

Do NSAIDs Impair Fracture Healing? A Meta-Analysis of Randomized Control Trials

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INTRODUCTION:

The purpose of this study was to perform a meta-analysis of the randomized controlled trials (RCTs) to compare the non-union rates following non-steroidal anti inflammatory drugs (NSAID) and a control for those undergoing fracture fixation.

METHODS: A literature search of three databases was performed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. RCTs comparing NSAIDs and a control for pain control following were included if they reported on non-union. Clinical outcomes were compared using Revman, and a p-value < 0.05 was considered to be statistically significant.

RESULTS: Nine RCTs with 1,104 patients were included. Overall, 8.9% of patients treated with NSAIDs and 3.9% of patients in the control group had a radiographic non-union (RR = 2.20, 95% CI 1.21 - 3.63, p = 0.008). There was low heterogeneity indicating consistency across the included studies $I^2 = 14\%$. Additionally, subgroup analysis of those with short-term NSAID use for less than two weeks had a higher rate of non-union (RR = 1.97, 95% CI 1.10 - 3.53, p = 0.02, $I^2 = 18\%$). However, none of the included pediatric patients had a non-union in either group (p > 0.99, $I^2 = 0\%$).

DISCUSSION AND CONCLUSION:

Overall, the current level I evidence in the literature supports the preclinical evidence that NSAIDs may impair fracture healing even with short-term use, resulting in approximately twice the relative risk of a non-union. However, further study is warranted to determine the ideal dosing and timing of NSAID administration after fracture to mitigate use of narcotic pain medications without compromising bone healing.