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Comparison between Steroid Injections versus Conservative Therapy in the Treatment of Plantar Fasciitis

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ABSTRACT

Introduction: Plantar fasciitis can be treated with several approaches as of yet. Common treatments can be divided into non-invasive treatments, such physical therapy (PT), orthosis, oral NSAIDs, radiation therapy (RT) and shock wave (SW) and invasive treatments, such corticosteroid injection (CSI), botulinum toxin injection, platelet-rich plasma (PRP) injection and surgery. So, this study is being undertaken to compare non-invasive conservative methods versus local Steroid injection therapy. The technique with better results will be recommended in future to reduce morbidity of these patients. **Materials and Procedures:** 434 patients in all fulfilling the inclusion criteria were chosen. Using computer produced random number tables, all of the study participants—who had informed written permission—were randomly divided into two groups. Group B patients received corticosteroid injections; Group A patients underwent conservative treatment. At least four years of post-fellowship experience, a consultant orthopedic surgeon conducted the procedure. Patients had surgery, and following four weeks, fictitious outcomes based on Visual Analogue Scale were observed. Results were assessed as Excellent when VAS was 0; Good when VAS was 0–30mm; Fair when VAS was 30–60mm; Poor when VAS = 60–100mm. **Results:** In my study, conservative management showed treatment outcome as excellent in 57.60% patients, good in 24.42%, fair in 10.60% and poor in 7.37% patients. While 86.18% of patients receiving corticosteroid injection treatment for Planter Fasciitis had excellent outcome, 6.45% good outcome, 4.15% fair outcome and 3.23 had poor outcome. **Conclusion:** This study found that treating plantar fasciitis with local corticosteroid injection results in a better functional outcome than with conservative management.

INTRODUCTION

The most prevalent cause of heel pain is plantar fasciitis. Usually starting with usual hobbling downstairs, or from a period of sitting, the discomfort is worse when first waking up in the morning.[1] Modern understanding is that plantar fasciitis is a degenerative condition rather than an inflammatory process.[2] Though the exact origin of plantar fasciitis is unknown, biomechanical stress of the plantar fascia at its enthesis of the calcaneal tuberosity is most often the reason.[3] Biomechanical stress on the plantar fascia can be produced by prolonged weight-bearing, obesity, limited ankle joint dorsiflexion, posterior muscle group tightness and maladaptive patterns of walking or running. The diagnosis depends on the usual history and the discovery of localized soreness in the medial calcaneal tubercle. Considered a self-limited disorder is planter fasciitis. Still, the considerable delay irritates patients as well as doctors.[4]

Plantar fasciitis can be treated with several approaches as of yet. Common treatments can be divided into non-invasive treatments, such physical therapy (PT), orthosis, oral NSAIDs, radiation therapy (RT) and shock wave (SW) and invasive treatments, such corticosteroid injection (CSI), botulinum toxin injection, platelet-rich plasma (PRP) injection and surgery.[5] Growing understanding of the pathophysiology has resulted in the broad use of many conservative therapies for resistant PF including physiotherapy, plantar fascia stretching exercises, cold packs, night splints, prefabricated and custom-made insert shoe modification, and NSAIDs.[6] Plantar heel pain has been addressed with corticosteroid injections since the 1950s. Rheumatologists and orthopedic surgeons have both

been well-known users of them regularly. An efficient approach for pain reduction, corticosteroids injections have been used to treat plantar fasciitis. Research on corticosteroid injection consequences such fascial rupture points to proof.[7]

Narula R. compared thenon-invasive conservative treatment with local steroid injection in the Management of Planter Fasciitis reported conservative management showed treatment outcome as excellent in 75% patients and good in 20% with overall satisfactory outcome in 95% patient.[8] While another study found that 90% of patients receiving corticosteroid injection treatment for Planter Fasciitis had generally good results.[9]

Considered a self-limited disorder is planter fasciitis. The clinical decision making in the therapy of this ailment is at times illogical, even if there are many publications outlining operative and non-operative treatment choices that alleviate the symptoms but without high quality data to establish which treatments are successful. Thus, the aim of this study is to evaluate non-invasive conservative techniques against local Steroid injection therapy. Future recommendations will call for the method with better outcomes in order to lower the morbidity of these patients.

