CellR4 2015; 3 (1): e1366

Letter to the editor

Update on: Minimally Invasive Autologous Bone Marrow Concentrate Stem Cells in the Treatment of the Chronically Injured Achilles Tendon: a Case Report

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Dear Editor,

In a recent publication in this journal we reported a case of chronically injured Achilles tendon that was successfully treated using autologous bone marrow aspirate concentrate in an office setting[1].

The pre-treatment MRI showed severe hypertrophic changes of the Achilles with marked tendinopathy and a consistent intermediate T1 signal throughout the thick, echogenic area (Figure 1). The cross section of the most hypertrophic area of the tendon measured 2.272 cm^2. The hypertrophy extended from about a centimeter above the superior reflection over a distance of about 6 cm, and measured about 2 cm coronally and 1.5 cm from A to P. The relative signal intensity (RSI) was 307.839.

A 10-week post-treatment MRI showed the Achilles had significantly healed by a decrease in the area measured on cross section (from 2.272 cm^2 to 1.877 $cm^{2)}$ and a decrease in the Relative Strength Intensity (RSI) from 307.839 to 182.471 (Figure 2).

We wish to update that report with the results of a 32-week post-treatment MRI that was performed using the same scanner as the pre- and 10 week post-treatment MRIs. These images showed near complete healing of the treated tendon. The area on cross section decreased from 2.272 cm^2 to 1.204 cm^2 and the RSI decreased from 307.839 to 90.356. Unaffected tendon on the same MRI showed a mean RSI of 72.536 (Figure 3). Figure 4 shows the progression of the RSI from pretreatment to the 32 week post-treatment MRI. At 32 weeks the patient also reported zero VAS pain scores at rest, while walking, and during toe-raising compared to scores of 2-3, 9, and 8 respectively prior to treatment (Table 1).

Conflict of Interests:

RWM and NHR are both shareholders and consultants to Biologic Therapies Inc, Ocala, FL, USA, and owners of the Riordan McKenna Institute of Cell Therapy in Southlake, TX.

Reference

1. McKenna RW, Riordan NH. Minimally Invasive Autologous Bone Marrow Concentrate Stem Cells in the Treatment of the Chronically Injured Achilles Tendon: A Case Report. CellR4 2014; 2(4): e1100.

