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Comparative evaluation of two investment techniques and pattern materials on surface irregularities of raw Ni-Cr castings- An In-Vitro Study

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Abstract:


Objective: Analyse the effect of different investment techniques and pattern materials on surface irregularities of raw Ni-Cr castings.

Methods and Materials: Sixty square shaped wax patterns measuring 10mm x 10mm x 2mm, all patterns were divided into 4 groups of different investment methods and pattern materials. Study design was experimental study. A phosphate bonded investment material (Bellasun, Bego) was used to invest fifteen samples of inlay wax and kept under normal atmospheric pressure and remaining fifteen wax patterns invested under a pressure of 3 bars for 30 minutes, then allowed to bench set for another 30 minutes. Same investing techniques respectively were carried for remaining 30 samples made from pattern resin. Stereomicroscope labomed-zoomar was used to evaluate the number of nodules of the castings.

Results: Specimens that invested under normal pressure had significantly more surface irregularities such as nodules than under invested under increased pressure ($p < 0.01$).

Conclusion: Wax patterns produced least surface irregularities when invested under pressure and can be recommended as the material and technique of choice. In resin patterns also, investing under pressure produced smoother casting surface than when invested at normal atmospheric pressure and the difference is highly significant.

Key-words: Surface irregularities, pattern resin, Ni –Cr alloy, raw castings, stereomicroscope

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