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An updated evidence about the role of timing to debridement on infection rate of open tibia fractures: A meta - analysis

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Objective: This systematic review and meta-analysis aimed to assess the current evidence on the timing of surgical debridement for open tibia fractures, particularly focusing on infection rates.

Methods: Extensive research was conducted across five bibliographic databases from January 2000 to June 2020, involving a systematic review and meta-analysis of studies comparing early and late debridement in cases of open tibia fractures.

Results: The analysis encompassed nine retrospective studies and six prospective studies. Combining the data revealed no statistically significant difference in the overall infection rate between early and late debridement (RD estimate (I2 = 5%). Subgroup analysis consistently demonstrated no significant variation regardless of how early or late debridement was defined. Furthermore, no substantial heterogeneity was observed in the pooled estimate (I2 = 0%). Similarly, there was no statistically significant distinction between the two groups in terms of deep infection rate (RD 0.01, 95% CI [-0.01 - 0.03], p = 0.92). The analysis also indicated no significant variance in the nonunion rate between early and late debridement. Visual examination of the funnel plots suggested minimal asymmetry.

Conclusion: The findings from this systematic review and meta-analysis suggest that the timing of surgical debridement does not significantly impact infection rates in adult patients with open tibia fractures. Patients who underwent delayed debridement displayed comparable risks of infection, deep infection, and nonunion compared to those who received early debridement. Notably, these results remained consistent even when the delay exceeded 12 hours' post-injury. While emergent debridement within 24 hours remains crucial, the universal application of the six-hour rule should be approached cautiously. Surgeons should consider various factors before deciding on urgent debridement within six hours of injury. Nevertheless, additional high-quality evidence is needed to further reinforce these conclusions and guide clinical decision-making.

Biography

Ahmed Elnewishy is an Orthopedic Surgery student at Kasr Al-Ainy Medical School in Kafr El Sheikh, Egypt. Passionate about orthopedics from a young age, he is dedicated to becoming a distinguished surgeon and researcher. Ahmed has published four research papers in reputable medical journals, reflecting his commitment to advancing medical knowledge. An avid soccer player, his interest in sports enhances his approach to treating athletic injuries, providing a well-rounded perspective on orthopedic care. Ahmed is an active participant in various medical conferences and workshops, continually seeking opportunities to expand his knowledge and network with other professionals. He believes in the importance of lifelong learning and stays abreast of the latest developments in orthopedic surgery..