MATERIALS AND METHODS

Selected for this randomized controlled experiment were 434 patients of age 18–65 of either gender who visited the Department of Orthopedic Surgery, Allied Hospital, Faisalabad Medical University, Faisalabad between July 2024 and January 2025 and had treatment of Plantar Fasciitis. Using WHO sample size calculator, for 2 proportions, Power of study = 80%, Level of significance = 5%, Anticipated population in group A = 95%[8] and Anticipated population in group B=90%[9], sample size was computed. Pregnant women and those with history of bleeding disorder or on anti-coagulant therapy were excluded from PF patients who also had other systemic diseases including diabetes mellitus, rheumatoid arthritis, and gout; history of trauma; Stress fracture calcaneum; and acute planter fascias rupture cases.

Following institutional ethical review committee approval, 434 patients in all fulfilling the inclusion criteria were chosen. Using computer produced random number tables, all of the study participants—who had informed written permission—were randomly divided into two groups. Group B patients received corticosteroid injections; Group A patients underwent conservative treatment. At least four years of post-fellowship experience, a consultant orthopedic surgeon conducted the procedure. Patients had surgery, and following four weeks, fictitious outcomes based on Visual Analogue Scale were observed. Results were assessed as Excellent when VAS was 0; Good when VAS was 0–30mm; Fair when VAS was 30–60mm; Poor when VAS = 60–100mm. Their answers came from a planned questionnaire; all of this information was entered onto a specifically created performa.

SPSS Version 25 helped one to analyze the data. For quantitative data like age, BMI, pain length, mean and standard deviation were computed. For qualitative variables like gender, side of impacted foot and outcome, frequency and percentage were computed. Two groups' outcomes were compared using the chi-square -test. P value under 0.05 was considered noteworthy.

RESULTS

Age range in this study was from 18 to 65 years with mean age of 42.29 ± 6.81 years. The mean age of patients in group A was 42.19 ± 7.15 years and in group B was 42.40 ± 6.54 years. Majority of the patients 58 (67.44%) were between 20-35 years of age as shown in Table I. Out of these 434 patients, 253 (58.29%) were male and 181 (41.71%) were females with ratio of 1.4:1. Mean size of stone was 6.69 ± 1.49 mm. Mean BMI in group A was 26.81 ± 9.33 kg/m^2 and in group B was 26.75 ± 8.56 kg/m^2.

In my study, conservative management showed treatment outcome as excellent in 57.60% patients, good in 24.42%, fair in 10.60% and poor in 7.37% patients. While 86.18% of patients receiving corticosteroid injection treatment for Planter Fasciitis had excellent outcome, 6.45% good outcome, 4.15% fair outcome and 3.23 had poor outcome as shown in Table III.

Table I

Age distribution for both groups (n=434).

Age (years)	Group A (n=217)		Group B (n=217)		Total (n=434)	
	No. of patients	%age	No. of patients	%age	No. of patients	%age
18-40	130	59.91	128	58.99	258	59.45
41-65	87	40.09	89	41.01	176	40.55

