

Surgical Correction of Congenital Talipes Equino Varus Deformity with and without Internal Fixation (Using K-Wires): A Comparative Study**K. B. Vijaya Mohan Reddy^{1*}, G. Praneeth Kumar Reddy², Y.V. Satyanarayana³**¹Associate Professor, Department of Orthopaedics, Kurnool Medical College, Kurnool, Andhra Pradesh²Assistant Professor, Department of Orthopaedics, Kurnool Medical College, Kurnool, Andhra Pradesh³Assistant Professor, Department of Orthopaedics, Kurnool Medical College, Kurnool, Andhra Pradesh

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Conflict of interest: Nil

Abstract:**Objective:** One of the most prevalent congenital anomalies is talipes equino varus, or Congenital Talipes Equino Varus (CTEV). It is often treated using conservative and surgical approaches. The purpose of the study is to compare the functional outcome of two groups of club foot-one in whom the tarsal joint was fixed with k-wires after doing posteromedial soft tissue release and one in whom it was not fixed.**Material and Methods:** This is a 3-year prospective study conducted at the Government General Hospital, Kurnool from November 2018 to November 2021. There were a total of 28 feet treated. Out of these, 12 were corrected by, Turco's post-medial soft tissue release and K-wire fixation and 16 were corrected by only Turco's posteromedial soft tissue release. The period of follow-up ranged from 6 months to 2 years.**Results:** The study comprised a total of 20 patients ranging in age from 4 months to 3 years. Thirteen were male and seven were female. There were 8 patients with bilateral deformity and 12 with unilateral deformity. We had excellent results in 50 % of cases, good results in 41.67 % of cases, and poor results in 8.3 % of cases with internal fixation. We had excellent results in 50 % of cases and good results in 50% of cases without internal fixation.**Conclusion:** This study demonstrates that whether tarsal joints are internally fixed or not after soft tissue release, there is no appreciable difference in the functional outcome.**Keywords:** Talipes equino varus, Postero medial release, Internal Fixation (k-wires).This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Hippocrates used the term Talipes equinovarus for the first time around 400 B.C. [1], the terminology is based on Latin. Talus refers to the ankle, pes to the foot, equinus to the horse, and varus to the inverted and adducted foot. Clubfoot is the most prevalent congenital abnormality, affecting all musculoskeletal tissues distal to the knee (1 to 2 in 1,000 live births). [2]

The first course of treatment for clubfoot is always non-operative. Surgery is recommended for clubfoot abnormalities that do not respond to conservative treatment such as serial manipulation and casting. Despite recent advances in surgical correction of congenital clubfoot deformity, the best treatment strategy remains debatable. Soft tissue techniques are the gold standard in clubfoot surgery. All tight soft tissue structures in the posterior aspect of the ankle and the medial side of the foot are surgically released during posteromedial soft-tissue release surgery. [3] Turco [4] (1971) performed a one-stage operation that included soft tissue release on the posterior medial

aspect as well as internal fixation of the talonavicular joint using percutaneous Kirschner's wire. He found in 1979 that the ideal time for operation is 1.5 years. McKay recommended additional radial circumferential soft tissue relaxation in the medial, lateral, posterior, and plantar aspects of the foot to have a positive outcome. [5] The Cincinnati incision provides the best exposure in the posterolateral and posteromedial aspects, however, skin closure might be challenging after surgery. [6] The use of a soft tissue expander before significant clubfoot surgery or revision surgery is particularly beneficial. [7]

This study aims to compare the functional outcome of two groups of club foot-one in whom tarsal joints were fixed with k-wires after doing posteromedial soft tissue release and one in whom tarsal joint was not fixed after soft tissue release

Materials and Methods

The current study was conducted at the Government General Hospital, Kurnool in the

Department of Orthopaedics from November 2018 to November 2021. This study comprised all idiopathic Congenital Talipes Equino Varus (CTEV). Patients admitted to the orthopaedics department. There were a total of 20 cases of 28 feet during these three years. Of these, 12 feet were corrected by, Turco's posteromedial soft tissue release and K-wire fixation of Tarsal joints, and 16 feet were corrected by Turco's posteromedial soft tissue release without K-wire fixation. Period of follow-up ranged from 6 months to 2 years.

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 a systematic manner.

Data collected was recorded in a specifically designed case record proforma about 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 merits. Evaluation of the results of clubfoot treatment is yet another area of widespread disagreement criteria listed and used by various authors for evaluation are far too many.

We have evaluated each foot functionally and rated them according to the criteria laid down by Turco [4] as Excellent, Good, Fair and Poor.

Results

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

Table 1: Age distribution

Age	No. of Patients
0-6 months	5
6months-1year	13
1-2years	1
>2 years	1
Total	20

Out of 20 cases 13 were Males, 7 were Females.

Table 2: Sex Distribution

Sex	No. of Patients
Male	13
Female	7
Total	20

Out of 20 patients, 8 had bilateral deformity & 12 had unilateral deformities. Out of 12 unilateral deformities, 7 were on the rightside and 5 on the left side.

Table 3: Laterality of Deformity

Deformity	No. of Patients
Unilateral	12 Right side: 7 Left side: 5
Bilateral	8
Total	20

The patient's feet were graded in to three groups based on HARROLD and WALKER classification. Maximum number of feet had grade-II type of severity.

Table 4: Grading of Severity

Grading	No. of feet
Grade-I	0
Grade-II	22
Grade-III	6
Total	28

Based on these criteria with internal fixation we had excellent results in 50 % of cases, good results in 41.67 % 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 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.

Table 5: Functional Outcome of surgical procedure

Functional outcome	With internal fixation (12 feet)	Without internal fixation (16 feet)
Excellent	6 (50%)	8 (50%)
good	5 (41.67%)	8 (50%)
Fair	-	-
Poor	1 (8.33%)	-

Discussion

The objective is to obtain a complete and lasting correction with a single surgery. Single-staged surgery is advantageous compared to two-staged procedures, as it leads to fewer amounts of scar formation and less chance of recurrence. Hussain et al [8] in a study of 70 surgically treated patients by modified Turco [9,10] posterior medial release concluded that this operation can be successfully used in all the cases of resistant clubfoot until three years. Chacko et al [11] (70 percent), Turco [9,10] (87 percent), Bensahel et al [12] (88 percent). Mazzone [13] also found 76.6 excellent and good results in 23 clubfeet in the patients with a mean age of 7.7 months (range 3.5-19 months) treated by posteromedial release.

The ratio was 13 Males to 7 females (1.8 to 1) in our study, while this ratio was 2 to 1 in a study conducted by Ponseti [14]. It is predominantly seen in males-65%.

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 50% of cases and good results in 50%. Turco (1979) had shown excellent results in 83% and failure in 8 %.

We compared the results of our study, with and without internal fixation. With internal fixation, we had excellent results in 50% of cases, good results in 41.67 % 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 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.

Conclusion

This study demonstrates that whether tarsal joints are internally fixed or not after soft tissue release, there is no appreciable difference in the functional outcome. There were two limitations in our study. A large number of patients and a longer follow-up timeframe is preferred to spot any variations in the recurrence rate.

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Authors Contributions: All authors participated in every aspect of the study, including conceptualization, design, data collection, data analysis, interpretation, manuscript preparation, critical review, and approval of the final version to be published.

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