



CIGNA HEALTHCARE COVERAGE POSITION

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Subject Plantar Fasciitis Treatments

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Coverage Position

NOTE: For information on the use of foot orthoses associated with plantar fasciitis, refer to the CIGNA HealthCare Lower Limb Orthoses Coverage Position.

CIGNA HealthCare covers open or endoscopic plantar fasciotomy as medically necessary for the treatment of plantar fasciitis following the failure of six months of appropriate medical therapy.

CIGNA HealthCare does not cover ANY of the following for the treatment of plantar fasciitis because these interventions are considered experimental, investigational or unproven (this list may not be all-inclusive):

- acupuncture
- autologous platelet injection
- Coblation® (e.g., ArthroCare Topaz™ MicroDebrider™)
- cryosurgery
- electron-generating devices
- extracorporeal shock wave therapy (ESWT) (OssaTron®)
- laser therapy
- microwave diathermy

- radiotherapy
 - stereotactic radiofrequency thermal lesioning
 - trigger-point needling and infiltration of the proximal medial gastrocnemius muscle
-

General Background

Plantar fasciitis is an overuse injury resulting in inflammation of the plantar fascia, which connects the heel to the toes. It is a common cause of heel pain in adults. Symptoms usually start gradually with mild pain at the heel, pain after exercise and pain with standing first thing in the morning. On physical examination, firm pressure will elicit a tender spot over the medial tubercle of the calcaneus. Risk factors for plantar fasciitis may include: obesity, age, being female, limited dorsiflexion of the ankle joint, prolonged weight bearing, and an increase in the amount of walking or running. Heel spurs are not necessarily associated with plantar fasciitis; heel spurs may be found in asymptomatic patients. Early treatment generally results in a shorter duration of symptoms.

First-Line Treatment

The mainstay of nonsurgical treatment and the standard of care for initial treatment is a program of stretching exercises, ice, activity modification, weight loss in overweight patients, recommendations for appropriate footwear, arch taping, nonsteroidal anti-inflammatory medications and shock-absorbing shoe inserts or orthoses. Prefabricated orthoses have been shown to be adequate for the majority of patients with various heel pain syndromes. Custom-molded foot orthoses are used when more conservative measures fail (Landorf, et al., 2006; Fink, Mizel, 2001; Pfeffer, et al., 1999). For additional information, refer to the CIGNA HealthCare Lower Limb Orthoses Coverage Position. These first-line therapies are more likely to be effective if treatment is started early. About 90% of people with plantar fasciitis improve significantly after two months of initial treatment (American Orthopaedic Foot & Ankle Society, 2001).

Iontophoresis is also a widely accepted noninvasive therapy for plantar fasciitis. Iontophoresis is the use of electric impulses from a low-voltage galvanic current stimulation unit to drive topical corticosteroids into soft tissue structures. A randomized, double-blind, placebo-controlled study was conducted by Gudeman, et al. (1997) comparing traditional modalities alone to traditional modalities with iontophoresis. Iontophoresis combined with traditional modalities resulted in significantly improved, immediate pain relief but no difference in outcome at one month after completion of treatment. Results of a more recent double-blind RCT conducted by Osborne and Allison (2006) indicated that treatment with acetic acid iontophoresis and taping gave greater relief from stiffness symptoms than treatment with dexamethasone and taping, but equivalent relief from pain symptoms. Iontophoresis may be tried as part of a first-line physical therapy program.

Second-Line Treatment

In the event early treatment fails, night splints, steroidal anti-inflammatory injections or a walking cast are the next level of the standard of care.

A night dorsiflexion splint allows passive stretching of the calf and the plantar fascia during sleep. In theory, it also allows healing to occur while the plantar fascia is in an elongated position, thereby creating less tension with the first step in the morning. A night splint can be molded from plaster or fiberglass casting material or may be a prefabricated plastic brace (Young, et al., 2001).

The evidence for night splinting is limited. Crawford and Thomson (2003) conducted a systematic review of the literature for randomized and quasi-randomized controlled trials on the effectiveness of night splints in reducing pain in patients with plantar fasciitis. A crossover trial of night splints reported improvements in patients' heel pain during the two treatment phases (Powell, 1998). A randomized clinical trial by Batt et al. (1996) found tension night-splinting to be significantly more effective than standard therapy alone. Several studies support the efficacy of night splints (Roos, et al., 2006; Barry, et al., 2002; Berlet, et al., 2002).

Crawford and Thomson (2003) conducted a systematic review of the literature for randomized and quasi-randomized controlled trials on the effectiveness of steroid injections in reducing pain in patients with

plantar fasciitis. A prospective, randomized, controlled, observer-blinded study by Porter and Shadbolt (2005) reported significantly lower pain scores at three months for patients who received intralesional corticosteroid injection (n=64) than those who received three applications of low-dose extracorporeal shock wave therapy (ESWT) (n=61). At 12 months, corticosteroid injection and ESWT were found to be equally effective. The studies that compare steroid injections with placebo substances show initial significant improvement; however, studies that include follow-up after one month show no difference in outcome at that time. This suggests that the effectiveness of steroid injections is short-term. Risks of steroid injection into the heel include rupture of the plantar fascia and fat pad atrophy.

The use of a short-leg walking cast for several weeks is a standard of care as a final conservative step in the treatment of plantar fasciitis. In one study by Gill and Kiebzak (1996), a short-leg cast worn for a minimum of three weeks was found to be an effective form of treatment for chronic plantar heel pain.