Figure 1

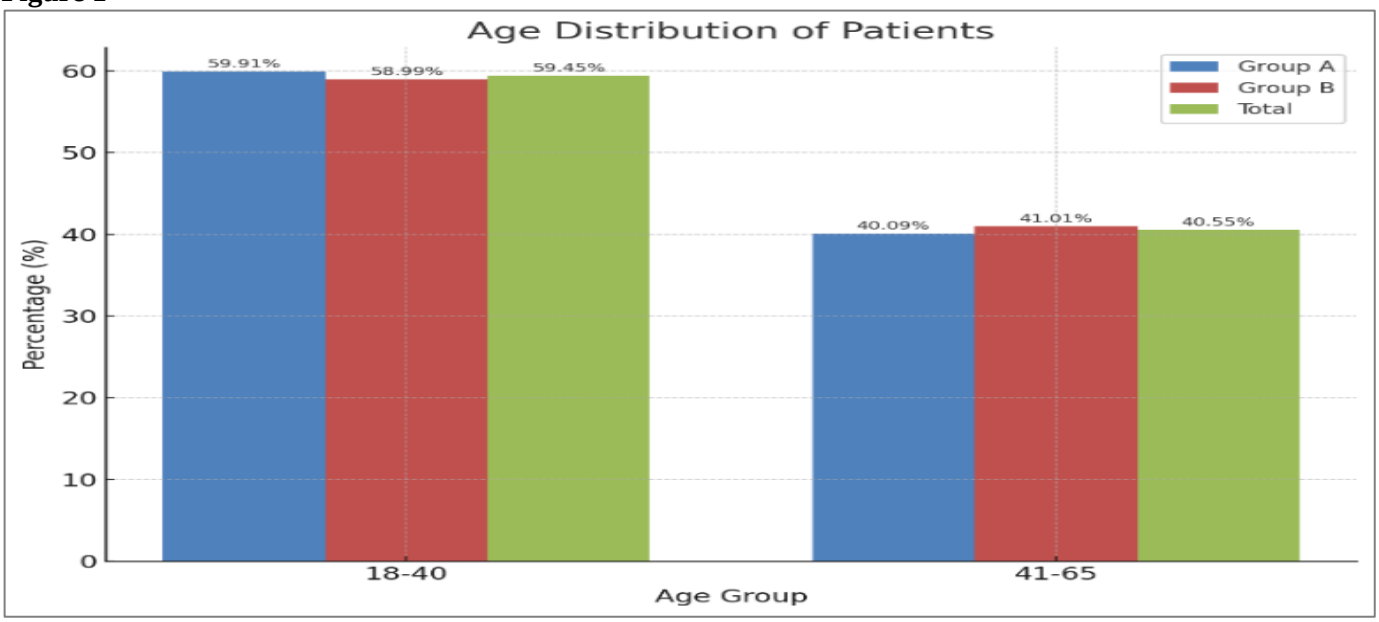
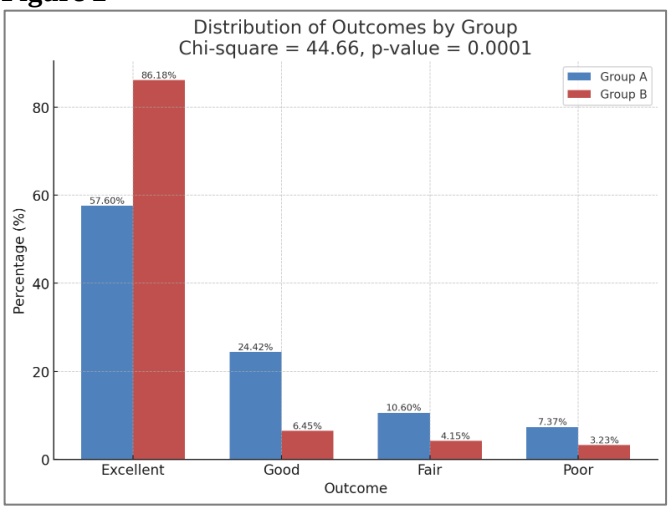


Table II

Comparison of functional outcome between both Groups (n=86).

		Group A (n=217)		Group B (n=217)		Chi square value	p-value
		Frequency	%age	Frequency	%age		
Outcome	Excellent	125	57.60	187	86.18	44.66	0.0001
	Good	53	24.42	14	6.45		
	Fair	23	10.60	09	4.15		
	Poor	16	7.37	07	3.23		

