

Surgical Management of Congenital TEV in Children at PMC Hospital Nawabshah

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Abstract: *Introduction:* Talipes equino varus TEV is one of the most common congenital anomaly. It is managed by some common ways i.e., conservative & surgical methods. Among surgical methods are Turco's posterior medial release, posterior soft tissue release operation (Attenborough), four quadrant release (Mc Kay). Objective of this study was to determine the reliability of surgical option like postero medial release in children having congenital TEV.

Material & Methods: This study was carried out during the period from October 2002 to March 2005 in the Deptt. of Orthopaedics of PMCH Nawab Shah. The inclusion criteria were children 2 months to 30 months of age having moderate to severe club foot. Clubfoot secondary to some other disorder such as cerebral palsy, arthrogryposis multiplex congenital, myelodysplasia or DDH were not included in this study. The deformity was treated surgically in all cases by postero medial release. Follow-up period was one & half year.

Results: A total 57 patients were included in this study with the age range of 2 months-2.5 yrs with moderate to severe deformity. Forty two were male (73.7%) and 15 patients (26.3%) were female, seventeen patients (29.8%) had bilateral club foot while the rest the rest of 40 patients (67.1%) had unilateral deformity. Positive family history of club foot was in 10 patients (17.5%). Results were concluded on 57 patients who completed one & half year follow-up. Excellent results were observed in 41 patients (71.9%), good in 11 patients (19.2%), fair in 2 children (3.5%). No patients lost to follow up.

Conclusion: Children up to 30 months (2 months - 2.5 years) age with congenital TEV can be treated with surgery successfully.

Keywords: Talipes equino varus, Postero medial release, Deformity.

INTRODUCTION

Congenital equino varus (CTEV) is a gross deformity of the foot present at birth. CTEV is the most common variety of club foot. It describes a foot that is plantar flexed and inverted. It has an incidence of approximately 1.24 per live births [1]. The severity of deformity can be extensive with sole pointing inwards so that dorsum of the foot becomes the weight bearing surface and child walks on the head and neck of the talus.

Children who couldn't get treatment for TEV, not only develop progressive increase in deformity associated with the adaptive changes but have poor function also even after the surgical correction.

Males are more frequently affected than females. It may be unilateral or bilateral as well. It is often associated with other hereditary conditions such as Arthrogryposis congenita and DDH [2].

Regarding treatment of this deformity, most of surgeons agree that management of children with CTEV should begin with conservative methods i.e., manipulation and serial casting in corrected position [3-5]. One or more surgical procedures are often required in patients, who had failure with serial manipulation and casting or older age of the child.

Unsatisfied results of non surgical methods used for correction of CTEV, encouraged the stimulus to choose surgical options like posterior soft tissue release operation (Attenborough), four quadrant release (Mc Kay) & Turco's posterior medial release, which provide lasting correction. In Turco's, postero medial release; the posterior, medial and subtalar soft tissue contractures are released to permit the realignment of abnormal anatomy of the bones of foot. It was first reported in year 1971, & is one of the surgical procedure of choice [6].

Table 1: Patient Population: Sex & Incidence

Male	Female	Bilateral	Unilateral
42	15	11	46

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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 [7,8]. The aim of this study was to determine the reliability of surgical option i.e., postero medial release in children having moderate to severe congenital TEV.

MATERIAL AND METHODS

This study was conducted from October 2002 to March 2005 in Orthopaedic unit of PMC Hospital Nawab Shah.

Children of either sex with age less than 2.5 years, having idiopathic TEV of moderate to severe deformity were included in the study. Exclusion criterion was other causes of TEV like arthrogryposis multiplex congenita, myelodysplasia & DDH.

Detail history consisted of pre natal, birth and family history of congenital anomalies was documented. Clinical examination of all patients esp. hips, spine and extremities & gait analysis was performed in those children who were able to walk.

Severity of the deformity and calf circumferences was also recorded. Radiological assessment of following angles was done by AP and Lateral radiographs of ankle & foot:

* Talo-calcaneal angle on AP and lateral views

* Talo-first metatarsal angle on AP view

* The values of TC angle measured on AP & lateral views were summated to yield Talo-calcaneal index, and an index greater than 40° was taken as normal.