Surgical Intervention

Surgical intervention should be considered only for intractable pain which has not responded to 6–12 months of proper conservative treatment. Plantar fasciotomy can be conducted using open or endoscopic techniques. Surgical interventions can include surgical removal or release of the fascia and removal of bone spurs. Spurs are usually resected, but no study has demonstrated that this makes a difference to the result. Risks of surgical intervention include: flattening of the longitudinal arch (which may cause lateral hindfoot and forefoot pain), heel hypoesthesia, rupture of the plantar fascia and complications related to anesthesia. Davies et al. (1999) analyzed a case series of 43 patients with 47 painful heels who underwent partial plantar fascia release and nerve decompression. After an average of 31 months of follow-up, 49% of the patients were reportedly satisfied with their outcome.

Endoscopic plantar fasciotomy is a less invasive technique requiring an incision of less than one-half inch in length and utilizing an arthroscope to visualize and release the fascia. It has been proposed as an improvement over open plantar fasciotomy, resulting in less trauma and improved recovery times. The only study to compare open with endoscopic techniques is that of Kinley et al. (1993), who compared 66 endoscopic with 26 open procedures and found significantly less postoperative pain, earlier return to work and fewer complications in the patients undergoing endoscopic surgery. The study is limited by lack of randomization.

There are a substantial number of retrospective studies supporting the use of endoscopic plantar fasciotomy. The largest case series (n=652) documented the outcomes associated with endoscopic plantar fasciotomy (Barrett, et al., 1995). Six hundred thirty-three of the operations (97%) were a success, as measured by relief in heel pain. Several smaller studies were conducted with case populations ranging from 17 to 69 cases, documenting improvement by patient satisfaction scores and/or foot scores (Boyle and Slater, 2003; O'Malley, et al., 2000; Lundeen, et al., 2000; Benton-Weil, et al., 1998). Based on the large number of reports of relief of heel pain from a series of nonrandomized trials, endoscopic plantar fasciotomy appears effective in the treatment of plantar fasciitis.

Unproven Therapies for Plantar Fasciitis

There are many therapies that have been suggested for treatment of plantar fasciitis that are not proven in the literature and not accepted as standard of care.

Acupuncture: Acupuncture is a method of producing analgesia or treating disease by stimulating anatomical locations on the skin by the penetration of needles. There are no studies specific to its efficacy in the treatment of plantar fasciitis. The overall body of evidence in general is of poor quality, consisting of numerous uncontrolled studies, case series and case reports. There is no evidence that supports the efficacy of acupuncture for the treatment of plantar fasciitis.

Autologous Platelet Injections: The use of autologous platelet concentrate to accelerate soft and hard tissue healing has been investigated in the medical literature. In addition to hard and soft tissue wound healing, purported benefits of this treatment include reduced inflammation, decreased blood loss, and reduced postoperative narcotic requirements. Several centrifuges are designed to concentrate platelet-enriched plasma from small amounts of autologous blood at the point of care. The platelet concentrate is then combined with other substances to form a gel for patient application. Outcomes have been

documented using autologous platelet injection for lateral epicondylitis. More recently, autologous platelet injection has been proposed as a treatment for plantar fasciitis.

One RCT evaluating the efficacy of autologous platelet injection for plantar fasciitis has been published. Kiter et al. (2006) treated 45 patients with plantar heel pain using either the peppering technique (n=15), autologous blood injection (n=15) or corticosteroid injection (n=15). In the peppering technique group, after infiltration of one milliliter (ml) of 2% prilocaine, the needle was inserted, withdrawn and redirected 10–15 times without emerging from the skin. At six-month follow-up, clinical improvement was evaluated using a visual analog scale (VAS). Improvements in VAS scores were reported to be 68%, 68% and 65% for the peppering technique, autologous blood injection and corticosteroid injection groups, respectively. In the opinion of the authors both the peppering technique and autologous blood injection seem to be effective alternatives to corticosteroid injections. However, larger, well-designed RCTs are needed to further define the role of autologous blood injection in the treatment for plantar fasciitis.

Lee and Ahmad (2007) conducted a prospective, randomized, controlled, observer-blinded study to compare the efficacy of intralesional autologous blood with corticosteroid injection for plantar fasciitis. A total of 64 patients were randomly assigned to receive either the autologous blood or corticosteroid treatment. All patients were assessed for the worst pain daily on visual analogue scale (VAS) and tenderness threshold (TT) at the plantar fascia origin using a pressure algometer before treatment, and at six weeks, three months, and six months after treatment. Data were complete for 61 patients, 30 patients in the autologous blood group and 31 patients in the corticosteroid group. Before treatment, both the autologous blood group and corticosteroid group had similarly high levels of pain (p=0.306). Over the six-month follow-up period, a significant reduction in pain levels was noted in both groups (p< 0.0001). Up to three months after treatment, patients who received corticosteroid injection had significantly lower levels of pain than those who received autologous blood injection (p<0.05). At six months after treatment, patients who had received the corticosteroid injection had lower average levels of pain than those who had received the autologous blood injection, but the difference was not significant (p= 0.094). Acknowledged limitations of this study include its short-term follow-up and the lack of a control group that would show the natural history of the disease without intervention.

There is insufficient evidence in the published peer-reviewed medical literature to support the use of autologous blood injection for the treatment of plantar fasciitis.