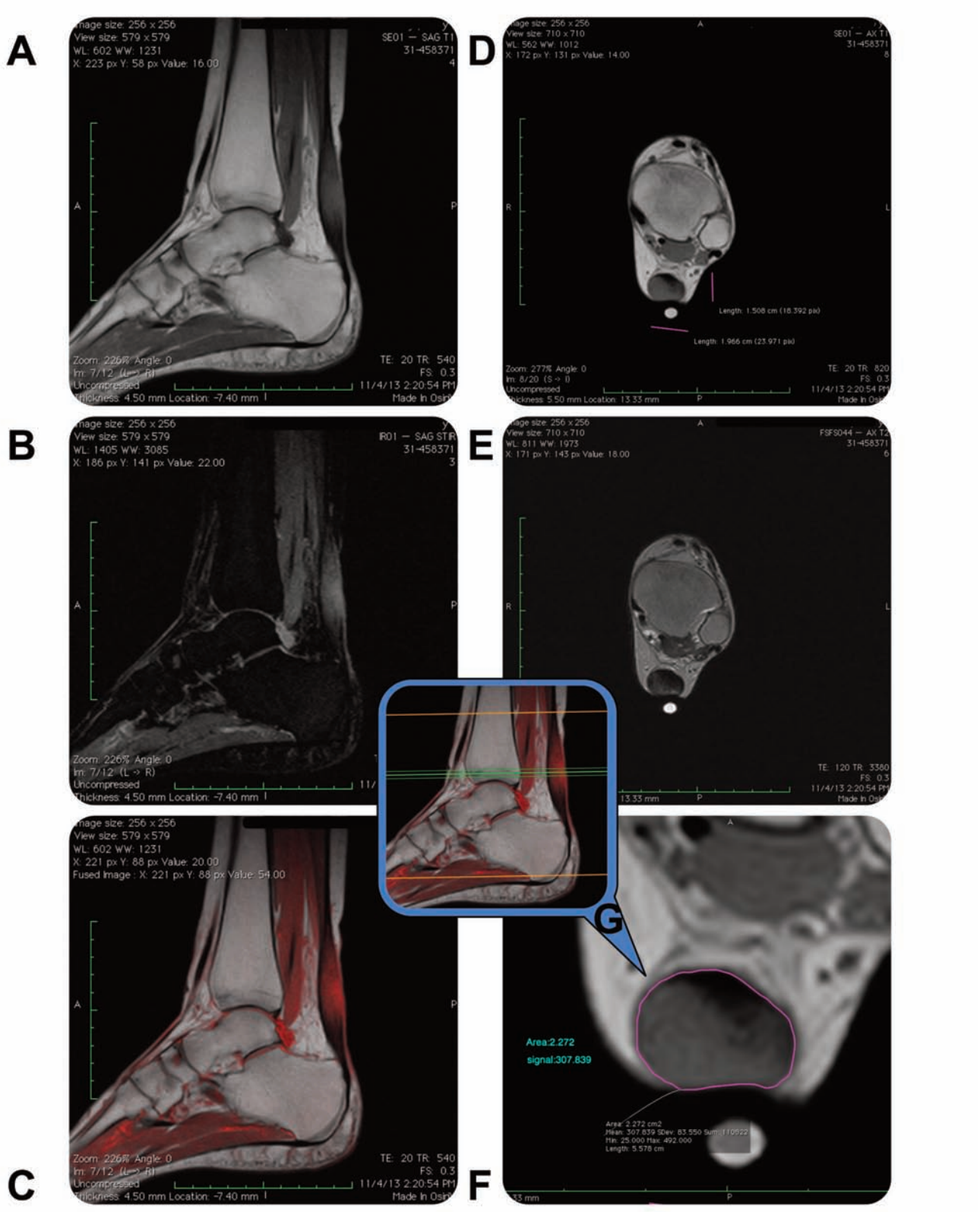

Figure 1. MRI of the patient's left ankle pre-operatively, performed on a Hitachi 0.3 Tesla device. The name of the patient has been blacked out. T1 images used for calculations were both performed with a TE of 20, and a TR of 820, utilizing 5.5 mm slice thicknesses. Color fusion with OsiriX Imaging Software. *A*, Sagittal T1 left ankle. *B*, STIR Sagittal left ankle. *C*, Sagittal T1 fused with a sagittal STIR left ankle. *D*, Axial T1 left ankle. *E*, Axial T2 Fast Spin Echo left ankle. *F*, Axial T1 zoomed to better show the image measurement of signal intensity and area of involved tissue left ankle. *G*, Scout view – center green line represents the image slice in F taken at the most involved portion of the tendon left ankle.

