ULTRASONOGRAPHIC EVALUATION OF ACHILLES TENDON HEALING AFTER PERCUTANEOUS TENOTOMY DURING PONSETI MANAGEMENT OF CLUBFOOT

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INTRODUCTION

Talipes equinovarus is a common idiopathic condition affecting about 1-6/1000 live birth totaling 100000 cases every year, 80% of them in developing countries. Clubfoot is characterized by ankle equinus, hindfoot varus, midfoot cavus and forefoot adduction.
Clubfoot management aims to achieve functional, painless, plantigrade and flexible foot. The most widely accepted method nowadays in conservative management of clubfoot is the method of casting described by Ponseti. This method was developed in response to the complications and poor outcomes which came with surgical management of clubfoot. It is widely accepted method that involves manipulation, serial casting, percutaneous Tendoachilles tenotomy and eventually abduction bracing to prevent recurrence.
In 90% of patients Tendoachilles tenotomy is needed to correct the residual hindfoot equinus and this is an important element of management that is associated with good outcome and prevention of relapse.

AIM OF THE WORK

The aim of the study was to assess tendon healing process after percutaneous Tendoachilles tenotomy during Ponseti management of clubfoot by the role of ultrasonography to determine the safety and effectiveness of the procedure.

PATIENTS AND METHODS

This prospective study included 20 patients (29 feet) with idiopathic clubfoot aged between 2 and 12 months old who needed percutaneous Tendoachilles tenotomy during Ponseti management.
Patients were subjected to history taking, clinical examination and Pirani scoring of their feet before Tendoachilles tenotomy procedure. Tenotomy was indicated when midfoot score reached zero and hindfoot score was more than zero during Ponseti management of their clubfeet. Percutaneous Tendoachilles tenotomy was done in the OR under general anesthesia. Tendon healing process was assessed by clinical examination and ultrasonography at 1, 2 and 4 months after tenotomy.

RESULTS

Table 1: Distribution of the studied feet according to clinical healing of Tendoachilles at firstfollow up (4 weeks after tenotomy) (n = 29)

Clinical healing	No.	%
Healed	29	100
Not healed	0	0.0

Table 2: Distribution of the studied feet according to U/S healing of Tendoachilles (n = 29)

U/S healing	Phase 1	Phase 2	Phase 3
End of First month	29 (100%)	0	0
End of Second month	0	29 (100%)	0
End of Fourth month	0	0	29 (100%)

Table 3: Relation between age at time of tenotomy and clinical healing at first follow up (4 weeks after tenotomy) (n = 29)

Clinical healing at first follow up	Age (months)			
	≤6 (n = 22)		>6 (n = 7)	
	No.	%	No.	%
Healed	22	100.0	7	100.0
Not healed	0	0.0	0	0.0

Table 4: Relation between age at time of tenotomy and U/S healing at the end of follow up (4 months after tenotomy) (n = 29)

U/S healing at end of follow up	Age (months)			
	≤6 (n = 22)		>6 (n = 7)	
	No.	%	No.	%
Healed	22	100.0	7	100.0
Not healed	0	0.0	0	0.0

Figure 1:
U/S of Rt Tendoachilles 1 month after tenotomy. Phase 1 (bulbous appearance).

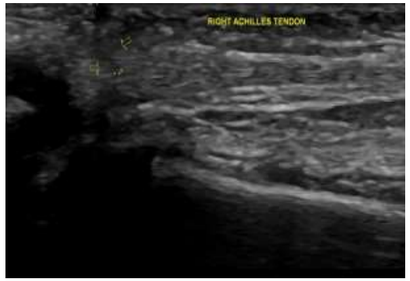

Figure 2:
U/S of Rt Tendoachilles 2 months after tenotomy. Phase 2 (regenerating tendon)

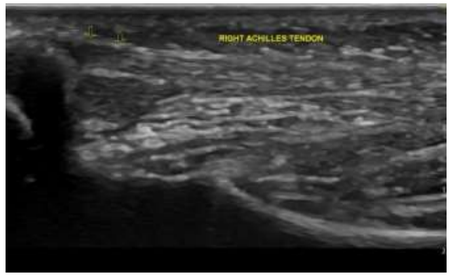

Figure 3:
U/S of Rt Tendoachilles 4 months after tenotomy. Phase 3 (healed tendon)

CONCLUSION

1. Healing of Achilles tendon after tenotomy in treatment of clubfeet infants is confirmed both clinically and by ultrasonographic examination.
2. There is no difference regarding healing process in patients below 6 months and patients from 6 to 12 months at time of tenotomy.