



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

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Acute Kidney Disease Without Antecedent Acute Kidney Injury Is Prevalent After Major Noncardiac Surgery: A Multicenter Retrospective Cohort Study

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Objectives : The 2021 KDIGO consensus defined acute kidney disease (AKD) as a broader construct encompassing both acute kidney injury (AKI) and subsequent kidney function decline within 90 days. Whether AKD frequently occurs without antecedent AKI in surgical patients remained poorly characterized.

Methods : We conducted a retrospective cohort study across seven tertiary centers in South Korea. Among patients who underwent non-cardiac major surgery between 2014 and 2020, AKI was defined according to the KDIGO criteria. AKD was defined as AKI, incident CKD (eGFR < 60 mL/min/1.73 m²), a ≥35% decline in eGFR, or a >50% increase in serum creatinine within 90-days postoperatively. Logistic regression models were constructed to identify independent predictors of AKD.

Results : Of 245,807 patients, 27,456 (11.2%) developed AKD, of whom 15,225 (6.2%) experienced AKI. AKD incidence was higher in patients with CKD than in those without CKD (21.7% vs. 10.5%). When stratified by surgical department, those with higher AKI rates also showed increased AKD incidence, with particularly pronounced progression in the OBGY group. Among the four AKD definition subtypes, AKD defined by AKI occurrence was most common. Critically, 12,231 patients (4.9% of the cohort; 44.5% of all AKD) developed AKD without antecedent AKI. Among AKI-free patients, AKD incidence was 5.3% overall, but rose to 4.4% in those with pre-existing CKD versus 5.4% in CKD-free patients. AKD-without-AKI incidence was highest in urology (13.5%) and was disproportionately driven by subacute eGFR decline. In multivariable analysis restricted to AKI-free patients, independent predictors of AKD were anemia, hypoalbuminemia, hyponatremia, diabetes mellitus, RAAS blocker use, and proteinuria ≥3+.

Conclusions : In this large multicenter cohort of patients undergoing major noncardiac surgery, AKD developed in 11.2% of patients. Near half of all AKD cases (44.5%) occurred without antecedent AKI, highlighting a clinically significant population that would be missed by conventional AKI-based monitoring.

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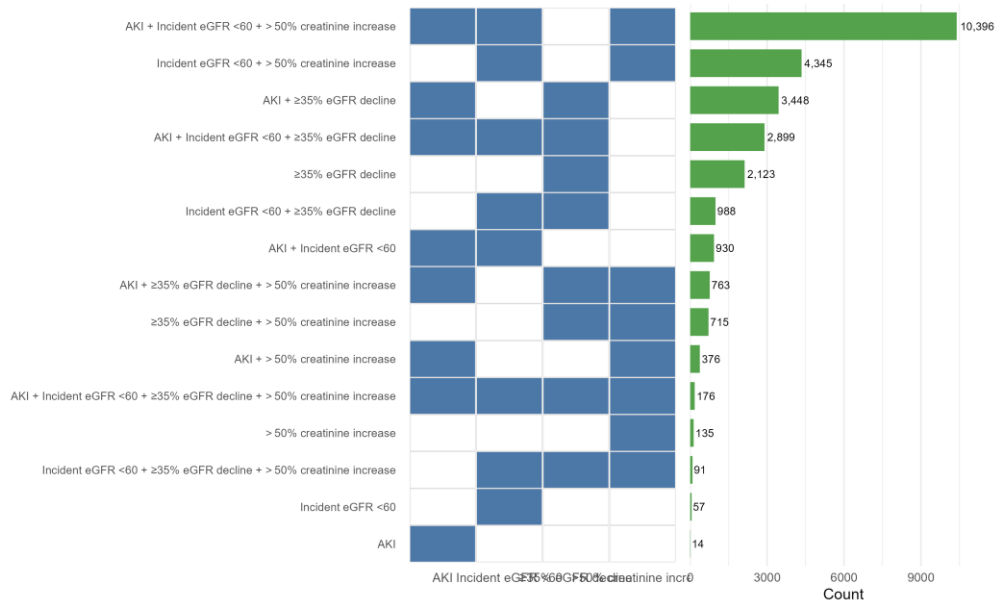
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Binary Matrix Heatmap of AKD Cc



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	GS	OBGY	UR	NS	OS	Total
N	116,835	10,103	24,016	22,821	72,032	245,807
AKI	6.8%	4.4%	11.3%	3.5%	4.6%	6.2%
AKD	11.9%	11.0%	17.2%	8.3%	8.8%	11.2%
Percent difference	5.1%	6.6%	5.9%	4.8%	4.2%	5.0%