



## Orthopaedics

## COMPARATIVE STUDY OF SURGICAL CORRECTION OF CONGENITAL TALIPES EQUINO VARUS DEFORMITY WITH AND WITHOUT INTERNAL FIXATION (USING K-WIRES)

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**ABSTRACT** Congenital Talipes Equino Varus is one of the most common congenital deformity which occurs in 1/1000 live birth worldwide. Regarding management of this clubfoot, most orthopaedic surgeons agree that approach management of children with congenital talipes equino varus deformity of foot should begin with conservative measures i.e, manipulation and serial casting in position of correction. One or more surgical procedures are often required in patients who had incomplete correction, recurrent deformity, syndromic correction and after repeated manipulation and casts. Recurrence is a common problem following the club foot surgery one of the reason for recurrence can be redisplacement of tarsal bones. This study aims to compare prospectively the functional and cosmetic outcome of two groups of club foot-one in whom tarsal joint were fixed with k-wires after doing posteromedial soft tissue release and one in whom tarsal joint were not fixed after soft tissue release. To know the incidence of congenital talipes equino varus with respect to age and sex predilection over a period of two years which were admitted between October 2017 to October 2019, 28 idiopathic club foot in 20 children range from 4 months to 3 years were treated out of 20 cases 12 were males, 8 were females. 8 patients had bilateral deformity out of 12 unilateral deformities 8 were on right side and 4 were on the left side. Male and female ratio 1.5:1 and unilateral to bilateral 1.5:1. In 12 feet turco's posteromedial soft tissue release and internal fixation of tarsal joints with k-wires was done in 16 feet only turco's posteromedial soft tissue release was done. The period of follow up ranges from 6 months to 2 years

**KEYWORDS :** Congenital Talipes Equinovarus, Turco's Posteromedial Soft Tissue Release, Internal Fixation (k-wires)

### INTRODUCTION

Congenital Talipes Equino Varus is the most common idiopathic deformity of the foot of unclear etiology. It is most common musculoskeletal birth defect of overall incidence of 1/1000 and highest prevalence in Hawaiians and Maoris. Since Hippocrates' time the treatment of clubfoot has remained perplexing and difficult problem for the Orthopaedic surgeons to treat successfully. Male to female ratio approximately with half of cases are bilateral in nature in 80%, clubfoot is an isolated deformity muscle contractures contribute to characteristic deformity that includes *adduction of forefoot, cavus of mid foot, varus and equinus of hind foot*. Bone deformity consist of medial spin of forefoot relative to mid foot and hind foot. Genetic components strongly suggested with familial occurrence in 25 % cases and recent link to *pitx1*, transcription factor critical required for limb development. CTEV may be associated with *arthrogryposis multiplex congenita, aminotic band syndrome (streeer dysplasia), pierre robin syndrome, opitz syndrome, Larsen syndrome, prune belly syndrome, spinal dysraphism, myelodysplasia* rarely some cases associated with *anterior tibial artery hypoplasia*.

We have passed through different forms of treatment ranging from gentle manipulation and strapping, several plaster corrections forcible manipulation including the use of mechanical devices to surgical correction.

### MATERIALS AND METHODS

All the patients with idiopathic CTEV admitted to orthopaedics department of GGH, Kurnool were included in this study in this two-year study, a series of 20 cases of idiopathic CTEV which were admitted to GGH, Kurnool during period October 2017 to October 2019 were profiled for the study patient were followed up for a period of 6 months to 2 years for recurrence and postoperative complications.

### INCLUSION CRITERIA

1. Children with congenital idiopathic clubfoot
2. Not associated with any other congenital deformity
3. Not underwent any surgery previously
4. Failed conservative treatment

### EXCLUSION CRITERIA

1. Relapse clubfoot
2. Secondary clubfoot (neuromuscular defects like cerebral palsy, arthrogryposis multiplex congenita, meningomyelocele)

Each case was examined clinically and properly in systematic manner. Data collected was recorded in a specifically designed case record proforma pertaining to patient particulars, history, clinical examinations, investigations, diagnosis, surgical procedures and follow up. The patients were assessed preoperatively for fitness for surgery. The cases were treated on their individual merits.

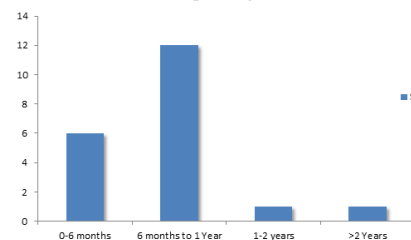
### OBSERVATION AND RESULTS

#### 1. AGE INCIDENCE

Age of operation	Number of Patients
0-6 months	6
6months-1year	12
1-2years	1
>2 years	1

The mean age at operation was 10 months the youngest patients was 4months old and oldest was 3 years old at the time of surgery

Age at operation



#### 2. SEX DISTRIBUTION

Males	females	Total
12	8	20

Out of 20 cases 12 were Males, 8 were Females and 8 patient had bilateral deformity. Out of 12 unilateral deformities 8 were on the right side 4 on the left side

#### 3. LATERALITY OF DEFORMITY

Unilateral	bilateral
12 (Right 8, left 4),	8

#### 4. GRADING OF SEVERITY

The patients were graded in to three groups based on HARROLD and WALKER classification

Grade-I	Grade-II	Grade-III
0	20	8

## RESULTS

Evaluation of the results of clubfoot treatment is yet another area of wide spread disagreement criteria listed and used by various authors for evaluation are far too many .We have evaluated each foot cosmetically and functionally and rated them according to the criteria laid down by *turco* as:-

### A. EXCELLENT

1. Complete correction of all components of the deformity.
2. Plantigrade cosmetically acceptable foot.
3. Pliable subtalar motion.
4. Dorsiflexion equal to the normal side or above the right angle in bilateral
5. Good gait and push off.

