OPERATIVE MANAGEMENT OF CONGENITAL TALIPES EQUINOVARUS DEFORMITY: EXPERIENCE AND REASON.

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SUMMARY

Background: Congenital talipes equinovarus is the most common congenital anomaly of the foot and ankle. The prevalence of this condition in our environment is not known due to dearth of medical literature on the subject. The aim of this study was to determine the outcome of our operative management of resistant talipes equinovarus by elongation of tendo-Achilles and posteromedial soft tissue release.

Methods: We present a retrospective review of congenital talipes equinovarus treated by Elongation of tendo Achilles (ETA) and Posterior Medial Release(PMR) at National Orthopaedic Hospital Enugu over a 6- year period (January1995- December 2000).

ResultsThere were 63(68%) males and 30(32%) females with mean age of 2.06 years at presentation (range 1/12-18years). There was positive family history in 6(7%) patients. More than half of the patients 63(68%) came without any formal referral. The mode of delivery was spontaneous vaginal delivery in 81(87%) and the first child appears to be more affected 22(24%). The deformities on presentation varied from talipes equinovarus 50(54%) to frank equinus in 3(3%) and fifty-four (58%) were bilateral. Sixty- three (68%) had initial treatment ranging from serial casting in 46(50%) to massage by traditional bonesetter in 2(2%) and the average duration of this initial treatment was 20weeks (range 2-106weeks). The average age at surgery was 2.5years (range 3/12-24 years). All patients received postoperative cast for an average of 13 weeks. The commonest post- operative complication was medial wound breakdown. The average duration of follow-up was 30 weeks (range3weeks-3years). Some patients were lost to follow-up immediately the cast was removed. As at last visit 90% were walking pain-free and do not require special shoe. The commonest residual deformity as at last visit was forefoot adduction in 17(18%) patients.

Conclusion: Elongation of tendo-Achilles and posteromedial soft tissue release are common operative procedures for CTEV. The short-term result of these procedures appears very good in our environment. However, the long-term result cannot be effectively analyzed due to high rate of loss to follow-up

Key words: Congenital talipes equinovarus, Posteromedial release, Achilles tendon elongation

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INTRODUCTION

Congenital talipes equinovarus is a common deformity encountered in paediatric orthopaedic practice. It has been described as the most common and most important deformity of the foot[1]. Its incidence ranges from 1-2 per a thousand live births, boys being affected twice as often as girls.[2, 3, 4] and it is bilateral in one third of cases. It is a complex deformity that is difficult to treat and has the tendency to recur at least up to the age of 7 years[4].

Treatment of this condition has remained a subject of dynamic controversy [5, 6, 7] hence the existence of various modalities of non-operative and operative treatments for this disorder. The first written record of club foot treatment is found in the works of Hippocrates from around 400BC where he recommended gentle manipulation of the foot followed by splinting.[8, 9] In developing countries where congenital club-feet present late for medical attention (i.e. when soft tissue fibrosis and contractures have become advanced), operative treatment for this condition is a common practice. More so, it has been observed that the non-operative technique for treatment of this disorder described by Ponsetti, though popular, requires 2-4 years of orthotic management, which in the face of stern pecuniary situations (as in the developing countries) limits end results due to poor compliance level to prolonged treatment.

Since the goal of treatment of congenital talipes equinovarus (CTEV) is to eliminate or reduce the four components of the deformity (equinus, varus, forefoot adduction & cavus) so that the patient has a pain -free, mobile, plantigrade foot free from callosities and without need for special shoes [10, 11], any effective therapy must be able to address these contending issues thoroughly. In this regards, surgical elongation of the Achilles tendon combined with postero-medial soft tissue release (PMR) have been found to be superior to conservative management [1, 7] in achieving these goals, especially when the deforming forces are immense- a situation often seen in rigid and neglected clubfoot.

The aim of this study was to determine the outcome of operative management of talipes equinovarus by elongation of tendo -Achilles and posteromedial soft tissue release.

