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Note:

Patient Name: WALLS, DARLENE 49290, Shockwave Report

Date: 06/28/2019

Pages: 13

GUARD INSURANCE GROUP
P.O. Box 1368
Wilkes-Barre, PA 18703

CARRIER

HEALTH INSURANCE CLAIM FORM

APPROVED BY NATIONAL UNIFORM CLAIM COMMITTEE (NUCC) 02/12

PICA | PICA

1. MEDICARE [ ] (Medicare#) MEDICAID [ ] (Medicaid#) TRICARE [ ] (ID#/DoD#) CHAMPVA [ ] (Member ID#) GROUP HEALTH PLAN [ ] (ID#) FECA BLK LUNG [ ] (ID#) OTHER [X] (ID#)

1a. INSURED'S I.D. NUMBER (For Program in Item 1): 558-37-5679

2. PATIENT'S NAME (Last Name, First Name, Middle Initial): WALLS, DARLENE

3. PATIENT'S BIRTH DATE MM DD YY: 03 23 1967 SEX M [ ] F [X]

4. INSURED'S NAME (Last Name, First Name, Middle Initial): Kaiser Permanente Downey Medical Center

5. PATIENT'S ADDRESS (No., Street): 16323 CORNUTA AVE APT 8

6. PATIENT RELATIONSHIP TO INSURED: Self [ ] Spouse [ ] Child [ ] Other [X]

7. INSURED'S ADDRESS (No., Street): 9333 IMPERIAL HWY

CITY: Bellflower STATE: CA

8. RESERVED FOR NUCC USE

CITY: Downey STATE: CA

ZIP CODE: 90706 TELEPHONE (Include Area Code): (213) 401-8827

ZIP CODE: 90242 TELEPHONE (Include Area Code): ( )

9. OTHER INSURED'S NAME (Last Name, First Name, Middle Initial):

10. IS PATIENT'S CONDITION RELATED TO:

11. INSURED'S POLICY GROUP OR FECA NUMBER: Unknown

a. OTHER INSURED'S POLICY OR GROUP NUMBER:

a. EMPLOYMENT? (Current or Previous) [X] YES [ ] NO

a. INSURED'S DATE OF BIRTH MM DD YY: 03 23 1967 SEX M [ ] F [X]

b. RESERVED FOR NUCC USE:

b. AUTO ACCIDENT? [ ] YES [X] NO PLACE (State):

b. OTHER CLAIM ID (Designated by NUCC): Y4 Unknown

c. RESERVED FOR NUCC USE:

c. OTHER ACCIDENT? [ ] YES [X] NO

c. INSURANCE PLAN NAME OR PROGRAM NAME: GUARD INSURANCE GROUP

d. INSURANCE PLAN NAME OR PROGRAM NAME:

10d. CLAIM CODES (Designated by NUCC):

d. IS THERE ANOTHER HEALTH BENEFIT PLAN? [ ] YES [X] NO *If yes*, complete items 9, 9a, and 9d.

READ BACK OF FORM BEFORE COMPLETING & SIGNING THIS FORM.

12. PATIENT'S OR AUTHORIZED PERSON'S SIGNATURE I authorize the release of any medical or other information necessary to process this claim. I also request payment of government benefits either to myself or to the party who accepts assignment below.

SIGNED Signature On File DATE 6/28/2019

13. INSURED'S OR AUTHORIZED PERSON'S SIGNATURE I authorize payment of medical benefits to the undersigned physician or supplier for services described below.

