

Early outcome of Steroid Injection in Plantar Fasciitis

RIZWAN ALI JHATIYAL¹, ZAMIR HUSSAIN TUNIO², LACHMAN DAS MAHESHWARI³, MUHAMMAD KASHIF ABBASI⁴, MUHAMMAD AZEEM AKHUND⁵ SYED MUHAMMAD ALI⁶

¹Consultant Orthopaedic Surgeon, Liaquat University Hospital, Hyderabad

²Assistant Professor, ³Senior Registrar Orthopedic Surgery and Traumatology, Liaquat University of Medical & Health Sciences, Jasmshoro

⁴Assistant Professor Orthopedic Surgery and Traumatology, Pir Abdul Qadir Shah Jilani Institute of Medical Sciences, Gambat

⁵Associate Professor Orthopedic Surgery & Traumatology, Peoples University of Medical & Health Sciences Shaheed Benazir Abad

⁶Associate Professor Orthopedic Surgery and Traumatology, Liaquat University of Medical & Health Sciences, Jasmshoro

Correspondence to Dr. Zamir Hussain Tunio, E-mail: zamir.hussain@gmail.com, +92 314-7703388

ABSTRACT

Aim: To evaluate the effectiveness and early outcome of steroid injections in the treatment of plantar fasciitis.

Study design: Descriptive, cross sectional study.

Place and duration of study: Department of Orthopedic Surgery & Traumatology, Liaquat University of Medical & Health Sciences Jamshoro from 1st January 2018 to 28th February 2019.

Methodology: Ninety nine cases having clinical diagnosis of plantar fasciitis with age ranging from 18 year to 55 year of either gender were studied after injecting Depo-Medrol (Methylprednisolone) 40mg mixed with 1ml of 2% lignocaine at most tender point of heel and evaluated the treatment response according to the method of Visual Analog Scoring. The VAS range is from 0-10; 0 no pain, 1-3, mild pain, 4-6 moderate, 7-8 severe and 9-10 worst pain.

Results: Sixty seven (67.68%) were females and 32 (32.32%) were males. Mean age was 43.3±7.7 years. Average duration of standing hours was 6.7±2.3 hours. Mean duration of symptoms was 75±21 days. While after 3 months of injection pain according to VAS was none 29 (29.3%), mild 46 (46.4%), moderate 15 (15.5%), severe 6 (6.06%) and worst 3 (3.03%). Pain free duration after injection was 41±11 days. Follow up duration was 110±21 days.

Conclusion: The steroid injection not only provides dramatic relief from pain of plantar fasciitis but also helps to improve quality of life and reduces the need of analgesics.

Keywords: Plantar fasciitis, Steroid, Injection, Heel pain, Visual Analog score.

INTRODUCTION

Plantar fasciitis is common cause of heel ache ingrown-ups.¹ It is the provocative condition that is due to over stressing of plantar fascia. Although aetiology is not exceptionally clear, most commonly suggested theory is micro-trauma and chronic inflammation of the plantar aponeurosis at its origin on the average calcaneal tubercle.² This condition accounts for around 10% of the population, commonly influencing matured women and youthful male runners.³ About 1-2 million patients visit to physician as reported by literature.⁴ In 20-30% of clinically diagnosed patients, symptoms arise bilaterally with sharp heel pain more extreme with initial moves in the morning, mostly while getting out of bed, increase after extended standing at the end of the day.⁵ Most of these patients can be treated easily, where symptom resolution is non-operational, in 90% of patients, expected within 10 months.⁶

There are several different non-operational solutions used to manage; as rest, ice, exercise of stretching of Achilles tendon and plantar fascia, strengthening of intrinsic muscles of the foot, Shoe changes, anti-inflammatory medications (NSAIDs), custom made orthotics, prefabricated shoe inserts, Stretching, occupational therapy, extracorporeal shock wave therapy and injections of corticosteroid, platelet rich plasma, autologous blood, botulinum toxin and surgical release of fascia. There is no consensus on the single therapeutic approach to date.⁷⁻⁹

Injections of corticosteroids have been used to treat since the 1950's, heel pain.¹⁰ The benefits of corticosteroid injections include low cost, fast relief from pain and it can be administered by in an outpatient setting by most family physicians.¹¹ For several decades, steroid injections have been used to treat tendinopathy such as tennis elbow, tendinitis of the Achilles, and plantar fasciitis.^{12,13}

This study was intended to see the effect and outcome of steroid injection in clinically diagnosed cases of plantar fasciitis in our community.

