



ULTRASONOGRAPHIC EVALUATION OF PLANTAR FASCIITIS: A PROSPECTIVE STUDY

Radio-Diagnosis

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ABSTRACT

Background: Plantar fasciitis (PF) is a common cause of chronic heel pain, often affecting middle-aged women and male runners. Sonography, due to its high spatial resolution and non-invasive nature, is an excellent modality for diagnosing PF. **Aim:** To evaluate the role of ultrasonography in diagnosing plantar fasciitis in comparison to MRI in patients with chronic heel pain. **Methods:** This prospective study (2022–2023) included 100 heels from asymptomatic volunteers (control group) and 100 heels from 88 symptomatic patients (study group). All underwent ultrasonography with a high-frequency linear probe, measuring plantar fascia thickness within 1 cm of the calcaneal attachment. **Results:** In the study group, plantar fascia thickness exceeded 4 mm in all cases, with indistinct margins and hypoechogenicity. Controls showed thickness between 2–4 mm with sharp outlines. Post local steroid injection, 74 patients showed resolution with fascia thickness reducing to <4 mm. **Conclusion:** Ultrasonography reliably diagnoses PF using criteria of >4 mm thickness, hypoechogenicity, and indistinct margins. It is low-cost, widely available, and has high patient acceptance¹.

KEYWORDS

Plantar fasciitis, ultrasonography, heel pain, fascia thickness, musculoskeletal imaging¹.

INTRODUCTION

Plantar fasciitis is the most frequent cause of heel pain, typically affecting middle-aged women and male runners. The plantar fascia is a strong connective tissue extending from the os calcis to the heads of the metatarsals, consisting of medial, central, and lateral bundles. The central bundle is most often affected. Micro-tears near the calcaneal origin lead to plantar fasciosis, which becomes symptomatic as plantar fasciitis. The principal stress occurs during walking, and plantar fascia is usually located within 1 cm of the calcaneal attachment. Sonography is a preferred modality for evaluation due to its:

- Non-invasive and dynamic capability.
- High spatial resolution for superficial structures.
- Low cost and easy accessibility².

Objective

To assess the role of ultrasonography in the diagnosis of plantar fasciitis in comparison to MRI in patients with chronic heel pain.

MATERIALS AND METHODS

Study Design: Prospective observational study

Participants:

- Control group: 100 heels from 100 asymptomatic volunteers (50 male, 50 female, aged 40–65 years).
- Study group: 100 heels from 88 symptomatic patients (84 females, 4 males, age ≥40 years).

Data Recorded: Age, sex, BMI.

Ultrasonography Technique:

- Equipment: High-frequency linear probes (17–5 MHz and 12–5 MHz).
- Patient position: Prone, feet over table edge, ankle dorsiflexed to 90°.
- Beam kept perpendicular to avoid anisotropy.
- Measurement: Thickness measured within 1 cm anterior to calcaneal attachment¹.

RESULTS

Control Group: Plantar fascia thickness 2–4 mm, sharp margins, homogeneous echotexture.

Study Group: Thickness >4 mm in all cases, indistinct margins, hypoechoic echotexture.

No fluid collection, intratendinous calcification, or rupture detected. Post-treatment follow-up:

- 74 patients (complete/significant improvement) → thickness reduced to <4 mm.
- 12 patients (no improvement) → thickness unchanged.
- 2 patients (no relief but thickness reduced <4 mm)¹.

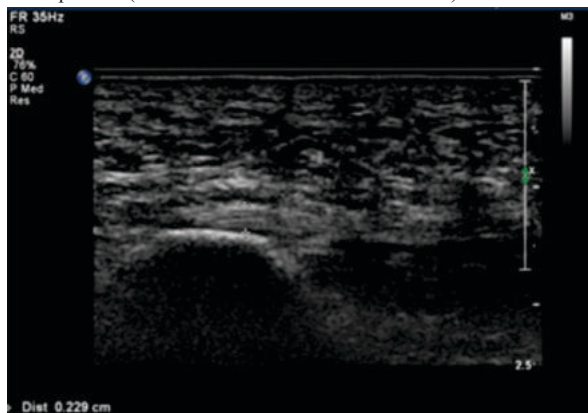


Figure 1: Ultrasound Of Normal Plantar Fascia.

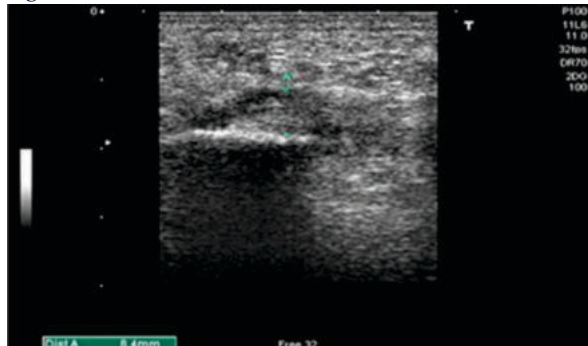


Figure 2: Ultrasound Of Plantar Fasciitis Showing Hypoechoic, Thickened Fascia.

DISCUSSION

Our findings align with previous literature where ultrasonographic criteria (>4 mm thickness, indistinct margins, hypoechogenicity) correlated strongly with clinical PF. The absence of calcifications in

our cohort may reflect chronic but non-calcific disease stages. Sonography provides dynamic, real-time assessment without radiation exposure, making it preferable for follow-up after steroid injections¹.

CONCLUSION

Ultrasonography is a reliable, cost-effective, and non-invasive tool for diagnosing plantar fasciitis, using criteria of >4 mm thickness, indistinct margins, and hypoechogenicity. Its portability and patient-friendly nature make it superior for screening and follow-up¹.

REFERENCES

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