SIGNED Signature On File

14. DATE OF CURRENT ILLNESS, INJURY, or PREGNANCY (LMP) MM DD YY: 01 04 2019 QUAL. 439

15. OTHER DATE QUAL. MM DD YY

16. DATES PATIENT UNABLE TO WORK IN CURRENT OCCUPATION MM DD YY FROM TO

17. NAME OF REFERRING PROVIDER OR OTHER SOURCE: DN Iseke, Harold D.C.

17a. 0B DC30855

17b. NPI 1780120386

18. HOSPITALIZATION DATES RELATED TO CURRENT SERVICES MM DD YY FROM TO

19. ADDITIONAL CLAIM INFORMATION (Designated by NUCC)

20. OUTSIDE LAB? [ ] YES [X] NO $ CHARGES

21. DIAGNOSIS OR NATURE OF ILLNESS OR INJURY Relate A-L to service line below (24E) ICD Ind. 0

A. S46.001A B. C. D.
E. F. G. H.
I. J. K. L.

22. RESUBMISSION CODE ORIGINAL REF. NO.

23. PRIOR AUTHORIZATION NUMBER

PHYSICIAN OR SUPPLIER INFORMATION

24. A. DATE(S) OF SERVICE From MM	DD	YY	To MM	DD	YY	B. PLACE OF SERVICE	C. EMG	D. PROCEDURES, SERVICES, OR SUPPLIES (Explain Unusual Circumstances) CPT/HCPCS	MODIFIER	E. DIAGNOSIS POINTER	F. $ CHARGES	G. DAYS OR UNITS	H. EPSDT Family Plan	I. ID. QUAL	J. RENDERING PROVIDER ID. #
1	Extracorporeal Shockwave Therapy													ZZ	111NS0005X
	06	19	19	06	19	19	11	09	99199		A	500.00	1		NPI 1629188438
2														NPI	
3														NPI	
4														NPI	
5														NPI	
6														NPI	

25. FEDERAL TAX I.D. NUMBER SSN EIN: 272582044 [ ] [X]

26. PATIENT'S ACCOUNT NO.: 49290

27. ACCEPT ASSIGNMENT? (For govt. claims, see back.) [X] YES [ ] NO

28. TOTAL CHARGE: $ 500.00

29. AMOUNT PAID: $ 0.00

30. Rsvd for NUCC Use

31. SIGNATURE OF PHYSICIAN OR SUPPLIER INCLUDING DEGREES OR CREDENTIALS (I certify that the statements on the reverse apply to this bill and are made a part thereof.)
Kevin Jung D.C.
25721 SIGNED 6/28/2019 DATE

32. SERVICE FACILITY LOCATION INFORMATION
Harold Iseke Chiropractic Professional Corp
3711 Long Beach Blvd Ste #200
Long Beach, CA 90807
a. 1780120386 b.

33. BILLING PROVIDER INFO & PH # (510) 870-0300
Harold Iseke Chiropractic Professional Corp
3711 Long Beach Blvd #200
Long Beach, CA 90807
a. 1780120386 b.

Harold Iseke Chiropractic Professional Corp
3711 Long Beach Blvd Ste #200, Long Beach, CA, 90807
Extracorporeal Shockwave Procedure Report

Patient:DARLENE WALLS
D.O.B.: 03/23/1967
Acc. #49290
Date: 06/19/2019
Diagnosis: Rotator Cuff Syndrome (S46.001A)
Procedure #: 1

INDICATIONS

Ms.DARLENE WALLS underwent extensive conservative care to the right shoulder including but not limited to physical and manipulating therapy, acupuncture, injections and prescribed medications. The appropriate diagnostic tests were performed to confirm the diagnoses. She still continues to have significant residual symptoms.
The patient was referred by a treating provider to undergo Extracorporeal Shockwave Therapy (ECSWT) treatment.

INTRODUCTION

Ms.DARLENE WALLS was explained in detail the basics of extracorporeal shockwave therapeutic procedure(s) (ECSWT), with expected benefits, most common potential risks and alternative treatments discussed. The contraindications were discussed and considered, including but not limited to advanced and symptomatic cardiovascular disease, acute malignancy or cancer recurrence, acute infection of soft tissue/bone, blood coagulation disorders, use of anticoagulants, pregnancy, the pacemaker and implantable devices, etc.

Patient understood the nature of the extracorporeal shockwave procedure and requested to proceed with recommended treatment.

Written and informed consent was voluntarily signed by the patient prior to any treatment provided.

