Case report: Implant overdentures with magnetic attachments using selective laser-sintered frameworks

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Abstract

A framework of removable partial denture can now be fabricated with Co-Cr and titanium alloys by selective laser melting (SLM), a rapid prototyping technology. The advantages of this technology are high precision, appropriate mechanical strength, and its ability to make complicated framework shapes. In this case, CAD/CAM technology was used to fabricate a denture framework and bar attachment with magnets for an implant-supported overdenture (ISOD).

A bar attachment for an ISOD was milled from a pure titanium disk within the wax denture, and the magnetic attachment keeper was placed on it. After the working cast with a bar attachment and the wax denture were both scanned, the denture framework was designed by CAD. The framework was then fabricated by SLM with Ti-6Al-4V alloy powder.

A titanium milled bar attachment with magnets and a laser sintered framework were used for the ISOD. Greater retention, as well as higher strength and accuracy, can be obtained using magnetic attachments and CAD/CAM technology.