INPLASY PROTOCOL

Corresponding author:
Chen Yue

872787975@qq.com

Author Affiliation:
Department of Orthopedic Surgery, Luoyang Orthopedic Hospital of Henan Province, Orthopedic Hospital of Henan Province.

Review Stage at time of this submission: Preliminary searches.

Conflicts of interest:
None declared.

Proximal femoral nail anti-rotation in the treatment of intertrochanteric fractures: A protocol for systematic review and meta-analysis

Chen, J[1]; He, P[2]; Liu, Q[3]; Liu, N[4]; Liu, Y[5]; Yue, C[6].

Review question / Objective: The aim of this protocol is to evaluate the efficacy and the safety of PFNA for intertrochanteric fractures based on current studies.

Condition being studied: The average age of the onset of intertrochanteric fractures occurs in late life, and with the growth of developed countries and the increase in the average age of death, the prevalence of intertrochanteric fractures is likely to continue to increase. The general outcome of patients with intertrochanteric fractures is often poor, as conservative treatment is ineffective. Presently, there is a consensus on surgical treatment. In recent years, proximal femoral nail anti-rotation (PFNA) has become the accepted surgical treatment because it is less invasive. Additionally, it is localized within the medulla and it has biomechanical advantages. This surgery can preserve the bone of the femoral head-neck, increase the contact area between the incision and the surrounding area, improve the fixation effect, and reduce the occurrence of hip inversion deformities. Its shorter operation time can eliminate the instability of the proximal femur after the removal of the internal fixation and facilitate fracture healing. It is suitable for all types of intertrochanteric fractures (A1, A2, A3 subtypes) and high-grade subtrochanteric fractures. However, there is no relevant systematic review in clinical practice. The aim of this protocol is to evaluate the efficacy and the safety of PFNA for intertrochanteric fractures based on current studies.

INTRODUCTION

Review question / Objective: The aim of this protocol is to evaluate the efficacy and the safety of PFNA for intertrochanteric fractures based on current studies.

Condition being studied: The average age of the onset of intertrochanteric fractures occurs in late life, and with the growth of developed countries and the increase in the average age of death, the prevalence of intertrochanteric fractures is likely to continue to increase. The general outcome of patients with intertrochanteric fractures is often poor, as conservative treatment is ineffective. Presently, there is a consensus on surgical treatment. In recent years, proximal femoral nail anti-rotation (PFNA) has become the accepted surgical treatment because it is less invasive. Additionally, it is localized within the medulla and it has biomechanical advantages. This surgery can preserve the bone of the femoral head-neck, increase the contact area between the incision and the surrounding area, improve the fixation effect, and reduce the occurrence of hip inversion deformities. Its shorter operation time can eliminate the instability of the proximal femur after the removal of the internal fixation and facilitate fracture healing. It is suitable for all types of intertrochanteric fractures (A1, A2, A3 subtypes) and high-grade subtrochanteric fractures. However, there is no relevant systematic review in clinical practice. The aim of this protocol is to evaluate the efficacy and the safety of PFNA for intertrochanteric fractures based on current studies.

METHODS

Participant or population: The trial included participants who met diagnostic criteria for intertrochanteric fractures. All eligible study participants, regardless of age, race, or sex, were included in the meta-analysis.

Intervention: Patients in the experimental group received surgical treatment with PFNA alone or in combination with other treatments.

Comparator: Patients in the control group received conventional treatments such as other surgical treatments, medications, and conservative traditional treatments.

Study designs to be included: The included studies will be randomized controlled trials(RCTs). There will be no restrictions on language or publication type. The included studies will be randomized controlled trials (RCTs). There will be no restrictions on language or publication type. Nonrandomized clinical studies, quasi-randomized controlled trials, cellular experiments, animal experiments, cluster randomized controlled trials, and case reports will be excluded.

Eligibility criteria: The included studies will be randomized controlled trials(RCTs). There will be no restrictions on language or publication type. Nonrandomized clinical studies, quasi-randomized controlled trials, cellular experiments, animal experiments, cluster randomized controlled trials, and case reports will be excluded.

Information sources: Electronic databases and other sources, including PubMed, Embase, the Cochrane Library, MEDLINE, the Chinese Biomedical Literature Database, China Science and Technology Journal Database, China National Knowledge Infrastructure, and Wanfang Data, will be searched using computer and manual methods. Different search methods will be adjusted according to different Chinese and English databases. We will briefly describe the search process for PubMed (Table 1).

Main outcome(s): The primary outcomes were time of initial inferior weight-bearing, operation time, and intraoperative blood loss.

Additional outcome(s): The secondary outcomes were hospitalization time, postoperative harris hip score(HHS), postoperative orthopedic complications, and postoperative medical complications.

Quality assessment / Risk of bias analysis: Two investigators will assess the risk of bias based on the Cochrane Handbook for systematic reviews 5.3 (https://www.cochrane.org/). Recommended assessment tools will independently assess methodological quality. In case of

disagreement, this will be resolved by discussion between the two reviewers or with the assistance of a third investigator.

Strategy of data synthesis: We will use RevMan 5.3, provided by the Cochrane Collaboration, for data analysis. We will use the chi-square test and I2 statistic to determine heterogeneity between studies. We consider heterogeneity between studies to be low when P ≥ 0.05 and I2 ≤ 50%. We will use fixed-effects models for the statistics. When P < 0.05 and I2 > 50%, we will consider the heterogeneity between studies to be high. We will use a random-effects model for the statistics. All data analysis will be conducted with 95% confidence intervals. Continuous data will be analyzed as the mean difference or the normalized mean difference, whereas dichotomous data will be examined as the relative risk. When P < 0.05, it indicates that the difference is statistically significant.

Subgroup analysis: If the heterogeneity between studies is high, we will conduct subgroup analysis at different age stages to explore whether age leads to heterogeneity.

Sensitivity analysis: In addition, a sensitivity analysis will be performed if necessary.

Country(ies) involved: China.

Keywords: proximal femoral nail anti-rotation, PFNA, intertrochanteric fractures, protocol, systematic review.

Contributions of each author:
Author 1 - Junming Chen - Conceptualization; Data curation; Formal analysis; Methodology; Writing–original draft; Writing–review & editing.
Email: 83439959@qq.com
Author 2 - Peilin He - Data curation; Formal analysis; Methodology; Writing–original draft; Writing–review & editing.
Email: 280363829@qq.com
Author 3 - Qianhua Liu - Data curation; Writing–review & editing.
Email: 312524150@qq.com
Author 4 - Ning Liu - Data curation; Writing–review & editing.
Email: chenjunming1017@163.com
Author 5 - Youwen Liu - Data curation; Writing–review & editing.
Email: liuyouwenguke@163.com
Author 6 - Chen Yue - Conceptualization; Data curation ;Formal analysis; Methodology; Project administration; Supervision; Writing–review & editing.
Email: 872787975@qq.com