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[\[PDF \(1912K\)\]](#) [\[References\]](#)**Effect of bending on the mechanical properties of gold wrought-wire clasps: a non-linear finite element analysis**[Nobusuke ODA](#)¹⁾, [Noriyuki WAKABAYASHI](#)¹⁾, [Takayuki YONEYAMA](#)²⁾ and [Tetsuya SUZUKI](#)¹⁾

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Abstract:

The purpose of this study was to assess the effect of bending of dental gold alloy wires on the mechanical characteristics of wrought-wire clasps. We conducted a simulation of large deformation in straight wires by means of non-linear finite element (FE) analysis. A bending force increased the principal tensile stress on the outer surface of the bending corner and the compressive stress on the inner surface of the bending corner to their maximum values. After unloading with springback, a residual tensile stress was produced on the inner surface. A gold alloy wire clasp exhibited a relatively greater flexibility with small permanent deformation after the clasp tip deflection as compared to previously reported data for Co-Cr wires; this suggests that it is suitable for periodontally compromised teeth. Wire clasps are more susceptible to failure as compared to straight wrought wires because of the residual stress produced during the bending process.

Key words:[Wire clasp](#), [Finite element analysis](#), [Residual stress](#)[\[PDF \(1912K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)[RIS](#)

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