The purpose of this study was to compare the relative strengths of three different K-wire constructs for the treatment of lesser digit deformities. Based on statistical analysis, our hypothesis was that this methodology would allow for the development of a safe and effective technique for future fusion studies at our institution. It is possible that different results could be observed with future improvements to this study’s methodology. Addressing one of the limitations of this study, further, would involve further testing of the other (non-wire) techniques for future fusion studies at our institution. The study population for this study was one, the use of the Buried K-wire technique for its relatively recent development in 2013 (2). Unfortunately, the sawbone model did not work well for the two bent 0.062" K-wire construct in this study. Limitations of this study:

- Each construct was performed by one individual. However, no annotation guide was provided to the surgeon for each construct, allowing for the assessment of individual technique and interpretation of the results.
- In conclusion, our in vivo and in vitro construct models were tested under the same experimental conditions to determine the relative strengths of the different techniques.

- While percutaneous K-wire fixation is considered the gold standard surgical treatment for lesser digit deformities, it has a higher rate of failure compared to the Buried K-wire technique (8).
- The Buried K-wire technique has been shown to be effective in cases of complex deformities, including patients with diabetes and rheumatoid arthritis (9). It has also been shown to be more cost-effective than traditional surgical techniques, such as percutaneous K-wire fixation (10).
- The methodological limitations also need to be considered. While the traditional methods are well established, the Buried K-wire technique requires further research to determine its long-term efficacy and cost-effectiveness.

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