

ORIGINAL ARTICLE

Management of talipes equinovarus (TEV) deformity – 5 year experience in Dhaka Shishu (Children) Hospital

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Abstract

Background : Congenital clubfoot (talipes equinovarus) is one of the treatable common congenital anomalies in Bangladesh. But due to some social reason a good number of patients come late for treatment.

Objectives: The aim of this study was to observe the result of the treatment of TEV at early age and to improve the quality of life of the affected growing children, thereby to prevent future deformity.

Methods: A retrospective study was carried out in Dhaka Shishu (Children) Hospital, during the period of July, 2002 to June, 2007. The study included children with non-rigid and rigid TEV deformity from birth to 3 years of age. The patients with resistant rigid deformity were excluded from the study. Total 216 cases with 376 feet of rigid and non-rigid type of TEV were reviewed. The cases were examined at each follow-up (1 month or 2 months interval) after correction of the deformity conservatively with serial plaster or surgery.

Results: The results were categorized as good, fair and poor. Good results were obtained in case of all non-rigid types of club foot and 49.8% of rigid type by manual stretching and serial plaster. Out of 92 operated feet (all were rigid type) good results were found in 83 and fair results in 9 cases.

Conclusion: Conservative as well as surgical approaches are the methods of treatment of clubfoot deformity. Early interventions give satisfactory results in managing clubfoot deformity. Stretching and serial plaster at appropriate time is the most effective method and has significant better outcome. Surgical treatment is not the only treatment but it is an important method of treatment of clubfoot deformity.

Keywords: Talipes Equinovarus, Early Childhood, Manual stretching, Serial plaster, Operative correction.

Introduction

In Bangladesh the incidence of club foot (Talipes equinovarus) is 5.5 per 1000 live birth and it is the second most common congenital anomaly.¹ It is a gross deformity of the foot present at birth and all clubfeet are not of same severity.² The

goal of the treatment of clubfoot is to obtain and maintain the foot in plantigrade position. Treatment should be initiated immediately on diagnosis, preferably within the first week of life in non-rigid type, which can be corrected easily by manual stretching.³

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Serial plaster and manipulation improve morbidity of TEV in early childhood and has shown to be successful if brought to hospital in early stage. It is not always necessary for all patients to go for operation, especially for the non-rigid type. Stretching, manipulation and putting cast to the affected foot will do the job and has substantial outcome of this kind of treatment. Even in the cases of rigid type of TEV, slight molding of the affected foot soften soft tissue and lengthen tendon that can be regarded to have favorable outcome to this kind of conservative treatment. Resistant rigid clubfoot almost always requires operative treatment.

In Dhaka Shishu (Children) Hospital most of the TEV come early and some are late. Late arrival cases are due to illiteracy, lack of knowledge of healthcare, ignorance, poverty, superstitions, communication gap, maltreatment by indigenous method, etc.⁴

The procedures of conservative treatment are lengthy and require considerable motivation on the part of the parents. Considering all the facts, it is quite likely that parents will opt for non operative treatment.³

Conservative treatments have some drawbacks like skin reaction to plaster, strict maintenance of plaster, frequent attendance. But with serial plaster gradual correction draws the interest for conservative management. The result of conservative treatment is good if it can be started at appropriate time and delayed cases usually need surgical correction. Patients need manual stretching, serial plasters in conservative group and postoperative plasters for operative group and clubfoot shoes until the child is school going.⁴ The study was carried to observe the result of treatment of TEV at early stage.

Materials and Methods

This retrospective study was carried out in the Department of Surgery, Dhaka Shishu (Children) Hospital; Dhaka, during the period of July, 2002 to June, 2007. The study included children with non-rigid and rigid TEV deformity from birth to 3 years of age. We excluded the patients with resistant rigid variety. Total 216 cases of 376 feet, both rigid and non-rigid type of TEV were included. The cases were examined on each follow-up at 1 month or 2 month interval after correction conservatively with serial plaster or surgically. Methods applied were Kit's method in serial plaster and Turco's approach in operation for TEV deformities. The results were analyzed in the last follow-up date the results were categorized as good, fair or poor. Good results: Near

normal appearance, plantigrade foot, dorsiflexion more than neutral, valgus, heal neutral, no stiffness. Fair results: near normal appearance, plantigrade foot, dorsiflexion up to neutral, heal neutral, mild stiffness. Poor results: deformed foot, persistence of one or more of the deformities, moderate to sever stiffness.

