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Abstract no.: PR 1

Efficacy of prophylactic antibiotics in reducing postoperative infections in percutaneous nephrolithotomy (PCNL): a multi-centre retrospective study

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Aim

- Postoperative infection is common after PCNL.
- Prophylactic antibiotics is recommended in current guidelines.
- Limited evidence available on the duration of antibiotics.
- This study evaluates the relationship between the use and duration of prophylactic antibiotics and post-operative infection risk.

Patients & Methods

- Patients who underwent PCNL in Hong Kong West Cluster from 2007 to 2023, and New Territories West Cluster from 2017 to 2023 were included.
- Baseline characteristics, preoperative urine culture, duration, and type of prophylactic antibiotics were examined.
- Post-operative outcomes such as fever, sepsis, and length of stay were analyzed.

Results

- A cohort of 890 patients were examined, mean age 57.4±11.1 years.
- All patients received intravenous antibiotic on induction.
- Twenty-seven percent (N=241) had positive preoperative urine culture.
- Common pathogens: Escherichia coli (38.5%) and Proteus (22.0%).
- Positive culture linked to higher post-op fever, more ICU/HDU admissions, and prolonged hospital stay.
- In patients with negative culture, 329 patients received antibiotics on induction only and 320 patients had a course of preoperative antibiotics (6.7±2.3 days).
- No significant differences in post-op fever (13.1% vs. 10.0%, P=0.222) or sepsis rates (3.7% vs. 3.5%, P=1.00).
- Comparable ICU/HDU admission rates and post-op antibiotic duration.
- Extended course group had shorter length of stay (5.2±2.3 vs. 6.5±3.7 days, P<0.001).

