

# Pre-Operative Urine Culture and Intraoperative Pelvic Urine Culture Study in PCNL Patients

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**Abstract:- Background and Objectives:** Urosepsis in Nephrolithiasis cases has increasingly become a risk due to manipulation during PCNL. Also, PCNL being the standard of care in such cases, irrespective of antibiotic coverage and negative pre-operative culture it still poses a threat for development of Urosepsis. The aim of this study is to study the bacterial growth in pre operative urine and intra operative pelvic urine culture in Nephrolithiasis cases. **Methods:** In this study, Urine samples were collected from 50 patients of Urolithiasis. Samples were subjected to routine culture methods. Bacterial growth if any isolated. Biochemical tests and antibiotic sensitivity pattern of the organism isolated were performed and recorded. **Results:** Of the study group of 50 patients, Males (59%) outnumbered the females(41%) in the rate of isolation of infection both preoperative and intraoperative culture. The sex ratio (male: female) was 1.75:1. Among preoperative samples 16 (32%) were culture positive and in intraoperative samples 22(44%) found to be culture positive. The predominant organism isolated was found to be E.coli which accounts for 40.9% in both group of samples. **Conclusion:** This study showed the effectiveness of assessing both the pre operative and intraoperative urine culture as a guide to predict the outcome of the PCNL procedure and to act in a effective way to prevent the development of complication.

## INTRODUCTION

Kidney stones affect 10-12% of population. Most common age group is 30-60<sup>1</sup>. Since its introduction, PCNL has become the standard care for patients with large volume Nephrolithiasis. Urosepsis due to manipulation during PCNL can be dangerous despite prophylactic antibiotic coverage and negative pre-operative urine culture.

The most common organism isolated was Escherichia coli followed by other gram negative organisms. In Nephrolithiasis patients, it has been postulated that bacteria in stone may be responsible for systemic bacterial infection<sup>2</sup>. Recent studies suggest that urine culture is a more accurate

predictor of urosepsis in patients undergoing PCNL for Nephrolithiasis<sup>3</sup>.

Also intra-operative renal pelvic urine culture is an important factor indicating the development of post-operative systemic inflammatory response syndrome (SIRS)<sup>3</sup>. Renal calculi pathogens are one of the predisposing factors for infectious agents<sup>2</sup>. However, pre-operative urine culture often fails to grow colonizing bacteria. Intra-operative pelvic urine culture may be essential in directing the antibiotic regimen<sup>4</sup>.

## AIMS AND OBJECTIVES

To analyze microbial growth in pre operative urine and intra operative pelvic urine by culture.

## MATERIALS AND METHODS

### Inclusion criteria:

1. Patients diagnosed with Uolithiasis
2. Age group- adolescents and adults

Urine samples (pre-operative urine and intraoperative renal pelvic urine) were collected from patients of Urolithiasis. They were then processed according to the standard guidelines. The specimens were inoculated on to nutrient agar(NA), MacConkey agar (MA), Blood agar (BA). The media were incubated at 37°C overnight. The growth from positive cultures were identified by its characteristic colony morphology and gram staining. Biochemical tests were performed from the culture isolates grown in respective urine samples. All the isolates were subsequently tested for antibiotic susceptibility based on Kirby-Bauer disk diffusion method on Muller Hinton Agar with antibiotic disks with respect to the type of organism isolated.

## RESULTS:

Table 1. Percentage of preoperative urine culture isolates:

Among 50 samples 16 (32%) were culture positive and 34 (68%) were culture negative

Total samples	Number of culture positive	Percentage (%)
50	16	32

Table 2. Percentage of intra-operative urine culture isolates:

Among 50 samples 22 (44%) were culture positive and 28 (56%) were culture negative

Total samples	Number of culture positive	Percentage (%)
50	22	44

Table.3-Analysis by age and gender:

Age group (In years)	Pre-operative urine culture			Intra-operative urine culture		
	Positive	Percentage(%)	Negative	Positive	Percentage(%)	Negative
21-30	2	12.5%	6	1	4.55%	7
31-40	3	18.75%	12	4	18.18%	11
41-50	5	31.25%	9	8	36.37%	6
51-60	6	37.5%	7	9	40.9%	4
<b>TOTAL</b>	<b>16</b>		<b>34</b>	<b>22</b>		<b>28</b>

Among the 16 isolates of positive pre operative urine culture, 2 isolates(12.5%) in the age group 21-30, 3 isolates (18.75%) in the age group of 31-40 years, 5 isolates (31.25%) of age group 41-50 and 6 isolates (37.5%) of age group 51-60.

Among the 22 isolates of positive intra-operative pelvic urine culture, 1 isolates(12.5%) in the age group 21-30, 4 isolates (18.75%) in the age group of 31-40 years, 9 isolates (37.5%) of age group 41-50 and 8 isolates (31.5%) of age group 51-60.

Table .4 Distribution of Infection among gender:

	Male		Female		Total
	Number	Percentage(%)	Number	Percentage(%)	
Pre-operative	9	56.25%	7	43.75%	16
Intra-operative	14	63.63%	8	36.36%	22

Males outnumbered the females in the rate of isolation of infection.

Table. 5 Percentage of organisms isolated from urine samples:

Sl no.	Microorganism	Pre-operative urine culture		Intra-operative pelvic urine culture	
		No of cases	Percent	No of cases	Percent
1	<i>Escherichia coli</i>	7	43.75	9	40.9
2	<i>Klebsiella pneumonia</i>	5	31.25	6	27.2
3	<i>Pseudomonas aeruginosa</i>	2	12.5	3	13.6
4	<i>Proteus mirabilis</i>	1	6.25	1	4.6
5	<i>Enterococcus faecalis</i>	1	6.25	2	9.1
6	<i>Staphylococcus aureus</i>	0	-	1	4.6
	<b>Total</b>	<b>16</b>	<b>100</b>	<b>22</b>	<b>100</b>

From the above table it has been found that E.coli accounts for majority of infection.

### CONCLUSION

Pelvic urine culture is recommended in PCNL posted cases to identify the organism in patients at risk for sepsis<sup>6</sup>. It helps in decision making about the treatment of post-operative infective complication<sup>7</sup>.

Post operative infection is one of the most common complication due to the pathogenic colonization of the renal stone. This study has showed Renal pelvic urine culture is one of the way to predict and to identify the causative organism and direct antimicrobial therapy.

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