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Comparison of The Fracture Resistance of Metal Reinforced Acrylic vs. Acrylic Only Distal Extension Cantilevers of Fixed Implant Supported Prostheses

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ABSTRACT

Purpose: The aim of this research project was to determine the fracture resistance to linear vertical compressive forces of acrylic and metal-reinforced acrylic fixed implant supported prosthesis cantilever arms. **Methods:** Ten non-reinforced and 10 reinforced acrylic superstructures were secured on five evenly distributed implants and subjected to linear axial compressive forces utilising an Instron® materials testing machine. The reinforcement consisted of commercially available preformed titanium metal strengthener bars. Force was applied to the cantilever arms 15mm distal to the distal most implant and two tests were conducted on each sample. The first drop in load recorded was noted as a fracture of the sample. **Results:** Fracture of the acrylic was noted at the distal most implant in both non-reinforced and the reinforced samples. The mean fracture value for the non-reinforced samples was 679N and for the reinforced samples, 628N. **Conclusion:** No significant difference between the fracture resistance of the two designs was noted.