



PIRANI SCORING IN ASSESSING SEVERITY TREATMENT AND FOLLOW UP OF CLUBFOOT

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ABSTRACT

Pirani scoring system is simple and easy to execute. The patients who have a lower Pirani score at initial presentation respond better and faster than those with a higher score. Treatment must start at the earliest possible date after assessing foot by Pirani score so that the number of casts can be reduced before Tenotomy and bracing. The tenotomy group will generally require more number of casts than those of the non-tenotomy group. Tenotomy indicated when Pirani score, MFCS < 0.5, HFCS > 0.5. Ponseti method is an excellent and scientifically accepted conservative method of treatment for Clubfoot with Pirani scoring to have a foot that is pain-free, flexible, plantigrade, mobile, normal in appearance, and shoe-ble with regular shoes.

KEYWORDS :

INTRODUCTION:

Clubfoot is the most common congenital physical disabilities of the foot worldwide, known to occur in 1-3 of every 1,000 births worldwide with evidence of higher rates in developing nations and 8,000,000 adults worldwide who are physically disabled with ctev who could have been cured if treated. In India, every day, 150 children are born with Clubfoot. In a year, over 2,20,000 children are born with Clubfoot, with an estimated 80% living in low and middle-income countries. In Asia 75,000, in India, it is estimated that more than 53,000 children in Andhra Pradesh on average 659 children are born with Clubfoot every year. The severity of the foot deformity may vary from mild to utterly rigid and deformed foot. The **Pirani Score** is a reliable method for assessing the amount of deformity in congenital Clubfoot and Easy to use. It is an Inter-observer reliable and valid. Formulated by Dr. Shafique Pirani. In this scoring system, a child's Total Score (TS) is between 0 and 6. A **total score of 0** means no deformity, a **total score of 6** means a severe deformity. The Total Score (TS) comprises Hindfoot Contracture Score (HFCS) between 0 and 3. All 3 signs each scored 0, 0.5, or 1 and Midfoot Contracture Score (MFCS) between 0 and 3 and all 3 signs each scored 0, 0.5, or 1. The Pirani Scoring system has been found to be both valid and reliable, unlike many other Clubfoot Scoring Systems, which are untested. A higher Pirani Score on presentation indicated a severe degree of deformity that a higher number of casts would be required, and as such can play a key role as a means for predicting treatment outcomes, in predicting when to do Tenotomy, also helps in to recognize relapse during follow-up, which helps to avoid complicated soft tissue and bony surgeries to correct the deformity. In a child with a high initial Hindfoot Contracture Score (HFCS), the likelihood to experience a relapse of deformity during the bracing phase is much higher than in those with lower scores and should have close monitoring with special emphasis put on the importance of the use of Foot Abduction Brace when educating parents/carers. It is using to assess when Tenotomy to be done, to recognize relapse during follow-up.

AIMS AND OBJECTIVES:

1. Diagnose the severity of Clubfoot.
2. To know how the patient foot is responding to the ponseti technique.
3. To know when Tenotomy to be done after serial castings with the ponseti method. Indication for tenotomy is HFCS > 0.5 and MFCS < 0.5.
4. To recognize the recurrence during follow up while the foot is in the bracing protocol.
5. The aim of the treatment of Club foot is to achieve pain-free, flexible, plantigrade,
6. cosmetically acceptable foot and shoe-able with the regular shoes.
7. The foot is assessed at initial presentation, during treatment, and follow-up by Pirani scoring system

MATERIALS AND METHODS:

This study was conducted in SIDDHARTHA MEDICAL COLLEGE.

The source of data is all confirmed cases of Clubfoot in Siddhartha Medical College. This study was done from December 2018 to December 2020, and cases were selected on an orthopedic OPD basis on Tuesday/Wednesday in GGH/VIJAYAWADA. The cases were confirmed to be idiopathic Clubfoot by ruling out any other congenital anomalies example, spinal abnormalities, Arthrogryposis multiplex congenita, or history of exposure to radiation or any teratogenic drug intake during pregnancy.

Inclusion Criteria

All these cases are selected on the basis of

1. Adduction, Supination, equinus, and varus deformity of the idiopathic foot.
2. Newborn to 4 yrs of age with idiopathic Clubfoot (child not at walking).
3. Idiopathic previously untreated Clubfoot.

Exclusion Criteria:

1. Postural Clubfoot
2. Syndromic Clubfoot
3. Neglected Clubfoot
4. Relapsed, club foot.
5. Atypical Clubfoot
6. Patients above the age of 4 years.
7. Post-surgical club foot.