PATIENTS AND METHODS

We present a retrospective review of congenital talipes equinovarus treated by Elongation of Tendo-Achilles (ETA) and posterior medial release (PMR) at National Orthopaedic Hospital Enugu over a 6- year period (January1995- December 2000). The medical records of all patients with congenital talipes equinovarus who were treated by elongation of tendo-Achilles and posterior medial soft tissue release within the study period were reviewed. Demographic data as well as the following data were collected: age at presentation, birth order, mode of delivery, source of referral, type and duration of initial treatment, laterality of the deformity, type of deformity present, age at operation, post operation care given, post operation complications, length of follow-up. The outcome of the operation was judged based on two parameters- pain on walking and residual deformity.

Acquired cases were excluded as well as those with incomplete records.

Descriptive statistics were provided.

RESULTS

There were 63(68%) males and 30(32%) females with mean age of 2.06+/- 3.2 years at presentation (range 1month-18years). Fifty cases (58%) were bilateral giving a total of 143 feet. There was positive family history in 6(7%) patients. More than half of the patients 63(68%) came without any formal referral.

The mode of delivery was spontaneous vaginal delivery in 81(87%). The first child was most often affected, accounting for 22(24%), Table 1.

The component deformities present at presentation were diverse and varied from frank talipes equinus to talipes equinovarus with or without forefoot adduction and or hypoplastic calf, Table 2.

Most patients had received one form of initial treatment or the other but mostly serial casting before presentation, Table 3.

The average duration of this initial treatment was 20weeks (range 2-106weeks). The average age at surgery was 2.5years (range 3months-24 years). Four patients had additional bone surgery (calcaneocuboid excision in 3 cases and triple arthrodesis in 1). Twenty eight percent of the feet had post-operative wound complications, the most common being complete medial wound breakdown, Table 4.

All patients received postoperative cast for an average of 13 weeks and were subsequently put on reversed shoes.

Follow up:

The average duration of follow-up was 30 weeks (range3weeks-3years). Some patients were lost to follow-up immediately the cast was removed

Assessment as at last follow up:

i. pain on walking

Ninety per cent of patients had plantigrade pain-free foot, which did not require special shoes. Eight per cent had painful feet that militate against walking and therefore required special shoes.

ii. Residual deformities.

Forefoot adduction was the commonest residual deformity, Table 5.

Table1: Birth order

	Frequency	Percent
1st	22	23.7
2nd	17	18.3
3rd	21	22.6
4th	9	9.7
5th	9	9.7
6th	4	4.3
7th	4	4.3
8th	1	1.1
not stated	6	6.5
Total	**93**	**100.0**

Table 2: Deformities at presentation

	Frequency	%
Talipes Equinovarus (TEV)	50	53.8
TEV with forefoot adduction, hypoplastic calf and cavus	39	41.9
Equines	3	3.2
Cavus	1	1.1
Total	93	100.0

Table 3: Initial treatment

	Frequency (n)	%
Serial casting	46	49.5
None	33	35.5
Attempted surgery in private hospital	9	9.7
Traditional Bone Setting (TBS)	2	2.2
Digital manipulation	2	2.2
Strapping	1	1.1
Total	93	100.0

Table 4: Post operative Complications

	Frequency (feet)	%
Medial wound break down	34	23
Partial wound break down	6	4
Wound Sepsis	1	0.7
Total	41	28

Table 5: Residual deformities

	Frequency (feet)	%
Hind foot varus	17	12
Forefoot adduction	17	12
Equines	16	11
Equines and forefoot adduction	8	5
Varus and forefoot adduction	2	1
Total	60	41

DISCUSSIONS

In developing countries where congenital club-feet present late for medical attention (i.e. when soft tissue fibrosis and contractures have become advanced), operative treatment for this condition is a common practice. More so, it has been observed that the non-operative technique for treatment of this disorder described by Ponsetti [10], though popular, requires 2-4 years of orthotic management, which in the face of stern pecuniary situations (as in the developing countries) limits end results due to poor compliance level to prolonged treatment. Since the goal of treatment of congenital talipes equinovarus (CTEV) is to eliminate or reduce the four components of the deformity (equinus, varus, forefoot adduction & cavus) so that the patient has a pain -free, mobile, plantigrade foot free from callosities and without need for special shoes [10, 11], any effective therapy must be able to address these contending issues thoroughly. To this regards, surgical elongation of the Achilles tendon combined with postero-medial soft tissue release (PMR) have been found to be superior to conservative management [1, 7] in achieving these goals, especially when the deforming forces are immense- a situation often seen in rigid and neglected clubfoot.

