ARTICLE IN PRESS

The Journal of Foot & Ankle Surgery xxx (2017) 1-6



Contents lists available at ScienceDirect

The Journal of Foot & Ankle Surgery

journal homepage: www.jfas.org



Original Research

Plantar Plate Repair Using a Direct Plantar Approach: An Outcomes Analysis

Mark A. Prissel, DPM, AACFAS ¹, Christopher F. Hyer, DPM, MS, FACFAS ², Jacqueline K. Donovan, DPM ³, Amanda L. Quisno, DPM ³

- ¹ Attending Physician, Orthopedic Foot and Ankle Center, Westerville, OH
- ² Attending Physician and Fellowship Director, Orthopedic Foot and Ankle Center, Westerville, OH
- ³ Resident, Medical Education Department, Postgraduate Year 3, Grant Podiatric Medicine and Surgery Residency, Columbus, OH

ARTICLE INFO

Level of Clinical Evidence: 4

Keywords: ligament tear metatarsalgia predislocation syndrome surgery

ABSTRACT

Direct plantar plate repair using a plantar approach has been described previously, but with few reports of the outcomes or clinical results. The purpose of the present study was to determine the outcomes of this technique. We performed a retrospective analysis of patients who had undergone direct plantar plate repair with or without concomitant Weil osteotomy and a prospective patient-reported subjective outcomes analysis. Ultimately, 131 patients (144 toes) were included, and the response rate for the mailed surveys was 53.5% (77 of 144 toes). The clinical outcomes reported a well-aligned toe in 87.1% of cases, with a recurrence rate of 7.6% (11 of 144) and a revision rate of 2.8% (4 of 144). Statistically significant improvement in the overall modified Foot Function Index (p < .001) and subscale scores for pain (p < .001), disability (p < .001), and activity limitation (p = .001) were noted postoperatively compared with the preoperative data. The median postoperative visual analog pain scale level reported at survey completion was 2.0 (range 0.0 to 10.0; mean \pm standard deviation 2.3 \pm 2.6). Despite the modified Foot Function Index scores, the patient satisfaction questionnaire data reported mixed results. Our modified Foot Function Index results demonstrated that this approach provides excellent postoperative pain relief, improvement of associated disability, and improvement in activity limitations. The importance of managing patient expectations is acknowledged secondary to the discrepancy with the patient satisfaction data and the modified Foot Function Index results, Further prospective study is warranted to compare this technique with alternate dorsal approaches for plantar plate repair with and without associated commercially available suture passing systems.

© 2016 by the American College of Foot and Ankle Surgeons. All rights reserved.

Surgical management of the dorsally subluxed second metatarsophalangeal joint (MTPJ) is difficult, with sometimes unpredictable long-term results. The plantar plate, a fibrocartilaginous tissue formed from the aponeurosis and joint capsule, is an important stabilizing component of the MTPJ. Injury commonly occurs from trauma, intrinsic foot deformity, inflammatory arthritis, or synovitis. Associated conditions can include hallux valgus, hammertoes, or digital contractures. Common presentations include the gradual onset of pain and swelling of the plantar MTPJ, a positive Lachman's test on examination, a feeling of a pebble in the shoe, or a bruise on the ball of the foot (1–21). On weightbearing, the toe can sublux dorsally or overlap an adjacent toe. The diagnosis is usually made clinically;

Financial Disclosure: None reported. **Conflict of Interest:** None reported.

Address correspondence to: Christopher F. Hyer, DPM, MS, FACFAS, Orthopedic Foot and Ankle Center, 300 Polaris Parkway, Suite 2000, Westerville, OH 43082. E-mail address: ofacresearch@orthofootankle.com (C.F. Hyer). however, plain film radiographs will demonstrate the degree of subluxation or dislocation of the involved MTPJ, implying plantar plate involvement, and can help to elucidate concomitant and contributory pathologic features, such as hallux valgus or a long second metatarsal (8,9). Magnetic resonance imaging is also highly sensitive and specific for imaging of the plantar plate, with a reported sensitivity of 95% and specificity of 100% (11,17).

