

MODIFIED TURCO'S POSTERO-MEDIAL RELEASE FOR CONGENITAL TALIPES EQUINO-VARUS

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Background: Talipes Equino-Varus (TEV) is one of the most common congenital anomaly. It is managed by various methods i.e. conservative & surgery. Objective of this study was to determine the efficacy of modified Turco's postero-medial release in children's having congenital TEV. **Methods:** This descriptive observational study was conducted from June 2004 to June 2008 in the Orthopaedics Unit of Lady Reading Hospital (LRH) Peshawar. The inclusion criteria were children of age 6 months to 3 years of age having moderate and severe club foot. The exclusion criteria were clubfoot secondary to some other disorders such as cerebral palsy, arthrogryphosis multiplex congenita, myelodysplasia or congenital dislocation of the hip. The deformity was treated by modified Turco's one stage release. Follow-up was for one year. Results were graded according to modified McKay rating system. **Results:** A total 70 patients were included in this study with the age range of 6 months to 3 years with moderate to severe deformity. Thirty-eight were male (54.2%) and 32 patients (45.72%) were female, twenty three patients (32.85%) had bilateral club foot while the rest of 47 patients (67.15%) had unilateral deformity. Positive family history of club foot was in 10 patients (14.2%). Results were concluded on 52 patients who completed one year follow-up. Excellent results were observed in 34 patients (65.38%), good in 9 patients (17.30%), fair in 2 patients (3.84%), and poor in 7 patients (13.46%). **Conclusion:** Children up to three years age with congenital TEV can be successfully treated in almost all the cases by modified Turco's one stage postero-medial release.

Keywords: Talipes Equino-Varus, Modified Turco's Procedure, Postero-medial release

INTRODUCTION

Congenital Talipes Equino-Varus (CTEV) is a gross deformity of the foot present at birth. The word talipes is derived from talus (ankle) and pes (foot). CTEV is the most common variety of clubfoot. It describes a foot that is plantar flexed and inverted.¹ It has an incidence of approximately 1.24 per 1000 live births.² The deformity can be quite severe, with sole of the foot pointing backwards. The dorsum of the foot becomes the weight-bearing surface so that the child walks on the head and neck of the talus. TEV results in severe handicap unless managed early. Untreated patients not only develop progressive increase in deformity associated with late adaptive changes but also have poor function even after surgical correction. Males are more frequently affected than females. It may be unilateral or bilateral. It is often associated with other hereditary conditions, such as Arthrogryphosis multiplex congenita and congenital dislocation of hip.³

Regarding treatment of this deformity, most orthopaedic surgeons agree that management of children with congenital TEV should begin with conservative measures, i.e., manipulation and serial casting in corrected position.⁴⁻⁶ One or more surgical procedures are often required in patients, who had failure with serial manipulation and casting or old age.

Being unsatisfied with the results of non-operative treatment and various soft tissue procedures provided the stimulus to develop one stage operation,

which provides lasting correction, described by Turco's as the postero-medial release. In this procedure, the posterior, medial and subtalar soft tissue contractures are released to permit the realignment of abnormal anatomy of bones and the corrected alignment is secured with Kirschner Wires. First reported by Turco in 1971, it is one of the operative procedures of choice.⁸ It was further modified to correct fore foot adduction by complete release of abductor hallucis and release of planter fascia with no K-Wire fixation according to some studies.^{9,10}

The aim of this study was to determine the efficacy of Turco's one stage postero-medial release in children having moderate to severe CTEV.

MATERIAL AND METHODS

This hospital based descriptive observational study was conducted from June 2004 to June 2006 in orthopaedic unit of Lady Reading Hospital Peshawar.

Children of either sex with age less than 3 years, having idiopathic TEV of moderate to severe deformity were included in the study. While those with clubfoot secondary to some other disorder such as cerebral palsy or associated with other congenital anomalies such as arthrogryphosis multiplex congenita, myelodysplasia or congenital dislocation of the hip were excluded from the study. Patients previously operated were also excluded.

These patients were evaluated and graded according to the criteria of Cummings.³ Detailed history including pre-natal history, birth history and

family history of congenital anomalies was taken. Clinical examination of hips, spine and extremities and analysis of gait was performed if the patient was of walking age. Severity of the deformity and calf circumferences was recorded. The length and width of the feet were measured. Radiological assessment was performed by antero-posterior (AP) and lateral radiographs of ankle and foot, measuring the following angles:

- Talo-calcaneal (TC) angle on AP and lateral views.
- Talo-First metatarsa angle on AP view.
- The values of TC angle measured on AP and lateral views were summated to yield talo-calcaneal index, and an index of >40 degree was taken as normal.

The need for surgical correction was discussed thoroughly with the parents and informed about the post operative complications and chances of recurrence of deformity and their willing to be included in the study.

All the patients had modified Turco's one stage procedure under tourniquet control and under general anaesthesia. Preoperative antibiotics were given in all cases. First follow-up visit was 2 weeks for stitches removal and change of plaster. Second follow-up visit took place after 6 weeks for cast removal and application of ankle foot orthosis (AFO) which was advised to be worn for 2 years. Parents were instructed to ensure the use of opposite shoes to be worn for two years. Patients were followed up monthly for first 3 months and then three monthly for one year and at each visit the feet were thoroughly examined and success of correction and results were drawn according to modified McKay's rating system after one year follow.

