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Association Of Neutrophil-to-Lymphocyte And Platelet Ratio (N/LP) To Postoperative Acute Kidney Injury And Mortality Following Major Abdominal Surgery: A Cross-Sectional Study

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Objectives : Postoperative acute kidney injury (AKI) is linked to significant morbidity, mortality, prolonged hospitalization, and financial burden. This study investigates the potential use of postoperative Neutrophil-to-Lymphocyte and Platelet ratio (N/LP) in predicting AKI and mortality in adult patients following major abdominal surgeries.
Methods : This analytical, retrospective, cross-sectional study involved a chart review of patients aged 18 years and older who underwent major abdominal surgeries at the University of Santo Tomas Hospital, Manila. Patients on renal replacement therapy and those lacking necessary laboratory data were excluded. A Receiver Operating Characteristic (ROC) curve was used to find the optimal N/LP cutoff for AKI prediction. Associations between N/LP and AKI were evaluated via binary logistic regression analyses. All data analyses were performed using R 4.2.2.
Results : A total of 119 patient charts were reviewed. Patients who developed AKI had significantly higher preoperative serum creatinine levels, lower eGFR, and reduced urine output. The N/LP ratio predicted AKI with a sensitivity of 33.3% and specificity of 96.3%, with an overall accuracy of 89.9%. The receiver operating curve area was 55.3%. Patients with an N/LP value > 8.593 were six times more likely to develop AKI (cOR 5.94, p-value = 0.019) and had a higher mortality risk (aOR 39.40, p = 0.003).
Conclusions : In patients who underwent major abdominal surgery, the N/LP ratio was not an effective tool for differentiating between patients with postoperative AKI and those without. However, patients with an N/LP > 8.593 showed significant association with increased in-hospital mortality. Future studies to validate these findings are recommended.

Picture1.png

Table 1.	Accuracy of N/LP in Predicting AKI
	% (95% CI), LR (95%CI)
Cutoff	≥ 8.593
Sensitivity	33.3 (6.7-60)
Specificity	96.3 (92.7-99.9)
PPV	50 (15.4-84.6)
NPV	92.8 (88-97.6)
Positive LR	8.92 (2.55-31.15)
Negative LR	0.69 (0.46-1.04)
Accuracy	89.9 (89.8-90.1)
ROC area (area, 95% CI)	55.3 (35.8-74.8)

Picture1.png

Table 2.	Association of N/LP to Postoperative AKI and Mortality	
	Beta Coefficient (95% CI)	p-value
Postoperative AKI	0.15 (-0.04 – 0.33)	.115
Mortality	0.26 (0.09 – 0.44)	**.004**