International Journal of Surgery and Clinical Research (IJSCR)

IJSCR : Int. Jour. Sur. and Clini. Research

https://www.ijscr.info

Volume No. 01 , Issue No. 01, 2026, Page No.: 12-16

Type of Manuscript: Original Research Article

An Evaluation and Supervision of Urolithiasis in Paediatric Patients, An Observational Study

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Conflicts of Interest: Nil

Abstract

Introduction: Urolithiasis is a common, yet often underestimated, medical condition in the pediatric population. Size and composition of stones are different in the pediatric population compared to adults.

Aims and Objectives

- To evaluate treatment planning and selection procedures.
- To evaluate and supervision of Urolithiasis in Paediatric Patients

Material and Method:

Study Design: An Observational study.

Study Period: Total 24 months.

Place of study: Department of General Surgery, National Medical College and Teaching Hospital, Birgunj, Nepal

Sample Size: Total 100 Patients

Result: Among 100 children, males comprised 60 (60.0%) and females 40 (40.0%), confirming a male preponderance in pediatric urolithiasis within this Observational.

Discussion: The observed narrative, structured through episodes, conveys the intricate real-world circumstances surrounding childhood stone disease and its management in a tertiary care setting.

Keywords: Calcium Phosphate, Computed Tomography, Hydration, Hypercalciuria, Urolithiasis

Introduction

Urolithiasis is a common, yet often underestimated, medical condition in the pediatric population. It is the most frequent injury of the urinary system, and its prevalence has been increasing in various countries. Size and composition of stones are different in the pediatric population compared to adults. This observational study aims to collect data in order to improve the knowledge of

the profile of pediatric urolithiasis in a tertiary care center, covering the clinical presentation, factors concerning completion of treatment, and follow-up outcomes.

The condition involves the formation of crystalline concretions within the renal calyces, pelvis, ureters, bladder, or urethra, often composed of calcium oxalate, calcium phosphate, uric acid, cystine, or struvite. Older children may present with more specific features such as colicky abdominal or flank pain, dysuria, frequency, urgency, hematuria, or passage of gravel or stones in the urine. Recurrent urinary tract infections, particularly in association with an underlying urological anomaly or metabolic derangement, may also signal the presence of urolithiasis. Unlike adults, children may not always be able to articulate their symptoms accurately, making clinical suspicion and diagnostic evaluation critically important. Non-contrast helical computed tomography (CT) is more sensitive and specific for stone detection and is often used when ultrasound results are inconclusive, particularly in emergency settings. However, its use must be judicious due to radiation exposure concerns in the pediatric population.

Aim and Objectives

- To evaluate treatment planning and selection procedures.
- To evaluate and supervision of Urolithiasis in Paediatric Patients

Material and Method

Study Design: An Observational study.

Place of study: Department of General Surgery, National Medical College and Teaching Hospital, Birgunj, Nepal

Study Duration: Total 24 months.

Sample Size: Total 100 Patients

Inclusion Criteria:

- Children aged 1 Years to 10 years
- Episodes of passage of urinary crystals.

Exclusion Criteria:

- Age <1 Years or >10 years.
- The profile of pediatric patient of urolithiasis
- Pediatric Patients with calculi in locations other than the urinary tract.

Result

Table 1: Sex Distribution

Sex		
	Frequency	Percent
Female	40	40.00
Male	60	60.00
Total	100	100.00

Graph 1: Sex Distribution

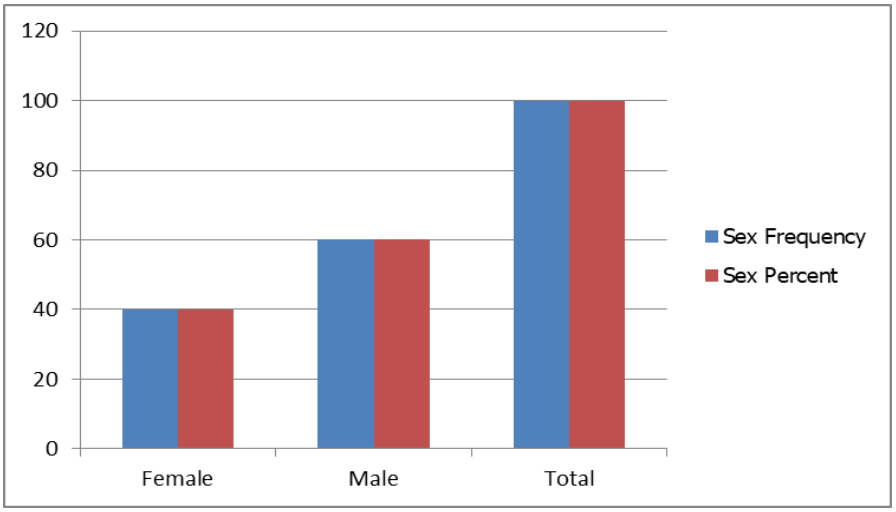


Table 2: Flank/Abdominal Pain

Flank Abdominal Pain YES AND NO			
		Frequency	Percent
	NO	15	15.00
	YES	85	85.00
	Total	100	100.00