In our series, we reviewed the surgical treatment of CTEV by ETA and posterior medial release. A preponderance of male cases M: F 2:1 with an age range of one month to 18years (mean age of 2.06years) at presentation was noticed. This is in agreement with most reports that dominate the literature on clubfoot [4]. Fifty eight percent of our cases were bilateral. This appears slightly higher than the 50% reported by most authors [3]. This slight increase is probably due to our yet to be published observation that most unilateral cases of CTEV tend to be mild and amenable to non-operative measures. Besides, the asymmetry of the feet and resultant gait in unilateral cases probably prompt parents to present their children early when non-operative treatment is often successful. As Hoque et al[5] have noted, late commencement of treatment increases the stiffness of the deformity and the possibility of an operative treatment. Only 7% of our cases had a positive family history of the condition. This supports previous reports that most cases of CTEV occur sporadically.[3, 4]. However, Lochmoller et al noted that 24.4% of the cases in their series had a family history of idiopathic congenital talipes equinovarus[12]. This difference can be explained by the study designs. Our series focused on surgical treatment only. Most cases of clubfoot are treated conservatively.[10] .The first child was the most affected (24%) in our series. This observation may not be unrelated to the high resting tone of a primigravid uterus[2].

At the time of initial presentation, 42% of cases of clubfeet that underwent surgical correction in our centre during the period of study had the four components of the disorder. Interestingly, all the cases in this subset had hypoplastic calf muscles as well. Fifty four percent of cases had only equinus and varus deformities while 3.2% and 1.1% respectively had isolated equinus and cavus deformity. These figures are not true demographic representation of prevalence of components of clubfeet since our study included cases that have had initial treatment. As aptly noted by Cummings et al[8], not all clubfeet are the same.

This therefore calls for the need to carefully assess each foot to determine the components of the deformity that remains especially when an initial treatment has corrected some components of the deformity. This principle guided treatment of cases in our series. Treatment was offered based on what was considered necessary. Most of our cases had elongation of Achilles tendon (ETA) and postero-medial release. This group was followed by those that ETA only was considered sufficient. The average age at which surgery was carried out on our patients was 2.5 years (range 3months-24years). Agreeably this age is rather high considering that most authors [6] now recommend the age of 9-12months as the optimum time for surgery. The reasons for this older age for surgery were closely related to late presentation as well as morbid fear for surgery often noticed in our environment. For example, the case that presented at 18 years could not decide for surgery until about six years later despite the fact that the deformity was long overdue for correction. Again financial constrain is also a major factor. In the absence of National Health Insurance, the over bearing revolving fund scheme in government hospitals entails that, patients must pay directly from their pocket and this is often not readily feasible.

Post-operatively all our patients had postoperative casting for an average of 13weeks. At this time patients were re-evaluated and reversed –shoe therapy instituted to consolidate the gains of surgery. This period of postoperative treatment was considered rather long by some parents and hence a reasonable number of cases were lost to follow up especially if the parents feel satisfied with the correction at any stage. However it is worthy of mention that this post –operative treatment period is much less than the 2 to 4 years period of orthotic management for clubfeet managed by the Ponseti technique [2].

Follow up duration ranged from 3weeks to 3 years (average 30weeks). Final assessment (at last follow-up visit) was based on presence or absence of pain on walking and presence of residual deformity. Ninety percent of cases had plantigrade, pain-free foot. This result was considered satisfactory. The residual deformities encountered include forefoot adduction (most common), varus and equinus deformities. This observation supports similar findings in the literature that forefoot adduction rarely responds to intervention directed at either the hind or midfoot[13]. In severe cases metatarsal osteotomy is recommended

Conclusion:

Elongation of tendo-Achilles and posteromedial soft tissue release are common operative procedures for CTEV. The short-term result of these procedures appears very good in our environment. However, the long-term result cannot be effectively analyzed due to high rate of loss to follow-up. There is therefore the need to educate attending midwives and other health workers on the need for early referral, and patients' parents on the importance of regular follow-up appointments.

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