COMPARTIVE STUDY BETWEEN THE RESULTS OF ORIGINAL, ACCELERATED AND DECELERATED PONSETI TECHNIQUES IN TREATMENT OF CONGENITAL TALIPES EQUINOVARUS

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Introduction

Congenital Idiopathic Talipes Equinovarus (CTEV), or clubfoot, is a complex deformity that involves pathological anatomical disorder in the foot with ankle equinus, hindfoot varus, midfoot cavus and forefoot adductus.

Ponseti technique has become the gold standard of care for congenital club foot management. It is not only a thorough manipulation and casting process but also prevention and treatment of relapse. The procedure includes a series of plaster casts that have been modified weekly for a period of six weeks, accompanied by a percutaneous tenotomy of the Achilles tendon (PAT), and a further three-week healing cast

Aim of the work

To compare the results of original, modified accelerated and modified decelerated Ponseti techniques in treatment of congenital talipes equinovarus (club foot).

Patients and Methods

PATIENTS

Sixty patients with congenital talipes equinovarus were recruited from the Orthopedic Department, Alexandria Main University Hospital (AMUH).

The patients were divided randomly by sealed envelope method into three groups.

Group I: Included 20 patients (31 feet) that were treated by traditional Ponseti technique using serial casts with one-week interval

Group II: Included 20 patients (31 feet) that were treated by Modified decelerated Ponseti technique using serial casts with a two-week interval

Group III: Included 20 patients (31 feet) that were treated by Modified accelerated Ponseti technique using serial casts with a three-day interval

METHODS

In this study, we modified the time factor in the Ponseti technique in both directions to compare the outcome between the accelerated with a three-day interval for casting, decelerated with a two-week interval and the classical Ponseti technique. The results will be monitored and the outcome of infants will be assessed using Pirani scoring system as follows: Initial before casting, after the last cast, after performing tenotomy for required feet, 6 months after tenotomy and 1 year after tenotomy

This was carried out on 60 infants entailing 93 feet who were assigned to 3 groups: the conventional, the accelerated and the decelerated groups.

Conclusion

Patients undergoing Ponseti Technique for treatment of CTEV has a variety of options regarding the interval at which the casts are changed.

Patients who had accelerated, original and decelerated Ponseti technique had similar prognosis demonstrated in post-cast, 6 months and 1 year Pirani scores.

All the patients had comparable rates of complications, relapses and need for tenotomy.

Results

Table: Comparison between the different studied periods according to Pirani score in each group

Pirani score	Pre-cast	After cast	Post tenotomy	After 6months	After 1 year	Fr	p
Group I	(n = 31)	(n = 31)	(n = 31)	(n = 31)	(n = 31)		
Min. – Max.	1.0 – 6.0	0.0 – 1.0	0.0 – 0.50	0.0 – 1.0	0.0 – 1.0		
Mean ± SD.	4.39 ± 1.43	0.45 ± 0.37	0.03 ± 0.12	0.10 ± 0.24	0.16 ± 0.30	103.813*	<0.001*
Median (IQR)	5.0 (4.0 – 5.0)	0.50(0.0 –0.50)	0.0 (0.0 – 0.0)	0.0 (0.0 – 0.0)	0.0 (0.0– 0.25)		
P_0		<0.001*	<0.001*	<0.001*	<0.001*		
P_1			0.001*	0.005*	0.022*		
Sig. bet. Periods			p_2=0.547,p_3=0.261,p_4=0.602				
Group II	(n = 31)	(n = 31)	(n = 31)	(n = 31)	(n = 31)		
Min. – Max.	0.50 – 6.0	0.0 – 1.0	0.0 – 0.50	0.0 – 0.50	0.0 – 1.0		
Mean ± SD.	3.61 ± 1.85	0.45 ± 0.30	0.03 ± 0.12	0.06 ± 0.17	0.11 ± 0.25	107.069*	<0.001*
Median (IQR)	4.0 (2.50 – 5.0)	0.50(0.50–0.50)	0.0 (0.0 – 0.0)	0.0 (0.0 – 0.0)	0.0 (0.0 – 0.0)		
P_0		<0.001*	<0.001*	<0.001*	<0.001*		
P_1			<0.001*	<0.001*	0.002*		
Sig. bet. Periods			p_2=0.779,p_3=0.470,p_4=0.659				
Group III	(n = 31)	(n = 31)	(n = 31)	(n = 31)	(n = 31)		
Min. – Max.	0.50 – 6.0	0.0 – 1.0	0.0 – 0.50	0.0 – 0.50	0.0 – 1.0		
Mean ± SD.	4.15 ± 1.59	0.47 ± 0.31	0.03 ± 0.12	0.06 ± 0.17	0.10 ± 0.24	108.536*	<0.001*
Median (IQR)	5.0 (3.50 – 5.0)	0.50(0.50–0.50)	0.0 (0.0 – 0.0)	0.0 (0.0 – 0.0)	0.0 (0.0–0.0)		
p_0		<0.001*	<0.001*	<0.001*	<0.001*		
p_1			<0.001*	<0.001*	0.001*		
Sig. bet. periods			p_2=0.779,p_3=0.574,p_4=0.779				