DESCRIPTION OF EXTRACORPOREAL SHOCKWAVE TREATMENT

Extracorporeal shockwave medical applications and research goes back to 1940's. The term "extracorporeal" indicates origination of the shock waves outside of the body. The principle behind ECSWT is the ability to produce intense, short, high energy, high pitched acoustic waves affecting body tissues and structures in a specific and focused way. In clinical setting, ECSWT had been utilized since 1980's, with most applications in the field of urology. International Society for Medical Shockwave Treatment (ISMST) was established in 1994, with yearly World Congress held since 1995. International Board of experts established guidelines for approved standard applications of ECSWT for muscular skeletal system in 2008

Further research in the field showed great clinical applications on pain relief and regenerative healing effect of shock waves on musculoskeletal structures, such as bones, tendons, muscles, ligaments, joints. The mechanism of

musculoskeletal shockwave therapy produces neovascularization and regeneration of the affected tissue by changing cell shapes, forming new cells and new blood vessels, decreasing inflammation and modulating pain transmission. Multiple studies established effect of ECSWT on tissue cells by changing their shape which leads to new cell function-healing effect on tissues, so called "tissue re-engineering". The general consensus of these studies is that the shockwave therapy have changed the non-operative treatment of musculoskeletal disorders substantially.

1. Frairia et al: Biological Effects of Extracorporeal Shock Waves on Fibroblasts. A Review. Muscles, Ligaments and Tendons Journal 2011; (4): 137-146.
2. Haupt G: Use of Extracorporeal Shock Waves in the Treatment of Pseudoarthrosis, Tendinopathy and Other Orthopedic Diseases . J Urology, V. 158, 4-11, July 1997.
3. Mariotto et al: Extracorporeal Shock Wave Therapy in Inflammatory Diseases: Molecular Mechanism that Triggers Anti-Inflammatory Action. *Current Medicinal Chemistry,* 2009, *16,* 2366-2372.
4. Loew et al. Treatment of calcifying tendinitis of rotator cuff by extracorporeal shockwaves: A preliminary report. J Shoulder Elbow Surg 1995; 4(2):101-106.
5. Magosch et al: Efficacy of Radial Shockwave Therapy for Calcific Tendinitis of the Rotator Cuff – A prospective Study. *Extracorporeal Shockwave Therapy. Clinical Results, Technologies, Basics*. Data Trace Publishing Company; 2007, pp 177- 192.
6. Shleberger et al: Non-invasive treatment of long bone pseudoarthrosis by shockwaves (ESWL). Arch Orthop Trauma Surg 1992;111:224-227.
7. Maier et al: Basic research of applying extracorporeal shockwaves on the musculoskeletal system. An assessment of current status. Orthopade. 2002Jul;31(7) 667-77.
8. Loew et al: Shockwave therapy is effective for chronic calcifying tendinitis of the shoulder. J. Bone Joint Surg 81B:863-867.
9. Chen et al: Recruitment of mesenchymal stem cells and expression of TFG Beta 1 and VEGF in early states of shock wave promoted bone regeneration. J Orthop Research; 2004.
10. Wang et al Shockwave Enhanced Neovascularization at Tendon – Bone Junction. J. Foot Ankle Surg,2002.
11. Wheelock, AJ: Shock Wave Therapy for Treatment of Plantar Fasciitis. JAMA. 2003 January 8; 289 (2): 172.
12. ACOEM Guidelines, Chapter 9: Shoulder Complaints. Extracorporeal Shock Wave Therapy; (2004) pg.203.
13. Gerdesmeyer et al: Extracorporeal Shockwave Therapy for the Treatment of Chronic Calcifying Tendonitis of the Rotator Cuff. JAMA Vol 290, No 19, 2573 - 2580.
14. Diesch et al: rESWT. A New method for the Treatment of Lateral Epicondylitis. *Extracorporeal Shockwave Therapy. Clinical Results, Technologies, Basics*. Data Trace Publishing Company; 2007, pp 205- 216.
15. Moretti et al: Extracorporeal shock waves down-regulate the expression of interleukin-10 and tumor necrosis factor-alpha in osteoarthriticchondrocytes. *BMC Musculoskeletal Disorders* 2008, 9:16.
16. Neuland HG, Duchstein HJ Induction of Adult (Tissue-specific)Mesenchymal Stem Cells through Extracorporeal Shock Waves to Regenerate Musculooskeletal Tissue
17. Vetrano et al: Extracorporeal shock wave therapy promotes cell proliferation and collagen synthesis of primary cultured human tenocytes. Knee Surg Sports Traumatol Arthrosc (2011) 19:2159–2168
18. Rompe et al: Analgesic Effect of Extracorporel Shock-Wave Therapy on Chronic Tennis Elbow. *J Bone Joint Surg [Br]* 1996;78-B:233-7.
19. Sohn et al: Spasticity and Electrophysiologic Changes after Extracorporeal Shock Wave Therapy on Gastrocnemius. Ann Rehabil Med 2011; 35: 599-604.