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

All the patients underwent surgery with tourniquet control and under general anesthesia. Pre-operative antibiotics were given one hour before in all patients. First follow-up visit was at 2 weeks for removal of sutures and change of plaster. Second follow up visit took place after 3 weeks for change of cast (COP) for further & gradual correction of any residual deformity. It was customary to take measurement of foot at the time of change of second POP cast. Just after removal of 3rd POP cast, application of DB was used in all patients

below 12 months until they acquired the age of one year or till child started walking. Surgical shoes were advised to be worn for two years. Parents were also instructed to ensure the use of opposite shoes to be worn for two years in order to maintain the corrected position / prevent any chance of recurrence, as child's foot is also growing as the age increases. Patients were then followed up monthly for first 3 months and then 03 monthly for one year and at each visit the feet were examined & degree of correction and results were noted according to modified Mc Kay's rating system.

RESULTS

57 patients included in the study with grade 2 and or 3. Out of these, 42(73.7%) patients were males and 15 (26.3%) females, with an age range from 2 months to 30 months.

Seventeen (29.8%) patients had bilateral deformity, out of those 13 (76.5%) were male and 4 (23.5%) were female and the remaining 40 patients had unilateral deformity, 29 (72.5%) males & 18 (%) females. Family history of CTEV was obtained in 9 (15.8%) patients. 48 (84.2%) patients hadn't sought any treatment regarding foot deformity, whereas 9 had history of serial casting and or some manipulation/ bandages. The average Talo-calcneal angle was 13° (range: 0-20°) on AP view and 13.5° (range: 9-25) on lateral view.

Average talo-first metatarsal angle was 50° (range: 25-90°). The foot bi-malleolar angle that is the angle formed by bi malleolar plane and the long axis of foot was 50.5° in average (range: 40-65°).

Five (8.8%) patients developed swelling of the toes after surgery. In these, cast was further widened & then augmented by applying elastic bandage. 2 (3.5%) patients got wound inflammation with redness and edema and in 7 (12.3%) patients wound dehiscence occurred. All these complications were treated by oral antibiotics and window dressings. During this period of one and half, none of patients lost to follow-up.

Table 2: Post-Op Complications

Toe swelling	Wound margins inflamed	Wound dehiscence	POP loosening
5	7	2	3

The mean angle of maximum dorsiflexion was 15° (range: 10-25°) and of plantar flexion 45° (range: 43-59) in 41 of the patients, while maximum dorsiflexion

was 14° (range: 10-18°) in 8 patients and the maximum plantar flexion was 19° in one patient and 16° (range: 14-20°) in 8 patients. Loosening of cast occurred in 5 patients just after the change of first POP. This was noticed esp. in flabby children whose thighs were fatty. This troublesome for parents were managed by re-application of the cast in all 5 cases immediately.

The fore foot was in neutral position in 41 (71.9%) patients, with 5-7° adduction in six (10.5%) patients and was in more than 5° adduction in remaining 5 (8.8%) patients.

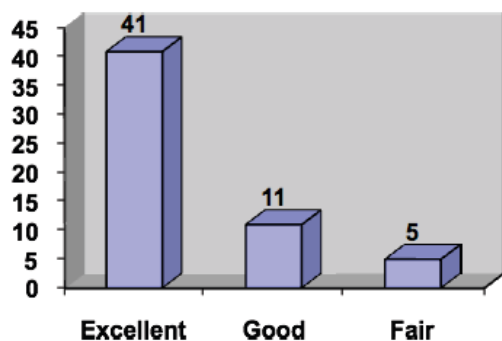


Figure 1: Results.

Flexor hallucis longus was functional in all the feet. 47 patients had no difficulty in shoe wear, while normal shoe wear was difficult in 4 (7%) feet. By the end of one year, all operated patients were available for evaluation and were graded according to Mc Kay rating system.

During the follow up of one and half year, the following results were observed: 41 (71.9%) patients had excellent results, 11 (19.3%) patients had good results and 2 (3.5%) patients had fair results.

DISCUSSION

CTEV is the most common anomaly in children encountered by Orthopaedic surgeons [1].

The ratio was 42 Male to 15 female (1.2 to 1) in our study, while this ratio was 2 to 1 a study conducted by Ponsetti [9].

Turco's VJ reported 83% satisfactory results, 12% fair results and 5% failure with his surgical procedure [6]. Thompson GH achieved excellent results in 86% of cases corrected with Turco's postero-medial release [13]. Hoque [14] 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.

The results of our study remained excellent to good in about 82% which are comparable to other studies [6, 7, 15-17].

CONCLUSION

CTEV can be successfully treated in children up to 2.5 years of age by surgical release, instead of treating them conservatively, with unreliable method of serial casting.

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