Figure 2



DISCUSSION

Most often occurring cause of heel discomfort for which patients visit the hospital is plantar fasciitis.[10] is There are several modes of treatment accessible in conservative and surgical spheres. A self-limiting disorder, plantar fascitis responds to conservative treatment in roughly 90% of patients within 9 to 12 months from the start of symptoms and surgery should only be advised when this period had passed.[11] We employ combinations of treatment even if it is yet unknown which treatment choices is better in our practice. In my study, conservative management showed treatment outcome as excellent in 57.60% patients, good in 24.42%, fair in 10.60% and poor in 7.37% patients. While 86.18% of patients receiving corticosteroid injection treatment for Planter Fasciitis had excellent outcome, 6.45% good outcome, 4.15% fair outcome and 3.23 had poor outcome. Narula R. compared thenon-invasive conservative treatment with local steroid injection in the Management of Planter Fasciitis reported conservative management showed treatment outcome as excellent in 75% patients and good in 20% with overall satisfactory outcome in 95% patient.[8] While another study found that 90% of patients receiving corticosteroid injection treatment for Planter Fasciitis had generally good results.[9]

Using foot and ankle ability measure (FAAM) and pain by visual analog score (VAS), Celik et al[12] assessed patients functional score. According to the results, individuals with planter fasciitis demonstrate temporary alleviation with a local steroid injection group; on the other hand, manual stretching group shows slow but consistent drop in pain and functional improvement in one year follow-up. Based on the 16weeks follow-up data, our study shows that the results of steroid injection are similar showing that although stretching exercise gives long term gains as compared to steroid injection group, short term results are better suggested by both. After one month of steroid injection, Genc H et al[13] saw a notable drop in the VAS score in the group suffering

from plantar fasciitis. Six months following injection, the VAS score dropped still. For this reason, they came to the conclusion that, given their long-term effects, steroid injections could be employed in treatment for plantar fasciitis.

Unlike our research, we discovered that the effectiveness of a steroid injection dropped at sixteen weeks as compared to two weeks and eight weeks follow-up.

Benedict et al.[14] conducted a study showing stretching is more successful than other techniques. According to their findings, 77% of all patients did not have any difficulty using stretching techniques and 92% of them were satisfied. The writers came to the conclusion that, in comparison to other therapies, stretching of plantar fascia is less expensive and more successful. This is like our research.

Considering that frequent corticosteroid injection is blamed for complications including weakness and occasionally rupture of plantar fascia and fat pad atrophy, Siavashi B and colleagues[15] concluded that there is no difference between corticosteroid injection and stretching exercises in plantar fascitis in long-term follow-up. Stretching exercises seem to be more sensible and safe approaches for long term management of this disorder. Although the improvement was not particularly superior than the corticosteroid injection group, Ryan et al[16] found that participants who daily stretched over a 12-weeks period had notable changes over the six weeks and 12-weeks follow-up compared to baseline.

Within the corticosteroid injection groups, two placebo-controlled RCTs[17,18] found notably lower pain scores than in the placebo groups. In the corticosteroid injection arm compared to the placebo arm, the trial by Ball et al. revealed up to 47.2% and 52.8% pain reduction at six and 12 weeks, respective. At the four-, eight- and 12-week follow-up, McMillan et al. found that foot pain scores in the corticosteroid injection arm improved relative to the placebo arm. But with a 22.9% pain reduction in the intervention group, the variation in foot pain levels was only noteworthy at the four-week mark.

Three investigations revealed notable pain reduction in the corticosteroid injection group as compared to the other forms of intervention, including use of insole, autologous blood injection, and local anaesthetic injection with or without tibial nerve block.One study[19] showed that the botulinum toxin A injection group—intervention group—had superior outcomes than the corticosteroid injection group. When compared to baseline, the next four studies showed notable pain reduction in both intervention groups at follow-up intervals; there were no appreciable variations between the intervention groups.[20-23]

Our study has a brief follow-up period as constraints. There is stratification and somewhat basic outcomes measurements. To assess the long-term advantages, the patients may have been followed for more time. Thus, given enough time, more fresh research is required.

CONCLUSION

This study found that treating plantar fasciitis with local corticosteroid injection results in a better functional outcome than with conservative management. Therefore, we advise that the main approach for treating plantar fasciitis should be local corticosteroid injection; these particular individuals can be mobilized and returned to their regular life right away to minimize pain.