The original application of the shockwave treatment was focused on plantar fasciitis of the heel, lateral epicondylitis of the elbow, calcific tendinitis of the shoulder and nonunion of long bone fractures. In early 2000's FDA approved ECSWT technology for various other indications, such as patellar tendonitis, osteochondritis dessicans, non-calcifying tendonitis of the shoulder, hamstring tendinopathy as well as avascular necrosis of the femoral head. Since then, the broad application of ECSWT for common musculoskeletal conditions was proven to be very effective, as shown by numerous published

international clinical studies.

1. Wang C-J: An Overview of Shock Wave Therapy in Musculoskeletal Disorders. Chang Gung medical journal . 05/2003;26(4):220-32.
2. Ludger Gerdesmeyer, Lowell Scott Weil *Extracorporeal Shockwave Therapy. Clinical Results*, Technologies, Basics. Data Trace Publishing Company; 2007
3. ISMST Newsletter 2008, June
4. Wang. C-J. Extracorporeal shockwave therapy in musculoskeletal disorders Journal of Orthopaedic Surgery and Research 2012, 7:11 http://www.josr-online.com/content/7/1/11
5. Gerdesmeyer et al: Radial Extracorporeal Shockwave Therapy (rESWT) in Orthopaedics. L Miner Stoffwechs 2004; 11(4): 36-39.
6. Mouzopoulos et al: Extracorporeal shock wave treatment for shoulder calcific tendonitis: a systematic review. Skeletal Radiol (2007) 36:803–811.
7. Nadar et al: Use of extracorporeal shock waves in the treatment of tendinopathy and other orthopedic diseases. Indian Journal of Urology 2000: V17 Issue 1; 44-46.
8. Shrivastava SK, Kailash: Shock wave treatment in medicine. *J. Biosci*. 30 269–275.
9. Galasso et al: Short-term outcomes of extracorporeal shock wave therapy for the treatment of chronic non-calcific tendinopathy of the supraspinatus: a double-blind, randomized, placebo-controlled trial. BMC Musculoskeletal Disorders 2012, 13:86.
10. Moretti et al: Medium-energy shock wave therapy in the treatment of rotator cuff calcifying tendinitis. Knee Surg Sports Traumatol Arthrosc(2005) 13: 405–410.
11. Pan et a: Extracorporeal Shock Wave Therapy for Chronic CalcificTendinitis of the Shoulders: A Functional and Sonographic Study. Arch Phys Med Rehabil Vol 84, July 2003, 988-993.
12. Peters et al: Extracorporeal shock wave therapy in calcific tendinitis of the shoulder. Skeletal Radiol (2004) 33:712–718.
13. Wang et al: Treatment of Calcifying tendinitis of the Shoulder with Shock Wave Therapy. Clinical orthopedics and related research, No 387 , 83-89.
14. Wang C-J, Chen H-S: Shock Wave therapy for Patients with Lateral Epicondylitis of the Elbow. Am J Sports Med, Vol 30, No.3, 422-425.
15. Ko et al: Treatment of Lateral Epicondylitis of the Elbow With Shock Waves. Clin Orthop Relat Res. 2001 Jun;(387):60-7.
16. Rompe JD, Maffulli N: Repetitive shock wave therapy for lateral elbow tendinopathy (tennis elbow): a systematic and qualitative analysis. British Medical Bulletin 2007; 83: 355–378.
17. Rompe et al: Low-energy extracorporal shock wave therapy for persistent tennis elbow. Int Orthop. 1996;20 (1):23-7.
18. Spacca et al: Radial Shock Wave Therapy for lateral Epicondylitis: a Prospective Randomized Controlled Single-blind Study. Eur Med Phys 2005;41:17-25.
19. Cacchio et al: Shockwave Therapy for the Treatment of Chronic Proximal Hamstring Tendinopathy in Professional Athletes. Am J Sports Med. 2011 Jan;39(1):146-53.
20. Furia et al: Low-energy extracorporeal shock wave therapy as a treatment for greater trochanteric pain syndrome. Am J Sports Med. 2009 Sep;37(9):1806-13.
21. Rompe et al: Low-energy extracorporeal shock wave therapy as a treatment for medial tibial stress syndrome. Am J Sports Med. 2010 Jan;38(1):125-32.
22. Swerver et al: Patient guided Piezo-electric Extracorporeal Shockwave Therapy as treatment for chronic severe patellar tendinopathy: A pilot study. J Back Musc Rehab, 23 (2010) 111–115.
23. Van Leeuwen et al: Extracorporeal shockwave therapy for patellar tendinopathy: a review of the literature. Br J Sports Med 2009;43:163–168.
24. Cosentino et al: Efficacy of extracorporeal shock wave treatment in calcaneal enthesophytosis. *Ann Rheum Dis* 2001;60:1064–1067.
25. The Diagnosis And Treatment of Heel Pain. A CLINICAL PRACTICE GUIDELINE REVISION 2010. The