Coblation®: Coblation, also referred to as cold or controlled ablation, has recently been proposed as a therapy for plantar fasciitis. Coblation bipolar technology uses radiofrequency energy to excite the electrolytes in a conductive medium, such as saline solution, creating precisely focused plasma. The plasma particles are then able to break molecular bonds within tissue, causing the tissue to dissolve at relatively low temperatures. It is theorized that this plasma radiofrequency-based microsurgery may promote an angiogenic healing response. Because the current does not pass directly through tissue, there is minimal thermal injury to any surrounding tissues.

Coblation technology can be delivered via a number of different wands, hand pieces and other electrosurgical systems. The ArthroCare Topaz™ MicroDebrider™ (ArthroCare Corporation, Sunnyvale, CA) was granted marketing approval by the FDA via the 510(k) process on March 5, 2006, because it is considered to be substantially equivalent to another device already on the market. The 510(k) summary stated that the orthopedic system is substantially equivalent to the ArthroCare Topaz™ ArthroWands. Under the FDA 510(k) approval process, the manufacturer is not required to supply to the FDA evidence of the effectiveness of the Topaz Microdebrider prior to marketing the device. According to the FDA, the Topaz MicroDebrider is indicated for debridement, resection, ablation, and coagulation of soft tissues and hemostasis of blood vessels in orthopedic and arthroscopic procedures.

A prospective, double-blind RCT (n=80) to evaluate the effectiveness of Coblation-based fasciotomy using the Topaz MicroDebrider is currently underway. The primary outcome measure for this study will be pain relief. Secondary outcomes will include a comparison of postoperative complications and an assessment of function and quality of life by the SF-36 questionnaire. There were no studies identified in the published peer-reviewed literature that assess the effectiveness of Coblation-based fasciotomy for relieving pain associated with plantar fasciitis. Therefore, Coblation technology for this indication is unproven at present.

Cryosurgery: Cryosurgery is a minimally invasive procedure that involves the use of extreme cold to destroy abnormal tissue. A single study investigating the efficacy of cryosurgery for the treatment of recalcitrant plantar fasciitis was identified. Allen and colleagues (2007) utilized cryosurgery for 59 consecutive patients (61 heels) who had failed prior conservative therapy and were considered surgical candidates. Study results suggested that pain decreased significantly after the procedure ($p < .0001$). However, the nonrandomized design and small sample size of this study decrease its generalizability.

Based on the lack of published data, cryosurgery is considered unproven for the treatment of plantar fasciitis.

Electron-Generating Devices: There is no evidence to support the use of electron generating devices in the treatment of plantar fasciitis (Crawford and Thomson, 2003).

Extracorporeal Shock Wave Therapy (ESWT): ESWT, also called orthotripsy, is a noninvasive treatment that involves delivery of 1000–3000 shock waves to the painful heel region, and has been introduced as an alternative to surgery for patients with chronic plantar fasciitis that has not responded to medical therapy. The mechanism by which ESWT might work to relieve pain associated with plantar fasciitis is unknown. It has been hypothesized that the shock waves may reduce transmission of pain signals from sensory nerves in the plantar fascia, and/or may stimulate healing (Huang, et al., 2000).

Buchbinder et al. (2002) conducted a randomized controlled study ($n=160$) and found no evidence to support a beneficial effect on pain, function and quality of life of ultrasound-guided ESWT over placebo in patients with ultrasound-proven plantar fasciitis up to 12 weeks following treatment.

Haake et al. (2003) stated that ESWT was no better than sham therapy for heel pain as a result of a randomized, double-blind, controlled trial ($n=135$). Statistically similar success rates for improvement were found in treated and placebo group at 12 weeks and one-year follow-up.

A Cochrane Review and meta-analysis (Crawford, 2003) found some indirect evidence that patients' heel pain improves spontaneously. Patients with heel pain in all trial arms improved spontaneously regardless of their treatment allocation, demonstrating that the condition is self-limiting in some patients. ESWT was evaluated in five randomized controlled trials using different doses, with no consensus reached regarding variation of range of energy (high versus low), number of pulses, or number of treatment sessions (Rompe, et al., 1996; Rompe, et al., 2002; Krischek, et al., 1998; Ogden, et al., 2001; Buchbinder, et al., 2002). The results of the meta-analysis found that the effectiveness of ESWT for plantar fasciitis was unclear.

The Institute for Clinical Systems Improvement (ICSI) conducted a technology review of ESWT for plantar fasciitis and concluded that, although it is a safe, nonsurgical procedure, the current scientific evidence does not permit a conclusion to be reached regarding the efficacy of ESWT for plantar fasciitis (ICSI, 2004).

Tice (2004) conducted a systematic review of the evidence on ESWT for musculoskeletal disorders on behalf of the California Technology Assessment Forum (CTAF). The author noted a wide variability in the techniques studied and in the quality of randomized trials. It was concluded that ESWT for the treatment of plantar fasciitis has not been shown to improve net health outcomes compared to sham therapy and therefore cannot be deemed as beneficial as the established alternatives (Tice, 2004).

The National Institute for Clinical Excellence (NICE) completed a systematic review on the use of ESWT for refractory tendinopathies (i.e., plantar fasciitis and tennis elbow). According to the NICE, the current evidence on ESWT, specifically for tennis elbow and plantar fasciitis, suggests that there are no major safety concerns. Evidence on efficacy is conflicting and suggests that the procedure produces little benefit apart from a placebo response in some patients (NICE, 2005).

