

Effects of Silane on the Push-out Bond Strength of Fiber-reinforced Resin Posts Luted with different self-adhesive Resin Cements



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INTRODUCTION:

The preservation of endodontically treated teeth is of great importance. Post and cores are used to restore endodontically treated teeth when there is extensive loss of the external tooth structure. The goals of post and core treatment are to maintain coronal and apical seal of the root canal, protect and preserve the remaining tooth structure, provide a supportive and retentive foundation for the placement of the definitive restoration and to restore function and aesthetics.

PURPOSE:

The study was completed to evaluate the effect of silane on the push-out bond strength using glass-fiber reinforced posts luted into endodontically treated teeth. Further aim was to determine if there is a regional relation between the adhesive system and the push-out bond strength of the fiber post using different luting agents.

MATERIALS AND METHODS:

Fifteen single rooted human teeth were used in the study.

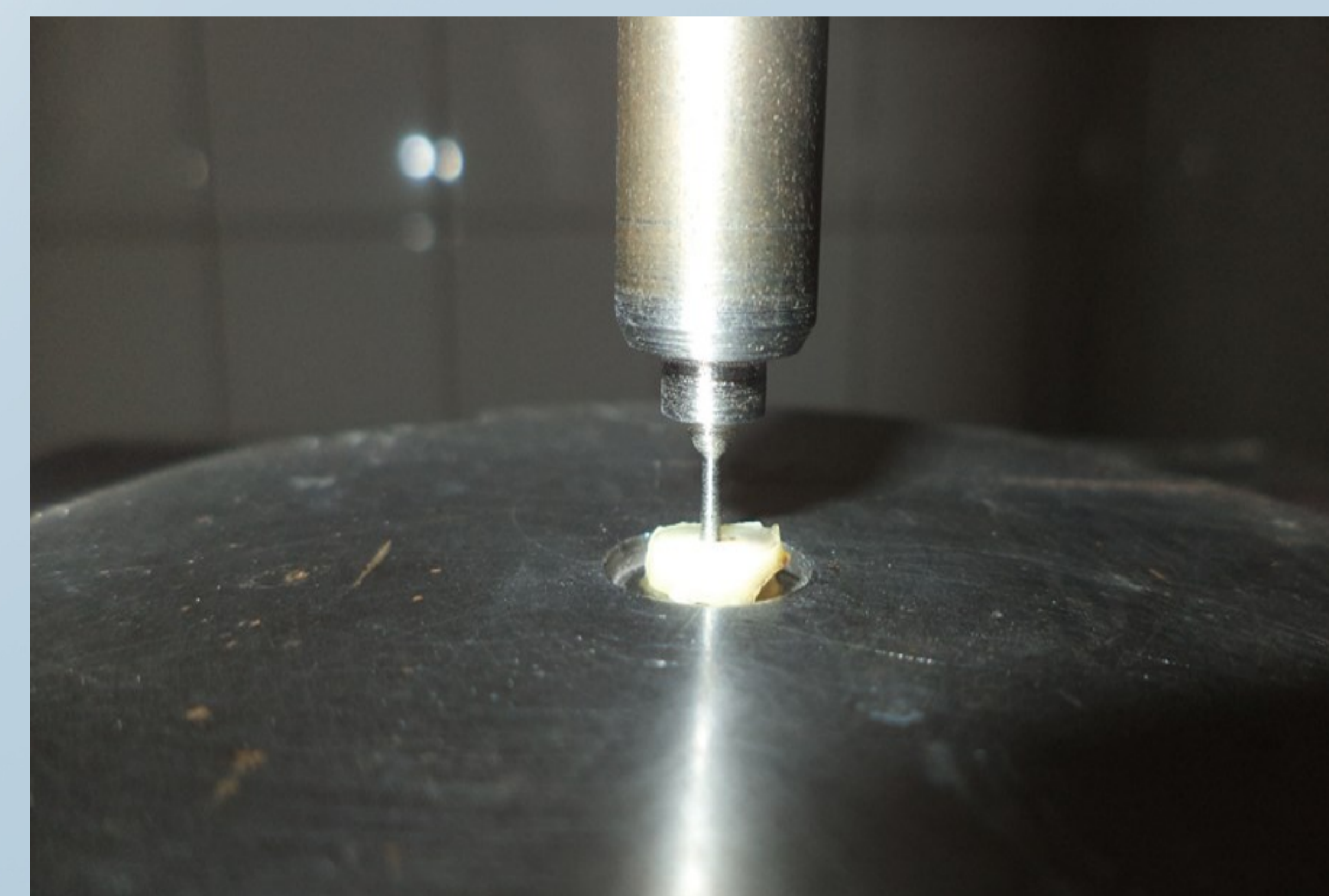
The root canal preparation, filling and luting the post were performed according to the manufacturer's instructions.

The teeth were divided into three groups.

In the roots of each group a same diameter (2.0 mm) glass fiber-reinforced composite post (Rebilda, Voco, Cuxhaven, Germany) were cemented.

In the first group Rebilda DC (VOCO GmbH, Cuxhaven, Germany) without silane, in the second group the same luting material with silane, and in the third group Clearfil DC Core Automix (KurarayDental, Okayama, Japan) without silane were used to lute the posts.

