External Validation of KLIC and CRIME-80 scores in Predicting Success of Debridement, Antibiotics, and Implant Retention for Periprosthetic Joint Infection

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Aim:

To evaluate the success rate of debridement, antibiotics, and implant retention in patients with periprosthetic joint infection and to perform an external validation of the KLIC and CRIME-80 preoperative risk scores.

• Methods:

- A retrospective study of 44 patients with PJI (25 hips, 19 knees) treated with DAIR between 2020 and 2024 was conducted. Diagnosis of PJI was made using the EBJIS 2021 criteria. Success was defined as an absence of pain in follow-up, no need of additional surgery, no need of suppression antibiotic and no death (in the 90 days following the DAIR procedure). KLIC and CRIME-80 scores were calculated for each patient. Statistical analysis included the Mann-Whitney U test for continuous variables and Fisher's exact test for categorical variables. The predictive performance of the scores was assessed using the Area Under the Receiver Operating Characteristic Curve.

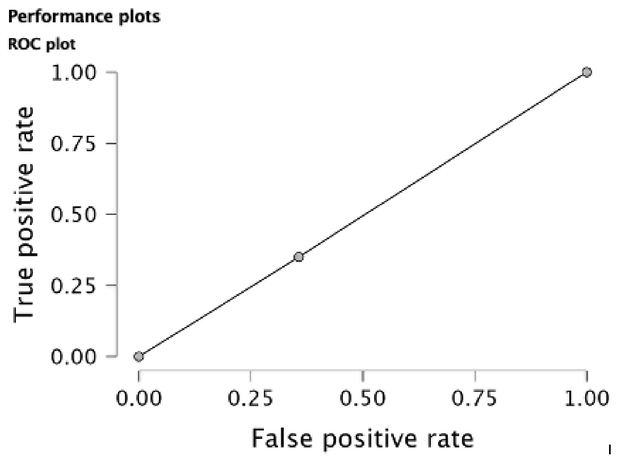
• Results:

- The overall success rate was 63.6%. The mean age was 71.2 years, and the mode ASA score was 2. Univariate analysis identified advanced age as the most significant predictor of failure (p=0.056). Patients over 80 years had a failure rate of 55.6%, compared to 22.2% in those under 60. Regarding score validation, the CRIME-80 score demonstrated a fair predictive performance (AUC 0.688), whereas the KLIC score showed poor discriminative ability (AUC 0.51), likely due to the low-to-moderate risk distribution of the cohort (maximum score 4). The duration of symptoms (mean 12 days), IV antibiotics (mean 20.4 days), and timing of Rifampicin introduction (median 8.5 days) did not significantly correlate with success (p>0.05).

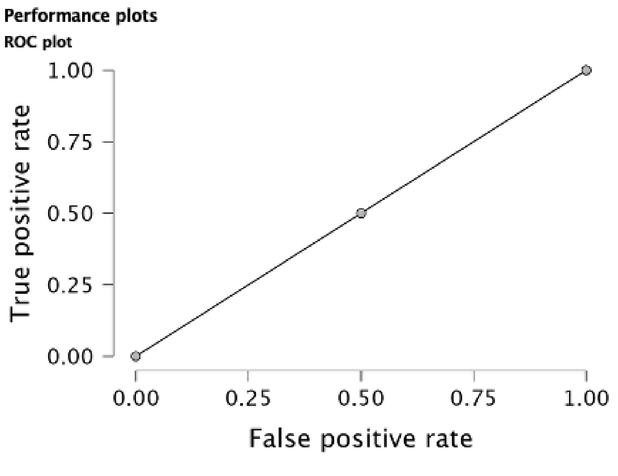
	Data	p-value
Age (Average)	71.2	0.056
Age >80 y (%)	20.5	0.180
Feminine (%)	56.8	0.066
Comorbidity (%)	47.7	0.820
Diabetes (%)	31.8	0.951
COPD (%)	4.5	0.682
R.A. (%)	4.5	0.682
Cirrhosis (%)	13.6	0.832
CRD (%)	22.7	0.786
Hb (average)	11.3	0.997
ASA SCORE(Moda)	2	0.084
II	45.5	
III	38.6	
IV	15.9	
Traumatic (%)	27.3	0.250
Knee (%)	43.2	0.565
Non-cemented (%)	47.7	0.873

	Data	p-value
Days of symptoms DAIR - average	12.0	0.293
Days of antibiotic intravenous – average	20.4	0.230
Positive culture (%)	65.9	0.781
Microorganism	29	0.176
S. epidermis	15	
MSSA	7	
MRSA	2	
Poli-microorganisms	3	
Others	2	
Rifampicin (%)	17	0.907
Days between surgery and rifampicin – average	25.24	0.228
Component switch-yes (%)	79.5	0.572
Days of inpatient - average	33.5	0.285

KLIC – ROAUC – 0.527



CRIME-80 – ROAUC – 0.688



Conclusion:

Our study suggests that DAIR remains an effective treatment for PJI, though patient age significantly impacts outcomes. The CRIME-80 score provided better risk stratification than the KLIC score in our population. The discrepancy between validated scores and real-world outcomes highlights the importance of individual clinical judgment.