INPLASY

INPLASY202490008

doi: 10.37766/inplasy2024.9.0008

Received: 2 September 2024

Published: 3 September 2024

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Comparison between the use of the dynamic hip screw (DHS) and the proximal femoral nail (PFN) in trochanteric fractures: a scoping review

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ADMINISTRATIVE INFORMATION

Support - No financial support.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202490008

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 3 September 2024 and was last updated on 3 September 2024.

INTRODUCTION

Review question / Objective What are the advantages and disadvantages of using the dynamic hip screw and the proximal femoral stem in the surgical correction of trochanteric fractures?

Background Proximal femoral fractures represent a prevalent orthopedic condition, often associated with falls in the elderly and high-energy trauma in younger individuals. This study reviews the surgical techniques most commonly used to treat these fractures, focusing on the proximal dynamic screw (DHS) and the proximal femoral stem (PFN).

Rationale The rationale for a study titled "Comparison between the use of the dynamic hip screw (DHS) and the proximal femoral nail (PFN) in trochanteric fractures: a scoping review" lies in the need to address the ongoing debate over the optimal fixation method for these common and serious fractures, particularly in elderly patients. Given the variations in outcomes such as healing time, complication rates, and functional recovery between DHS and PFN, a scoping review is essential to comprehensively map the existing evidence, identify gaps in knowledge, and provide guidance for clinical practice. This review aims to inform orthopedic surgeons about the most effective treatment options, ultimately improving patient outcomes and highlighting areas for future research.

METHODS

Strategy of data synthesis Quantitative data will be summarized with statistical measures (e.g., means, risk ratios) and potentially analyzed through meta-analysis using fixed-effect or

random-effects models, while qualitative data will be synthesized using thematic or narrative analysis. Heterogeneity across studies will be assessed both statistically and qualitatively, with subgroup and sensitivity analyses conducted as needed. Risk of bias will be evaluated within and across studies, and results will be presented through summary tables, figures, and a narrative interpretation to ensure comprehensive and transparent reporting.

Eligibility criteria The eligibility criteria would include studies that focus on patients with trochanteric fractures treated with either DHS or PFN. Eligible studies would encompass various study designs, such as randomized controlled trials, cohort studies, and case series. The criteria would also include studies reporting on outcomes like healing time, complication rates, functional recovery, and cost-effectiveness. Additionally, studies published in peer-reviewed journals, regardless of language or publication date, would be considered, provided they offer relevant data on the comparison of these two fixation methods.

Source of evidence screening and selection The source selection process will involve several stages. Initially, two independent reviewers will screen titles and abstracts of studies identified through database searches to exclude irrelevant studies. Full-text articles of potentially eligible studies will then be retrieved and assessed for inclusion based on predefined eligibility criteria. Any disagreements between reviewers at any stage will be resolved through discussion and consensus; if consensus cannot be reached, a third reviewer will be consulted to make the final decision. This systematic approach ensures a comprehensive and unbiased selection of sources for the review.

Data management Data management will involve a structured approach to ensure accuracy and consistency. All identified studies will be imported into a reference management software like EndNote or Zotero to organize and remove duplicates. Data extraction forms will be developed to collect relevant information from each included study, such as study design, population characteristics, interventions, outcomes, and key findings. This extracted data will be stored in a secure, cloud-based database (e.g., Excel or REDCap) accessible to all reviewers. Regular backups will be performed to prevent data loss. Quality checks will be conducted periodically to ensure the accuracy of the data entered. Any discrepancies identified during data extraction will be discussed and resolved among the reviewers, with the final data being reviewed by the lead investigator before analysis.

Reporting results / Analysis of the evidence The reporting of results and analysis of the evidence will be comprehensive and transparent. The findings will be presented in a structured format, beginning with a PRISMA flow diagram to illustrate the study selection process, including the number of studies identified, screened, and ultimately included in the review. A detailed summary of the characteristics of the included studies, such as study design, population, intervention details, and outcomes, will be provided in tables and figures for easy comparison. The analysis of the evidence will involve both quantitative and qualitative approaches. For quantitative data, where applicable, meta-analysis techniques will be used to pool results, and the outcomes will be presented as effect sizes with 95% confidence intervals. Heterogeneity among studies will be assessed using statistical measures, and subgroup analyses will be performed if sufficient data is available. Qualitative data and any narrative elements will be synthesized thematically, highlighting common patterns, themes, and variations across studies. The results will be critically analyzed in the context of existing literature, discussing the strengths and limitations of the evidence, the clinical implications of the findings, and identifying gaps for future research. A transparent discussion of potential biases and the overall quality of the evidence will also be included to provide a balanced interpretation of the review's outcomes.

Presentation of the results The quantitative findings will be presented in the form of forest plots if a meta-analysis is conducted, displaying effect sizes with corresponding confidence intervals for direct comparisons between DHS and PFN. For qualitative data, thematic summaries will be provided, highlighting common trends and significant insights across the studies. Additionally, the results will include narrative descriptions of the main findings, addressing the research objectives, and discussing the implications of the evidence for clinical practice. We will also include visual aids, such as graphs or charts, to illustrate important points or trends observed in the data. Finally, a critical analysis section will interpret the results within the broader context of existing research, noting any limitations or gaps that future studies should address.

Language restriction Only texts in english were selected.

Country(ies) involved Brazil.

Other relevant information Understanding the characteristics and indications of each surgical technique is essential so that orthopedists can select the most appropriate method for each specific case of proximal femoral fracture. The correct choice between the proximal dynamic screw and the proximal femoral stem allows treatment to be customized according to the type and complexity of the fracture, optimizing clinical results, reducing the risk of complications and promoting a faster and more efficient recovery for the patient.

Keywords Orthopaedics; Traumatology; Fractures; Femur; Dynamic Screw; Proximal Femoral Stem.

Dissemination plans The dissemination plans include several key strategies. The primary results will be published in a peer-reviewed journal specializing in orthopedics or trauma surgery to reach an academic and clinical audience. A summary of the findings will also be presented at relevant conferences and symposiums to engage with researchers and practitioners in the field. Additionally, a plain-language summary of the results will be created for dissemination to healthcare professionals and stakeholders through institutional websites, social media platforms, and professional networks. This multi-faceted approach aims to ensure that the findings are accessible to a broad audience and can inform both clinical practice and future research directions.

Contributions of each author

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