govt. Medical college, Ratlam M.P.

**4. Associate Professor, Department of General Medicine NSC Government Medical College
Khandwa M.P.**

**5. Assistant professor, Department Of Community medicine, N.S.C.G. Medical college,
Khandwa M.P.**

Abstract:

Background:

A prospective study to determine effectiveness of Ponseti method in correcting clubfoot in children aged 2-10 years and failed or recurrent clubfoot in older aged children was done at Department of Orthopaedics & Traumatology.

Two patients had pressure ulcer on talar head One patient had allergy to plaster material. The plaster breakage was common complication in the older children.

The correction rate with ponseti method is over 90% can accomplished in about two to three months without extensive surgery. It has also been demonstrated that the ponseti method can be successful in clubfeet that recurs after extensive surgery.

Keywords: Ponseti Method, Clubfoot, Complication & Idiopathic.

Study Designed: Prospective Observational Study.

Introduction

The neglected clubfoot is one for which there has never been initial treatment or perhaps very inadequate and incomplete treatment. The deformity is made worse by weight bearing on the lateral side or dorsum of the foot, exaggerating the abnormal shape and causing further

deformation. The contracted soft tissues on the medial side of the foot are encouraged to contract further. The bones are compressed unnaturally at a time when they are plastic and deform into abnormal shapes. Bones that normally support the arch of the mid foot now bear axial load. A thickened callous and large bursa develops over the weight bearing area often associated with deep fissures, vulnerable to breakdown and infection.^{1&2}

The recurrence in an adolescent is usually associated with incomplete correction & inadequate follow up rather than being secondary to growth alone.³

The goal of treatment is to reduce or eliminate these four deformities, so that the patient has a functional, pain free, plantigrade foot, with good mobility and without calluses and does not need to wear modified shoes.

Clubfoot correction ideally should be performed during infancy, before children learn to walk, but experts agree that the Ponseti treatment method can also be effective in older children.

Material & Method

A prospective study to determine effectiveness of Ponseti method in correcting clubfoot in children aged 2-10 years and failed or recurrent clubfoot in children aged 2-10 years was done at Department of Orthopaedics&Traumatology, M.G.M Medical College and Maharaja Yeshwantrao Hospital, and tertiary Government care center Indore. The duration of study was from August 2014 to August 2016 and includes 25 patients (40 feet).

Each patient registered was given a Clubfoot clinic number and detailed personal history was recorded including the name, age, sex, name of parents, laterality, address, date of first reporting, age at reporting detailed history of any previous treatment etc. A Club Foot Clinic card containing all the required information was issued and pamphlets containing all the required information's in the local language were given to attendants. The patients were followed up regularly at the clinic and assessed.

INCLUSION CRITERION

- Idiopathic clubfoot
- Age 2-10 years
- Pirani score more than 4 (rigid foot).

EXCLUSION CRITERION

- Children with clubfeet below 2 years and above 10 years
- Secondary Club feet
- Local non healing wound
- Pirani score less than 4

Our protocol

- 1- A thorough general examination of the child was done so as to detect any associated congenital anomalies.
- 2- A complete clinical assessment of all feet made precast and post cast.

- 3- Aim of treatment is to achieve a functional, pliable, painless, plantigrade and cosmetically acceptable looking foot.
- 4- During the entire period of treatment, we try to educate and counsel the parents about clubfoot, importance of early treatment, bringing the child regularly for follow up.

Pirani score

Dr. Shafique Pirani, Clubfoot clinic of Royal Columbian Hospital Canada developed a valid, reliable method of clinically evaluating the severity of a virgin clubfoot. A child's total score can be between 0 to 6 depending on severity

METHOD

The foot is evaluated every visit during serial cast treatment. The child is kept supine at the end of examination table and is relaxed.

LOOK

- CLB (curved lateral border)
- MC (medial crease)
- PC (posterior crease)

FEEL

- LHT (lateral head of talus)
- EH (emptiness of heel)

MOVE

- RE (Rigidity of equinus)

1-Curved lateral border (CLB)

Look at the plantar surface of the foot at rest and gauge the curvature of the lateral border of the foot by placing a straight edge along lateral border.

2-Medial crease (MC)

Assessed with the foot in maximum correction and looking at the longitudinal arch of the midfoot.

3-Posterior crease (PC)

Assessed with the foot in maximum correction and looking at back of the heel.

4-lateral part of head of talus (LHT)

Assessed with the foot in deformed position, lateral head of talus is palpated and foot is everted.

5-Emptiness of heel (EH)

Assessed with the foot in maximum correction, with the examining finger placed on corner of the heel and applying gentle pressure.

6- Rigid equinus (RE)

Assessed with the baby supine, knee extended and foot in maximum correction from lateral side.