After complete setting of the luting agents three 2mm-thick rods were obtained from the cervical (A), middle (B), and apical (C) regions of the roots. The specimens were then subjected to push-out testing in special equipment (Lloyd 1000 R Materials Testing Machine). Bond strength data were analyzed with ANOVA tests.



RESULTS:

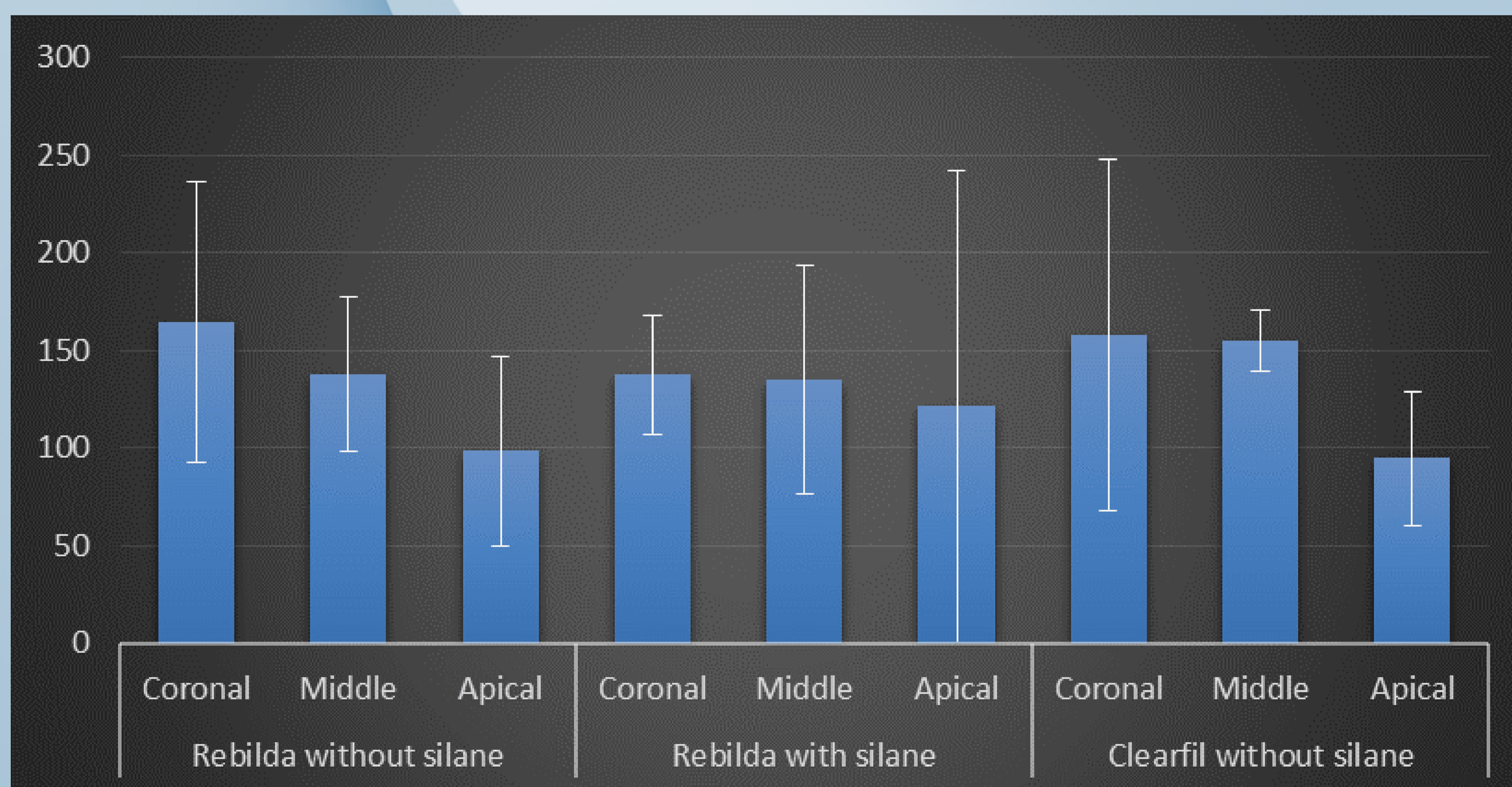
The Rebilda technology without silane had the highest mean value push-out bond strength at the coronal region (164.71N±72.12), while the Clearfil technology without silane had the lowest mean value at the apical region (94.86N±34.14). The one-way ANOVA showed that using silane had no significance on the push-out bond strength (P=0.909), however the root canal dentin regions had a significant effect on the push-out bond strength (P<0.010).

CONCLUSION:

This study showed significant differences among various luting protocols. The bond strength was significantly higher in the coronal region due to the greater cemented surface area and the difference in dentin structure.

ACKNOWLEDGEMENT:

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Treatment	Region	Mean (N)	±SD
Rebilda Without Silane	Cervical	164.7133	72.1244
	Middle	137.8100	39.2466
	Apical	98.5666	48.522
Rebilda + Silane	Cervical	137.4775	30.1325
	Middle	135.0925	59.0325
	Apical	121.2675	121.2675
Clearfil Without Silane	Cervical	158.0750	89.8750
	Middle	155.2150	15.8350
	Apical	94.8650	34.1450