








Comparison of subcostal and supracostal access in percutaneous nephrolithotomy of isolated upper pole stone: A prospective randomized clinical trial

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Abstract

Purpose: To assess and compare the safety and efficacy of supracostal and subcostal access percutaneous nephrolithotomy (PCNL) for isolated upper pole stones, we designed a prospective randomized clinical trial.

Materials and methods: A prospective randomized study of 76 patients (18–65 years old) was conducted from January 2024 to September 2024 on isolated upper calyceal renal stones at a medical teaching hospital. The eligible participants were divided into subcostal and supracostal access for PCNL groups (38 patients per group). The measured variables included age, sex, body mass index, stone size, comorbidities, procedure time, stone-free rate, hospital stay, and complications (modified Clavien Dindo grading).

Results: Of 76 patients, 47 were male and 29 female, with a mean age of 47 and 53 years for the subcostal and supracostal groups, respectively. The mean stone size was 27.38 and 28.89 mm in the two studied groups, respectively. The mean operation and fluoroscopy time, hospital stay, laboratory data, and complications had no significant difference between the two investigated groups.

Conclusion: Unlike the traditional view, supracostal access during PCNL is safe and effective and is not associated with a higher incidence of postoperative complications. However, both procedures were performed by skilled surgeons, so surgeons should have sufficient training and choose the proper method for each patient individually to minimize complications and obtain the best results. Further studies with a large number of cases are recommended.

Keywords

supracostal, subcostal, percutaneous nephrolithotomy, upper pole stones, surgical complications

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Introduction

Since Fernstrom and Johansson performed the first percutaneous nephrolithotomy (PCNL) in 1976, the endourological approach has taken an increased role in managing complex urinary calculi.^{1,2} Since its inception, significant advancements have been made in the techniques and devices employed during the procedure.^{3,4} There has also been a global rise in the incidence of renal stones among individuals of all ages, genders, and racial and ethnic differences.⁵

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Author contributions

MMH: concept, design, data acquisition, and manuscript editing. ZK: concept, design, statistical analysis, manuscript preparation, and editing. AE: concept, design, data acquisition, and manuscript editing. DI: concept, design, data acquisition, and manuscript editing. AH: concept, design, data acquisition, and manuscript editing. AS: data acquisition, statistical analysis, manuscript preparation, and editing. OK: data acquisition, data analysis, statistical analysis, manuscript preparation, and manuscript editing. FM: concept, design, statistical analysis, manuscript preparation, and editing. All authors have contributed to the information submitted for publication, and all authors have read and approved the manuscript.

Declaration of conflicting interests

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Data availability statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Supplemental material

Supplemental material for this article is available online.

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