



EVALUATION OF MANAGEMENT AND OUTCOMES OF RENAL CALCULI IN ADULT POPULATION

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ABSTRACT

Kidney stone disease, also known as nephrolithiasis or urolithiasis, is when a solid piece of material (kidney stone) develops in the urinary tract, Kidney stones typically form in the kidney and leave the body in the urine stream. A small stone may pass without causing symptoms. If a stone grows to more than 5 millimeters (0.2 inches), it can cause blockage of the ureter, resulting in sharp and severe pain in the lower back or abdomen. A stone may also result in blood in the urine, vomiting, or painful urination. About half of people who have had a stone will have another in ten years. The purpose of this prospective observational study is to evaluate the management and outcomes of renal calculus in adult population. A total of 100 patients who were admitted in the department of urology in the hospital was analyzed according to the study parameter. The results were obtained from 100 patients with renal calculi disease who were enrolled in the study fulfilled after selection criteria on obtaining consent from the same among 100 subjects. The study illustrated the evaluation of different surgical methods for managing renal calculi in various location of the urinary system and concluded that the Ureteroscopic lithotripsy (URSL) is the most suitable technique for removing lower ureteral impacted stones and Percutaneous nephrolithotomy is the most preferable procedure for upper ureteral impacted stones. Patients underwent Ureteroscopic lithotripsy were associated with shorter hospital stay, lower risk of fever when compared to Percutaneous nephrolithotomy. No significant difference was observed in terms of age and type of stent used. Males are more prone to various types of renal calculi compared to females in the age group of 20-60. Oral alkaline therapy and Extracorporeal shockwave lithotripsy are recommended only in the absence of hydronephrosis/ hydroureteronephrosis, and the stone size is <5mm.

Key Words:- Renal Calculi, Kidney Stones, Nephrolithiasis, Urolithiasis.

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material (kidney stone) develops in the urinary tract, Kidney stones typically form in the kidney and leave the body in the urine stream [Khan S. R., 2016]. A small stone may pass without causing symptoms. If a stone grows to more than 5 millimeters (0.2 inches), it can cause blockage of the ureter, resulting in sharp and severe pain in the lower back or abdomen. A stone may also result in blood in the urine, vomiting, or painful urination [Sigurjonsdottir V. K., 2015]. About half of people who have had a stone will have another in ten years [Courbebaissé M., et. Al., 2017].

Management

Treatment for kidney stones varies, depending on the type of stone and the cause.

INTRODUCTION

Kidney stone disease, also known as nephrolithiasis or urolithiasis, is when a solid piece of

Small stones with minimal symptoms.

Most small kidney stones won't require invasive treatment. You may be able to pass a small stone by the following

Drinking water

Drinking as much as 2 to 3 quarts (1.8 to 3.6 litres) a day will keep your urine dilute and may prevent stones from forming. Unless your doctor tells you otherwise, drink enough fluid — ideally mostly water — to produce clear or nearly clear urine [Kumar S. B. N., et. Al., 2012].

Pain relievers

Passing a small stone can cause some discomfort. To relieve mild pain, your doctor may recommend pain relievers such as ibuprofen (Advil, Motrin IB, others) or naproxen sodium (Aleve) [Moe O. W., 2006].

Medical therapy

Your doctor may give you a medication to help pass your kidney stone. This type of medication, known as an alpha blocker, relaxes the muscles in your ureter, helping you pass the kidney stone more quickly and with less pain [Romero V., et. Al., 2010]. Examples of alpha blockers include tamsulosin (Flomax) and the drug combination dutasteride and tamsulosin (Jalyn) [Coe F. L., et. Al., 1992].

AIM:

The purpose of this prospective observational study is to evaluate the management and outcomes of renal calculus in adult population.

OBJECTIVES OF THE STUDY

- The objective of this study is to evaluate the treatment and outcomes in adult population (20-60 years).
- To evaluate the outcomes of various surgical procedures to determine its efficacy in the management of renal calculi.
- To determine the appropriateness of various surgical procedures with respect to location of the stone.

METHODOLOGY:

Study Design: Prospective observational Study

Study site: Raghavendra urological super speciality hospital, Tirupati.