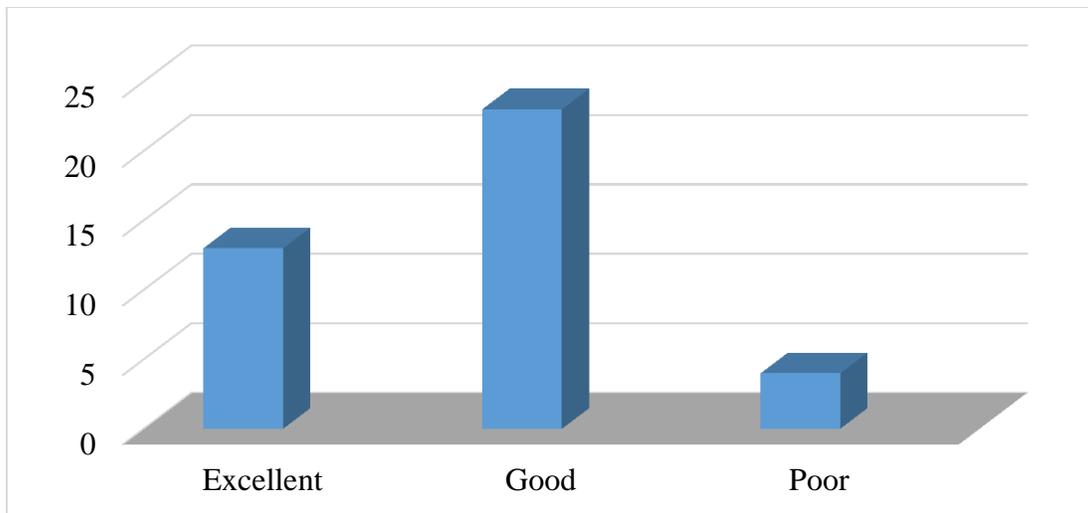
Results**TABLE 1: COMPLICATIONS**

Complications
<p>Two patients had pressure ulcer on talar head</p> <p>One patient had allergy to plaster material.</p> <p>The plaster breakage was common complication in the older children.</p>

TABLE 2: GRADING OF RESULT

GRADING	NO. OF FEET
Excellent (Pirani Score <1)	13
Good (Pirani Score 1-2)	23
Poor (Pirani Score >2)	4

- Of the 40 feet under the study, 13 feet (32.5%) have been graded as excellent and 23 feet(57.5%)t as good, and 4 feet(10%) as poor.
- Two patient required surgical correction, first was the 10 year old male child with bilateral ctév (pirani score of both feet was 5 , it was a recurrent case of ctév. The first treatment was started at neonatal age with casting and percutaneustenotomy,and recurrence was recognized after 3 years. Tibialis anterior was transferred to the lateral cuneiforme. This operation was performed in another hospital. But the recurrence came in both feet and at the age of 7 year. We started the treatment of child at the age 10 by ponseti casting , total of 15 cast applied 3 pirani score of both foot was achieved ,but the dynamic supination and bony deformity was found.so we planed the lateral osteotomy and soft tissue release for the correction of deformity.
- And the second child was 3 year old male with bilateral CTEV with Pirani score 6 for each foot, treated with ponseti casting. Patients parents were noncompliant to wear cast, and lost to follow up after 6 casts. (Pirani score 3). Then patient came back after few months with recurrence of all deformity and Pirani 4.5. Due to noncompliance of parents, we planned JESS fixator for correction .



Graph 1: Grading of results



Discussion

The use of Ponseti treatment in untreated children between the age of 1 and 6 years. In 260 feet, extensive soft tissue release was avoided in 94%. 83% only had casting and PAT. They changed casts every week same as our study.⁴

In our prospective study, total number of patients are 25(40 feet). Of these male patients 19(76%) and 6 female patients (24%). Initial Pirani score was 5.15. All patients needed tenotomy. Post cast Pirani score was 1.17. Mean duration of follow up was 10. 8 month. A total of 375 casts (average 9.37/foot). Average age of presentation in our study was 4.4 year.⁵

Percentage of correction of Pirani's score in our study, all feet were evaluated with Pirani score throughout the correction phase and after correction. In our study, out of 40 feet, 13 feet(32.5%) graded excellent (Pirani score less than 1) 23 feet(57.5%) graded good (Pirani score

between 1-2) and 4 feet(10%) graded poor(pirani score more then 2). In our study some patients had pressure ulcer, and allergic reaction (rashes) and these were mentioned as complications of casting method of Ponseti and plaster breakage was common problem in older children which enhanced the number of cast. There were no other significant complications seen in our study.⁶

Conclusion

The correction rate with ponseti method is over 90% can accomplished in about two to three months without extensive surgery. It has also been demonstrated that the ponseti method can be successful in clubfeet that recurs after extensive surgery.

The Ponseti method can be used successfully to treat neglected clubfoot in older children than is traditionally recommended. If the treatment is done properly, it will significantly reduce the need for surgical intervention. Ponseti method is simplest, safe, easy and low cost method can be easily performed with minimal learning curve. This can also be done in the small centre (sub and primary health centre at the rural settings), with short period of training and minimal adds. It does not required special skill, But require great attention to detail. It is very important for health care practitioners to counsel parents regarding the bracing protocol after initial correction to avoid recurrences. Treatment is not expensive and is painless for children. This makes the ponseti method avery powerful tool in children's health a much more "democratic" treatment that is cost effective and can be make accessible. This method is very useful for developing countries. This is the most expeditious way to gain full correction with least complication So we concluded that the Ponseti method is also gold standard treatment for rigid, neglected, recurrent cases of club foot in older children.

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