MATERIALS AND METHODS

This descriptive cross sectional study was conducted at Department Of Orthopedic Surgery and Traumatology, LUMHS Jamshoro from 1st January 2018 to 28th February 2019. A total of 99 cases having clinical diagnosis of plantar fasciitis with sharp pain at heel and local tenderness at medial calcaneal tuberosity with age ranging from 18 year to 55 year of either gender were selected while cases with prior steroid injection, bleeding disorder, skin disease such as eczema or psoriasis, septic arthritis of foot and ankle, rheumatoid arthritis and gout, diabetic foot, tumor, patient with recent history of foot trauma, other reasons for heel pain and who were not willing to participate were excluded. Patient's occupation, duration of symptoms, any treatment received, co-morbid, and addiction were noted. Patients were injected steroid injection of Depo-Medrol (Methylprednisolone) 40mg mixed with 1ml of lignocaine 2% locally at origin of plantar aponeurosis from medial calcaneal tuberosity under aseptic environment. Patient is directed to spend some time resting

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your feet over the following 48-72 hours and asked to avoid exercise during this recovery time and to avoid sports for next 6-8 weeks. For the next 3 months patients will be asked for regular physiotherapy, icing, exercises, modified shoe support. Patient's pain was assessed after 3 months of injection. Pain free duration after injection and complications as pain at injection site, cortisone flare were noted. Further Plantar Fascia Tear or Rupture, Infection, Thinning of the Heel Pad, Lighter Skin Pigmentation, and Facial Flushing because of steroid injection was noted. Regarding use of quantity of analgesics patients were interviewed after 2 weeks and 3 months of steroid injection. Follow-up duration was noted. We evaluated the treatment response according to the method of Visual Analog Scoring. The VAS was used to classify the pain on bearing weight. The VAS range is from zero to ten; 0 no pain, 1-3, mild pain that can be ignored, 4-6 moderate pain that interferes with tasks, sleep, concentration, 7-8 severe pain interfering with basic needs, 9-10 worst pain possible that requires bed rest. Data was analysed by SPSS-22.

RESULTS

There were 67(67.68%) female and 32(32.32%) male with mean age of 43.3±7.7 years. Sixty one (61.61%) have right sided, 23(23.23%) have left sided and 15(15.15%) have bilateral heel pain. Regarding occupation 52(52.53%) were house wives, 22(22.22%) labourer, 19(19.2%) government servant and 6(6.06%) were students. Average duration of standing hours was 6.7±2.3 hours. Mean duration of symptoms was 75±21 days. Fifty three (53.54%) cases received treatment from general practitioner, 22(22.2%) from bone setter, 10(10.1%) by self-medication, 14(14.14%) didn't received any treatment. Seven (7.07%) were with controlled hypertension on medication, 3(3.03%) were having asthma, 4(4.04%) having hepatitis C treated adequately. 5(5.05%) were active smoker, 4(4.04%) were occasional and 7(7.07%) were ex-smoker (Table 1).

Regarding use of analgesics after getting injection patients were told to use analgesics as per need, at 1st visit after two weeks data showed that 77(77.77%) cases didn't used any analgesic while 13(13.13%) cases used one tablet daily and 9(9.09%) cases used two tablets daily. And at final visit after 3 months 35(35.35%) patients didn't need any analgesic, 41(41.41%) cases were on single tablet, 12(12.12%) on two tablets and 11(11.11%) on three tablets (Table 2).

Pain at first visit according to Visual Analog Score was mild in 17(17.2%), moderate in 53(53.5%), severe in 22(22.2%) and worst in 7(7.1%). While pain after 3 months of injection pain was none in 29(29.3%), mild in 46(46.3%), moderate in 15(15.2%), severe in 6(6.1%) and worst in 3(3.1%) [Table 3]. Regarding complications; pain at injection site was reported in 6(6.1%), thinning of the heel pad in 2(2.1%), lighter skin pigmentation in 3(3.1%) while plantar fascia rupture and infection was noted in none (Table 4). Twenty two (22.2%) cases received 2nd dose of cortisone injection after 3 months. Pain free duration after injection was 41±11 days. Follow-up duration was 110±21 days (Table 5).

Table 1: Demographic information of the patients (n=99)

Variable	No.	%
Gender		
Male	32	32.3
Female	67	67.7
Heel Side		
Right	61	61.6
Left	23	23.2
Bilateral	15	15.1
Occupation		
Housewife	52	52.5
Labourer	22	22.2
Government servant	19	19.2
Student	6	6.06

Table 2: Frequency of usage of analgesics after steroid therapy (n=99)

Variable	No.	%
Daily usage of analgesic tablets after two weeks		
No any tablet	77	77.77
One tablet	13	13.13
Two tablets	9	9.09
Daily usage of analgesic tablets after three months		
No any tablet	35	35.35
One tablet	41	41.41
Two tablets	12	12.12
Three tablets	11	11.11

Table 3: Pain according to VAS (n=99)