Journal of Foot & Ankle Surgery 49 (2010) S1–S19.
26. Fridman et al: Extracorporeal Shockwave Therapy for the Treatment of Achilles Tendinopathies: A Prospective Study. J Am Podiatr Med Assoc. 2008 Nov-Dec;98(6):466-8.
27. Chen et al: Treatment of Painful Heel Syndrome with Shock Waves. Clin Orthop Relat Res. 2001 Jun; (387):41-6.
28. Ibrahim et al: The Effectiveness of Extracorporeal Radial Shock Wave Therapy for Patients with Plantar Fasciitis. ABSTRACT 10th ISMST Congress, Sorrento 2009.
29. Kudo et al: Randomized, placebo-controlled, double-blind clinical trial evaluating the treatment of plantar fasciitis with an extracoporeal shockwave therapy (ESWT) device: a North American confirmatory study. J orthop Res. 2006 Feb;24(2):115-23.
30. Rompe et al: Low-energy extracorporeal shock wave therapy for painful heel: a prospective controlled single-blind study. Arch orthop trauma Surg (1996) 115:75-79.
31. Thompson et al: The effectiveness of extra corporeal shock wave therapy for plantar heel pain: a systematic review and meta-analysis. *BMC Musculoskeletal Disorders* 2005, 6:19.
32. Younger Λ: Shock Wave therapy for treatment of Foot and Λnkle Conditions. Techniques in Foot and Λnkle Surgery 5(1):60-65, 2006.

Extracorporeal shock waves demonstrated multiple beneficial effects on tissues which include the following:

1. *Mechanical – shock waves affecting "mechanoreceptors"- mechanical sensors in tissues. Therapy is demonstrated to break calcium deposits and spurs around the joints.*
2. *Biological –ECSWT is demonstrated to increase microcirculation in tissues and increases cell permeability resulting in significantly improved healing rates.*
3. *Physiological – directly beneficially affects local hormones, neuromodulating factors such as substance – P, growth factors and enzymes responsible for decrease in inflammation and promoting tissue regeneration.*

Extracorporeal shockwave therapy utilizes a ballistic technique. When the applicator is placed against the skin, overlying the affected area (shoulder, elbow, ankle, trunk, etc), the shockwave is becoming a projectile, accelerated by compressed air and propelled at high energy through the tissues. Once beyond the skin barrier, the shock wave continues to spread and propagate inside the body to designated depth of the injured area under treatment. Three consecutive sessions of ECSWT treatments, on average, are required to produce maximal therapeutic effect for the affected body part.