Graph 2: Flank/Abdominal Pain

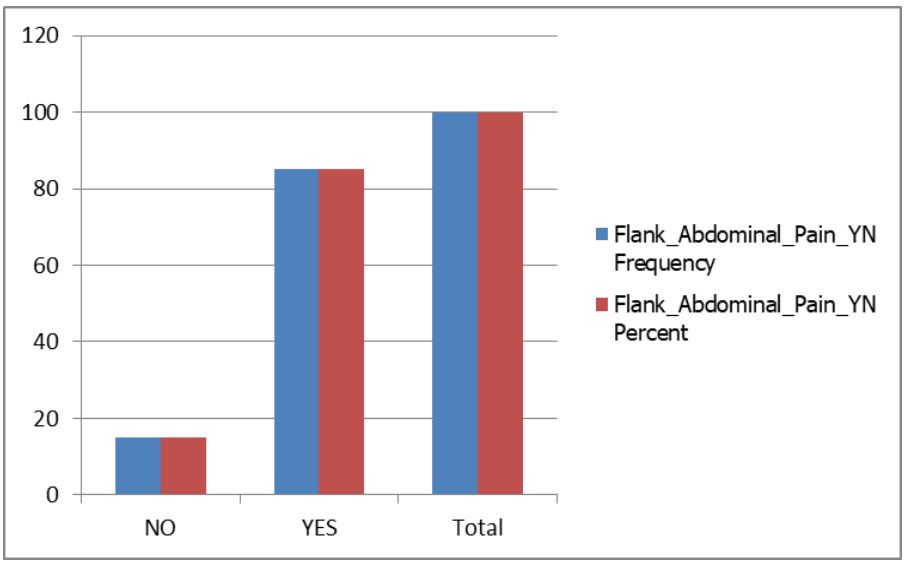


Table 3: Gross Hematuria

Gross Hematuria YES AND NO			
		Frequency	Percent
	NO	62	62.00
	YES	38	38.00
	Total	100	100.00

Graph 3: Gross Hematuria

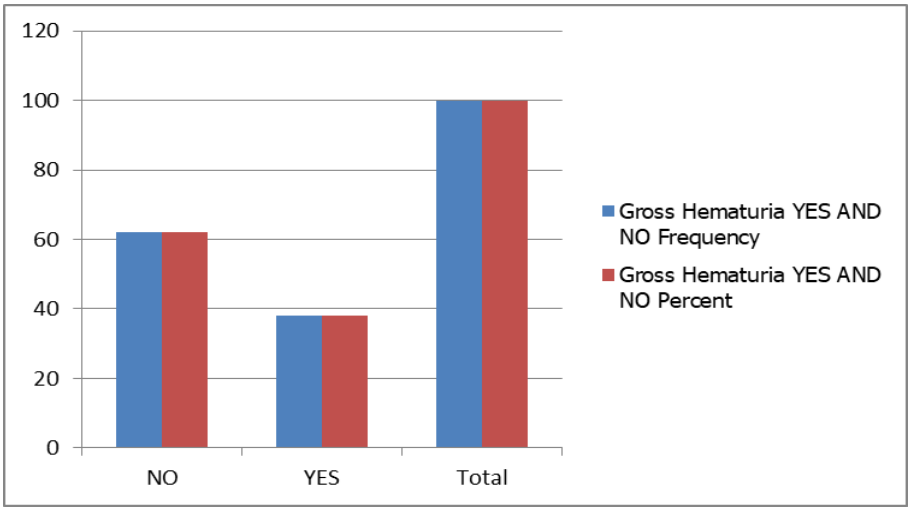
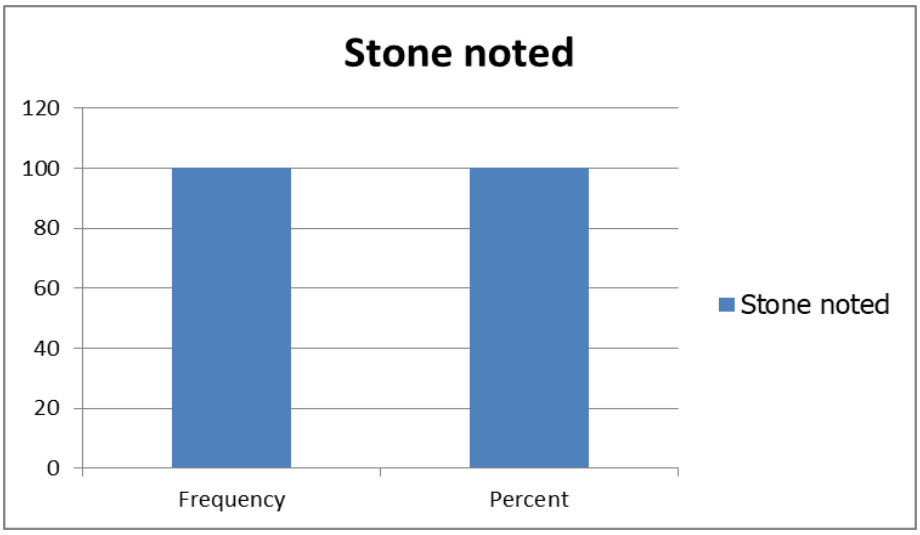


Table 4: USG Findings

USG Findings		
	Frequency	Percent
Stone noted	100	100.0

Graph 4: USG Findings



Discussion

Paediatric urolithiasis is uncommon, yet there is a worldwide rise in its incidence. The observed narrative, structured through episodes, conveys the intricate real-world circumstances surrounding childhood stone disease and its management in a tertiary care setting.

This study offers a comprehensive, real-world portrait of paediatric urolithiasis across early and middle childhood, mapping the journey from presentation to prevention with enough granularity to guide daily practice and service design. Marked fluctuations in presentation delays or the appearance of atypical symptoms expose vulnerabilities within existing frameworks of clinical knowledge and health system intelligence. Addressing such gaps promises earlier intervention, reduces uncertainty in diagnosis, and optimizes the allocation of limited specialist resources.

Conclusion

The most frequently reported symptoms were pain, fever, and vomiting, and of note, there was a considerable period between the onset of symptoms and the presentation to this tertiary centre. Detailed reports of stone characteristics, imaging modalities, treatment regimens, outcomes, and follow-up have been included

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