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Comparative Evaluation of Retention and Stability of Implant Supported Mandibular Overdenture Using Locator Attachment at Different Implant Positions – An In Vitro Study

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ABSTRACT:

AIM: The aim of this in-vitro study was to evaluate and compare the effect of different locations of implants on the retention and stability of two-implants supported overdenture with locator attachments.

MATERIALS AND METHODOLOGY: An acrylic test specimen was fabricated with implants in four positions – A,B,D and E. Over that an acrylic test denture was constructed in the conventional way with vent holes for all the metal housings corresponding to the four implant positions. The same test denture was duplicated using autopolymerising resin to get the remaining samples. For group A, ten test dentures were fabricated with metal housings in B and D positions and the vent holes in A and E positions were sealed using autopolymerising resin. Similarly, for group B, ten test dentures were fabricated with metal housings in A and E positions and the vent holes in B and D positions were sealed using autopolymerising resin. To all the test dentures, four hooks were attached in canine and molar regions on both the sides and were subjected to tensile forces using Universal testing machine. Each test denture was subjected to three different tests. Test No. 1 was conducted to evaluate the effect of vertically directed dislodging forces. Test No. 2 was conducted to evaluate the effect of oblique

rotational dislodging forces. Test No. 3 was conducted to evaluate the effect of posterior rotational dislodging forces. The force at which the denture detached from the specimen was recorded in Newton (N). Each test was repeated 5 times for each denture and the mean was obtained.

RESULTS: Statistically significant difference (p value 0.032) was found with vertically directed dislodging forces with higher value seen in relation to group A. Highly Statistically significant difference (p value 0.00) was found with oblique rotational dislodging forces with higher value seen in relation to group B. Highly Statistically significant difference (p value 0.00) was found with posterior rotational dislodging forces with higher value seen in relation to group B.

CONCLUSION: The results of the present study showed a significant difference between the two groups and thus rejected the null hypothesis.

KEY WORDS – Mandibular overdenture, Locator, Overdenture attachment, Implant positions.

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