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Recycling of used super elastic NiTi orthodontic wires via electromechanical treatment

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Introduction: NiTi orthodontic wires are used to arrange teeth. Super elastic property of these wires creates a permanent and continues force and cause the increase in the efficiency and decrease in the period of treatment. The desired mechanical properties of NiTi orthodontic wires cause to use these for twice or more time. The goal of this research is the evaluation of mechanical properties of used NiTi orthodontic wires under electromechanical treatment.

Methods and Materials: First, estimated the electrical resistance and the transformation temperatures by the electrical resistance test. Then, we compare the raw wire to the wires that exposed the electromechanical treatment by tensile test.

Results: The results indicated the decrease in the super elastic properties in the wires that exposed the electromechanical treatment.

Conclusions: It could be possible to use this method to control the amount of force to teeth in the period of treatment.