Subjects: Adult population (20-60 years)

Sample size (n):100

Study Duration: This study is carried out for the duration of 6months.

INCLUSION CRITERIA:

- Patients with unilateral, bilateral renal calculi (0.5cm in size and larger) were included.
- Adult population between the range 20-60 years of age were included.
- Both genders were involved.
- Patients who were willing and able to give written informed consent form are included.

EXCLUSION CRITERIA:

- Patients below the age of 20 years & above 60 years were excluded.
- Patients or breast-feeding women were excluded.
- Patients who were in hospice care or were receiving palliative care were excluded.

MATERIALS:

- Patient informed consent form- English (Annexure-I)
- Patient informed consent form- Telugu version (Annexure-II)
- Patient data collection form (Annexure-III).

Statistical analysis:

The data set was cleaned and edited for inconsistencies. Statistical analyses were performed using Microsoft Excel 2007. Two-way ANOVA test was used to analyse the appropriateness of various surgical procedures in the treatment of renal calculi. All reported P value were compared to a significance level of 5%, differences were considered statistically significant in $P < 0.05$ or $P < 0.01$.

RESULTS AND DISCUSSION:

A total of 100 patients who were admitted in the department of urology in the hospital was analyzed according to the study parameter. The results were obtained from 100 patients with renal calculi disease who were enrolled in the study fulfilled after selection criteria on obtaining consent from the same among 100 subjects.

The subject between 20-60 years of age was included in the study. From this study we observed that, 24% out of the total subjects were between 20-30years followed by 31-40, 41-50, 51-60 were 32%, 25% and 19% respectively. In the study population among the adults' males was 67% and females was 33%. The more adult population was observed among the male gender. The mean age of males was 38.134 ± 10.617 and females were 41.60 ± 11.583 .

Based on our observation Vesical ureteric junction was found to be the most common location for the occurrence of renal calculi with an occurrence rate of 34.83% whereas pelvic-ureteric junction was found to be the least common location for the occurrence of renal stone with occurrence rate of 8.9%.

Fig No. 01 indicates that unilateral renal calculi have more occurrence rate (56%) when compared to Bilateral renal calculi (44%).

Fig No. 02 shows that double J stent is used widely with 68.75% when compared to Retrograde pyelographic stent with 31.25%.

Fig No. 03 shows that URSL is most preferred surgical procedures among other procedures.

Fig No. 04 shows that the length of stay in hospital is comparatively low in patients undergoing URSL with that of the PCNL.

Based on the statistical analysis, The two-way ANOVA P- value found to be 0.010054 and the result was considered to be significant at P <0.05.

Table No. 01 shows the list of medications administered during treatment. The non-steroidal anti-inflammatory agents or opiate analgesics are administered in case of pain [Skolarikos A, et. Al., 2014] [Skolarikos A, et. Al., 2015]. Oral alkaline therapy comprising either ALKAMAX syrup or STONE ONE tablet is advised during discharge. Concomitant therapy may vary from one patient to another [Cunningham P., et. Al., 2016].

INFERENCE: The Two-way ANOVA p value is 0.010054. The result is significant at p <0.05.

Table No 01: Analysis of medical management among various procedures

Brand name	Invasive procedures				Non-invasive procedure
	Pre operative therapy		Post operative therapy		
	URSL	PCNL	URSL	PCNL	
CEFTAS 200	42	31	5	3	4
EXTRACEF 1 G	13	4	43	27	0
EXALIZ 1.125 G	1	1	3	2	1
ALCEF SB 1.5 G	3	0	7	3	0
ORPENEM 200 MG	0	0	1	1	0
RANTAC 150 MG	59	36	59	36	5