Classification of technology used

1. *Generator: Electrohydraulic, piezoelectric and electromagnetic.*
2. *Energy flow density: low energy and high energy.*
3. *Application: Radial waves and focused waves.*

ECSWT is one of the few effective techniques utilized for the treatment of chronic stages of injury. ECSWT is able to "jump start" the healing process and progress from the chronic into acute stage of healing in tendinopathy (chronic degeneration and inflammation of shoulder joint, rotator cuff tear, Achilles tendon, knee patellar tendon, elbow joint tendons, ankle and feet tendon, etc.).

1. Ogden et al: Shockwave therapy for chronic proximal plantar fasciitis. Clin Orthop. 2001; 387:47-59.
2. Wang CJ, Ko JY, Chan YS, Weng LH, Hsu SL: Extracorporeal shockwave for chronic patellar tendinopathy. Am J Sports Med 2007,35(6):972-8.

3. Ludger Gerdesmeyer, Lowell Scott Weil Extracorporeal Shockwave Therapy. Clinical Results, Technologies, Basics. Data Trace Publishing Company; 2007.
4. Lian O, Dahl J, Ackermann PW, Frihagen F, Engebretsen L, Bahr R: Pronociceptive and antinociceptive neuromediators in patellar tendinopathy. Am J Sports Med 2006, 34(11):1801-8.
5. Rompe, JD, et al. Evaluation of Low-Energy Extracorporeal Shockwave Application for Treatment of Chronic Plantar Fasciitis. Journal of Bone and Joint Surgery. 2002 Mar; 84 (A3); 335-341.
6. Notarnicola et al: Shockwave Therapy in the Management of Complex Regional Pain Syndrome in Medial Femoral Condyle of the Knee. Ultrasound Med Biol 2010 Jun;36(6):874-9.
7. Sems et al: Extracorporeal Shock Wave Therapy in the Treatment of Chronic Tendinopathies. *J Am Acad Orthop Surg* 2006;14:195-204.
8.Albert et al: High-energy extracorporeal shock-wave therapy for calcifying tendinitis of the rotator cuff: a randomised trial.J Bone Joint Surg Br. 2007 Mar;89(3):335-41.
9. Cosentino R: Extracorporeal shock wave therapy for chronic calcific tendinitis of the shoulder: single blind study. Ann Rheum Dis 2003;62:248–250.
10. Furia JP: Safety and Efficacy of Extracorporeal Shock Wave therapy for Chronic Lateral Epicondylitis. Am J Orthop 2005 Jan;34(1):13-9.
11. Pettrone et al: Extracorporeal Shock Wave Therapy without Local Anesthesia for Chronic Lateral Epicondylitis. J Bone Joint Surg Am, 2005 Jun;87(6):1297-304.
12. Rompe et al: Repetitive Low-Energy Shock Wave Treatment for Chronic Lateral Epicondylitis in Tennis Players. Am J Sports Med. 2004 Apr-May;32(3):734-43.
13. Yildiz Y, Aydin T: Focused and Radial Extracorporeal Shock Wave Therapy for Lateral Epicondylitis: Preliminary results. ABSTRACT 10th ISMST Congress, Sorrento 2009.
14. Furia et al: A single application of low-energy radial extracorporeal shockwave therapy is effective for the management of chronic patellar tendinopathy. Knee Surg Sports traumatol Arthrosc. 2012 May 25. [Epub ahead of print].
15.Taunton et al: Treatment of patellar tendinopathy with extracorporeal shock wave therapy. BC MED J, Vol. 45 No. 10, 500-507.
16. Furia JP: High-Energy Extracorporeal Shock Wave Therapy as a Treatment for Insertional Achilles Tendinopathy. Am. J. Sports Med. 2006; 34; 733-740.
17. Furia JP, Rompe JD: Extracorporeal shock wave therapy in the treatment of chronic plantar fasciitis and Achilles tendinopathy. Curr Opin Orthop, 2007; 18:102–111.
18. Gerdesmeyer et al: Focused shock wave therapy in chronic plantar heel pain a randomized Placebo controlled trial. Presented at the 2010 Annual Meeting of the American Academy of Orthopaedic Surgeons. March 9-13, 2010. New Orleans.
19. Gerdesmeyer et al: Radial Extracorporeal Shock Wave Therapy Is Safe and Effective in the Treatment of Chronic Recalcitrant Plantar Fasciitis.
Results of a Confirmatory Randomized Placebo-Controlled Multicenter Study. Am J Sports Med. 2008 Nov;36 (11):2100-9.
20. Gollwitzer et al: 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.
21. Malay et al: Extracorporeal Shockwave Therapy Versus Placebo for the Treatment of Chronic Proximal Plantar Fasciitis: Results of a Randomized, Placebo-Controlled, Double-Blinded, Multicenter Intervention Trial. J Foot Ankle Surg. 2006 Jul-Aug;45(4):196-210.
22. Norris et al: Effectiveness of Extracorporeal Shockwave Treatment in 353 Patients with Chronic Plantar Fasciitis. J Am Podiatr Med Assoc. 2005 Nov-Dec;95(6):517-24.
23. Rassmussen et al: Shockwave therapy for chronic Achilles tendinopathy A double-blind, randomized clinical trial of efficacy. *Acta Orthopaedica* 2008; 79 (2): 249–256.
24. Rompe et al: Shock Wave Application for Chronic Plantar Fasciitis in Running Athletes. Am J Sports Med. 2003 Mar-Apr;31(2):268-75