OBSERVATION AND RESULTS

In this prospective study total, 25 feet (21 patients) were treated by the ponseti method, and the endpoint of casting treatment is taken as ten casts: 17 unilateral and 4 bilateral cases among 21 cases. Post casting treatment, heel cord tenotomy was done if needed and started on the bracing protocol.

The mean age at the start of treatment for 21 patients (25 feet) was 22 days (range 2 days to 7 months).

The mean initial Pirani severity score for 25 feet was 4.52. After correction by the ponseti technique, the final mean score at follow-up was found to be 0.00, and the mean change in score was found to be 4.52. This was analyzed by the paired t-test, and the p-value was < 0.0005, which is significant.

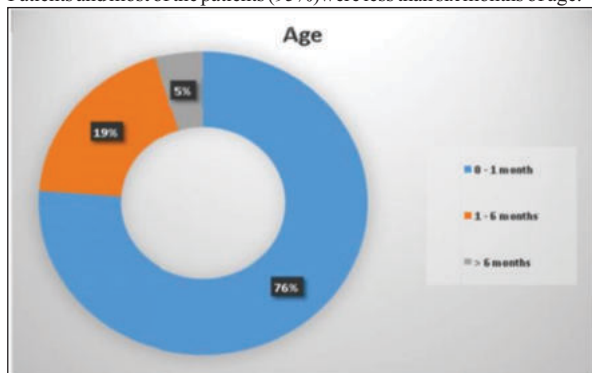
The mean value of Pirani score on regular follow-up was 0.02, which shows a change of 4.50 from the initial score. This change also has a p-value of < 0.0005, which is significant.

1. The mean age at the start of treatment for 21 patients (25 feet) was 22 days (range 2 days to 7 months).

Age	Frequency	Percent
0-1 Months	16	76

1-6 Months	4	19
> 6 Months	1	5

The most common age group was 0 – 1 month with 16 (76%) Patients and most of the patients (95%) were less than six months of age.



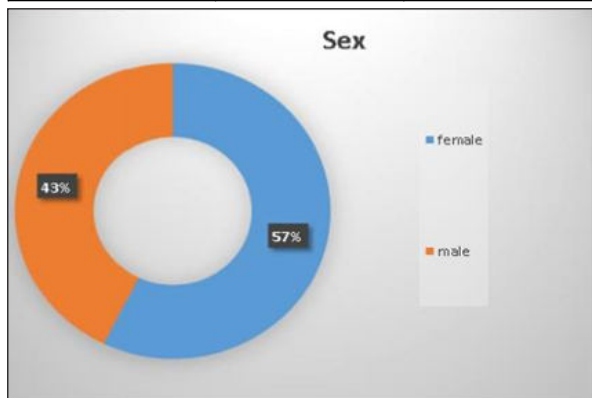
Details Of Age Of Subjects In Days

	Age in Days
Mean	21
Median	5
Minimum	2
Maximum	210

The minimum age – 2 days
 The maximum age – 21 days (6m10days).
 The mean age at initiation of treatment for the 21 patients was 21 days.
 The median age at initiation of treatment for 21 patients was 5 days.
 (Range 2 days–210 days).

2. Distribution Of Sex

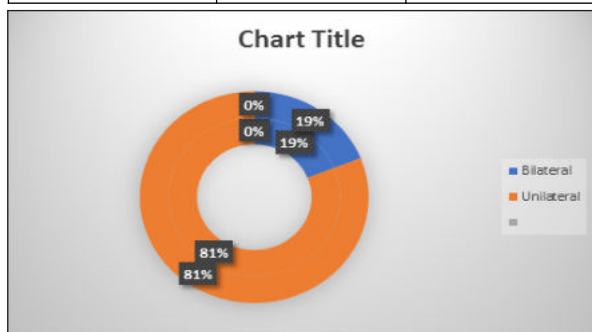
Sex	Frequency	Percentage
Female	12	57
Male	9	43
Total	21	100



There were 12 females (57 %) and 9 males (43 %). The male to female ratio was 1:1.3

3. Side Of Involvement

	Frequency	Percent
Bilateral	4	19
Unilateral	17	81
Total	21	100



4. Correlation Between Side And Sex

		Unilateral	
		Right	Left
Male	2	4	3
Female	2	5	5

5. Details Of Percutaneous Tenotomy Done

Tenotomy	Frequency	Percent
Done	7	33
Not Done	14	67

24% of patients needed percutaneous Tenotomy of tendo Achilles at the end of casting. 33% of male patients and 33% of female patients needed percutaneous Tenotomy.