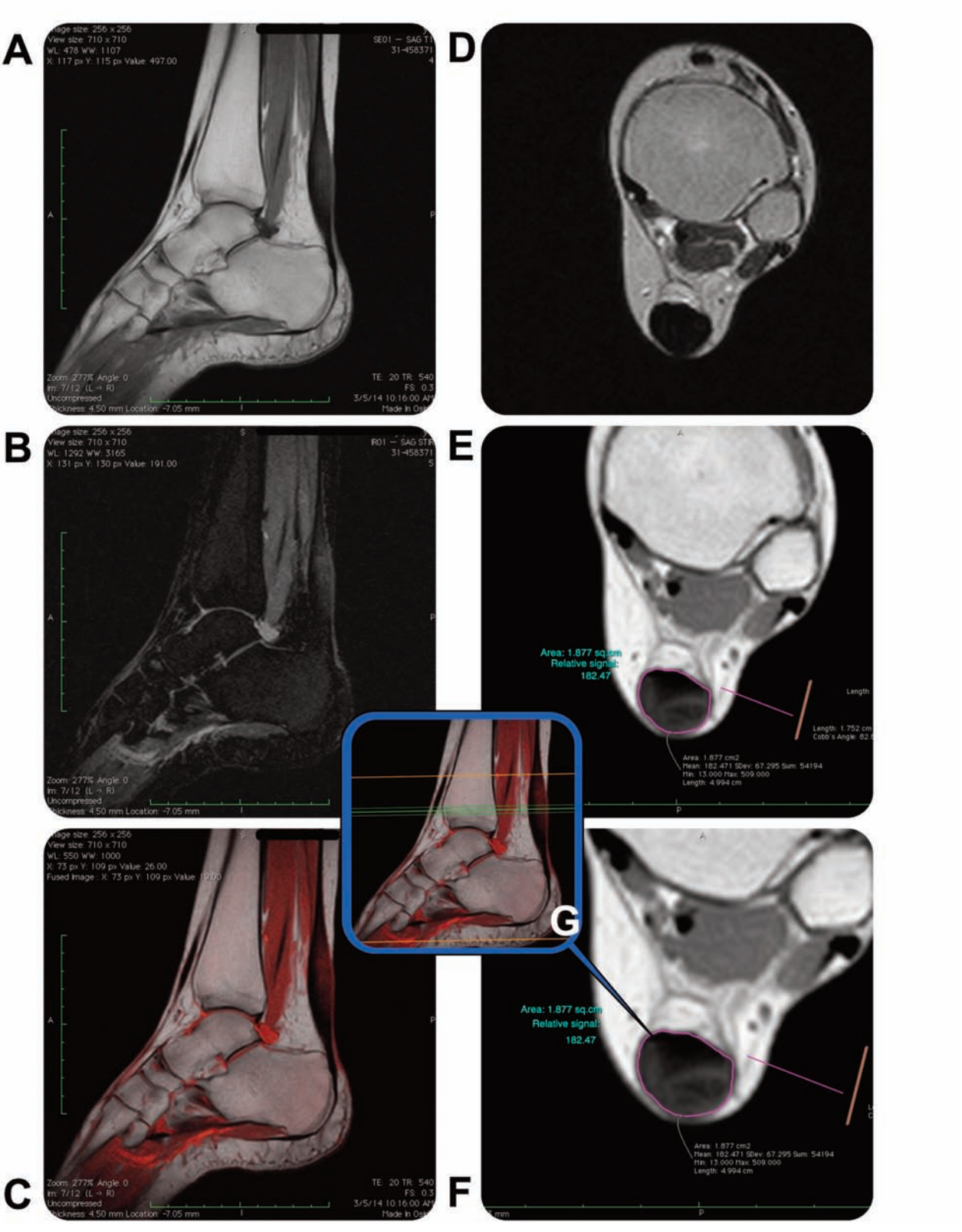

Figure 2. MRI of the patient's left ankle 10 weeks post-operatively, performed on a Hitachi 0.3 Tesla device. The name of the patient has been blacked out. T1 images used for calculations were both performed with a TE of 20, and a TR of 820, utilizing 5.5 mm slice thicknesses. Color fusion with OsiriX Imaging Software. *A*, Sagittal T1 left ankle. *B*, STIR Sagittal left ankle. *C*, Sagittal T1 fused with a sagittal STIR left ankle. *D*, Axial T1 left ankle. *E*, Axial T2 Fast Spin Echo left ankle. *F*, Axial T1 zoomed to better show the image measurement of signal intensity and area of involved tissue left ankle. *G*, Scout view – center green line represents the image slice in F taken at the most involved portion of the tendon—left ankle.

