

EFFECTS OF A DENTURE CLEANSING SOLUTION ON THE RETENTION OF NOVALOC® AND LOCATOR® ATTACHMENT AFTER DIFFERENT IMMERSION TIMES

INTRODUCTION

Thailand is experiencing a demographic shift, with a growing elderly population (19.4% are 60+ years old). Among this group, tooth loss is prevalent, and suffering from complete edentulism, primarily due to periodontitis and dental caries. Dentures are the common solution, but they often fail due to instability and bone resorption, especially in the mandible. Implant-retained overdentures, such as those using Locator® and Novaloc® attachments, offer better retention and stability but require maintenance over time.

This study compares the retention of overdenture attachments immersed in a Polident® solution for two durations: 3 minutes (recommended by the manufacturer) and 8 hours (representing an overnight soak). The aim is to evaluate whether the longer, more convenient soaking time for elderly individuals affects attachment retention.

KEYWORDS:

Locator®, Novaloc®, Implant retained overdenture, Retention, Denture cleansing solution



OBJECTIVE

To evaluate the difference in the retention of Locator® and Novaloc® attachments after immersion in denture cleansing solution for 3 minutes and 8 hours per session over the course of 6 months.

HYPOTHESIS

H_0 = The difference in the immersion time causes no significant change in the retention of Locator® and Novaloc® attachments

H_1 = The difference in the immersion time of at least 1 group of samples causes a change in the retention of Locator® and Novaloc® attachments

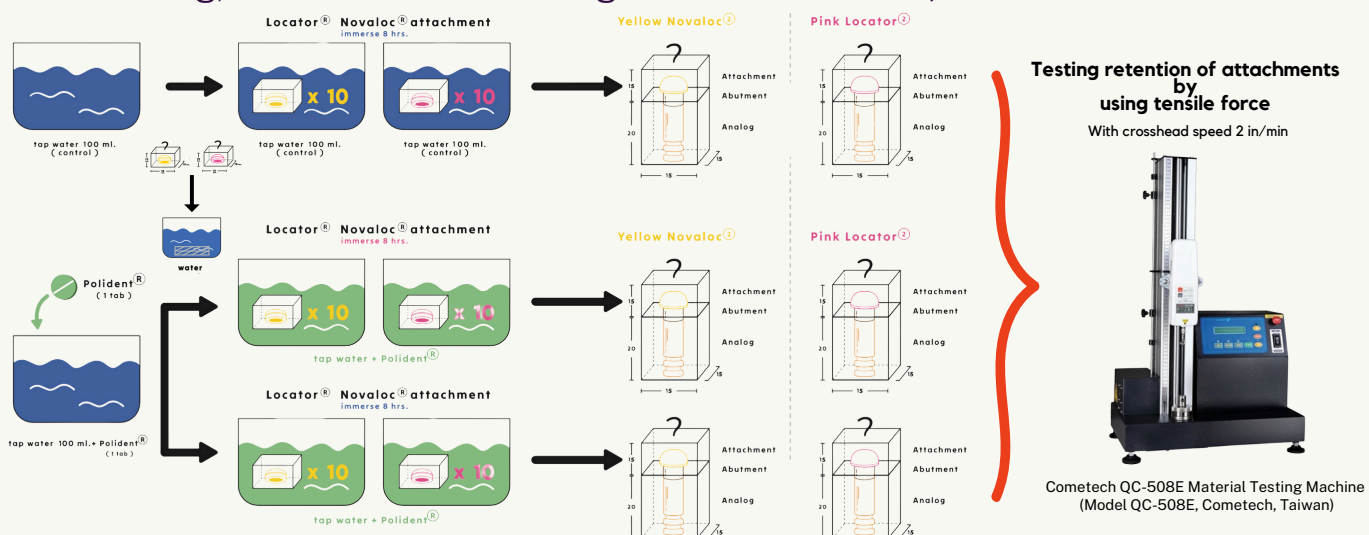
DATA ANALYSIS

The data were analyzed using IBM SPSS Statistics Software. Testing normality distribution by using Kolmogorov-Smirnov test after it was not normal distribution, the results were measured with Mann Whitney U test and then two-way repeated measures ANOVA were used to analyze the difference in retention values at a 5% significance level ($\alpha = 0.05$) in each group.

METHODOLOGY

The total of 60 samples will be divided into 30 Novaloc® attachments and 30 Locator® attachments. The samples were divided into 3 groups (10 Novaloc® and 10 Locator® in each group) immersed in different conditions (tap water, Polident® for 3 minutes and 8 hours per day) for the equivalent time 3 and 6 months. The specimen will be pushed down with a metal rack to ensure full immersion, after each cycle the specimen will be washed in tap water for a minute.

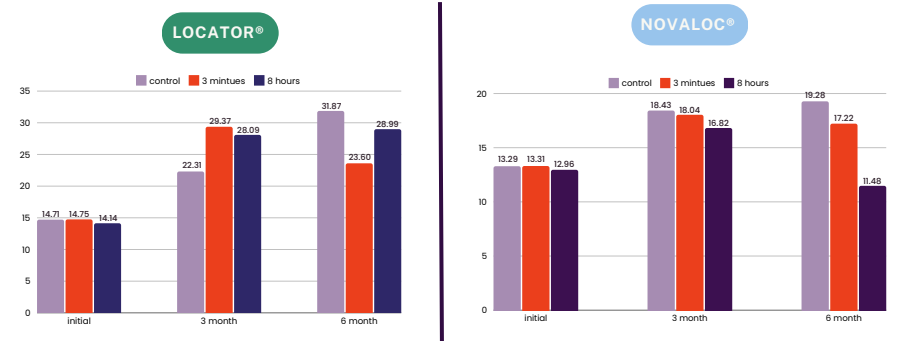
The specimens were tested for load-to-dislodgement (retentive force; Newton) using Comotech QC-508E Material Testing Machine in separate immersing time (before soaking, after simulated soaking for 3 and 6 months).



RESULTS

Both Novaloc® and Locator® attachments showed a significant increase in retention after immersion in each solution and at each immersion time during the T2 interval ($p < 0.05$). For Locator® at T2, the tap water group differed significantly from both the 3-minute (mean difference 7.06) and 8-hour groups (mean difference 5.78) ($p < 0.05$), but there was no significant difference between the 3-minute and 8-hour groups (mean difference 1.28) ($p > 0.05$). At T3, the tap water group showed a significant increase in retention (mean difference 9.56, $p < 0.05$), while the 3-minute group showed a significant decrease (mean difference 5.76, $p < 0.05$).

For Novaloc® attachment at T2, no significant retention difference was found among the three groups ($p > 0.05$), but at T3, significant differences were observed between 3 minutes and 8 hours (mean difference 41.22), 3 minutes and tap water (mean difference 15.36), and tap water and 8 hours (mean difference 56.57) ($p < 0.05$). The 8-hour group showed a significant decrease in retention (mean difference 41.35, $p < 0.05$).



CONCLUSION

This study compared the retention of Locator® and Novaloc® attachments after 3-minute and 8-hour immersions in denture cleanser over one year. Results suggest 8-hour immersion offers more stable retention for Locator®, potentially simplifying denture care for elderly patients. Conversely, in Novaloc® attachment 3-minute immersion provides more stable retention than 8-hour immersion. Further research is needed to confirm long-term durability, as 6-month findings remain inconclusive.

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