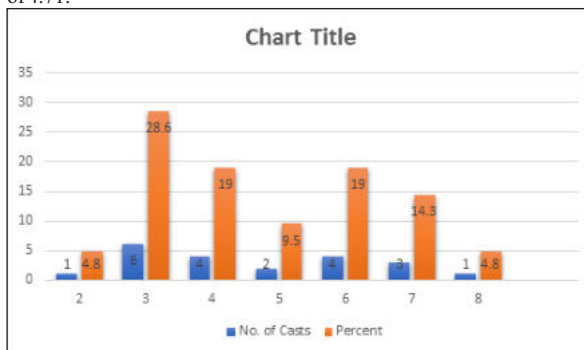
1. Mean Pirani score before treatment -4.52 (range–1.5– 6.0)
2. Mean Pirani score after treatment - 0.45 (range– 0.0– 2.0)
3. Mean Pirani score at 6months follow-up -0.02 (range–0–0.5)
4. Mean change in Pirani score 4.07 (before treatment and after treatment)

P value < 0.0005 (highly significant)

Casts

No. of Casts	No. of Casts	Percent
2	1	4.8
3	6	28.6
4	4	19
5	2	9.5
6	4	19
7	3	14.3
8	1	4.8
Total	21	100

1. The total number of casts required for the study was 99, with a mean of 4.71.



No patient has undergone extensive surgery like posteromedial soft tissue release or bony procedures to correct the deformity.

Only one recurrence is recorded, which was due to non-compliance towards the brace after two months of bracing, MFCS changed from 0 to 1. He was treated with manipulation, and pop cast followed D-B splint.

There is no significant difference between the age and Pirani score at the start of treatment, end of treatment and follow up. (P-value > 0.05)

DISCUSSION

Treatment of idiopathic Clubfoot is either conservative or surgical. Despite the long term experience in many centers, there still are outcome controversies surrounding both types of management. Controversies persist because of the lack of standards for evaluating functional outcomes, rendering comparisons between treatment groups problematic and long-term follow-up studies showing results.

Lloyd-Roberts 61 wrote, "Clubfoot will doubtless continue to challenge the skill and ingenuity of orthopaedic surgeons; Shafique Pirani 74 (1999), given a scoring system, is a Canadian Orthopaedic Surgeon who assisted in the development of Clubfoot Services in Malawi and Uganda; it is easy to use the tool developed to assess the severity of the individual components of Clubfoot. And It is used both as a means to assess the severity of the Clubfoot at initial presentation and for monitoring of the patients' progress. The Pirani Clubfoot Score assessing the severity of the deformity and scores are an excellent way to monitor the progress of treatment. An increase in the score between

visits may be an indication that relapse in the Clubfoot Deformity is occurring. Tenotomy indicated when Pirani score MFCS<0.5, HFCS>0.5.

Prof. Ignacio ponseti devised his method of conservative treatment of congenital talipes equino varus, which starts from day one of age and is based on the fundamentals of kinematics and pathoanatomy of the deformity. This method successfully realigns Clubfoot in infants without extensive and major surgeries.

This method has a correct biomechanical basis for realigning deformed ankle and foot joints and corrects deformity due to favorable retracting contractile fibrosis posteromedially in soft tissue and ligaments. So this method does not aim at the anatomical and radiological correction and can be evaluated critically on the basis of clinical correction.

The longest published follow-up is the 30year follow-up of 45 patients treated with the ponseti method of manipulation and casting at the University of Iowa Hospital and clinics between 1950 and 1967.

CONCLUSION:

1. Pirani scoring system used to
- a. Pirani scoring system used to
- b. assess the severity of Clubfoot.
- c. Monitor the progress of treatment by the ponseti technique.
- d. To know when Tenotomy to be done.
- e. To recognize relapse during the bracing protocol.
2. This system is simple and easy to execute.
3. The patients who have a lower Pirani score at initial presentation respond better and faster than those with a higher score.
4. Treatment must start at the earliest possible date after assessing foot by Pirani score so that the number of casts can be reduced before Tenotomy and bracing.
5. The tenotomy group will generally require more number of casts than those of the non-tenotomy group.
6. Tenotomy indicated when Pirani score, MFCS<0.5, HFCS>0.5.
7. Ponseti method is an excellent and scientifically accepted conservative method of treatment for Clubfoot with Pirani scoring to have a foot that is pain- free, flexible, plantigrade, mobile, normal in appearance, and shoe-ble with regular shoes.

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