ECSWT is also able to enhance an effective healing of bone non-union fractures.

1. Cacchio et al Extracorporeal Shockwave Therapy compared with Surgery for long bone nonunions. JBJS, Nov 2009.
2. Rompe, JD, et al. High Energy Extracorporeal Shock Wave Treatment of Nonunions. Clinical Orthopaedics and Related Research. 2001 Jun; 387:102-111.
3. Valchanou, VD, et al High Energy Shock Wave in the Treatment of Delayed and Nonunion for Fractures. International Orthop.1991; 15(3); 181-184.
4. Elster EA, Stojadinovic A, Forsberg J, Shawen S, Andersen RC, Schaden W: Extracorporeal shock wave therapy for nonunion of the tibia. J Orthop Trauma 2010, 24(3):133-41.

Another benefit of ECSWT is a direct mechanical effect of breaking the calcium deposits and forming spurs around the affected joints.

1. Wang CJ, Yang KD, Wang FS, Chen HH, Wang JW: Shock wave therapy for calcific tendinitis of the shoulder: a prospective clinical study with two year follow-up. Am J Sports Med 2003, 31(3):425-30.
2. Jurgowski W, Loew M, Cotta H, Staehler G: Extracorporeal shock wave treatment of calcareous tendonitis of the shoulder. J Endourol 1993,
7(Suppl 1):13-17.
3. Loew M, Daecke W, Kusnierezak D, Rahmanzadeh M, Ewerbeck V: Shockwave application in calcifying tendinitis of the shoulder: prediction of outcome by imaging. Arch Orthop Trauma Surg 2000, 120:43-8.
4. Spindler A, Berman A, Lucero E, Braier M: Extracorporeal shock wave treatment for chronic calcific tendinitis of the shoulder. J Rheum 1998, 25(6):1161-3.
5. Cacchio et al: Effectiveness of Radial Shock-Wave Therapy for CalcificTendinitis of the Shoulder: Single-Blind, Randomized Clinical Study. Physical Therapy . Volume 86 . Number 5, May 2006.
6. Sabeti-Aschraf et al: Extracorporeal Shock Wave Therapy in the treatment of Calcific Tendinitis of the Rotator Cuff. Am J Sports Med 2005 Sep;33(9):1365-8.
7. Hsu et al: Extracorporeal shock wave therapy for calcifying tendinitis of the shoulder. J Shoulder Elbow Surg. 2008 Jan-Feb;17(1):55-9.
8. Loew M, W. Daecke, D. Kusnierczak, M. Rahmanzadeh, V. Ewerbeck: Shock-wave therapy is effective for chronic calcifying tendinitis of the shoulder. *J Bone Joint Surg* 1999;81-B:863-7.
9. Magosch et al: Radial Shock Wave Therapy in Calcifying tendinitis of the Rotator Cuff – A Prospective Study. Zeitschrift für Orthopädie 141(6):629-36.