A Blue Cross Blue Shield Association Technology Evaluation Center (TEC) Technology Assessment evaluated whether ESWT improves health outcomes for patients with plantar fasciitis that is unresponsive to conservative measures. Evidence was reviewed from five double-blind, randomized controlled trials

(RCTs) reporting on a total of 878 patients (Healthtronics Surgical Services, Inc., 2002; Ogden, et al., 2001; Dornier Medical Systems, Inc., 2002; Theodore, et al., 2004; Buchbinder, et al., 2002; Haake, et al., 2002; Rompe, et al., 2003). High-energy ESWT was used in two of these trials. Improvement in morning pain and increased activity were the most common outcome measures. The evidence was found to be insufficient to permit a conclusion on the health outcome effects of ESWT for plantar fasciitis. Where reported, improvement in morning pain was not accompanied by a significant difference in quality-of-life measurement or use of pain medication. It was concluded that ESWT for chronic plantar fasciitis has not been demonstrated to improve health outcomes in the investigational setting (Blue Cross Blue Shield Association, 2005).

A technology assessment of RCTs evaluating the safety and efficacy of ESWT for the treatment of chronic plantar fasciitis was performed for the Canadian Agency for Drugs and Technologies in Health (CADTH). Ho (2007) concluded "the lack of convergent findings from these randomized trials of ESWT for plantar fasciitis suggests uncertainty about its effectiveness. The evidence reviewed does not support the use of this technology for this condition" (Ho, 2007).

For additional information, refer to the CIGNA HealthCare Extracorporeal Shock Wave Therapy for Musculoskeletal Conditions Coverage Position.

Insoles with Magnetic Foil: The theory behind magnet therapy is that magnetic fields create an electrical current that interrupts the transmission of pain signals in the central nervous system as well as increasing blood flow to an area, boosting the flow of oxygen and other nutrients, ultimately reducing pain and swelling. Two randomized clinical trials comparing magnetic versus sham insoles for reducing pain have demonstrated that there is no difference between the therapies in patients with plantar fasciitis (Caselli, et al., 1997; Winemiller, et al., 2003). The limited evidence found in the published peer-reviewed literature does not support the use of magnetic insoles for the treatment of plantar fasciitis.

For additional information, refer to the CIGNA HealthCare Lower Limb Orthoses Coverage Position.

Laser Therapy: Laser therapy, also called low-level laser therapy (LLLT) is a form of phototherapy which involves the application of low-power monochromatic and coherent light to injuries and lesions to stimulate healing. LLLT is used to increase the speed, quality and tensile strength of tissue repair, resolve inflammation, and give pain relief. Basford et al. (1998) conducted a randomized, double-blinded, placebo-controlled clinical study of 32 subjects comparing dummy versus active laser therapy over four weeks using relief of pain as the endpoint. No significant differences were found between the groups in pain scores either during treatment or at one-month follow-up. The available data regarding the efficacy of laser therapy for the treatment of plantar fasciitis is limited.

Microwave Diathermy: Microwave diathermy uses microwave radiation to create heat within the tissues. There is no evidence supporting the efficacy of this modality in the treatment of plantar fasciitis (Crawford and Thomson, 2003).

Radiotherapy: Radiotherapy for plantar fasciitis treatment has been well-established in Germany for about 100 years. The exact radiobiological mechanisms of the effect of ionizing radiation on plantar fasciitis have been incompletely investigated and understood. In 2001, the Patterns of Care Study in Benign Diseases Panel of the German Society for Radiation Oncology distributed a standardized questionnaire to all radiotherapy departments in Germany to determine their experience with radiotherapy for plantar fasciitis (Micke, et al., 2004). The records of 7947 patients were prospectively evaluated over a median follow-up period of 28 months for reduction in pain scores. Several different types of equipment and doses of radiation were utilized among the centers. No dose-response relationship could be established. Complete relief of pain for more than three months was reported in a median of 70% of all treated patients, and pain relief lasting a minimum of 12 months was reported in 65% of patients. No statistical analysis of the significance of these percentages was reported.

Miszczyk et al. (2007) evaluated the effectiveness of radiotherapy and assessed the impact of fraction dose (fd) compared to total dose (TD) in the treatment of 856 patients with plantar fasciitis. Outcome measures included pain relief level, period of anesthetic effect preservation after treatment, presence of pain and the timing of its appearance, and analgesia use. Complete follow-up data were available for 327

patients. The mean follow-up period was 74 months. After treatment, a lack of pain was reported by 48% of the patients. Pain relief greater than 50% was reported by 21% of patients and 17% reported pain relief less than 50%. The mean pain relief duration was 72 months. The last follow-up, 25% of these patients reported having pain at rest and 32% had pain while walking. A dose-effect relationship was not found. This study is limited by its retrospective, nonrandomized design and loss to follow-up.

Further research is needed to demonstrate the safety and efficacy of radiotherapy for the treatment of plantar fasciitis.

Stereotactic Radiofrequency Thermal Lesioning: Stereotactic radiofrequency thermal lesioning, or radiofrequency lesioning, is a minimally invasive procedure, in which a probe the size of a needle is placed through the skin in the heel in the area of pain. While the patient is under intravenous (IV) sedation, the tip of the probe heats up to 87° Celsius (189° Fahrenheit), and is kept there for 90 seconds. The proposed mechanism of action is desensitization of the nerve endings. In a retrospective study of 39 patients, Sollitto et al. (1997) found that 92% of patients experience resolution of symptoms. This study is limited by the lack of a control group and randomization; a more rigorous design is needed.