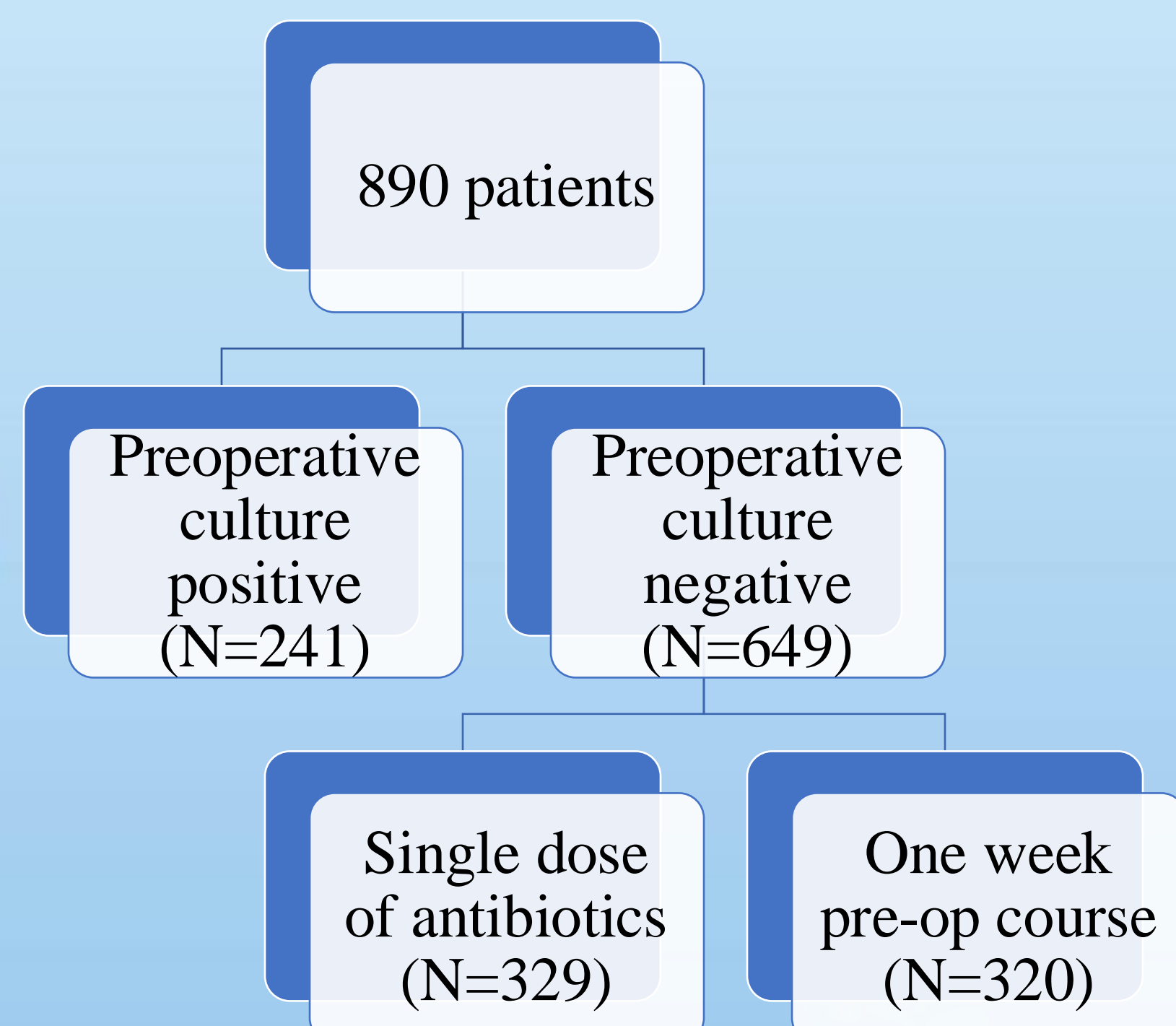


Figure 1. Flow diagram of patients undergoing PCNL

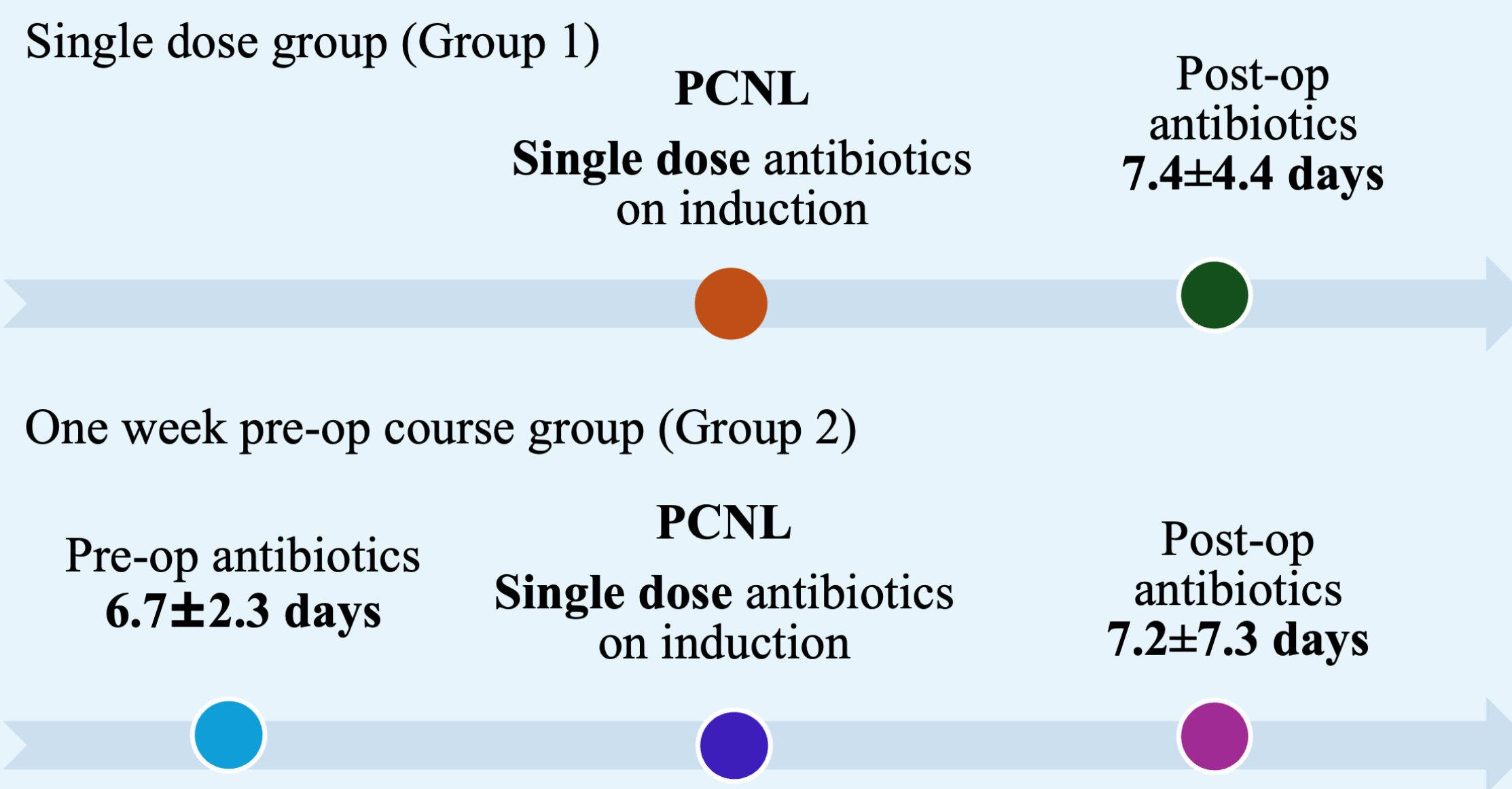


Figure 2. Antibiotic use in Single dose group (Group 1) and One week pre-op course group (Group 2)

	Single dose	One week pre-op course	P value
N	329	320	
Age	56.7±10.6	58.2±10.3	0.07
ASA class	1 – 35 (10.7%) 2 – 262 (79.9%) 3 or above – 31 (9.5%)	1 – 55 (17.2%) 2 – 216 (67.5%) 3 or above – 49 (15.3%)	<0.001
No. of stones*	2.6±2.8	2.7±2.0	0.63
Pre-op stone maximum diameter (mm)	25.6±12.9	29.2±14.9	0.001
Pre-op stone size (mm ²)	420.9±484.5	555.7±699.0	0.004
Pre-op antibiotic duration (days)	/	6.7±2.3	/
Operation time (min)	137.2±51.4	134.1±48.7	0.44
Number of tract(s)	Single tract 171 (96.4%)	Single tract 134 (96.6%)	0.76
Tract size (Fr)	23.4±6.0	21.8±5.6	<0.001
Pre-operative drainage (ureteric stent/ PCN)	52 (26.8%)	45 (28.8%)	0.72
Residual stone (>4mm)	111 (33.7%)	101 (31.6%)	0.56
Post-op PCN duration (days)	7.7±10.8	6.4±10.9	0.15
Need of post-op ureteric stenting	84 (36.1%)	125 (61.9%)	<0.001
Post-op stenting duration (days)	46.8±22.2	45.8±27.0	0.78

