Ponseti method of (Clubfoot) Congenital talus equinus varus Treatment

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ABSTRACT
In our study, fifteen paediatric patients with congenital Talipes Equinus Varus with unilateral and bilateral involvement were treated with a classic technique of Ponseti method CTEV treatment. The patients were aged between 3 months to 6 months. After a mean follow-up of 24 months (range 2—24 months) all patients had full correction of ankle and foot. No patient had recurrence in our study.

Objective: Our study was to treat patient on Out patient basis,economy to patient, effective, no need of any surgery and efficient.

Result: Results were good with this method and parents were very happy.

Keywords: congenital Talipes Equinus Varus, Club Foot, Ponseti’s Method

PATIENTS AND METHOD:
Clinical/Pathologic anatomy:
The complex three dimensional deformity
- Cavus
- Adductus
- Varus
- Equinus

Functional Anatomy: Kinematic Coupling of Subtalar joint:
- Calcaneal adduction, inversion and flexion
- Calcaneal abduction, eversion and extension,
- Foot abduction causes calcaneal abduction
- Calcaneal abduction corrects heel varus and calcaneal flexion

Correction of Pathologic anatomy:
- Cavus ------ Elevate Ist Metatarsal
- Adductus ------ Abduct Midfoot
- Varus ------- Evert Calcaneus
- Equinus ------- Dorsiflex Talus

General Principles:
- Cavus corrected by supinating forefoot in proper alignment with the hindfoot.
- Adduction corrected by abducting the entire foot under the talus with the foot in slight supination
- Heel varus will be corrected when the entire foot is fully ab ducted
- Equinus is corrected by dorsiflexing the foot (facilitated by percutaneous tenotomy of the tendo Achilles)
- Well moulded plaster casts are applied after manipulations are complete.

Weekly casting with correction every two weeks:
1wk 2wk 3wk 4wk 5wk
1. The Ponseti Method: manipulative correction of cavus
2. The Ponseti Method: manipulative correction of adductus/heel varus
   • The whole foot abducted under the talus
   • Thumb on head of the talus, not the calcaneus.
   • The heel is not touched
3. Manipulative correction of adductus & varus
   • The entire foot is abducted between 50 to 60 degrees.
   • The foot should never be everted.
   • The navicular moves away from the medial malleolus.
   • The head of the talus covered.
4. The Ponseti Method: casting
   • Above knee plaster cast for 5 to 7 days
5. The Ponseti Method: casting
   • The last cast before tenotomy. The foot is rotated 60-70 degrees external with respect to the thighs.
6. The Ponseti Method: casting
   • The last cast before tenotomy. The foot is rotated 60-70 degrees external with respect to the thighs.
7. The Ponseti Method: Equinus correction-Tenotomy
   • Complete section of the tendon heals lengthened in three weeks under Local anaesthetic.
8. The Ponseti Method: tenotomy & final cast
   • The last cast in 70 degrees external rotation and 10 degree dorsiflexion
   • The corrected foot after removal of the last cast.
9. Denis Brown Foot Abduction Brace:
   • Maintains correction
   • 3 months full time
   • 2-4 yr. night time
   • Bar as wide as shoulders
   • Externally rotate 70 degrees
   • Dorsiflex 10-15 degrees
   • Heelcup
   • Failure to wear is the most common cause of recurrence
1. UNILATERAL-LEFT

2. BILATERAL

Above knee plaster cast for 5 to 7 days:
Subcutaneous tenotomy under local anaesthesia:

Denis Brown Splint:

Results After full correction of club foot with Ponseti's Method
Ignacio Ponseti, MD, whose pioneering, non-surgical, treatment has benefited hundreds of thousands of children worldwide, died Sunday at age 95 following a sudden illness. Memorial services are still being planned. Dr. Ponseti joined the orthopedics faculty at The University of Iowa in 1944 following his residency—remaining here the next four decades treating patients, teaching, and conducting research. He retired as professor emeritus in 1984, but returned in 1986 to a consultative practice in orthopedics. In the course of his career he developed the Ponseti method for treating clubfoot, involving the careful manipulation of muscles, joints and ligaments held in a series of casts and braces to reposition the foot back to normal. It became the "gold standard" for clubfoot treatment, after decades of positive follow-up results and numerous international peer-reviewed studies showing success rates as high as 98 percent.

Over the past decade, through educational and advocacy efforts, the Ponseti method has become the mainstream treatment for clubfoot in North America and is increasingly used to help children with clubfoot from underdeveloped regions of the world. In August 2006, the American Academy of Pediatrics endorsed the Ponseti method.

RESULTS:

This Study shows following results after two years follow up; Results: Club foot;

- Excellent = 84%
- Good = 16%

DISCUSSION:

Ponseti Treatment of 15 idiopathic clubfeet in 11 infants less than 6 months of age in our study. For our study all the steps and method were taken into consideration, which were used by Ponseti, Early age group of infants, Above knee casting, Weekly changing of plaster as per the method, if necessary Tenotomy under local anaesthesia, and using of Denis Brown Splint. The Pirani’s Severity Score was used to asses the deformity correction of mid foot and Hind foot

Pirani’s severity score:

Midfoot score
Three signs comprise the Midfoot Score (MS), grading the amount of midfoot deformity between 0 and 3.

- Curved lateral border [A]
- Medial crease [B]
- Talar head coverage [C]
Hindfoot score

Three signs comprise the Hindfoot Score (HS), grading the amount of hindfoot deformity between 0 and 3.

- Posterior crease [D]
- Rigid equinus [E]
- Empty heel [F]

References:

[1] Evaluation of the Iowa (Ponseti) Technique for the treatment of the idiopathic clubfoot. Excellent results are reported from Iowa
   - Short term results: 235 out of 236 feet corrected
   - Long term outcome: 78% good & excellent at 30 years
   - W. Lehman Hosp for Joint Diseases, New York

   n = 37 feet
   36 corrected, 1 failed correction
   36 fitted with foot abduction brace
   Compliant with brace:
   All remained corrected (n=27)
   Non compliant with brace (n=9)
   Remained corrected = 3, recurrence = 6

   Herzenberg J.E. et al University of Maryland
   Parameter studied: need to perform PMR
   Follow up > 1 year
   Results

[5] Lehman et al, New York: 50 pts, >90% success
[6] Dobbs, St. Louis: 95 feet, 100% initial success
[7] Frick, S. Carolina: 38 feet, 100% success (12 >6 mo.)
[8] Crawford, New Zealand: 50 feet, 92% success
[9] Penny & Pirani, Uganda: 171 feet, 93% success
[10] Mkandiwire, Malawi: 40 feet, 83% success