STATEMENT OF PROBLEM:

A precise marginal seating is most important in a dental restoration to fulfill biological, physical, esthetic and long term success in the oral cavity. Traditionally, patterns were fabricated with type II inlay waxes by indirect waxing technique. To prevent distortion, ideally wax patterns should be invested immediately, but it is not possible every time. To overcome the disadvantages of inlay wax, Autopolymerizing resins and photopolymerising resins were introduced. Even though Different pattern resins are commercially available in the market, no study has been conducted to evaluate and compare the marginal accuracy of different pattern materials due to the effect of storage time and temperature, before and after fabrication of castings.

PURPOSE OF THE STUDY:

The purpose of the study was to evaluate and compare the marginal accuracy of commercially available inlay wax, Autopolymerising resin and photopolymerising resin due to the effect of storage time and temperature, before and after fabrication of castings.

MATERIALS AND METHODS:

A total of 90 dies were poured from the metal master die impressions and they were separated as 3 groups namely inlay wax (30), Autopolymerizing resin (30) and photopolymerising resin (30). Among thirty dies for each group, they were again divided into 10 dies for each variables namely immediately cast group, specimens stored at 0°c for 24 hours and specimens stored at ambient temperature for 24 hours. Specimens were fabricated with the help
of a template to achieve even thickness. Inlay waxes were prepared by press and mold technique, and resins were prepared by incremental technique. After fabrication they were stored according to their groups. Before casting the patterns were measured with a stereomicroscope for marginal discrepancy of each pattern. The patterns were spured, invested, cast, divested after the sprues were cut. After casting, the copings were measured with a stereomicroscope for marginal discrepancy with the help of custom made jig.

RESULTS:

After immediately casting, inlay wax and Autopolymerized resin specimens showed better marginal accuracy than photopolymerised resin specimens.

Inlay wax specimens stored for 24 hours, at 0°C, and measured before casting showed better marginal accuracy than Autopolymerized resin and photopolymerized resin specimens.

Inlay wax specimens stored for 24 hours, at ambient temperature, and measured before casting showed better marginal accuracy than Autopolymerized resins and photopolymerized resins.

Inlay wax and Autopolymerized resin specimens stored for 24 hours, at 0°C, and measured after casting showed better accuracy than photopolymerized resin specimens.

Inlay wax specimens stored for 24 hours, at ambient temperature, after casting showed better marginal accuracy than Autopolymerized and photopolymerized resin specimens.

When Compared within pattern materials, none of the materials kept at 0°C or ambient temperature showed statistically significant difference.
CONCLUSION:

All the pattern materials used in the study showed clinically insignificant results. Inlay wax specimens showed better marginal accuracy than Autopolymerized and photopolymerized resin specimens stored for 24 hours, and measured before casting. Factors like use of press and mold technique, uniform heating and molding temperature of wax patterns made with minimal thickness were considered to arrive at the above conclusion. When compared within pattern materials, kept at 0°C or ambient temperature, they showed insignificant difference. Both inlay wax and Autopolymerized resin specimens immediately cast, and stored for 24 hours at 0°C showed better marginal accuracy than photopolymerized resin specimens.

KEYWORDS:

Autopolymerizing resin, Casting, pattern, wax, margin, bead-brush technique.