REFERENCES

1. Atzmon, R., Eilig, D., Dubin, J., Vidra, M., Marom, O., Tavdi, A., Drexler, M., & Palmanovich, E. (2022). Comparison of platelet-rich plasma treatment and partial plantar Fasciotomy surgery in patients with chronic plantar Fasciitis: A randomized, prospective study. *Journal of Clinical Medicine*, *11*(23), 6986. https://doi.org/10.3390/jcm11236986
2. Goel, N., Talwar, J., Agarwal, S., Krishna, L. G., & Rustagi, A. (2021). A comparative study between intralesional platelet rich plasma injection and extracorporeal shockwave therapy for the treatment of plantar fasciitis. *Journal of Arthroscopy and Joint Surgery*, *8*(3), 246-252. https://doi.org/10.1016/j.jajs.2021.04.003
3. Chen, C., Lee, M., Lin, C., Chang, C., & Lin, C. (2018). Comparative efficacy of corticosteroid injection and non-invasive treatments for plantar fasciitis: A systematic review and meta-analysis. *Scientific Reports*, *8*(1). https://doi.org/10.1038/s41598-018-22402-w
4. Kumar, S., Verma, D., Dhammi, I., Kumar, R., Kapoor, R., & Mittal, A. (2019). Role of platelet-rich plasma versus corticosteroid injection in the treatment of plantar fasciitis: A comparative study. *Journal of Orthopaedic Diseases and Traumatology*, *2*(2), 26-30. https://doi.org/10.4103/jodp.jodp_9_19
5. Hohmann, E., Tetsworth, K., & Glatt, V. (2020). Platelet-rich plasma versus corticosteroids for the treatment of plantar Fasciitis: A systematic review and meta-analysis. *The American Journal of Sports Medicine*, *49*(5), 1381-1393. https://doi.org/10.1177/0363546520937293
6. Nishanth, S., Vikram, S., & Siddharth, S. (2018). A comparative prospective study of platelet rich

plasma vs. corticosteroid injection in plantar Fasciitis not responding to 6 weeks of conservative treatment. *International Journal of Foot and Ankle*, *2*(2). https://doi.org/10.23937/ijfa-2017/1710008