Results

Total 216 clubfoot patients with 376 feet were treated conservatively and surgically in Dhaka Shishu (Children) Hospital during this period.

Age of the patients ranged from 2 weeks to 23 months, mean age was 12.6 months (Fig 1). Irrespective of sex and side involvement, there were 148(68.5%) male and 68 (31.9%) female and among them 56(25.9%) was unilateral and 160 was (74.1%) bilateral (Fig 2). Among 56 unilateral cases right foot was involved in 29 cases and left was involved in 27 cases. Among total 376 clubfeet of 216 patients, distribution of involved feet and type of club foot is shown in Table I. Only one case had family history of club foot. Club foot associated with other congenital

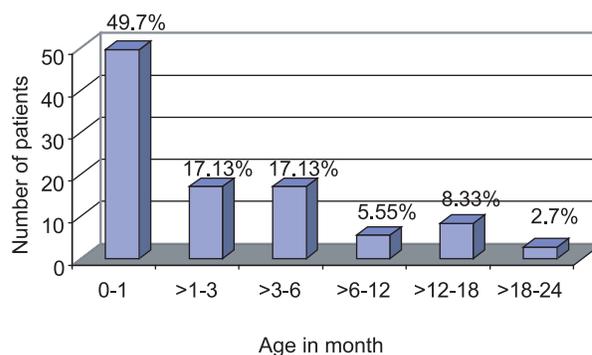


Fig 1 Age distribution of the patients (n= 216)

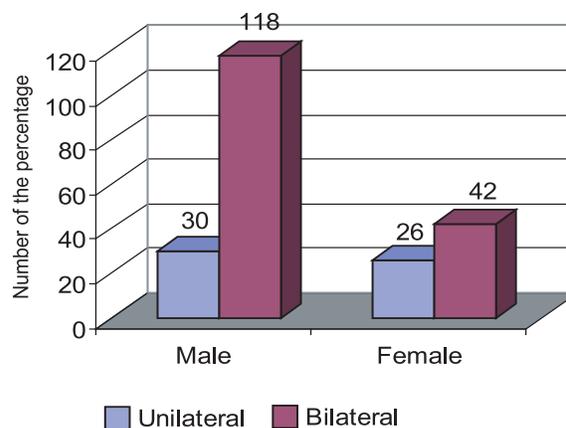


Fig 2 Distribution of affected legs by sex (n=216)

Table I
Types of clubfoot (patient = 216, clubfoot=376)

Side	Non rigid	Rigid
	No. (%)	No. (%)
Unilateral foot (n=56)	43 (76.8%)	13 (23.2%)
Bilateral foot(n=160X2=320)	12* (3.8%)	308 (96.3%)
Total feet (n=376)	55(14.6%)	321(85.4%)

*12 cases with bilateral clubfoot had one rigid foot and the other non-rigid.

Table II
Types of clubfoot, Management and Result (n=376)

Type	Manual Stretching (n=48)		Serial Plaster (n=236)		Operative Correction (n=92)	
	Good	Fair	Good	Fair	Good	Fair
	Non-rigid (n=55)	48(87.3%)	0	7(12.8%)		0
Rigid (n=321)			160(49.8%)	69(21.5%)	83(25.9%)	9(2.8%)

anomalies were present in only 12 (5.6%) patients. Two patient had congenital dislocation of patella and 2 patient had cleft palate. Thirty seven (86.0%) of 43 non-rigid patients were corrected by only manual stretching, 6 (13.9%) needed serial plaster and none of them needed operative correction. Among 173 patients 123 (71.1%) were treated by serial plaster and 50 (28.9%) were treated by operative correction.

