

## Patients with End-Stage Renal Disease Are at Increased Risk of Postoperative Complications Following Lower-Extremity Fracture Surgery

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**Purpose:** End-stage renal disease (ESRD) leads to multiple systemic effects and patients suffer from multiple comorbidities including fractures. While previous studies have examined complications following hip fracture surgery in ESRD patients, there are no studies evaluating other lower-extremity injuries. This study aimed to identify postoperative complication risk in patients with ESRD who had lower-extremity fractures.

**Methods:** Using our database from 2000 to 2015 at 2 Level-I trauma centers, we collected data on patients over age 40 years, who had lower-extremity fractures and surgical fixation. Diagnosis of ESRD was made before the injury. Each ESRD patient was matched by 2 non-ESRD patients regarding age, gender, American Society of Anesthesiologists (ASA) score, and AO/OTA fracture classification. Postoperative outcomes were nonunion, mechanical failure, and infection. The number of outcome events was compared between the ESRD and non-ESRD cohorts.

**Results:** Our study cohort included a total of 195 patients (65 ESRD patients matched to 130 non-ESRD patients). Postoperative complications of nonunion, mechanical failure, or infection occurred in 14 patients (9 in ESRD and 5 in non-ESRD) during a median follow-up of 31 months (range, 12 to 141 months). The ESRD cohort had significantly higher mechanical failure rate compared to the non-ESRD (relative risk [RR] = 8, P = 0.003). The composite outcome was also higher for the ESRD cohort (RR = 3.6, P = 0.02).

**Conclusion:** ESRD was associated with higher complication rates of nonunion, mechanical failure, and infection after lower-extremity fracture surgeries.

Table 2. Post-operative Complications

	ESRD (N=65)	Non-ESRD (N=130)	RR*	P Value
Non-union - no. (%)	3 (5)	2 (2)	3	0.34
Mechanical failure - no. (%)	8 (12)	2 (2)	8	0.003
Post-op infection - no. (%)	4 (6)	3 (2)	2.7	0.22
Composite - no. (%)	9 (14)	5 (4)	3.6	0.02

\*RR = Relative Risk