Variable	No.	%
Pain at 1 st visit		
Mild (1-3)	17	17.2
Moderate (4-6)	53	53.5
Severe (7-8)	22	22.2
Worst (9-10)	7	7.1
Pain after 3 months		
None (0)	29	29.3
Mild (1-3)	46	46.3
Moderate (4-6)	15	15.2
Severe (7-8)	6	6.1
Worst (9-10)	3	3.1

Table 4: Complications after steroid therapy (n=99)

Complication	No.	%
Pain at injection site	6	6.1
Thinning of the heel pad	2	2.1
Lighter skin pigmentation	3	3.1
None	88	88.7

Table 5: Descriptive statistics of the patients

Variable	Mean±SD
Mean age (years)	43.3±7.7
Mean duration of symptoms (days)	75±21
Average duration of standing (hours)	6.7±2.3
Pain free duration after injection (days)	41±11
Follow up duration (days)	110±21

DISCUSSION

Plantar fasciitis is the foremost common sort of plantar fascia injury and is the foremost common reason for heel torment, capable for 80% of cases.¹⁴The condition tends to happen more regularly in ladies, military individuals, aged

athletes, dancers, overweight, and youthful male athletes.¹⁵ Plantar fasciitis is evaluated to influence 1 in 10 individuals at a few point amid their lifetime and most commonly influences individuals between 40–60 a long time of age.¹⁶ The expense of treating plantar fasciitis in the United States is assessed to be \$284 million by every year.¹⁷ Plantar fasciitis can be effectively overseen in approximately 85% to 90% of patients without any need for surgical intervention.¹⁸ Different treatment procedures have been utilized in treatment of plantar fasciitis with positive impact in result, be that as it may there's no common assertion as to which treatment methodology or combination of modalities is most successful in its administration¹⁹.

Ang⁸ has reviewed different studies of corticosteroid injection for plantar fasciitis. He reported mean age 41.4–57.0 years, duration of pain was 2-180 months, with the majority suffering for at least six months. Every one of the ten investigations audited were predictable in showing that corticosteroid therapy bring about relief of symptoms by decreasing threshold of pain as well thickness of fascia. The effect maintained at least for 90 days following injection.

Whittaker et al²⁰ has done systemic review and meta-analysis regarding the corticosteroid injection for heel pain, total of 47 trials (2989 participants) were studied; the discoveries of this efficient survey showed that corticosteroid is more viable than autologous blood infusion and foot orthoses within the brief term (up to 6 weeks), but platelet-rich plasma and dry needling are more successful within the longer term (more noteworthy than 12 weeks). For the result of work, corticosteroid injection is more compelling than physical treatment within the brief term. They reported this therapy as safest, only pain at injection site reported complication while we observed the same complication in 6.1% of cases.

Waziret al²¹ has compared the steroid injection with other conventional methods (ibuprofen and exercises) in 52 patients with average age of 44.11±9.76 years and he concluded that injection methylprednisolone is effective to relieve the pain. We also used the same injection and found dramatic results.

Abidin et al²² has studied prevalence and risk factors of plantar fasciitis among 364 security force personnel, he observed average heel pain in 10.6%, plantar fasciitis was prevalent in 13.2% and strong relation of prolonged standing more than 8 hours with the cause while in the present study 6.7±2.3 hours standing time in our patients. A meta-analysis by Gaujoux-Viala et al²³ found no differences in efficacy between the different kinds of corticosteroids used in tendinopathies while we used Depo-Medrol (Methylprednisolone) in our study.

Khan²⁴ has studied the comparison between steroid and specific exercises for chronic 50 cases with pain at least for 10 months. Females were 60%, and showed that specific exercises are more effective than steroid injection in chronic cases. While in our study 67.67% were females with majority of house wives and chronic cases were not compared with other methods.

Be that as it may, one ought to be cognizant that repeated use of steroid infusion can lead to complications.⁷ Buccilliet al²⁵ detailed a case of abscess

formation after nearby steroid injection in foot. We didn't encounter this sort of complication. And in 88% of cases we didn't observed any complication. Ball et al²⁶ observed that Heel Tenderness Index improved significantly in the steroidinjection groups compared to the placebo group at the follow-up of 12 weeks while we observed the same outcome in 110±21 days of follow-up.

CONCLUSION

The steroid injection not only provide dramatic relief from pain of plantar fasciitis but also helps to improve quality of life by psychological boost and reduces the need of analgesics by providing pain free duration of 41±11 days. So we recommend this therapy for quick recovery but repeated doses should be avoided.

