



EFFECT OF PIRANI SCORE ON MANAGEMENT OF CONGENITAL TELIPUS EQUINO VARUS(STUDY OF 100 FEET)

Orthopaedics

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ABSTRACT

Clubfoot is one of the most common congenital deformities since time immemorial. The **ultimate aim** of this study is to know whether Pirani severity score will allow the surgeon to give more specific answers of the questions of parents or not during the early stages of Ponseti treatment. A total number of 100 feet in 64 patients of CTEV were studied and rated according to pirani score prospectively at Guru Govind Singh hospital, M.P.Shah medical college, Jamnagar, during the period from July 2014 to July 2016 by ponseti method. The need for a tenotomy can be predicted at the onset of the treatment from Pirani severity score system. The early the age at beginning of treatment doesn't exclude need for tenotomy. The number of cast can be predicted at the onset of the treatment from Pirani severity score system.

KEYWORDS:

CTEV, Pirani score, Ponseti method.

1.Introduction

Clubfoot is one of the most common congenital deformities since time immemorial. The essential documentation of clubfoot comes from ancient Egyptians paintings on the walls of their ancient tombs depict clubfoot deformity and statue of a diastrophic dwarf with clubfoot can be found in Tutankhamen collection.

It is estimated that congenital clubfoot effecting about one infant in every 1000 births. Eighty per cent of the cases occur in developing nations. Most are untreated or poorly treated in underdeveloped nations. Neglected clubfoot leads to physical, social, psychological, and financial burdens on the patients, their families, and the society. Globally, neglected Clubfoot is the most serious cause of physical disability among congenital musculoskeletal defects.

Idiopathic clubfoot is a complex deformity that is difficult to correct. The deformity has four components: Ankle Equinus, Hindfoot Varus, Midfoot Adductus and Forefoot Cavus. The Ponseti serial corrective cast management is an easy, effective and economical method of idiopathic club foot management. The deformity is corrected by weekly serial corrective cast manipulation. The aim of the treatment is to reduce or eliminate all the components of the CTEV deformity to obtain painless, plantigrade, pliable and cosmetically and functionally acceptable foot within the minimum time duration and least interruption of the socio-economical life of the parents and child.

The initial treatment of the Clubfoot should be non-operative regardless of the severity of the deformity. Ponseti Method which involves serial corrective manipulation, a specific technique of the cast application, and a possible percutaneous Tendo-Achillis tenotomy. The method has been reported to have short-term success rate approaching 90% and long-term results have been equally impressive.

Pirani et al provide a simple scoring system based on six clinical signs of contracture. Three clinical signs for Midfoot and three clinical signs for Hindfoot.

The scoring is to be done post gentle correction without undue force.

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, where 0 is no abnormality while 6 is maximum deformity.

Parents whose children are starting Ponseti treatment are enquiring about the number of the casts to correct the deformity and about the requirement of the tenotomy later on during treatment as well as long term result of the treatment offered.

In my literature search, I could find few papers proving predictive value of PIRANI SCORING in the management of CTEV.

This study is carried out at our institute to assess Predictive Value of PIRANI SCORE in management of CTEV in our institute.

Of course, it is well known that increase in PIRANI scoring while the management is on or is completed, is a sure sign of relapse / recurrence and that has also been assessed during the course of study.

The **ultimate aim** of this study is to know whether Pirani severity score will allow the surgeon to give more specific answers of the questions of parents or not during the early stages of Ponseti treatment.

May we have a world free of disabilities !

2.Material and Method

- A total number of 100 feet in 64 patients were studied prospectively in Guru Govind Singh Govt. Hospital, M. P. Shah Govt. Medical College, Jamnagar during the period from July 2014 to July 2016 with only idiopathic clubfoot & treated with Ponseti technique and evaluated with help of **PIRANI SCORE** at each visit. All the patients were treated in outpatients department as early as possible and treated by PONSETI Method and were given serial manipulative correction maintaining cast at a weekly interval. Simultaneous correction of cavus, adduction and varus achieved and equinus cannot be addressed until all other deformities were corrected and foot were able to abduct 60 to 70 degree on talus. A simple percutaneous tenotomy of the achillis was performed if residual equinus was observed i.e. after abduction of the foot and the varus deformity of the heel have been corrected. After which tenotomy and fully corrective cast was given for 3 weeks after which they were put on steenbeek's brace. This brace worn continuously for 23 hrs upto 3 months and after that patient is put on night time splint only and day time ctev shoes. After the patient started walking he was put on CTEV SHOES. Every patient was followed up every monthly till 6 months and thereafter every 3 months for an average of 2 years.

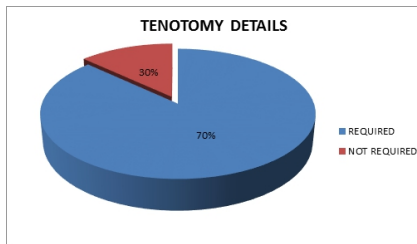
The relationship between need for PIRANI score for assessing no. of cast and need for tenotomy and other is investigated using the Chi-squared test with $p=0.05$ considered to be significant. Value of Chi-squared test is calculated with help of MedCalc Version 9.2.0.1. (demo version).