Trigger-Point Needling and Infiltration: Trigger-point needling for plantar fasciitis is the needling and infiltration of anesthetic into the myofascial trigger points at the proximal portion of the medial gastrocnemius muscle. Imamura et al. (2003) conducted a randomized, controlled study of 64 subjects comparing conventional physical therapy to physical therapy plus injection of 1% lidocaine to the taut band at the proximal portion of the medial gastrocnemius muscle of the involved limb. Statistically significant reduction of pain and improvement in function were found in both groups without difference between them. However, the time required to achieve the same improvement was significantly less in the injected group than in the control group. Post-injection soreness and local hematoma were found in 30% of the patients receiving trigger-point needling. Additional studies are needed to support the effectiveness of this therapy.

Professional Societies/Organizations

In a joint policy statement, the American Podiatric Medical Association (APMA) and the American College of Foot and Ankle Surgeons (ACFAS) acknowledge that ESWT is one of the many procedures used to treat plantar fasciitis. In addition to the clinical trials used for U.S. Food and Drug Administration (FDA) approval of the Ossatron and Dornier Epos Ultra devices, the societies examined seven studies in their review of the literature. Weil et al. (2002) analyzed the results of 40 feet treated with high-energy ESWT (n=36). The data from this cohort was compared to that of nine patients who underwent percutaneous plantar fasciotomy (PPF) at the same institution. It was concluded that ESWT significantly reduced symptoms associated with chronic plantar fasciitis and compared favorably to the results achieved with PPF. Limitations of this study include the lack of randomization and small patient population. Alvarez (2002) looked at high-energy ESWT in a case series of 20 patients and reported 18 of those patients to be improved or pain-free after treatment. Two other studies were RCTs that evaluated the effectiveness of low-energy ESWT and found it to be no better than placebo or ineffective in the treatment of plantar fasciitis (Haake, et al., 2003; Buchbinder, et al., 2002). In contrast, a third RCT (n=45) compared applications of low-energy ESWT to sham treatment and reported ESWT to be a safe and effective method for the treatment of chronic plantar fasciitis in long-distance runners (Rompe, et al., 2003). Rompe et al. noted that further study is needed to compare the effectiveness of repeated low-energy versus single high-energy shock wave applications. Despite the limited evidence from small studies, few randomized trials and conflicting results identified in the literature, the APMA/ACFAS concluded that "ESWT appears to be an efficacious, FDA-approved, non-surgical option in the treatment of chronic proximal plantar fasciitis" (APMA/ACFAS, 2003).

Summary

Conservative first- and second-line treatments for plantar fasciitis are most often successful. For those who fail medical management, plantar fasciotomy or plantar fascia release may be considered. A number of investigational treatment modalities have been proposed for plantar fasciitis, the most controversial of which is extracorporeal shock wave therapy (ESWT). Although promising, the evidence in the published peer-reviewed literature regarding the efficacy of ESWT remains inconclusive at this time.

Coding/Billing Information

Note: This list of codes may not be all-inclusive.

Covered when medically necessary:

CPT®* Codes	Description
28008	Fasciotomy, foot and/or toe
29893	Endoscopic plantar fasciotomy

HCPCS Codes	Description
	No specific codes

ICD-9-CM Diagnosis Codes	Description
	Multiple/Varied codes

Experimental/Investigational/Unproven/Not Covered:

CPT* Codes	Description
20552	Injection(s); single or multiple trigger point(s), one or two muscle(s)
20553	Injection(s); single or multiple trigger point(s), three or more muscle(s)
28890	Extracorporeal shock wave, high energy, performed by a physician, requiring anesthesia other than local, including ultrasound guidance, involving the plantar fascia
97024	Application of a modality to one or more areas; diathermy (eg, microwave)
97810	Acupuncture, one or more needles; without electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient
97811	Acupuncture, one or more needles; without electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient, with re-insertion of needle(s)
97813	Acupuncture, one or more needles; with electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient
97814	Acupuncture, one or more needles; with electrical stimulation; initial 15 minutes of personal one-on-one contact with the patient, with re-insertion of needle(s)
0019T	Extracorporeal shock wave involving musculoskeletal system, not otherwise specified, low energy
0101T	Extracorporeal shock wave involving musculoskeletal system, not otherwise specified, high energy
	Multiple/Varied codes

HCPCS Codes	Description
	No specific codes

ICD-9-CM Diagnosis Codes	Description
728.71	Plantar fascial fibromatosis

*Current Procedural Terminology (CPT®) © 2007 American Medical Association: Chicago, IL.

