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INPLASY

Plate versus Screw Fixation in Pediatric Femoral Neck Fractures

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Corresponding author:
Chang-Hao Lin

cych12763@gmail.com

Author Affiliation:
Ditmanson Medical Foundation Chia-Yi Christian Hospital.

Lin, CH; Yao, SH; Chen, CH.

ADMINISTRATIVE INFORMATION

Support - No.

Review Stage at time of this submission - Data analysis.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 1 August 2025 and was last updated on 1 August 2025.

INTRODUCTION

Review question / Objective Clarify differences in clinical outcomes and complication rates between fixation methods in pediatric femoral neck fractures.

Condition being studied Femoral neck fractures in children are different from those in adults. The common post-operative complications following pediatric femoral neck fractures including avascular necrosis, coxa vara, leg length discrepancy, and premature physeal closure. A limited number of studies have compared fixed-angle plate and screw fixation in the treatment of pediatric femoral neck fractures.

METHODS

Participant or population Patients <18 years with femoral neck fractures.

Intervention Screw or fixed-angle plate fixation.

Comparator Screw versus fixed-angle plate fixation.

Study designs to be included Comparative study, case-series study, randomized control trial.

Eligibility criteria We included studies that reported the clinical outcomes of screw or plate fixation following pediatric femoral neck fracture. Protocols, case reports, reviews, comments, letters, and conference articles were excluded from the analysis. The patients with pathological fracture were also excluded. Publication date and language were not limited.

Information sources PubMed, EMBASE, Cochrane Library, and Google Scholar.

Main outcome(s) Ratliff's criteria for functional assessment, postoperative complications were assessed (avascular necrosis of femur head, nonunion, Coxa vara, premature epiphyseal closure, leg length discrepancy).

Quality assessment / Risk of bias analysis Non-randomized studies tool (MINORS).

Strategy of data synthesis Pooling data from all included studies, the outcomes of interest were presented separately according to fixation methods. Meta-analysis was not performed due to the limited number of comparative studies.

Subgroup analysis Based on duration of follow-up, trauma mechanisms, fracture pattern, time from injury to surgery, and reduction method.

Sensitivity analysis As this study is not a formal meta-analysis, no quantitative heterogeneity testing (e.g., I^2 statistics) or meta-regression will be performed. Instead, sensitivity will be addressed qualitatively by assessing whether trends remain consistent across different subgroups. Due to the limited number of plate-treated cases and variability in study designs, no formal statistical sensitivity analysis will be conducted.

Country(ies) involved Taiwan.

Keywords Pediatric femoral neck fracture; plate; screw; avascular necrosis; complication.

Contributions of each author

Author 1 - Chang-Hao Lin.
Email: cych12763@gmail.com
Author 2 - Chun-Ho Chen.
Email: 07342@cych.org.tw
Author 3 - Shu-Hsin Yao.