Figure No 01: Comparison of Types of Renal calculi between gender

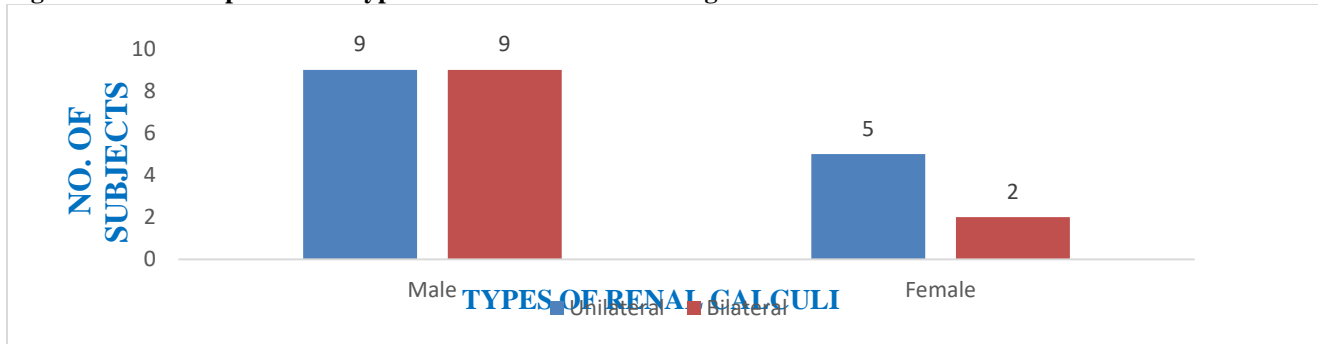


Figure No 02: Status of stent placement between gender

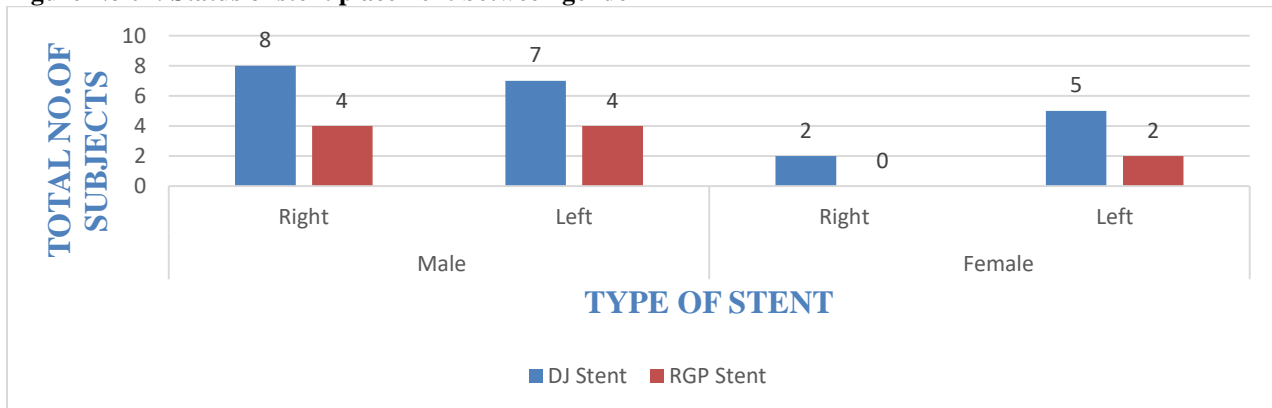


Figure No 03: Comparison of Surgical procedures between gender

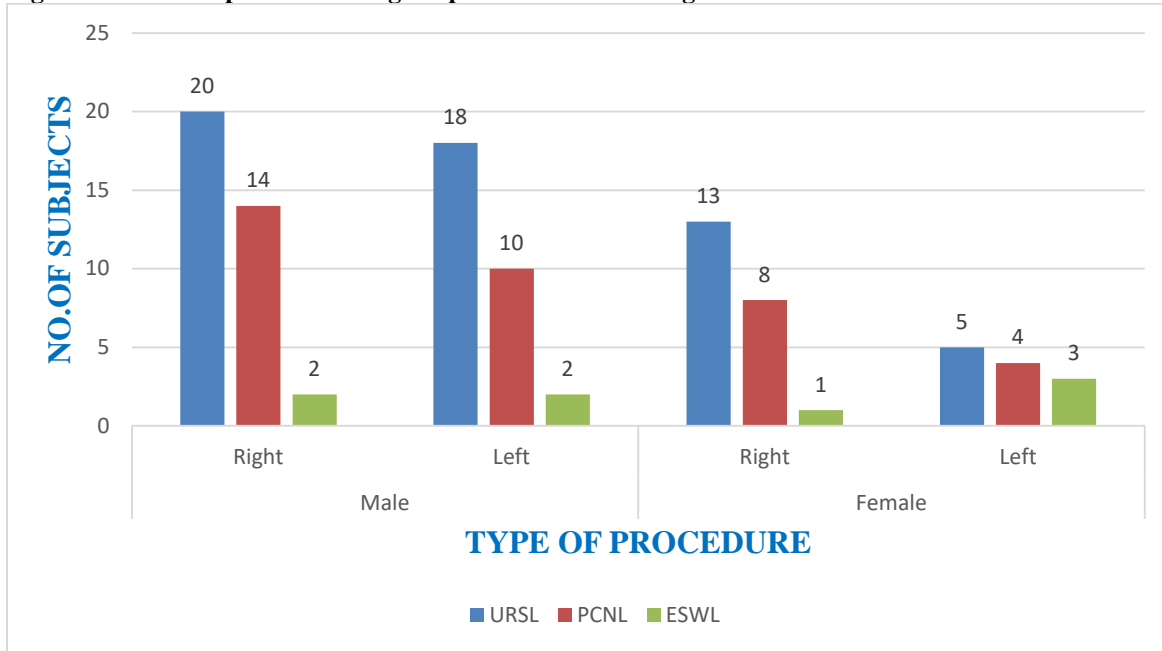
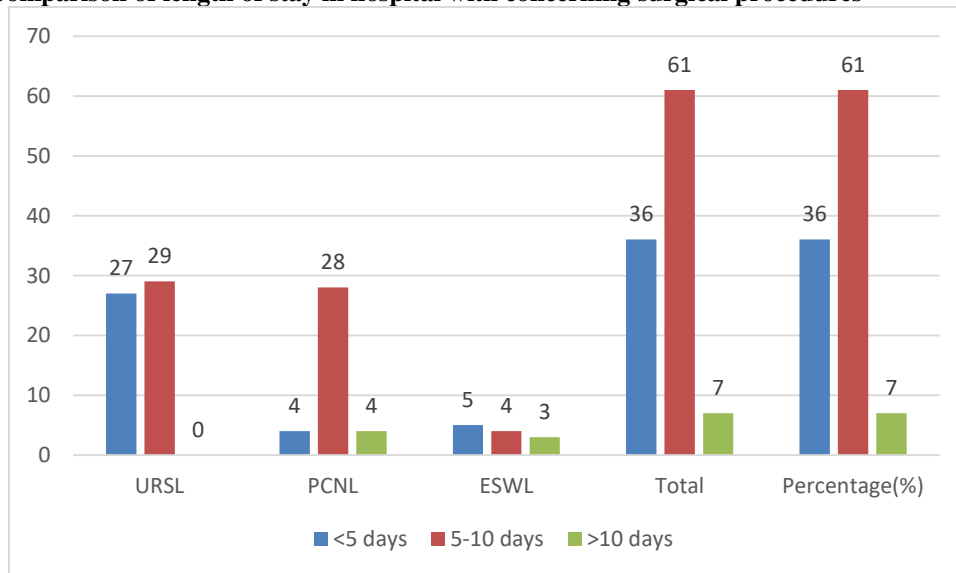


Figure No 04: Comparison of length of stay in hospital with concerning surgical procedures



CONCLUSION

The study illustrated the evaluation of different surgical methods for managing renal calculi in various location of the urinary system and concluded that the Ureteroscopic lithotripsy (URSL) is the most suitable technique for removing lower ureteral impacted stones and Percutaneous nephrolithotomy is the most preferable procedure for upper ureteral impacted stones. Patients underwent Ureteroscopic lithotripsy were associated with

shorter hospital stay, lower risk of fever when compared to Percutaneous nephrolithotomy. No significant difference was observed in terms of age and type of stent used. males are more prone to various types of renal calculi compared to females in the age group of 20-60.

Oral alkaline therapy and Extracorporeal shockwave lithotripsy are recommended only in the absence of hydronephrosis/ hydroureteronephrosis, and the stone size is <5mm.

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