REFERENCES

1. Akl RA, El Sadek M, Abd el Dayem A, Mostafa MS. Platelet Rich Plasma versus Corticosteroid Local Injection Results in Treatment of Planter Fasciitis in New-Cairo. *ZagazigUnivMedJ*2019;25(5):665-72.
2. Dicharry J. *Anatomy for Runners: Unlocking your athletic potential for health, speed, and injury prevention*. Skyhorse Publishing Inc.; 2012.
3. Irving DB, Cook JL, Young MA, Menz HB. Obesity and pronated foot type may increase the risk of chronic plantar heel pain: a matched case-control study. *BMC Musculoskeletal Disorders* 2007;8(1):1-8.
4. Thompson JV, Saini SS, Reb CW, Daniel JN. Diagnosis and management of plantar fasciitis. *JAmOsteopathic Assoc*2014;114(12):900-1.
5. Kaya BK. Plantar fasciitis in athletes. *JSport Rehab*1996;5(4):305-20.
6. McNally EG, Shetty S. Plantar fascia: imaging diagnosis and guided treatment. *Seminars Musculoskeletal Radiol*2010; 4(3): 334-43.
7. Tatli YZ, Kapasi S. The real risks of steroid injection for plantar fasciitis, with a review of conservative therapies. *Curr Rev Musculoskeletal Med*2009;2(1):3-9.
8. Ang TW. The effectiveness of corticosteroid injection in the treatment of plantar fasciitis. *Singapore Med J* 2015;56(8):423.
9. Memon AR. Treating plantar fasciitis conservatively: evidence-based case report. *MOJ Orthop Rheumatol* 2014;1(4): 00025.
10. Lapidus PW, Guidotti FP. Local injections of hydrocortisone in 495 orthopedic patients. *Industrial Med Surg* 957; 26(5): 234-44.
11. Lareau CR, Sawyer GA, Wang JH, Di Giovanni CW. Plantar and medial heel pain: diagnosis and management. *JAAOS*2014;22(6):372-80.
12. Aicale R, Bisaccia RD, Oliviero A, Oliva F, Maffulli N. Current pharmacological approaches to the treatment of tendinopathy. *Expert Opin Pharmacotherap* 2020; 21(12): 1467-77.
13. Delgado DA, Lambert BS, Boutris N, McCulloch PC, Robbins AB, Moreno MR, Harris JD. Validation of digital visual analog scale pain scoring with a traditional paper-based visual analog scale in adults. *J Am Acad Orthop Surg* 2018;2(3).
14. Jeswani T, Morlese J, McNally EG. Getting to the heel of the problem: plantar fascia lesions. *ClinRadiol*2009;64(9):931-9.
15. Scher CD, Belmont Jr LC, Bear MR, Mountcastle SB, Orr JD, Owens MB. The incidence of plantar fasciitis in the United States military. *JBJS*2009;91(12):2867-72.

16. Roxas M. Plantar fasciitis: diagnosis and therapeutic considerations. *Alternative Med Rev* 2005;10(2).
17. Tong KB, Furia J. Economic burden of plantar fasciitis treatment in the United States. *Am J Orthop* 2010;39(5):227-31.
18. Thompson JV, Saini SS, Reb CW, Daniel JN. Diagnosis and management of plantar fasciitis. *J Am Osteopathic Assoc* 2014;114(12):900-1.
19. Ross M. Use of the tissue stress model as a paradigm for developing an examination and management plan for a patient with plantar fasciitis. *J Am Pediatr Med Assoc* 2002; 92(9):499-506.
20. Whittaker GA, Munteanu SE, Menz HB, Bonanno DR, Gerrard JM, Landorf KB. Corticosteroid injection for plantar heel pain: a systematic review and meta-analysis. *BMC Musculoskeletal Disorders* 2019;20(1):1-22.
21. Wazir IK, Inam M, Arif M, Saeed M, Satar A. Treatment of plantar fasciitis of foot-local steroid infiltration in comparison with conventional treatment: a randomized controlled trial. *JPakOrthopAssoc* 2013;25(1):28-34.
22. Abidin SZ, Haneef K, Malik NR, Mashal M, Zeb A, Rahman MU. Prevalence and associated risk factors for plantar fasciitis among security forces personnel in Peshawar. *Ann Allied Health Sci* 2019;5(2):20-3.
23. Gaujoux-Viala C, Dougados M, Gossec L. Efficacy and safety of steroid injections for shoulder and elbow tendonitis: a meta-analysis of randomised controlled trials. *Ann Rheumatic Dis* 2009 Dec 1;68(12):1843-9.
24. Khan UZ. Functional outcome of plantar fascia specific exercise versus corticosteroid injection in chronic plantar fasciitis. *J Surg Pak* 2018;23(1):30-4.
25. Buccilli Jr TA, Hall HR, Solmen JD. Sterile abscess formation following a corticosteroid injection for the treatment of plantar fasciitis. *J Foot Ankle Surg* 2005;44(6):466-8.
26. Ball EM, McKeeman HM, Patterson C, Burns J, Yau WH, Moore OA, Benson C, Foo J, Wright GD, Taggart AJ. Steroid injection for inferior heel pain: a randomised controlled trial. *Ann Rheumatic Dis* 2013;72(6):996-1002.