Initial treatment of MTPJ instability should be conservative and should include activity modification, orthotics, metatarsal pads, modified shoe gear, and toe splints. Cortisone injections are also a potential conservative therapy used by some; however, these should be considered with caution, because further attenuation of the plantar plate and involved capsular structures can result, thus increasing the deformity present. When conservative treatment fails, surgical intervention is often necessary. Conservative options provide palliative pain relief but are not curative, because the injury to the plantar plate is not addressed. Historically, the most common procedures to address instability at the MTPJ have been the Weil osteotomy,

Girdlestone-Taylor flexor to extensor tendon transfer, or a combination of the 2 (1,18). The Weil osteotomy is meant to decompress the MTPJ, and the Girdlestone transfer addresses hyperextension at the MTPJ. These approaches indirectly address the deformity without correcting the direct underlying cause of the pathology, which is plantar plate disruption. In a review of the Weil osteotomy by Highlander et al (7), the Weil osteotomy was reported to have a 36% complication rate of floating toe deformity, with recurrence rate of 15%. Thus, direct repair of the plantar plate has been described; this technique directly addresses the ruptured or attenuated plantar plate (2-6,10,12-16,19-21). More recently, in addition to direct plantar plate repair techniques using a plantar approach, dorsal techniques have been developed, secondary to concerns regarding the potential for painful plantar scars and wound healing complications (5,14–16,20,21). Direct plantar plate repair techniques using a plantar approach have been described in expert opinion and technique guides but with few reports of outcomes or clinical results (2,3,10,13,19). The purpose of the present retrospective review was to determine the outcomes of a previously described plantar plate repair technique (10).

Patients and Methods

After institutional review board approval, we performed a retrospective analysis of patients aged ≥18 years who had undergone direct second or third plantar plate repair with or without concomitant Weil osteotomy at a single foot and ankle specialty practice from December 2010 through April 2014. The patients were identified by a review of the medical records. A prospective patient-reported subjective outcomes analysis was also performed. An additional inclusion criterion for the patient-reported outcome measures was that the date of the completed patient survey had to be ≥ 1 year after the surgical date. The exclusion criteria were revision plantar plate repair, indirect (e.g., dorsal approach) plantar plate repair, other surgical repair of the second MTPJ (e.g., Girdlestone-Taylor procedure), acute surgical repair of a plantar plate injury, age <18 years at surgery, and inadequate medical record documentation available. The surgical technique used has been previously reported. It includes a direct plantar incision for identification and treatment of the plantar plate injury, with the primary repair completed with polyglactin 910 suture using a pants-over-vest technique and the associated toe pinned in a plantarflexed position for added stability (10). The included patients were mailed a 5-question patient satisfaction questionnaire, the modified Foot Function Index (FFI) questionnaire, and instructions for correct completion for each toe that had undergone plantar plate repair (Figs. 1 and 2). For any ambiguous response on the returned patient questionnaires, a single telephone interview was attempted to clarify the response. In the event a clear response was not obtainable, the pertinent question was excluded from the analysis. Those patients who did not return the mailed questionnaires were contacted by telephone 1 time requesting completion of the mailed surveys. If the patient was unable to be reached or refused to complete the mailed surveys, they were excluded from the subjective patient-reported analyses.

The demographic characteristics, clinical characteristics, and outcomes for the included patients are described using the mean \pm standard deviation and/or median and range for continuous variables and frequencies and percentages for categorical variables. The results of the patient questionnaire, which included a current visual analog scale (VAS) pain score and questions regarding pain, wound healing complications, and satisfaction, are also reported using the median and range and frequencies and percentages. Satisfaction with the outcome of the procedure was compared using the variables of the toe touching the ground, the scar on the bottom of the foot causing pain, and wound healing complications using the χ^2 or Fisher exact test. The pre- and

		Planta	r Plate	Repa	ir Que	stioni	naire f	or you	rside/		:	
	Ple	ase cir	cle you	ır <u>cur</u>	<i>rent</i> p	ain le	vel (0-	10) of	the af	fected	toe:	
No P	ain										Worst Pa	ain
	0	1	2	3	4	5	6	7	8	9	10	
1.	Doesy		which No	had a "	'plantar	plate	repair"	touch t	he grou	ınd whe	en you stand?	
2.	Does t	the scar	on the l	bottom	ı of you	r foot c	ause pa	iin?				
3.		r foot?	rience w	ound l	healing	compli	ications	with y	our inc	ision or	the bottom	
4.		h <u>is</u> repa						re and t	he reco	overy, v	ould you	
5.	Are yo	2=1 3=1 4=1	ied with Very un Somewl Neutral Somewl Very lik	likely hat unl	(extremikely (c	nely dis lissatis sfied)	satisfie fied)		?			

Fig. 1. Mailed questionnaire for patient-reported subjective outcomes.

Download English Version:

https://daneshyari.com/en/article/5576015

Download Persian Version:

https://daneshyari.com/article/5576015

Daneshyari.com