References

1. Allen BH, Fallat LM, Schwartz SM. Cryosurgery: an innovative technique for the treatment of plantar fasciitis. *J Foot Ankle Surg.* 2007 Mar-Apr;46(2):75-9.
2. Alshami AM, Souvlis T, Coppieters MW. A review of plantar heel pain of neural origin: differential diagnosis and management. *Man Ther.* 2008 May;13(2):103-11. Epub 2007 Mar 30.
3. American Orthopaedic Foot & Ankle Society. Plantar Fasciitis. Updated April 2001. Accessed Apr 1, 2004. Available at URL address: http://www.orthoinfo.aaos.org/fact/thr_report.cfm?Thread_ID=144&topcategory=Foot
4. American Podiatric Medical Association (APMA)/American College of Foot and Ankle Surgeons (ACFAS). APMA and ACFAS Joint Policy Statement on Extracorporeal Shock Wave Therapy. December, 2003. Accessed May 10, 2006. Available at URL address: http://www.acfas.org/NR/rdonlyres/17CA33BD-A58B-40CB-9674-1392E7890076/0/ESWT_APMA_ACFASPolicyFinal_12_8_2003.pdf
5. Barrett SL, Day SV, Pignetti TT, Robinson LB. Endoscopic plantar fasciotomy: a multi-surgeon prospective analysis of 652 cases. *J Foot Ankle Surg.* 1995 Jul-Aug;34(4):400-406.
6. Barry LD, Barry AN, Chen Y. A retrospective study of standing gastrocnemius-soleus stretching versus night splinting in the treatment of plantar fasciitis. *J Foot ankle Surg.* 2002 Jul-Aug;41(4):221-227.
7. Barr KP, Harrast MA. Evidence-based treatment of foot and ankle injuries in runners. *Phys Med Rehabil Clin N Am.* 2005 Aug;16(3):779-99.
8. Basford JR, Malanga GA, Krause DA, Harmse WS. A randomized controlled evaluation of low-intensity laser therapy: plantar fasciitis. *Arch Phys Med Rehab.* 1998 Mar;79(3):49-254.
9. Berlet GC, Anderson RB, Davis H, Kiebzak GM. A prospective trial of night splinting in the treatment of recalcitrant plantar fasciitis: the Ankle Dorsiflexion Dynasplint. *Orthopedics.* 2002 Nov;25(11):1273-1275.
10. Batt ME, Tanji EL, Skattum N. Plantar fasciitis: a prospective randomized clinical trial of the tension night splint [abstract]. *Clin J Sport Med.* 1996 Jul;6(3):158-162.
11. Benton-Weil W, Borrelli AH, Weil LS Jr, Weil LS Sr. Percutaneous plantar fasciotomy: a minimally invasive procedure for recalcitrant plantar fasciitis. *J Foot Ankle Surg.* 1998 Jul-Aug;37(4):269-272.
12. Blue Cross Blue Shield Association, Technology Evaluation Center. Extracorporeal Shock Wave Therapy (ESWT) for Chronic Plantar Fasciitis. Technology assessment. 2005 Mar. Accessed May 10, 2006. Available at URL address: http://www.bcbs.com/tec/Vol19/19_18.pdf
13. Boyle RA, Slater GL. Endoscopic plantar fascia release: a case series. *Foot Ankle Int.* 2003 Feb;24(2):176-179.
14. Buchbinder R. Plantar fasciitis. *N Engl J Med.* 2004 May 20;350(21):2159-2166.
15. Buchbinder R, Ptaszik, Gordon J, Buchman J, Prabaharan V, Forbes A. Ultrasound-guided extracorporeal shock wave therapy for plantar fasciitis. *JAMA.* 2002;288(11):1364-1372.
16. Caselli MA, Clark N, Lazarus S, Velez Z, Venegas L. Evaluation of magnetic foil and PPT Insoles in the treatment of heel pain. *J Am Podiatr Med Assoc.* 1997 Jan;87(1):1-16.

17. Crawford F, Snaith M. How effective is therapeutic ultrasound in the treatment of heel pain? *Ann Rheum Dis.* 1996 Apr;55(4):265-267.
18. Crawford F, Thomson C. Interventions for treating plantar heel pain. *The Cochrane Database of Systematic Reviews* 2004 (1).
19. Davies MS, Weiss GA, Saxby TS. Plantar fasciitis: how successful is surgical intervention?. *Foot Ankle Int.* 1999;20:803-807.
20. Digiovanni BF, Nawoczenski DA, Lintal ME, Moore EA, Murray JC, Wilding GD, Baumhauer JF. Tissue-specific plantar fascia-stretching exercise enhances outcomes in patients' with chronic heel pain: a prospective, randomized study. *J Bone Joint Surg Am.* 2003 July;85-A(7):1270-1277.
21. Donley BG, Moore T, Sferra J, Gozdanovic J, Smith R. The efficacy of oral nonsteroidal anti-inflammatory medication (NSAID) in the treatment of plantar fasciitis: a randomized, prospective, placebo-controlled study. *Foot Ankle Int.* 2007 Jan;28(1):20-3.
22. Fink B, Mizel M. What's new in foot and ankle surgery. *J Bone Joint Surg Am.* 2001;83-A(5):791-796.
23. Furia JP. High-energy extracorporeal shock wave therapy as a treatment for insertional Achilles tendinopathy. *Am J Sports Med.* 2006 May;34(5):733-40.
24. Gill LH, Kiebzak GM. Outcome of nonsurgical treatment for plantar fasciitis. *Foot Ankle Int.* 1996 Sep;17(9):527-532.
25. Gollwitzer H, Diehl P, von Korff A, Rahlfs VW, Gerdesmeyer L. Extracorporeal shock wave therapy for chronic painful heel syndrome: a prospective, double blind, randomized trial assessing the efficacy of a new electromagnetic shock wave device. *J Foot Ankle Surg.* 2007 Sep-Oct;46(5):348-57.
26. Gudeman SD, Eisele SA, Heidt RS Jr, Colosimo AJ, Stroupe AL. Treatment of plantar fasciitis by Iontophoresis of 0.4% dexamethasone. A randomized, double-blind, placebo-controlled study. *Am J Sports Med.* 1997 May-June;25(3):312-316.
27. Haake M, Buch M, Shoellner C. Extracorporeal shock wave therapy for plantar fasciitis: randomized controlled multicenter trial. *BMJ.* 2003;327(7406):75.
28. HAYES Medical Technology Directory™. Extracorporeal Shock Wave Lithotripsy for Chronic Plantar Fasciitis. 2003 May. Lansdale, PA: HAYES Inc; ©Winifred S. Hayes, Inc. Update 2003.
29. Ho C. Extracorporeal shock wave treatment for chronic plantar fasciitis (heel pain). *Issues Emerg Health Technol.* 2007 Jan;(96 (part 1)):1-4.
30. Hogan KA, Webb D, Shereff M. Endoscopic plantar fascia release. *Foot Ankle Int.* 2004 Dec;25(12):875-81.
31. Huang HH, Oureshi AA, Biundo JJ Jr. Sports and other soft tissue injuries, tendonitis, bursitis, and occupation-related syndromes. *Curr Opin Rheumatol.* 2000;12:150-154.
32. Imamura M, Imamura S, De Carvalho AE Jr, Mazagao RA, Casius DA, Fischer AA. Plantar fasciitis: A new treatment approach. *Arch Phys Med.* 2003 Sep;84(9):E4.
33. Institute for Clinical Systems Improvement (ICSI), Technology Assessment Committee. Extracorporeal Shock Wave Therapy for Plantar Fasciitis. November, 2004. Accessed May 10, 2006. Available at URL address: <http://www.icsi.org/knowledge/detail.asp?catID=107&itemID=1926>