### B. GOOD

1. Complete correction of all components of the deformity.
2. One or more mild cosmetically acceptable residua, such as calf atrophy, asymmetric foot size or pes planus.
3. Pliable metatarsus adducts.
4. Toe-in-gait

### C. FAIR

1. Over correction of some loss of initial correction.
2. Plantigrade foot
3. Functionally acceptable
4. Less acceptable cosmetically

### D. POOR

1. Loss of correction and recurrence of deformities.
2. Persistence of cosmetically unacceptable deformities.

Of the 28 feet, 12 feet were corrected by standard Turco's posteromedial soft tissue release and K-wire fixation. 16 feet corrected by Turco's posteromedial soft tissue release without K-wire fixation.

Based on these criteria with internal fixation we had excellent results in 50 % of cases, good results in 41.5 % of cases and poor results in 8.3 % of cases. Without internal fixation, we had excellent results in 50 % of cases and good results in 50% of cases.

We encountered mild wound gaping after suture removal in 5 feet and mild superficial infection in 3 feet, which eventually healed with regular dressings and antibiotics .None of the patients had skin necrosis.

We had poor results in one child with internal fixation. This child presented at the age 1 ½ year and she had not followed postoperative protocol.

## DISCUSSION

In idiopathic club foot 30-50 %children show no response to conservative management. These children will benefit by early surgical intervention .The aim of surgical treatment in clubfoot is to obtain a plantigrade, painless, functional foot with good mobility and without calluses and ability to wear normal shoe.

The objective is to obtain a complete and lasting correction with a single surgery. Single staged surgery is advantageous compared to two staged procedure, as it leads to less amount of scar formation and less chance of recurrence. Hussain et al<sup>2</sup> in a study of 70 surgically treated patients by modified Turco<sup>3,4</sup> posterior medial release concluded that this operation can be successfully used in all the cases of resistant clubfoot until three years. Chacko et al<sup>5</sup>(70 percent),Turco<sup>3,4</sup>(87 percent),Bensahel et al<sup>6</sup> (88 percent).Mazone<sup>7</sup> also found 76.6 excellent and good results in 23 clubfeet in the patients with mean age of 7.7 months(range3.5-19 months)treated by posteromedial release.

The rate of relapse varies from 13-15% in different studies this depends mainly on severity of deformity, age of patient and prior treatment. However, displacement of tarsal bones is observed in few cases during revision surgery for relapse and is one of the cause of the relapse.

The present study was carried out in the Department of Orthopaedics

between October2017 to October 2019. In these two years a total of 20 cases with 28 feet were recorded. Out of these, 12 feet were corrected by, Turco's post medial soft tissue release and K-wire fixation of Tarsal joints. 16 feet were corrected by Turco's posteromedial soft tissue release without k-wire fixation. In few feet we fixed both talonavicular and subtalar joints .In few cases we fixed only talonavicular joint. While fixing subtalar joint we accidentally passed K-wire beyond ankle joint in few cases, which should not be done.

It is predominantly seen in males in our series- 60 % and is comparable with other series like-Kite (1964), 71 % males and 29% females. Danielsson (1992) – 80 % males and 20 % females. Gupta & Gupta (1999) – 70% males and 30 % females.

It is bilateral in about half of the patients. Our series – 40% . Mc Evan et al (1961) -50 % Ponseti and Smiley (1963) -40 % ,kite (1964) -49 % , Sompii (1984) -50 % Gupta and Gupta (1999) -50%.

The mean age at operation was 10 months. Youngest patient was 4 months and oldest was 3 years old at the time surgery.

These were followed up for 11.5 months on average. Longest follow up was 24 months, shortest was 6 months.

We evaluated the results of club foot treatment according to the criteria laid down by Turco.

We have not found any series in literature, to compare our results of treatment with and without internal fixation.

We compared our results of standard posteromedial soft tissue release with Turco's series. We had excellent results in 5-% of cases and good results in 50%. Turco (1979) had shown excellent results in 83% and failure in 8%.

We compared results of our study, with and without internal fixation. With internal fixation we had excellent results in 50% of cases, good results in41.5 % cases and poor results in 8.3 % cases.

Without internal fixation, we had excellent results in 50% cases and good results in 50% cases.

We had poor results in one child with internal fixation. This child presented at the age of 1 ½ year and she had not followed postoperative protocol.

The limitations of our study are the relatively short follow up and limited number of patients.

## CONCLUSION

In conclusion, there was no significant difference on standing, gait pattern and tip toe walking between the two groups of the children.

The end cosmetic appearance and the level of patient satisfaction were good.

This study shows that there is no significant difference in functional and cosmetic outcome by either internal fixing or not fixing tarsal joints after soft tissue release.

However long term follow up is necessary to identify any difference in the recurrence rate.

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