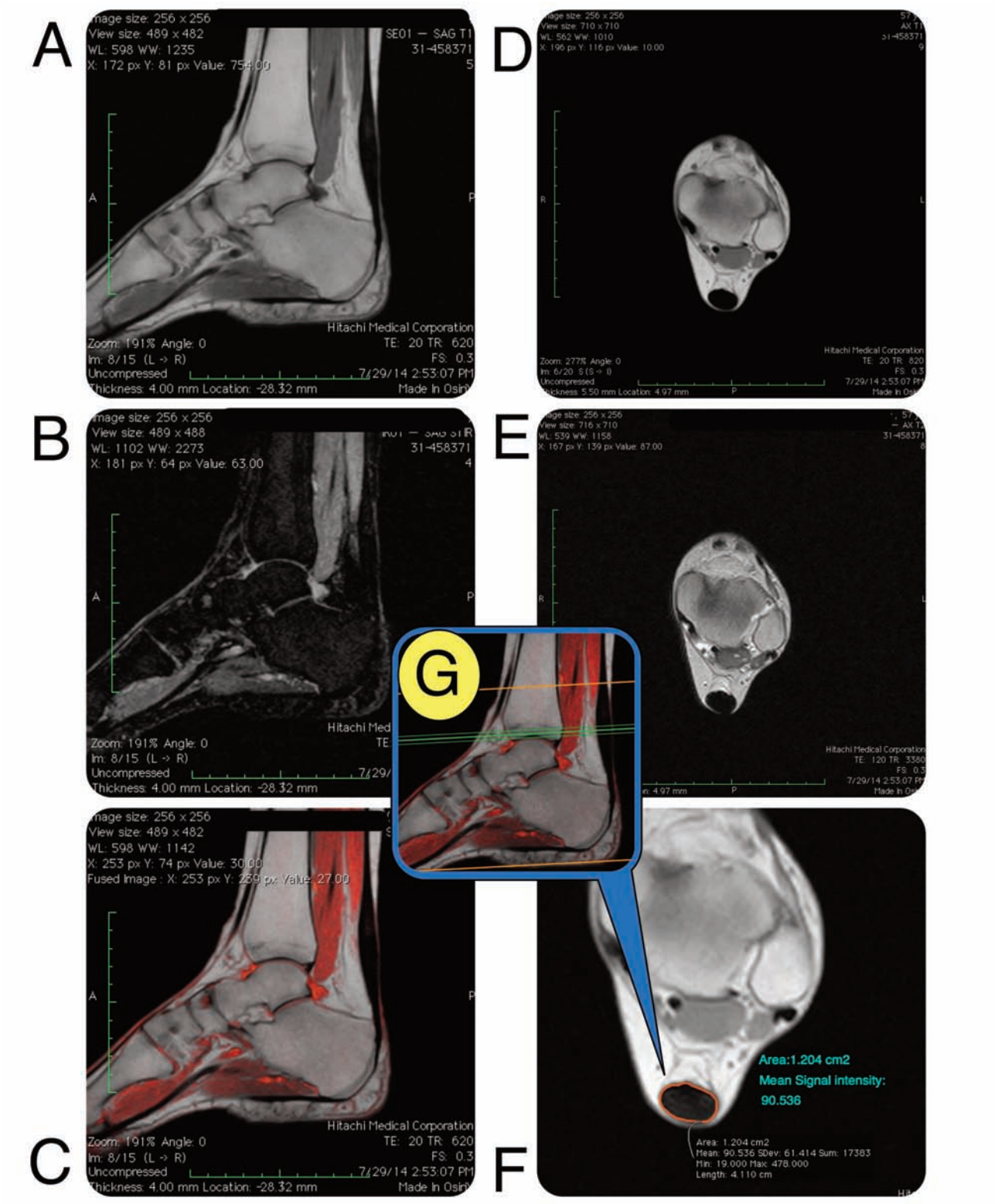

Figure 3. MRI of the patient's left ankle 32 weeks post-operatively, performed on a Hitachi 0.3 Tesla device. The name of the patient has been blacked out. T1 images used for calculations were both performed with a TE of 20, and a TR of 820, utilizing 5.5 mm slice thicknesses. Color fusion with OsiriX Imaging Software. *A*, Sagittal T1 left ankle. *B*, STIR Sagittal left ankle. *C*, Sagittal T1 fused with a sagittal STIR left ankle. *D*, Axial T1 left ankle. *E*, Axial T2 Fast Spin Echo left ankle. *F*, Axial T1 zoomed to better show the image measurement of signal intensity and area of involved tissue left ankle. G, Scout view – center green line represents the image slice in F taken at the most involved portion of the tendon—left ankle.

Special thanks to Dr. Paul Marsh, D.O. of Monticello Diagnostic Imaging for compiling these images.

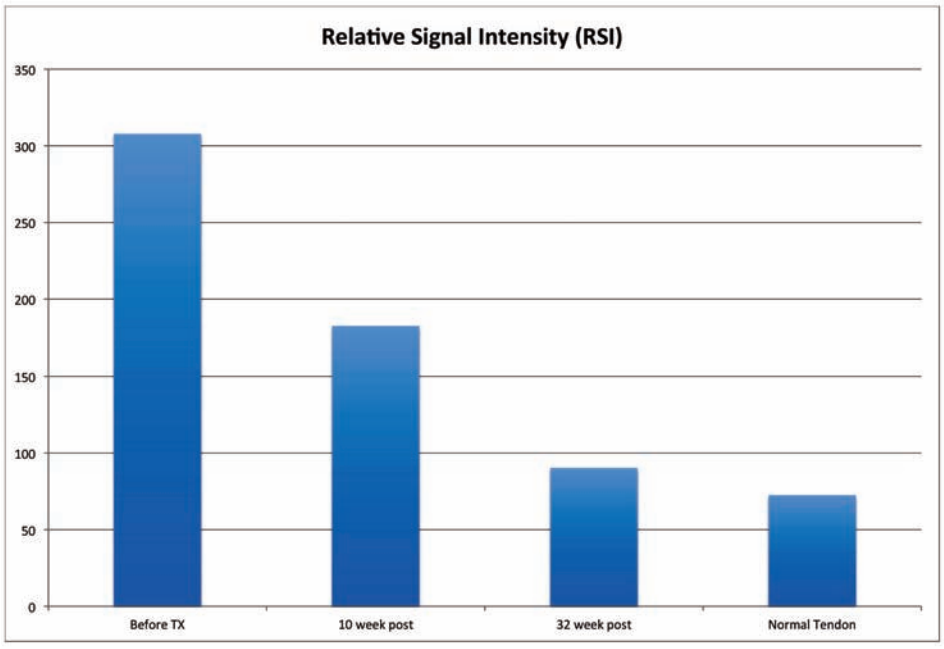

Figure 4. Relative Signal Intensity (RSI) values pre-treatment (Before TX), at 10 weeks post-treatment (10 week post) and 32 weeks post treatment (32 weeks post). The value of a normal tendon area at 32 weeks is also provided for comparison.

Table 1. Scores of the Visual Analog Scale (VAS) for pain at rest, on walking and at toe-raising and dorsiflexion before and after the intervention.

	Pre-intervention	**Post-intervention**	
	t=0	**t=8 weeks**	**t=32 weeks**
At rest	2-3	0	0
Walking	9	2	0
Toe raising	8	0	0