34. Jupiter J, Ring D. Approach to minor orthopedic problems of the foot and ankle. In: Goroll A, editor. Primary care medicine. Lippincott Williams & Wilkins; 2003.
35. Kinley S, Frascone S, Calderone D, Wertheimer SJ, Squire MA, Wiseman FA. Endoscopic plantar fasciotomy versus traditional heel spur surgery: a prospective study. *J Foot Ankle Surg.* 1993 Nov-Dec;32(6):595-603.
36. Kiter E, Celikbas E, Akkaya S, Demirkan F, Kilic BA. Comparison of injection modalities in the treatment of plantar heel pain: a randomized controlled trial. *J Am Podiatr Med Assoc.* 2006 Jul-Aug;96(4):293-6.
37. Khoury V, Guillin R, Dhanju J, Cardinal E. Ultrasound of ankle and foot: overuse and sports injuries. *Semin Musculoskelet Radiol.* 2007 Jun;11(2):149-61.
38. Kirschek O, Rompe JD, Herbsthofer B, Nafe B. Symptomatic low-energy shockwave therapy in heel pain and radiologically detected plantar heel spur. *Orthop Ihre Grenzgeb.* 1998 Mar-Apr;136(2):169-174.
39. Landorf KB, Keenan AM, Herbert RD. Effectiveness of different types of foot orthoses for the treatment of plantar fasciitis. *J Am Podiatr Med Assoc.* 2004 Nov-Dec;94(6):542-9.
40. Landorf KB, Keenan AM, Herbert RD. Effectiveness of foot orthoses to treat plantar fasciitis: a randomized trial. *Arch Intern Med.* 2006 Jun 26;166(12):1305-10.
41. Lee TG, Ahmad TS. Intralesional autologous blood injection compared to corticosteroid injection for treatment of chronic plantar fasciitis. A prospective, randomized, controlled trial. *Foot Ankle Int.* 2007 Sep;28(9):984-90.
42. Lemont H, Ammirati KM, Usen N. Plantar fasciitis: a degenerative process (fasciosis) without inflammation [abstract]. *J Am Podiatr Med Assoc.* 2003 May-Jun;93(3):234-237.
43. Lundeen RO, Aziz S, Burks JB, Rose JM. Endoscopic plantar fasciotomy; a retrospective analysis of results in 53 patients. *J Foot Ankle Surg.* 2000 Jul-Aug;39(4):208-217.
44. Maier M, Steinborn M, Schmitz C, Stabler A, Kohler S, Pfahler M. Extracorporeal shock wave application for chronic plantar fasciitis associated with heel spurs: prediction of outcome by magnetic resonance imaging. *J Rheumatol.* 2000;27:2455-2462.
45. Micke O, Seegenschmiedt MH. Radiotherapy in painful heel spurs (plantar fasciitis): results of a national patterns of care study. *Int J Radiation Oncology Biol Phys.* 2004;58(3):828-843.
46. Mischczyk L, Jochymek B, Wozniak G. Retrospective evaluation of radiotherapy in plantar fasciitis. *Br J Radiol.* 2007 Oct;80(958):829-34. Epub 2007 Sep 17.
47. National Institute for Clinical Excellence (NICE). Interventional Procedures Programme. Interventional procedures overview of extracorporeal shock wave therapy for refractory tendinopathies (plantar fasciitis and tennis elbow). January 2005. Accessed May 10, 2006. Available at URL address: <http://www.nice.org.uk/pdf/ip/252%20ESWT%20overview%20for%20web.pdf>
48. Ogden JA, Alvarez R, Levitt R, Cross GL, Marlow M. Shock wave therapy for chronic proximal plantar fasciitis. *Clin Orthop Rel Res.* 2001;387:47-59.
49. O'Malley JMJ, Page A, Cook R. Endoscopic plantar fasciotomy for chronic heel pain. *Foot Ankle Int.* 2000 Jun;21(6):505-510.