RESULTS

Seventy patients included in the study with grade II or III deformity. Out of these patients, 38 (54.28%) were males and 32 (45.71%) females, with an age ranging from 6 months to 3 years.

Twenty three (32.857%) patients had bilateral deformity out of which 9 (12.85%) were male and 14 (20%) were female and the remaining 47 (67.15%) patients had unilateral deformity, 29 (41.42%) males and 18 (25.71%) females.

Family history of CTEV is given in Table-1.

Table-1: Family history of TEV

Family History of Clubfoot	No.	%
Patients with Family History of Clubfoot	40	57.14
Patients with no Family History of Clubfoot	30	42.86
Total:	70	100

Thirty (42.86%) patients had no history of any previous treatment, while 40 (57.14%) patients had history of serial casting.

On X-ray the average talo-calcaneal angle was 12.5 degree (range: 0–20 degree) on AP view and 13 degree (range: 9–25 degrees) on lateral view. Average talo-first metatarsal angle was 50.2 degree (range: 25–90 degree). The foot bi-malleolar angle i.e. the angle formed by bi-malleolar plane and the long axis of foot was 55.5 degree in average (range: 40–65 degrees).

Post-operatively 8 (11.43%) patients developed swelling of the toes. In these patients the casts were split and augmented by applying crepe bandages. 20 (28.50%) Patients got wound inflammation with redness and oedema and in 7 (10%) patients wound dehiscence occurred. All these complications were treated by oral antibiotics and casts with window for daily dressing.

During follow-up, the main problem was poor compliance. We lost 18 patients for follow-up after the 1st cast and stitches removal.

The mean angle of maximum dorsiflexion was 15 degree (range: 10–25 degree) and of plantar flexion 45 degrees (range: 43–59 degrees) in 43 of the patients, while maximum dorsiflexion was 14 degree (range: 10–18 degree) in 8 patients and the maximum planter flexion was 19 degrees in one patient and 16 degrees (range: 14–20 degrees) in 8 patients.

The forefoot was in neutral position in 40 (57.14%) patients, with 5 degrees adduction in 6 (8.57%) patients and was in more than 5 degrees adduction in the remaining 7 (10%) patients. The heel was in varus in 7 (10%) patients while neutral in the remaining 45 (64.29%) patients. Flexor hallucis longus was functional in all the feet. Shoe wear was normal in 48 (68.57%) patients while normal shoes wear was difficult in 4 (5.71%) feet.

By the end of one-year only 52 (74.28%) patients of the 70 operated ones for TEV were available for evaluation. They were graded according to the modified McKay rating system.

In this short term follow up of one year, the following results were observed. Thirty-four (65.38%) patients had excellent results, 9 (17.30%) patients' good results, 2 (3.84%) patient had fair results and 7 (13.46%) patients had poor results.

DISCUSSION

CTEV is the most common orthopaedics anomaly.² The ratio was 38 Male to 32 female (1.2 to 1) in our study, while this ratio was 2 to 1 a study conducted by Ponseti.¹¹ Bilateral clubfoot was noted in 30% patients in our study while in Otremski¹⁰ study, it was about 50% and Yamamoto reported it more than 30%.¹²

In our study there were 14.28% patients with family history of CTEV while family history was present in 11.42% of patients in another study.¹³

In our study 64.28% patients had received conservative treatment (serial casting) starting from the initial days of life, while 35.71% of the patients had no conservative treatment till the time of presentation. This is mainly because of educational status and awareness of the patients.

The compliance of the patients was poor in our patients and even in this short time of one year, we lost 18 patients out of 70, thus the follow up rate was 74% at the end of one year while in other study¹⁴, the follow up rate was 70% after a mean follow up of more than 15 years. In another study¹³ follow up rate is about 95% in patients treated for CTEV deformity.

The degree of correction, i.e., the results were measured according to the McKay rating system. In our study excellent results were in 34 patients (65.38%) good in 9 patients (17.30%), fair in 2 patients (3.84%) and poor in 7 patients (13.46%). Turco's VJ reported 83% satisfactory results, 12% fair results and 5% failure with his surgical procedure.⁸ Thompson GH achieved excellent results in 86% of cases corrected with Turco's postero-medial release.¹⁵ Hoque¹⁶ got excellent to good results in 75% rigid talipes equino-varus and had 11% fair and 13% poor results with Turco's postero-medial release.

With Modified Turco's postero-medial release, in patients of 9 months to 4 years of age, Otremski¹⁰ achieved full correction of equines in 98%, heel varus in 91%, Cavus in 85% and forefoot adduction in 91% of cases. The results of our study remained excellent to good in about 82% which are comparable to other studies.^{8,9,17-19}

The cause of relapse in most of the cases is primarily mismanagement or non-compliance, infection wound dehiscence and excessive scar hypertrophy which results in recurrence of deformity and poor functional outcome.

CONCLUSION

Patients with CTEV can be successfully treated in children up to three years of age by modified Turco's one stage postero-medial release.

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