Clinical effect of pain relief with use of shock wave occurs in two stages:

1. Early stage-hours, days after application which is explained by "hyperstimulation" and "get control" theories.

1. Graff et al Effect of high energy shockwaves on bony tissue. Urol Res 1988
2. Hausdorf et al Extracorporeal shockwaves induce production of bone growth factor from osteoblasts. Calcified Tissue Int, 2004

2. Delayed stage effect after treatment in 4-6 weeks associated with tissue regeneration, new blood vessel

formation-actual healing of tissues including tendons, muscles, bones.

1. Russo et al Shockwave therapy for the treatment of hip necrosis. 2nd Internat Congress of the European Society for Musciloskeletal; Shockwave Therapy. 1999

Overall reported benefits of ECSWT treatment in musculoskeletal system is 75% - 85%.

1. Furia JP: Safety and efficacy of extracorporeal shock wave therapy for chronic lateral epicondylitis. Am J Orthop (Chatham, NJ) 2005, 34(1):13-9.
2. Ko JY, Chen HS, Chen LM: Treatment of lateral epicondylitis of the elbow with shock waves. Clin Orthop 2001, 387:60-7.
3. Van Leeuwen MT, Zwerver J, van den Akker-Scheek I: Extracorporeal shockwave therapy for patellar tendinopathy: a review of the literature. Br J Sports Med 2009, 43(3):163-8.
4. Vulpiani MC, Vetrano M, Savoia V, Di Pangrazio E, Trischitta D, Ferretti A: Jumper's knee treatment with extracorporeal shock wave therapy: a long-term follow-up observational study. J Sports Med Physical Fitness 2007, 47(3):323-8.
5. Ludger Gerdesmeyer, Lowell Scott Weil Extracorporeal Shockwave Therapy. Clinical Results, Technologies, Basics. Data Trace Publishing Company; 2007.
6. Moretti et al: Extracorporeal shock wave therapy in runners with a symptomatic heel spur. Knee Surg Sports Traumatol Arthrosc(2006) 14: 1029–1032.

Extracorporeal shockwave therapy has multiple benefits over the operative treatment. The greater trauma caused by operative procedure leads to prolonged course of rehabilitation, much greater periods of disability and correspondingly higher social and economic burden to patients and carriers. Calculated average cost of operative treatment is 5 – 7 higher than for ECSWT.

1. Weil LS Jr, Roukis TS, Weil LS, Borrelli AH: Extracorporeal shock wave therapy for the treatment of chronic plantar fasciitis: indications, protocol, intermediate results, and a comparison of results to fasciotomy. J Foot Ankle Surg 2002, 41(3):166-72.
2. Peers KH, Lysens RJ, Brys P, Bellemans J: Cross-sectional outcome analysis of athletes with chronic patellar tendinopathy treated surgically and by extracorporeal shock wave therapy. Clin J Sport Med 2003,13(2):79-83.
3. Haake et al: Assessment of the Treatment Costs of Extracorporeal Shock Wave Therapy Versus Surgical Treatment for Shoulder Disease. International Journal of Technology Assessment in Health Care 2001, 17:4;612-617.
4. Haake et al: Extracorporeal Shock Wave Therapy versus Surgical Treatment in Calcifying Tendinitis and Non Calcifying Tendinitis of the Supraspinatus Muscle. Eur J Orthop Surg Traumatol (2001) 11: 1-4.
5. Radwan et al: Resistant tennis elbow: shock-wave therapy versus percutaneous tenotomy. Int Orthop. 2008 Oct;32(5):671-7.

Correspondingly, in our clinical experience the number of surgical interventions had declined dramatically (>50%), following introduction of ECSWT treatment.

It is obvious that ECSWT, a quickly growing and emerging part of the therapeutic regimen, is becoming a forefront of modern medical sciences, particularly of musculoskeletal disorders and rheumatology. A modern

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Your fax may be incomplete because one or more of the following has occurred:

1. Fax transmission was interrupted.

2. "End fax" signal not received.

3. Unable to convert to desired file format.

We apologize for any inconvenience.

You will not be charged for this additional page.