50. Osborne HR, Allison GT. Treatment of plantar fasciitis by LowDye taping and iontophoresis: short term results of a double blinded, randomised, placebo controlled clinical trial of dexamethasone and acetic acid. *Br J Sports Med.* 2006 Jun;40(6):545-9; discussion 549. Epub 2006 Feb 17.
51. Pfeffer G, Bacchetti P, Deland J, Lewis A, Anderson R, Davis W. et al. Comparison of custom and prefabricated orthoses in the initial treatment of proximal plantar fasciitis. *Foot Ankle Int.* 1999 Apr;20(4):214-221.
52. Porter MD, Shadbolt B. Intralesional corticosteroid injection versus extracorporeal shock wave therapy for plantar fasciopathy. *Clin J Sport Med.* 2005 May;15(3):119-24.
53. Powell M, Post WR, Keener J, Wearden S. Effective treatment of chronic plantar fasciitis with dorsiflexion night splints: a crossover prospective randomized outcome study. *Foot Ankle Int.* 1998 Jan;19(1):10-18.
54. Probe RA, Baca M, Adams R, Preece C. Night splint treatment for plantar fasciitis. *Clinical Orthopaedics and Related Research.* 1999;368:190-195.
55. Riddle D, Pulisic M, Pidcoe P, Johnson R. Risk factors for plantar fasciitis: a matched case-control study. *J Bone Joint Surg Am.* 2003;85-A(5):872-877.
56. Rompe JD, Hopf C, Nafe B, Burger R. Low-energy extracorporeal shock wave therapy for painful heel: a prospective controlled single-blind study. *Orthop Trauma Surg.* 1996;115(2):75-79.
57. Rompe JD, Schoellner, Carsten MD, Nafe B. Evaluation of Low-Energy Extracorporeal Shock Wave Application for Treatment of Chronic Plantar Fasciitis. *J Bone Joint Surg Am.* 2002 Mar;84-A (3):335-341.
58. Rompe JD, Furia J, Weil L, Maffulli N. Shock wave therapy for chronic plantar fasciopathy. *Br Med Bull.* 2007;81-82:183-208. Epub 2007 Apr 24.
59. Roos E, Engstrom M, Soderberg B. Foot orthoses for the treatment of plantar fasciitis. *Foot Ankle Int.* 2006 Aug;27(8):606-11.
60. Seil R, Wilmes P, Nuhrenborger C. Extracorporeal shock wave therapy for tendinopathies. *Expert Rev Med Devices.* 2006 Jul;3(4):463-70.
61. Singh D, Angel J, Bentley G, Trevino S. Fortnightly review: plantar fasciitis. *BMJ.* 1997;315(7101):172-175.
62. Sollitto RJ, Plotkin EL, Klein PG, Mullin P. Early clinical results of the use of radiofrequency lesioning in the treatment of plantar fasciitis. *J Foot Ankle Surg.* 1997 May-Jun;36(3):215-219.
63. Stephens MB. Clinical inquiries. *J Fam Pract.* 2003;52(9):714-717.
64. Stuber K, Kristmanson K. Conservative therapy for plantar fasciitis: a narrative review of randomized controlled trials. *JCCA J Can Chiropr Assoc.* 2006 Jun;50(2):118-33.
65. Thordarson DB, Kumar PJ, Hedman TP, Ebramzadeh E. Effect of partial versus complete plantar fasciotomy on the windlass mechanism. *Foot Ankle Int.* 1997 Jan;18(1):16-20.
66. Tice JA. Extracorporeal Shock Wave Therapy for Musculoskeletal Disorders. California Technology Assessment Forum (CTAF). June 9, 2004. Accessed May 10, 2006. Available at URL address: http://www.ctaf.org/content/assessments_pdf/32362336391_ESWT%2004%20final.pdf
67. Torpy J. Plantar fasciitis. *JAMA.* 2003;290(11):1542.

68. U.S. Food and Drug Administration (FDA). Ossatron® Premarket Approval (PMA). Accessed May 20, 2005. Available at URL address: <http://www.fda.gov/cdrh/pdf/p990086b.pdf>
69. U.S. Food and Drug Administration (FDA). ArthroCare Topaz™ ArthroWands. 510(k) Summary. Accessed May 12, 2007. Available at URL address: <http://www.fda.gov/cdrh/pdf5/K053567.pdf>
70. Wilner JM, Strash WW. Extracorporeal shockwave therapy for plantar fasciitis and other musculoskeletal conditions utilizing the Ossatron--an update. *Clin Podiatr Med Surg*. 2004 Jul;21(3):441-7, viii.
71. Winemiller MH, Billow RG, Laskowski ER, Harmsen WS. Effect of magnetic vs sham-magnetic insoles on plantar heel pain. *JAMA*. 2003 Sep 17;290(11):1474-1479.
72. Young C, Rutherford D, Niedfeldt M. Treatment of plantar fasciitis. *Am Fam Physician*. 2001;63(3):467-474.
73. Zhu F, Johnson JE, Hirose CB, Bae KT. Chronic plantar fasciitis: acute changes in the heel after extracorporeal high-energy shock wave therapy--observations at MR imaging. *Radiology*. 2005 Jan;234(1):206-10. Epub 2004 Nov 24.