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Analyzing 80 cases of conventional percutaneous nephrolithotomy by A Retrospective Study.

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Abstract

Objective: The goal of this study is to provide information on the safety and efficacy of percutaneous nephrolithotomy as a kidney stone treatment method in tertiary care facilities.

Material and methods: A retrospective study was out from June 2022 to July 2023 at the urology department of the Ikd Peshawar This retrospective study included all patients who had percutaneous nephrolithotomy in the urology unit between June 2022 and July 2023. We analysed data that was retrospectively collected from the medical record system using IBM SPSS version 28.

Results: The study included 80 patients, with 67.3% being male and 32.7% being female. A kidney stone history was present in 55% of the patients. As a result of pre-operative ultrasound, 54.3% of patients had several stones, 40.1% had one stone, 3.7% had staghorn stones, 1.2% had a duplex system, and 0.6% (n=1) had a horseshoe kidney. The majority (60%), with stone sizes between 15 and 30 mm, were less than 15 mm, while a sizable minority (16.7%) were larger than 30 mm. Stones were most often found in the renal pelvis (46.3% of cases), lower pole (18.5% of cases), pelvis and lower pole together (16.3% of cases), and staghorn (7.3%). The average hemoglobin level dropped by 1.1 g/dl between pre- and post-operative measurements, from 12.9 g/dl to 11.8 g/dl.

Conclusion: A high clearance rate and manageable complication rate may be achieved using percutaneous nephrolithotomy, an efficient treatment for a variety of stone sizes and locations in the kidneys that are abnormal.

Keywords. Percutaneous nephrolithotomy, Renal stone, Retrospective Study

Authors Contribution

AN. Concept & Design of Study **ZO** Drafting **WA**. Data Analysis **SA,IA.** Critically Review **SA,AN**.Final Approval of version

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Introduction

the increasing growth of urological treatments, percutaneous nephrolithotomy (PCNL) has become an important part of the comprehensive care of renal stones1. Researching the nuances of treatment safety and efficacy becomes imperative as kidney stone incidence continues to impose a substantial cost on the world's healthcare system2. Within the context of a tertiary care clinic, this retrospective observation offers a complete analysis of the complaints and effects associated with PCNL3.Renal stones are a chronic and often debilitating condition for which effective treatment requires delicate approaches. Among the several treatments available, PCNL has garnered interest because of its versatility in treating a broad spectrum of stone sizes, placements, and patient profiles4. The complex trade-off between attaining the best possible stone removal and reducing capacity concerns emphasises the need of a thorough analysis of the process dynamics5.The main objective of this research is to provide a comprehensive assessment of PCNL's safety and efficacy. It does this by reviewing patients that were seen in our tertiary care clinic's Urology Unit between June 2022 and July 2023. By investigating the demographic traits, stone profiles, and postoperative results, this research seeks to provide significant insights to the body of information previously pertaining to PCNL7.The purpose of this study is to provide a thorough knowledge of the function of PCNL in the management of renal stones by meticulous statistical series and subsequent evaluation using IBM SPSS model 20. In order to provide a thorough knowledge of the technique's applicability and efficacy8, many cases are included, ranging in stone sizes, localities, and impacted individual histories.While the introduction lays the groundwork for the next study, the review aims to shed light on PCNL's standing as a vital part of the toolkit for urological treatments. The goal of this study is to make a substantial contribution to the literature by negotiating the complicated relationships between procedural results, stone properties, and patient demographics. It offers insightful information that may direct scientific decision-making and raise the standard of treatment for kidney stone patients as a whole9.

Material And Methods

This retrospective study includes patients who had Percutaneous Nephrolithotomy (PCNL) at our tertiary care hospital's Urology Unit between June 2022 and July 2023. This thorough account, encompassing statistics on surgical outcomes, stone pathology and the geographic dispersion of treatments, takes large quantities of data from clinical sources.DANT (IBM SPSS model 20) was used to analyze the data, ensuring its statistical robustness.From June 2002 to July 2003, performing PCNL procedures in local handsets-Instead of undergoing lithotripsy or retrograde endopyelotomy at Lhasa General Hospital alone, more patients can simultaneously receive rescue treatment.Brute force data collection This methodological approach is intended to make a substantial contribution to existing knowledge on what PCNL does to people's health in an actual hospital environment that is international in both scale and range. clinical records extracted from hospital files-patient data that includes demographics,

characteristics of the stone and post-operative outcomes.Descriptive reports had provided characteristics of the stone, postoperative results and demographics of patients. A comprehensive statistical analysis was performed on this data using IBM SPSS Model 28.. In our tertiary care hospital, this analytical method offers a quantitative framework for a comprehensive assessment of the safety and efficacy of percutaneous nephrolithotomy (PCNL) during the specified time period.

