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Retention Force Provided by Custom-Made and Native Locator Abutments

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OBJECTIVES

The purpose of this study was to evaluate the retention force provided by locator abutments fabricated for implants placed in zero, 15, and 30 degrees angulation.

INTRODUCTION

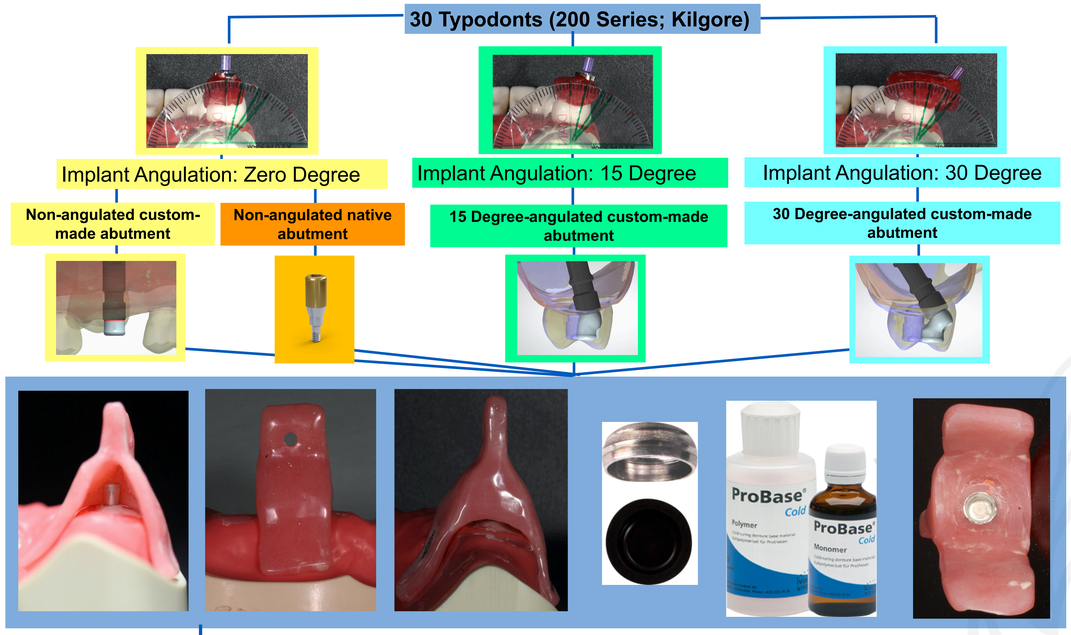
The purpose of attachments is to improve the retention of a removable prosthesis. An implant-retained prosthesis's success primarily depends on the retentive capacity of its attachment element to sustain its functionality. Implants in the maxillary arch is placed with different angulation due to the resorption pattern of the edentulous maxillary arch.

It is agreed that implants planned for the use of overdenture should be parallel to one another to obtain a predictable retention, a complete seating of the retentive elements, and to prevent premature wear or fatigue of the attachment components. One of the methods in correcting the angulations of implants is the use of angulated locator abutment. The use of custom-made angled abutment may affect the retention of the overdenture.

MATERIAL AND METHODS

Materials	Manufacturer
Implant Analog, RC	Straumann USA LLC
Locator Abutment, AH=3 mm	Zest Dental Solution Corp
Angulated Abutment	TruAbutment Inc.
ProBase, Cold Cure	Ivoclar Vivadent, Inc.

Table 1: List of Materials Used in the Study



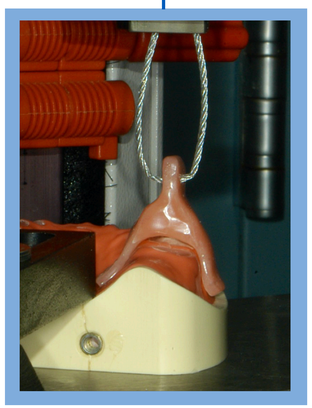


Figure 1: Workflow for Methods

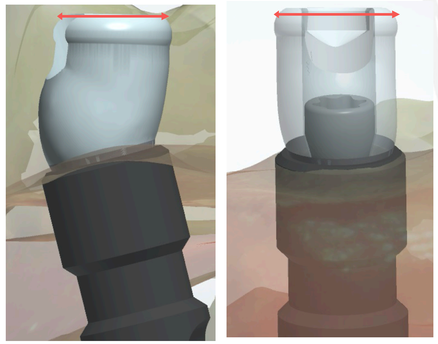


Figure 2: Mesio-Distal and Bucco-Lingual Diameter using Digital Caliper

RESULTS

Abutment	Mean ± SD (mm)	
	Mesio-Distal Diameter	Bucco-Lingual Diameter
Non-angulated Custom-Made	3.82±0.016	3.82±0.017
15 Degree Custom-Made	3.83±0.014	3.47±0.28
30 Degree Custom-Made	3.82±0.02	3.58±0.009
Non-angulated Native	3.81±0.0	3.82±0.0

Table 2: Diameter of Abutment for Custom-Made and Native Abutments at Mesio-Distal and Bucco-Lingual Direction

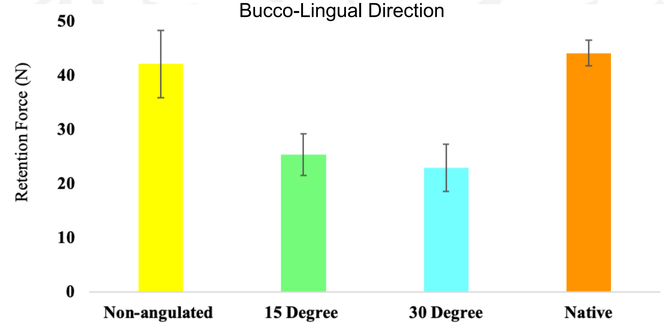


Figure 3 Mean ± SD (N) of Retention Force for Each Abutment

CONCLUSIONS

Within limitations of this study, it can be concluded that:

1. Custom-made abutments fabricated for 15 and 30 angled implants provided a significantly less retention compared to the abutments for zero angled implants.
2. There was no significant difference between native and custom-made abutments for zero angled implants.

Future studies should focus on the performance of the abutments after fatigue load.

REFERENCES

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