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Effects of NSAID use on bone healing: A meta-analysis of cohort studies and randomised controlled trial within clinical settings

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This unique meta-analysis aims to determine whether Non-Steroidal Anti-Inflammatory Drugs (NSAID) use is significantly associated with poor bone healing outcomes within clinical settings and to further highlight whether such association is more significant for non-union or delayed union of fractures. It will further explore bone healing outcomes in relation to the type, route, dosage and duration of NSAID exposure and aims to demonstrate modifying evidence effects of patients' age, smoking status, diabetes, site of fracture and length of follow-up to diagnosis on bone healing outcomes. MedLine, Embase and Cochrane electronic databases were searched electronically, and search period included January 1975 to December 2017. Observational studies and randomised trials involving effects of NSAID exposure on fracture healing and spinal fusion were considered for non-union and delayed bone union. Meta-analysis was performed in compliance with QUORUM and PRISMA guidelines. In the initial analysis of pooled data from 15 studies including randomised trials and cohort studies, results suggested significant risk of poor bone healing in patients with NSAID use (OR = 2.45, 95% CI 1.57-3.82, $p < 0.0001$). Meta-regression further suggested significant poor outcomes in relation to oral route (OR = 4.34, 95% CI 2.50-7.55, $p < 0.00001$), extended duration of NSAID exposure (OR = 2.64, 95% CI 1.41-4.91, $p = 0.002$) and across all bone types (OR = 2.71, 95% CI 1.74-4.22, $p < 0.0001$). Smoking was a significant confounder associated with poor bone healing (OR = 2.55, 95% CI 2.12-3.07, $p < 0.00001$). The current synthesis incorporates high-quality randomized controlled trials and retrospective cohort studies; however, it lacks decent quality prospective cohort studies due to their non-existence within available literature. This highlights the need for further high-quality randomized controlled trials or prospective cohort studies assessing NSAID exposure on bone healing that will also provide basis for more extensive meta-analysis in future.

Biography

Ali and Hayat are currently undergoing their training in Trauma and Orthopaedics Surgery in North West region, UK. Through-out his undergraduate and postgraduate career, Ali had been involved in extensive research and is author to several international publications and monographs. Hayat completed her masters in Orthopaedics and Trauma Science and thrives to contribute to ongoing research in the subject. Authors unique and robust work on role of NSAID use on bone healing provides a cornerstone for future research to highlight effects of NSAID use on fracture healing and spinal fusion. This extensive project will be of interest to a wide variety of readers including medical practitioners, orthopaedic surgeons, and emergency medicine doctors while considering use of NSAIDs for pain management in patients with fractures.

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