7. Singh, M., Ummat, A., Sharma, C., Thivari, P. S., & Kochhar, S. (2019). Efficacy of platelet-rich plasma vs corticosteroid injection in chronic plantar Fasciitis: A comparative study. *Journal of Foot and Ankle Surgery (Asia Pacific)*, *6*(1), 2-6. https://doi.org/10.5005/jp-journals-10040-1097
8. Narula, R. (2014). Comparative study of: Non-invasive conservative treatments with local steroid injection in the management of planter Fasciitis. *JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH*. https://doi.org/10.7860/jcdr/2014/10354.4895
9. Verma, P. K. (2019). Role of conservative treatment,steroid injection and platelet rich plasma in plantar fascitiscomparative study. *International Journal of Orthopaedics Traumatology & Surgical Sciences*, *5*(1), 151-156. https://doi.org/10.47618/ijotss/v5i1.30
10. Cutts, S., Obi, N., Pasapula, C., & Chan, W. (2012). Plantar fasciitis. *The Annals of The Royal College of Surgeons of England*, *94*(8), 539-542. https://doi.org/10.1308/003588412x13171221592456
11. SCHEPSIS, A. A., LEACH, R. E., & GOUYCA, J. (1991). Plantar Fasciitis. *Clinical Orthopaedics and Related Research*, *266*, 185-196. https://doi.org/10.1097/00003086-199105000-00029
12. Celik, D., Kuş, G., & Sırma, S. Ö. (2015). Joint mobilization and stretching exercise vs steroid injection in the treatment of plantar Fasciitis. *Foot & Ankle International*, *37*(2), 150-156. https://doi.org/10.1177/1071100715607619
13. Genc, H., Saracoglu, M., Nacır, B., Erdem, H. R., & Kacar, M. (2005). Long-term ultrasonographic follow-up of plantar fasciitis patients treated with steroid injection. *Joint Bone Spine*, *72*(1), 61-65. https://doi.org/10.1016/j.jbspin.2004.03.006
14. Digiovanni, B. F., Nawoczenski, D. A., Malay, D. P., Graci, P. A., Williams, T. T., Wilding, G. E., & Baumhauer, J. F. (2006). Plantar fascia-specific stretching exercise improves outcomes in patients with chronic plantar Fasciitis. *The Journal of Bone & Joint Surgery*, *88*(8), 1775-1781. https://doi.org/10.2106/jbjs.e.01281
15. Siavashi, B., Naghshbandi, S. F., & Golbakhsh, M. R. (2012). Comparison of stretching exercises and corticosteroid injection in pain reduction of patients with plantar Fasciitis. *Orthopedic & Muscular System*, *01*(01). https://doi.org/10.4172/2161-0533.1000106
16. Ryan, M., Hartwell, J., Fraser, S., Newsham-West, R., & Taunton, J. (2014). Comparison of a physiotherapy program versus Dexamethasone injections for plantar Fasciopathy in prolonged standing workers. *Clinical Journal of Sport Medicine*, *24*(3), 211-217. https://doi.org/10.1097/jsm.0000000000000021
17. Ball, E. M., McKeeman, H. M., Patterson, C., Burns, J., Yau, W. H., Moore, O. A., Benson, C., Foo, J., Wright, G. D., & Taggart, A. J. (2013). Steroid injection for inferior heel pain: A randomised controlled trial. *Annals of the Rheumatic Diseases*, *72*(6), 996-1002. https://doi.org/10.1136/annrheumdis-2012-201508
18. McMillan, A. M., Landorf, K. B., Gilheany, M. F., Bird, A. R., Morrow, A. D., & Menz, H. B. (2012). Ultrasound guided corticosteroid injection for plantar fasciitis: Randomised controlled trial. *BMJ*, *344*(may22 1), e3260-e3260. https://doi.org/10.1136/bmj.e3260
19. Elizondo-Rodriguez, J., Araujo-Lopez, Y., Moreno-Gonzalez, J. A., Cardenas-Estrada, E., Mendoza-Lemus, O., & Acosta-Olivo, C. (2013). A comparison of botulinum toxin a and Intralesional steroids for the treatment of plantar Fasciitis. *Foot & Ankle International*, *34*(1), 8-14. https://doi.org/10.1177/1071100712460215
20. Guner, S., Onder, H., Guner, S. I., Ceylan, M. F., Gökalp, M. A., & Keskin, S. (2013). Effectiveness of local Tenoxicam versus corticosteroid injection for plantar Fasciitis treatment. *Orthopedics*, *36*(10). https://doi.org/10.3928/01477447-20130920-27
21. Ryan, M., Hartwell, J., Fraser, S., Newsham-West, R., & Taunton, J. (2014). Comparison of a physiotherapy program versus Dexamethasone injections for plantar Fasciopathy in prolonged standing workers. *Clinical Journal of Sport Medicine*, *24*(3), 211-217. https://doi.org/10.1097/jsm.0000000000000021
22. Díaz-Llopis, I. V., Rodríguez-Ruíz, C. M., Mulet-Perry, S., Mondéjar-Gómez, F. J., Climent-Barberá, J. M., & Cholbi-LLobel, F. (2011). Randomized controlled study of the efficacy of the injection of botulinum toxin type a versus corticosteroids in chronic plantar fasciitis: Results at one and six months. *Clinical Rehabilitation*, *26*(7), 594-606. https://doi.org/10.1177/0269215511426159
23. Kiter, E., Çelikbaş, E., Akkaya, S., Demirkan, F., & Kiliç, B. A. (2006). Comparison of injection modalities in the treatment of plantar heel

pain. *Journal of the American Podiatric Medical Association*, *96*(4), 293-296. https://doi.org/10.7547/0960293