Table 1. Baseline characteristics of pre-operative culture negative patients

*Counted as 10 stones if more than 10 stones

	Single dose	One week pre-op course	P value
Any Complication	Total 57 (17.3%) Grade 1 – 3 (0.9%) Grade 2 – 44 (13.4%) Grade 3 or above – 10 (3%)	Total 61 (19.1%) Grade 1 – 8 (2.5%) Grade 2 – 46 (14.4%) Grade 3 or above – 7 (2.2%)	0.63
	•Pseudoaneurysm (4) •Ureteric obstruction (3) •Sepsis (2) •ARDS (1)	•Pseudoaneurysm (3) •Septic shock (2) •Ureteric obstruction (1) •Renal haematoma (1)	
Post-op fever	43 (13.1%)	32 (10%)	0.27
Post-op sepsis	12 (3.7%)	11 (3.5%)	1.0
Maximum post-op white cell count (x 10 ⁹ /L)	13.0±4.3	13.0±4.1	0.88
Post-op duration of antibiotics (days)	7.4±4.4	7.2±7.3	0.66
Length of stay (days)	6.5±3.7	5.2±2.3	<0.001
ICU/HDU admission in fever patients	4 (1.2%)	4 (1.3%)	1.0

Table 2. Complication rates of pre-operative culture negative patients

Conclusion

- An extended course of prophylactic antibiotics does not show additional benefit in prevention of infection.

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