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A review of dental implant materials

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Implants have been gaining popularity amongst the patients and frequently are being considered as a first treatment option for missing teeth. In attempt to replace a missing tooth many biomaterials have been evolved as implants for many years in an effort to create an optimal interaction between the body and the implanted material. From a chemical point of view, dental implants may be made from metals, ceramics or polymers. The choice of material for a particular implant application will generally be a compromise to meet many different required properties. There is, however, one aspect that is always of utmost importance that how the tissue at the implant site responds to the biochemical disturbance that a foreign material presents and whether the surrounding bone in integrated with the implant material. The goal of achieving an optimal bone-implant interface has been approached by the alteration of implant surface topography, chemistry, energy and charge as well as bulk material composition. This presentation will review and summarize the biomaterials used for dental implants and the various pros and cons associated to those materials. This presentation might answer the question that "Are ceramic and polymer implants a promising alternative to titanium implants?"

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The effect of metal surface treatment before reporcelainization for ceramic repair after adhesive fracture of ceramo-metallic restoration

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Introduction: Ceramic fracture over non-precious crown coping is a clinical disaster causes a problem for the clinician. The problem is of great importance since till now there is lack of literature/researches that investigate this point. The high cost of the precious metals has simulated interest in less expensive alloys for the casting of Crown & Bridge. We intended to share in solving the problem in regard to the best treatment of bare metal for the best bond strength.

Aim: To investigate the effect of metal surface treatment (sandblasting, grinding and grinding) followed by sand blasting before repocelainization of the bare metal on the bond strength and to shed some light on the mechanism of metal ceramic bonding.

Material & Methods: Two non-precious dental casting alloys, a nickel-chromium and a cobalt-chromium alloys and one type of dental ceramic were used. A total of 80 rod shaped metallic samples, 40 samples for each alloy were used for bond strength measurements and for metallographic study.

Results: Bond strength evaluation test: Co-Cr alloy exhibited the highest mean bonding value followed by Ni-Cr. For Ni-Cr alloy the highest mean bond strength was obtained when the bare metal was treated with sandblasting. For Co-Cr alloy, the highest mean bond strength was obtained when the bare metal was treated with sandblasting and when it was treated with grinding with P120D silicon carbide emery paper.

Conclusions: It is possible to repair the metal/porcelain restoration interface after adhesive fracture. Direct reporcelainization (without metal surface treatment) on the bare metal also gives adequate bond strength. Sandblasting increases the bond strength of metal/porcelain interface for both the investigated alloys, namely Ni-Cr and Co-Cr. The cobalt-chromium alloy shows better bond strength with sandblasting than the nickel-chromium alloy. Grinding procedure should not be used as a metal surface treatment before reporcelainization because it lowers the bond strength in case of base metal alloys.

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