3.OBSERVATION & DISCUSSION AND ANALYSIS

A total number of 100 feet of CTEV were studied prospectively in Guru Govind Singh Govt. Hospital, M. P. Shah Govt. Medical College, Jamnagar during the period from July 2014 to July 2016 with a minimum followup of 6months.

A.Tenotomy Details

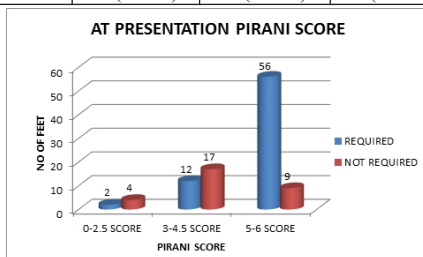
TENOTOMY	No of foot	Percentage%
Required	70	70%
Not Required	30	30%
Total	100	100%



We have done percutaneous tenotomy in 70 feet for the correction of the equinus deformity. Tendo-Achillis tenotomy is an integral part of the Ponseti's technique for the treatment of idiopathic clubfeet. The indication for the tenotomy has been clearly described and in our study it is to be necessary in 70% of the patients. The feet requiring tenotomies were equally well corrected at the end of the treatment as those that did not require tenotomies. This conclusion clears the fact that the need of tenotomy does not suggest a poor result.

B. Relation of tenotomy with at presentation PIRANI SCORE

Tenotomy	At Presentation Pirani Score			Total
	0-2.5	3-4.5	5-6	
Required	02(33.33%)	12(41.38%)	56(86.15%)	70
Not Required	04(66.67%)	17(58.62%)	09(13.85%)	30
Total	06(100%)	29(100%)	65(100%)	100



RESULT OF CHI-SQURE TEST

Chi-squared = 17.295
 Degree of freedom = 01
 Significance level p<0.0001

The association between At Presentation PIRANI SCORE and TENOTOMY is highly significant.

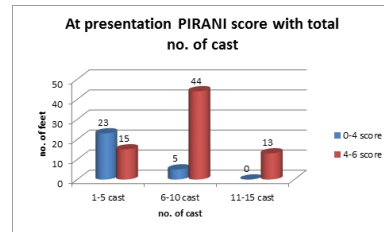
Out of 65 feet with a Pirani score greater than or equal to 5.0 at initial presentation, 56 feet (86.15%) required tenotomy. Of the 29 feet with Pirani score between 3.0 and 4.5, 12 feet (41.38%) required a tenotomy, 17 feet (58.62%) did not. Finally, only 2 feet (33.33%) out of 06 feet with initial Pirani severity scores between 1 and 2.5 needed a tenotomy.

This study is an attempt to determine whether the Pirani scoring system can be used to clarify the need of tenotomy and allows an estimation of number of weekly corrective manipulative plaster casts required by Ponseti method or not.

It has been found that a significantly greater percentage of the more severely deformed feet that scored greater than or equal to 5.0 on Pirani severity score required a tenotomy. It is very obvious because equinus is one of the components measured in these scores, so when equinus is severe the score become worse. In tenotomy group, the other components of hindfoot were also significantly worse than that of the non-tenotomy group. Hindfoot components reflect both the severity and the rigidity of the hindfoot contracture which may contribute to the need for tenotomy.

C. Relation of at presentation PIRANI SCORE with Total No. of cast

Total No. of cast	At presentation PIRANI SCORE				TOTAL
	0-4	Percentage%	4-6	Percentage %	
1-5	23	82.14%	15	20.83%	38
6-10	05	17.86%	44	61.11%	49
11-15	00	00%	13	18.06%	13
Total	28		72		100



RESULT OF CHI-SQURE TEST

Chi-squared = 32.69
 Degree of freedom = 02
 Significance level p<0.0001

The association between At Presentation PIRANI SCORE and Total no. of cast is highly significant.

In our study 82.14% feet required 1-5 cast whose at presentation PIRANI SCORE was 0-4.

Also, 61.11% feet required 6-10 cast whose at presentation PIRANI SCORE was 4-6.

The feet that had at presentation PIRANI SCORE was 4-6 required significantly more casts(6-10) than those that whose at presentation PIRANI SCORE 0-4 which also suggest that the likelihood of no. of cast relates to the overall rigidity of the deformity, and not only on the absolute severity of equinus. It concludes that the feet ultimately requiring more no of cast were in fact stiffer during the entire casting process in addition to being more severely deformed at the onset of the treatment. This explains that why the mean number of the casts (6-10casts) required for the at presentation PIRANI SCORE 4-6 group were significantly greater than that of at presentation PIRANI SCORE 0-4 group (1-5 casts).

4. CONCLUSION:

A lot has been said on effect of PIRANI score on management of CTEV. From our study of 100 feet, our data suggest that :

- The need for a tenotomy can be predicted at the onset of the treatment from Pirani severity score system.
- In our present study, 70% feet required tenotomy. The feet requiring tenotomies were equally well corrected at the end of the treatment as those that did not require tenotomies. This conclusion clears the fact that the need of tenotomy does not suggest a poor result.
- The early the age at beginning of treatment doesn't exclude need for tenotomy.
- The number of cast can be predicted at the onset of the treatment from Pirani severity score system.

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