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Corresponding author:
Miguel Paiva neto

miguelpaivan@hotmail.com

Author Affiliation:
Hospital Dom Helder Câmara –
Residência Médica em Ortopedia e
Traumatologia, Cabo de Santo
Agostinho/PE, Brasil.

**Comparative efficacy of corticosteroid and
hyaluronic acid injections in the treatment of chronic
plantar fasciitis: a systematic review**

Paiva Neto, M; Lira, BHP.

ADMINISTRATIVE INFORMATION

Support - Não houve financiamento externo. A pesquisa foi realizada com recursos próprios.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202590063

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 16 September 2025 and was last updated on 16 September 2025.

INTRODUCTION

Review question / Objective In patients with chronic plantar fasciitis (Population), how effective is corticosteroid infiltration compared to hyaluronic acid infiltration (Intervention vs. Comparator) in improving pain, function, and clinical safety (Outcomes)?

Rationale Plantar fasciitis is one of the main causes of heel pain in adults, responsible for up to 15% of consultations for foot pain in orthopedic clinics. Most cases respond well to conservative treatment, but refractory cases may require infiltrative therapy. Corticosteroid infiltration is widely used due to its rapid effect and low cost, but it carries risks such as plantar fat pad atrophy and fascia rupture when repeated. Hyaluronic acid, traditionally used in osteoarthritis, has emerged as a potential alternative due to its mechanical and anti-inflammatory properties, offering more sustained results and fewer adverse events. A

systematic review is necessary to compare the efficacy and safety of these two options and guide clinical decision-making in chronic plantar fasciitis.

Condition being studied Chronic plantar fasciitis, a degenerative and inflammatory condition of the plantar fascia that leads to heel pain, functional limitation, and reduced quality of life. It is prevalent in adults between 40–60 years old, especially in women, obese individuals, and people exposed to mechanical overload. In refractory cases, local infiltrations with corticosteroids or hyaluronic acid are considered therapeutic alternatives.

METHODS

Search strategy The search was conducted in the following electronic databases: PubMed, Biblioteca Virtual em Saúde (BVS), Scopus, and SciELO.

The search strategy used controlled vocabulary (MeSH and DeCS) combined with free-text terms and Boolean operators. The main keywords included: “fasciitis, plantar” AND “infiltration” AND “corticosteroid” AND “hyaluronic acid”.

The review followed the PRISMA 2020 guidelines and used the PCC framework (Population, Concept, Context) to guide the search. The time frame was from January 2020 to December 2024, with inclusion of articles in English, Portuguese, and Spanish. Reference lists of included studies were also screened to identify additional eligible publications.

Participant or population Adults diagnosed with chronic plantar fasciitis, with persistent heel pain and functional limitation, refractory to conservative management. No restrictions on sex, race, or geographic location were applied. The age group most represented in the studies was between 40 and 60 years.

Intervention Local infiltration with hyaluronic acid (single or multiple injections), with or without ultrasound guidance, used as a treatment for chronic plantar fasciitis.

Comparator Local infiltration with corticosteroid (single or multiple injections), with or without ultrasound guidance, used as a treatment for chronic plantar fasciitis.

Study designs to be included Randomized controlled trials (RCTs), prospective and retrospective cohort studies, and case-control studies that directly compare corticosteroid and hyaluronic acid infiltration in chronic plantar fasciitis.

Eligibility criteria Inclusion criteria:

- Studies published between January 2020 and December 2024;
- Full-text articles available in English, Portuguese, or Spanish;
- Studies including adult patients with chronic plantar fasciitis;
- Studies evaluating corticosteroid and/or hyaluronic acid infiltration, with clinical outcomes of pain and/or function.

Exclusion criteria:

- Narrative reviews, systematic reviews, meta-analyses, editorials, letters, and case reports;
- Duplicate publications;
- Studies without accessible abstracts or full texts;
- Studies not directly comparing corticosteroid and hyaluronic acid infiltrations.

Information sources The information sources included four electronic databases: PubMed, Biblioteca Virtual em Saúde (BVS), Scopus, and SciELO. Searches were limited to articles published between January 2020 and December 2024. Reference lists of included studies were manually screened to identify additional eligible records. No contact with study authors or trial registries was necessary, as sufficient data were obtained from published articles.

Main outcome(s)

Primary outcome:

- Reduction in pain intensity measured by the Visual Analog Scale (VAS).

Secondary outcomes:

- Functional improvement assessed by clinical scales such as the American Orthopaedic Foot and Ankle Society (AOFAS) score;
- Safety profile of the interventions, including reporting of adverse events such as plantar fascia rupture, fat pad atrophy, or injection site complications.

Additional outcome(s) -

- Duration of pain relief (short-term vs. long-term follow-up);
- Patient satisfaction with the intervention;
- Need for repeated infiltrations or additional treatments;
- Cost-effectiveness when reported.

Data management All retrieved references were exported into a reference manager (Mendeley) to remove duplicates. Two independent reviewers screened titles and abstracts according to eligibility criteria. Full-text articles were then assessed for final inclusion. Disagreements were resolved by consensus or consultation with a third reviewer. Data from included studies were extracted into standardized tables, recording study design, sample size, intervention protocols, outcomes, and results.

Quality assessment / Risk of bias analysis The methodological quality and risk of bias of the included randomized clinical trials were assessed using the Cochrane Risk of Bias Tool (RoB 2). For observational studies, the Newcastle-Ottawa Scale (NOS) was applied. Each study was classified as low, moderate, or high risk of bias based on domains such as randomization, allocation concealment, blinding, completeness of data, and selective reporting.

Strategy of data synthesis Data from included studies were synthesized narratively and presented

in structured tables, highlighting sample characteristics, intervention protocols, follow-up, and outcomes. Due to heterogeneity in study design, infiltration protocols, and outcome measures, meta-analysis was not feasible. Instead, a qualitative synthesis comparing corticosteroid and hyaluronic acid infiltration was performed, with emphasis on pain reduction (VAS), functional improvement, and adverse events.

Subgroup analysis If sufficient studies are available, subgroup analyses will be performed according to:

- Type of corticosteroid used (e.g., triamcinolone, betamethasone, dexamethasone);
- Guidance method (ultrasound-guided vs. palpation-guided infiltration);
- Number of injections (single vs. multiple);
- Duration of follow-up (short-term ≤ 3 months vs. long-term > 3 months).

Sensitivity analysis Sensitivity analysis will be conducted by excluding studies with high risk of bias or low methodological quality to assess the robustness and consistency of the findings.

Language restriction English, Portuguese, and Spanish.

Country(ies) involved Brazil.

Other relevant information This systematic review is part of a residency thesis and will also be submitted as part of the requirements for the TEOT 2026 examination in Orthopedics and Traumatology (SBOT – Sociedade Brasileira de Ortopedia e Traumatologia).

Keywords Plantar fasciitis; Corticosteroid infiltration; Hyaluronic acid; Heel pain; Orthopedics; Foot and ankle.

Dissemination plans The results of this systematic review will be disseminated through submission of the final manuscript to a peer-reviewed scientific journal in orthopedics and traumatology. Additionally, the review will be presented as part of a residency thesis project and submitted to the TEOT 2026 examination (Sociedade Brasileira de Ortopedia e Traumatologia).

Contributions of each author

Author 1 - Miguel Paiva Neto - Author 1 drafted the manuscript, conducted the literature search, data extraction, and prepared the systematic review.
Email: miguelpaivan@hotmail.com

Author 2 - Bruno Lira - Author 2 supervised the project, provided methodological guidance, and critically revised the manuscript.
Email: brunohplira@hotmail.com