Complications were skin excoriation in 18 (8.3%), plaster reaction in 31 (14.3%), and pressure necrosis and sloughing of skin in 6 (2.8%) cases. The incidence of plaster reaction was highest, and it was more in the early age group.

Good result were obtained in case of all non-rigid types of club foot 55 (100%), and 160 (49.8%) of rigid type (n=321) by manual stretching and serial plaster but fair results were in 69 (21.5%) feet. Out of 92 operated feet (all were rigid type) good results were found in 83 and fair results in 9 (Table II).

Discussion

The importance of early treatment of clubfoot is very important. "Start the treatment before the delivery of head in breech presentation" was highly quoted by Lehman to emphasis on the necessity of early treatment.³

The realization of early treatment among parents is increasing day by day. This has been observed in parents attending Dhaka Shishu Hospital. Good result was obtained in all cases of non-rigid type of clubfoot with conservative management, manual stretching and serial plaster. Most of the patients with rigid variety of foot were treated with serial plaster with good and fair results. Fifty patients were operated upon after serial plaster failed to give adequate correction. Serial plaster in rigid variety of clubfoot makes the operative correction easier. The treatment of choice of this series was serial plaster for rigid type in early life. Most of the cases responded well with good results.

Skin excoriation, skin reaction to plaster cast and pressure necrosis were present in 55 cases. This type of hazard was also found in 6 operative cases. For operative patients, preoperative X-rays were used to assess the talocalcaneal joint deformity. In serial plaster at first correction of varus deformity needs 3 or more serial plasters. After correction of varus deformity, serial plaster were applied for the equinus deformity, where two or more serial plasters were required, and then maintenance cast up to walking age and then clubfoot shoe. Regarding the operative procedure, Turco's approach⁵ was used in all

operative cases. After treatment, the surgical and nonsurgical cases were given clubfoot shoes and followed up every 2 months interval and advised to use the clubfoot shoes at least for 3 years till school going age.

Most of the cases in the series (49.7%) were below 1 month of age. Almost all of them responded well with good results. Overall, the cases between the age group 0-3years, 148 out of 216 cases, had good results and 68 cases fair results.

Shaw⁶ and Liyod⁷ have shown that club-feet treated with the conservative method (serial casting and stretching) have been successfully corrected up to 70%.

The success rate depends on initial severity, age at start of treatment, presence of neurological pathology, adherence to the standard protocols, family support and also experience in the correct manipulation and cast application.^{8,9}

By the use of Kites method, Kits,¹⁰ Roye¹¹ and Karoki¹² showed that about 90% clubfoot can be treated conservatively. Study of Wynne-Davis and Shaw showed that about 30% to 50% clubfoot can be corrected by manipulation, stretching and serial plaster respectively.¹³ But in another study by Lehman showed 70 percent in rigid variety and 100 percent corrections of postural deformity and rest corrected surgically.³ Study in Ethiopia showed only 12% TEV needed operation.⁸

In the present series, correction of non- rigid variety, 100 percent had good result by manual stretching and serial plaster and in rigid foot 75.7 percent good result obtained with serial plaster and surgical correction, which is almost similar to this result.

During the present study period, it was found that parents became more cautious now-a-days about the deformity and attend hospital early to seek medical advice. In spite of poor communication, parents attended out patient department for follow up at regular intervals from far distance and even parents from poor socio-economic class tried to visit at regular intervals because patients were treated conservatively and obviously they were afraid of operative treatment. Therefore, regular and early attendance at out patient department may give satisfactory results.

Conclusion

Conservative as well as surgical approaches both are accepted methods of treatment of clubfoot deformity. Early interventions make easy to manage.

Stretching and serial plaster at appropriate time is most effective and has significant outcome. Surgical treatment is not the total treatment but a part of the treatment of clubfoot deformity.

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