

End-Stage Renal Disease and Orthopaedic Surgery: An Analysis of Inpatient Wound Complications

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Purpose: Patients living with end-stage renal disease (ESRD) are prone to a wide spectrum of wound complications. It is known, from basic science studies, that renal impairment disrupts the process of keratinization and leads to lower rates of granulation. The effect of ESRD on inpatient postoperative wound complications has not been well studied in surgical patients, especially patients undergoing orthopaedic surgery.

Methods: The Nationwide Inpatient Sample database was used to identify patients 18 years old and older who underwent open reduction and internal fixation (ORIF) in the US from January 2002 to December 2014 for various types of fractures. Inpatient outcomes such as wound complications were analyzed.

Results: There were 867,378 patients who underwent ORIF recorded in the database from January 2002-December 2014. A total of 0.81% (7055/867,378) had ESRD. Patients with ESRD had higher rates of wound complications compared with their non-ESRD counterparts (1.0% vs 0.4%; $P < 0.05$). Stratifying by the type of wound complication, ESRD patients were more likely to develop wound dehiscence (0.2% vs 0.1%; $P < 0.05$) and nonhealing wounds (0.1% vs 0.03; $P < 0.05$). Multivariate analysis controlling for multiple confounding factors, including age, sex, race, fracture location, number of operations, smoking status, and comorbidities, demonstrated a higher rate of wound complications (odds ratio [OR], 1.55; 95% confidence interval [CI], 1.2-2.05; $P < 0.001$), wound dehiscence (OR, 2.11; 95% CI, 1.3-3.5; $P = 0.003$), and nonhealing wounds (OR, 2.57; 95% CI, 1.3-5.1; $P = 0.007$) in patients with ESRD. Stratifying by location, only ESRD patients undergoing ORIF of the femur (0.8% vs 0.4%; $P < 0.05$) and the tibia/fibula (1.9% vs 0.4%; $P < 0.05$) were at a higher rate of postoperative complications.

Conclusion: Orthopaedic surgeons should be aware of the significantly increased risk of postoperative structural wound complications in patients with ESRD and special measures should be instituted to help maintain the integrity and healing process of such wounds.