Comparing Early vs. Delayed Debridement and Fixation in Open Distal Radius Fractures: A Systematic Review and Meta-Analysis of Postoperative Complications

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INTRODUCTION:
Open fractures have historically been considered orthopedic emergencies due to the high risk of infection and complications. However, the traditional approach of urgent operative debridement and fixation of open distal radius fractures has been challenged by several studies. This study aims to conduct a systematic review and meta-analysis of the studies comparing the outcomes of early (<24 hours) and late (>24 hours) debridement and fixation in open distal radius fractures.
METHODS: This systematic review and meta-analysis were conducted following PRISMA guidelines. A systematic search was performed in PubMed, Embase, Cochrane Library, and Web of Science from January 2000 to February 25, 2025. Level I, II, and III studies were included if they examined adult patients (≥18 years) with open distal radius fractures treated surgically and compared early (≤24 hours) versus late (>24 hours) debridement, with reported postoperative complication rates.
RESULTS: A total of 1,541 articles were identified across four databases and after full-text screening, five retrospective studies were included in the quantitative synthesis. Early debridement showed a more favorable trend in reducing minor infections, major infections, overall infections, and complications compared to late debridement, though none reached statistical significance. Reoperation rates were higher in the early group but also did not reach significance.
DISCUSSION AND CONCLUSION: Early and late surgical debridement for open distal radius fractures resulted in similar rates of infection, reoperation, and overall complications, suggesting that timing within or beyond 24 hours may not independently impact surgical outcomes. Clean open distal radius fractures may be suitable for delayed surgical fixation if antibiotics are initiated promptly. However, robust prospective studies are essential to determine the most effective management strategies for these injuries.