

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

PROBLEM: Ceramic fracture over non-precious crown coping is a common clinical problem 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. The research conducted from January 2010 to December 2011.

AIM: 1) **Testing of bond strength:** effect (sandblasting, grinding and grinding followed by sandblasting) on the bond strength.

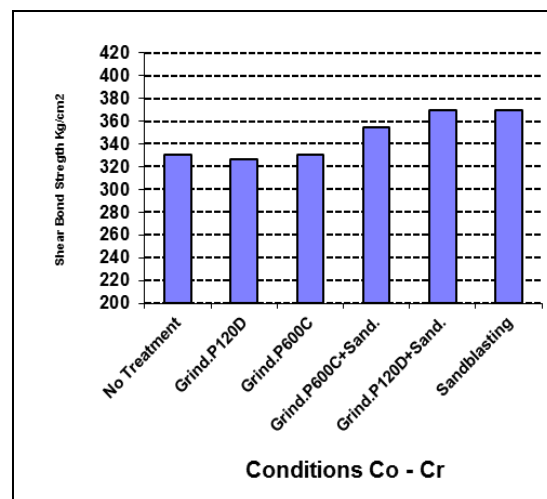
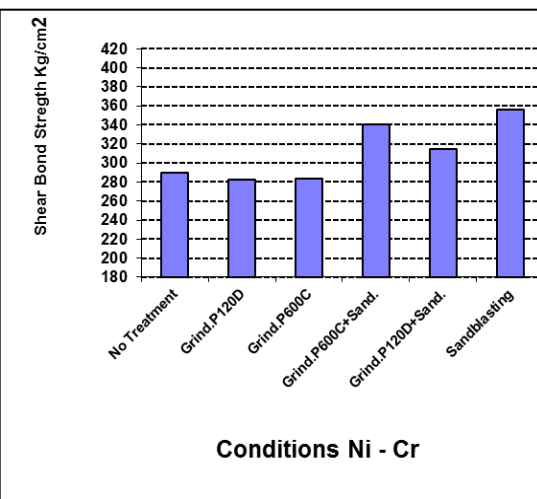
2) **Metallographic microscopic study**

INTERVENTION:

- Two non-precious dental casting alloys, a Ni-Cr and a Co-Cr 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.
- Specimens were prepared.
- The samples were porcelainized.
- Shear bond strength was measured

- Three different methods of surface treatment of the bare metal were done for each alloy-ceramic system beside a group of no surface treatment
- All samples were then repocerlainized.
- Metallographic microscopic examination of the interface was done for all the samples.
- Grinding the metal samples:
- Testing of shear bond strength using tables, Standard deviation, standard error at confidence of 95% & bar chart.
- Metallographic study was carried out using one type of metallographic microscope

RESULTS: Those bar charts show shear bond strength at different metal surface treatment



CONCLUSIONS:

- 1) It is possible to repair the metal/porcelain restoration interface after adhesive fracture
- 2) Direct reporecelainization on the bare metal gives adequate bond strength.
- 3) Sandblasting increases the bond strength of metal/porcelain interface for both the investigated alloy
- 4) Co-Cr alloy shows better bond strength with sandblasting than the Ni-Cr alloy.
- 5) Grinding procedure should not be used as a metal surface treatment before reporecelainization because it lowers the bond strength in case of base metal alloys.

NEXT STEPS:

- Further research is required about reporecelainization & evaluating the adhesive bond between non-precious alloys & ceramic. Most of studies were on cohesive fracture of ceramic.
- The increase use of ceramic restorations engenders the need for reliable ceramic repair system.