

Barrel Finishing of Cobalt-Chromium Alloy Cast Plate

— Prevention against Clasp Deformation —

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The centrifugal barrel finishing is used to improve the surface smoothness of cobalt-chromium framework. However, hard abrasives may hit clasps on the framework during the finishing, which makes the clasps deformed.

The purposes of this study were to examine the deformation of clasps during barrel finishing and to devise a method for preventing clasp deformation. Twenty clasp-shaped cobalt-chromium castings (in premolar shape and molar shape) were fabricated.

In the prevention test, clasp arms were covered with polyethylene tubes and self-curing acrylic resin. Triangular prism-shaped abrasives made of Al_2O_3 and SiO_2 , 6 mm each side, were used in the primary polishing, and similar abrasives, 4 mm each side, were used in the secondary finishing. The durations of the primary and the secondary polishings were 60 minutes and 40 minutes, respectively. The distance between the clasp tips were measured with a measuring microscope before polishing and after primary and secondary polishings.

The results were as follows :

1. Statistical analysis showed that the distance between the clasp tips of the premolar castings had significantly increased after barrel finishing, but such significant increase was not observed in molar castings.
2. The increase of the inter-tip distance during barrel finishing was prevented by connecting clasp arms with polyethylene tubes and self-curing acrylic resin.

The results suggested that the barrel finishing was a useful method for the improvement of surface smoothness of cobalt-chromium framework without deforming clasp arms.

Key words : barrel finishing, clasp deformation, cobalt-chromium, framework