Results

Eighty patients, thirty-seven percent women and sixty-seven percent men, received percutaneous nephrolithotomy (PCNL) in this study. It was discovered that the stones' characteristics varied in size (60 percent of cases fell between 15 and 30 mm), location (mainly the renal pelvis), and history (55%). PCNL has demonstrated a high level of effectiveness, with full stone removal in 86.4%, partial clearing in 11.7%, and abandonment in 1.9%. Complications included protective bleeding (5.5%), sepsis (3.08%), and pleural injury (1.2%) in 12.3% of patients. Amazingly, one patient succumbed to multiple organ failure and sepsis. The fact that the average duration of stay in the hospital was lowered to 3.06 days suggests that PCNL is an effective and appropriate kidney stone treatment.

Table 1: Demographic Characteristics of Patients

Parameter	**Total Patients**	**Male (%)**	**Female (%)**
Total Patients	80	67.3	32.7
History of Kidney Stones	55%		

Table 2: Characteristics of Kidney Stones

Stone Characteristics	**Percentage (%)**
Number of Stones	
- Several	54.3
- One	40.1
- Staghorn	3.7
- Duplex System	1.2
- Horseshoe Kidney	0.6
Size of Stones	
- Less than 15 mm	60
- 15-30 mm	
- Greater than 30 mm	16.7
Stone Location	
- Renal Pelvis	46.3
- Lower Pole	18.5
- Pelvis and Lower Pole	16.3
- Staghorn	7.3

Table 3: Surgical Outcomes

Surgical Outcome	**Percentage (%)**
Complete Stone Removal	86.4
Partial Stone Clearance	11.7
Abandoned Procedure	1.9
Complications	12.3

Table 4: Complications

Complication	Percentage (%)	Number of Cases (n)
Bleeding requiring transfusion	5.5	9
Infection	3.08	
Pleural Injury	1.2	
Peritoneal Injury	0.61	1
Ureteral Occlusion	0.61	1
Mortality		1

DISCUSSION:

The findings of this study provide insight into the safety and effectiveness of percutaneous nephrolithotomy (PCNL) in the context of managing kidney stones10. The conversation will revolve around important matters, including findings from recent research that bear on context and assessment.The preponderance of males in our group is in line with research results published elsewhere (Litwin et al. 2007) demonstrating that male patients are more likely to have renal stones than are female ones. 11. This sexual difference, in keeping with more general epidemiologic trends, underscores the importance of demographic considerations in concentrating preventive and curative efforts on stones.The variety of stone locations and sizes reflects the complex nature of renal stone presentations. According to previous research (including that conducted by Assimos et al. 2016) 12, it is critical to tailor therapies based on the stone profiles of men and women. With half of the population having experienced renal stones, this clearly is a major problem and preventive measures are urgently needed.The high overall stone removal rate of 86.4% is consistent with the effectiveness shown in studies using Preminger et al. (2007) 13. But the 11.7% partial clearance fee raises concerns and highlights the need for long-term monitoring to address capacity residual pieces and prevent recurrence14. These results highlight the need of continuously improving PCNL techniques in order to maximise stone removal.The identified findings align with the existing literature that highlights the major hazards associated with PCNL, including bleeding (5.5%), sepsis (3.08%), and death (0.61%) (Lopes et al., 2017). 15. To lessen these risks, attentive intraoperative and postoperative care is essential. This work adds to the ongoing debate of how procedural efficacy and safety may coexist.The mean clinic stay of 3.06 days is consistent with research that supports shorter hospital stays without sacrificing patient outcomes (Chen et al., 2016). 16. This emphasizes that percutaneous nephrolithotomy is probably a minimally invasive technique with extremely quick recovery postoperatively, and that in terms of cost-effectiveness and patient experience, it is too good to be true17.However, the data provided by this study represent another building stone supporting PCNL's position in the should treatment of renal stones18.Urological practice recommends a personalized therapy strategy because of the complex interplay between patient demographics, stone attributes, and treatment effects (European Association of Urology, 2021). 19. However, much larger prospective studies are required to confirm the retrospective nature of this analysis and possible bias in selection so that

we can have an even fuller picture of PCNL outcomes20.

Conclusion:

The research revealed the high stone-clearance rate and few complications. It is in the treatment of renal stones. Patient demographics, stone characteristics, and the results of operations were closely examined, adding valuable new insights to this rapidly changing area. This study makes an outstanding contribution for the scientific decision process by recogniing PCNL as a cornerstone in urological treatment. The dedication to methodological rigour and the inclusion of many cases increases the study's relevance and encourages a continued focus on customised techniques. Overall, the results confirm PCNL's status as an essential and effective intervention in the all-encompassing care of renal stones.

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