Supplementary Information

<u>**Statistic**</u>

Statistical analyses

We used two different strategies for calculating the frequency of non-unions stratified by technique. First, we summed up the total number of non-unions and the total number of individuals for each method. Second, we calculated the frequency in per cent as non-unions/ individuals *100 for each technique. For Figure 1 and the regression analyses, we calculated the frequency of non-unions for each study separately. Figure 1 shows the frequency of non-unions expressed as mean and 95% confidence intervals for each technique individually. The lower and upper bands of the intervals are the minimum and maximum respectively. To model associations of the technique with the frequency of non-unions, we fitted a two-part regression model consisting of a logistic regression part and a generalized linear model part with a log-link and gamma distribution. A two-part model was needed because several studies did not observe any non-unions, and the frequency of non-unions was not normally distributed among the studies. In the two-part model, the logistic part was conducted to model whether non-unions were observed or not. The generalized linear model part was conducted to model the frequency of non-unions > 0. To simplify the two-part-model interpretation, we expressed the results as β-coefficient estimated from both model parts and its 95% confidence interval. These β-coefficients can be interpreted similar to those from a simple linear regression model and compare the frequency of non-units between all techniques and the reference technique K-wires. A *p*<0.05 was considered statistically significant. Associations between technique and the consolidation time were analyzed by median regression with K-wires as reference technique. All analyses were conducted with Stata 16.1.

Results

The lowest non-union rate in compression techniques was 3.9 % with the compression screw. Interestingly the non-union rate for the peg fixations (without compression) was even lower 3.6 %. The highest non-union rate showed the interosseous wiring with 8.6 % (Figure 1). With K-wires as the reference technique (since it had the highest number in the included studies) the two-part regression analysis showed that only the compression screw showed a statistically significant lower non-union rate (p=0.039). For the other techniques no significant difference could be detected (Figure 2). Finally, we did a statistical analysis of techniques without compression (K-wires, pin fixation, peg fixation, plate) versus techniques with compression (tension-band, compression screw, interosseus wiring). There was no statistically significant difference in the number of non-unions (p=0.770).