Observation of abutment tooth cementum and coping margin

A Sugita.[1], S Endo.[1], E Nagai.[1,2], N Tsukimura.[1,2], H Saito.[1], M Morokuma.[1], N Suzuki.[1], D Akita.[1] and T Ishigami.[1,2]

[1]Department of Partial Denture Prosthodontics, Nihon University School of Dentistry
[2]Division of Clinical Research, Dental Research Center, Nihon University School of Dentistry

Introduction

It is ideal for placing finishing line of crown restoration prosthesis at enamel, however root cap placed finishing line at cementum surface. There are few studies on cementum margin of prosthesis. The purpose of this study was to investigate for the cementum coping margin and scaling and root planning (SRP) cementum surface of the extracted teeth.

Materials and Methods

1. the extracted teeth done SRP using hand scalar and ultrasonic scalar

After extracted teeth, the subject of this observation is no cervical cavity in a upper caspid which fixed with 10% formalin . It is set in the gypsum which the periapical side is being under 5 mm from the labial cement-enamel-junction (CEJ) on the edge and cut off crown using the diamond disk . As for the extracted teeth, the root preparation was done using the diamond point (Sho-fu, Tokyo, Japan) is Test1, and it was done SRP using a hand scaler (Gracy-curet 5.6, Hu-Friedy) or an ultrasonic scaler (A-chip, Yoshida, Tokyo, Japan) is Test2. These samples, after decalcification with 5% formicacid, it was done paraffin embedding which are hematoxyline-eosin-stain (H.E) dyed were observed by an optical microscope. (fig.1)

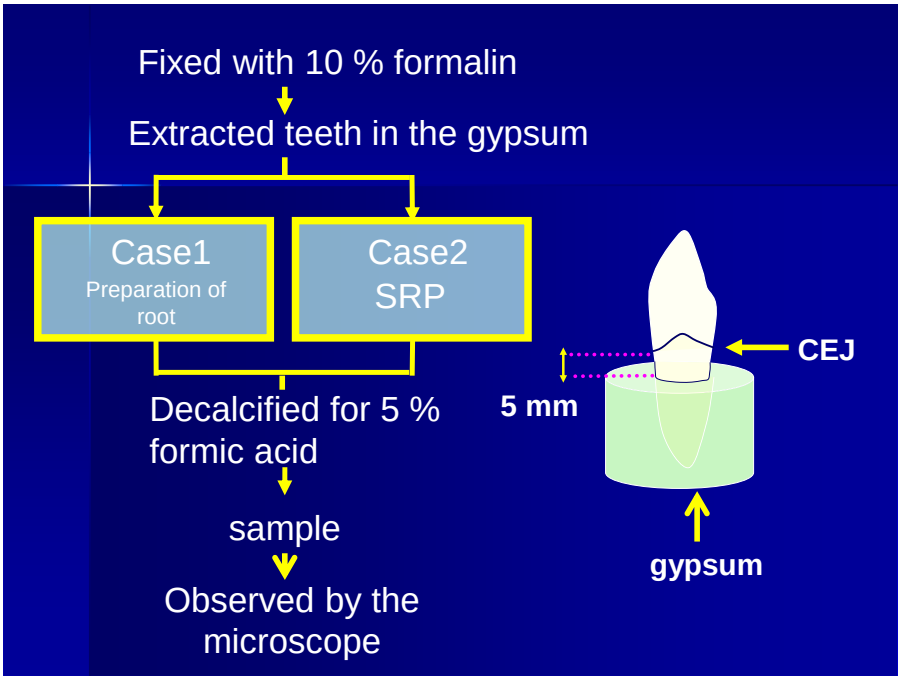


Fig.1

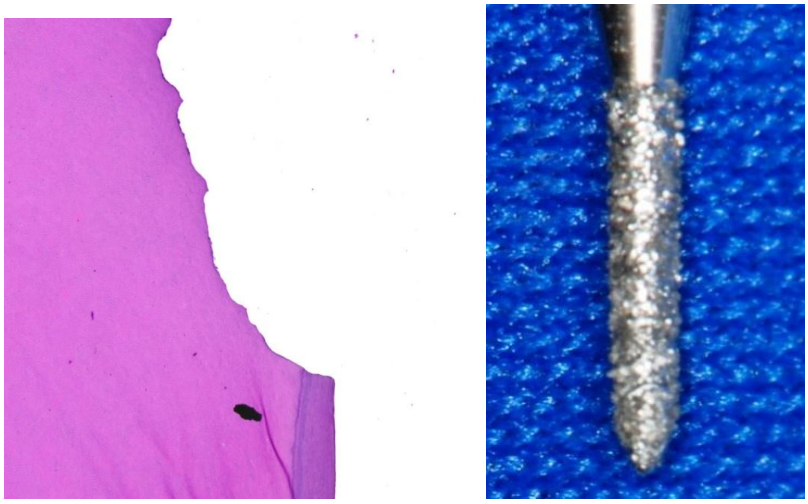
2. The extracted teeth with the margin of the coping were observed with laser microscope.

10 extracted teeth with the margin of the coping were observed with laser microscope (VHX-1000, KEYENCE,Tokyo, Japan). (fig2)

Fig.2 microscope

Results

1. As the result of this study, for the observation of after preparation of root surface. It is lesslikely that the cementum will cause chipping by using a diamond point. (fig3) On the other hand root of SRP seems to have cracks and exfoliation of cementum after preparation of root surface. (fig4)

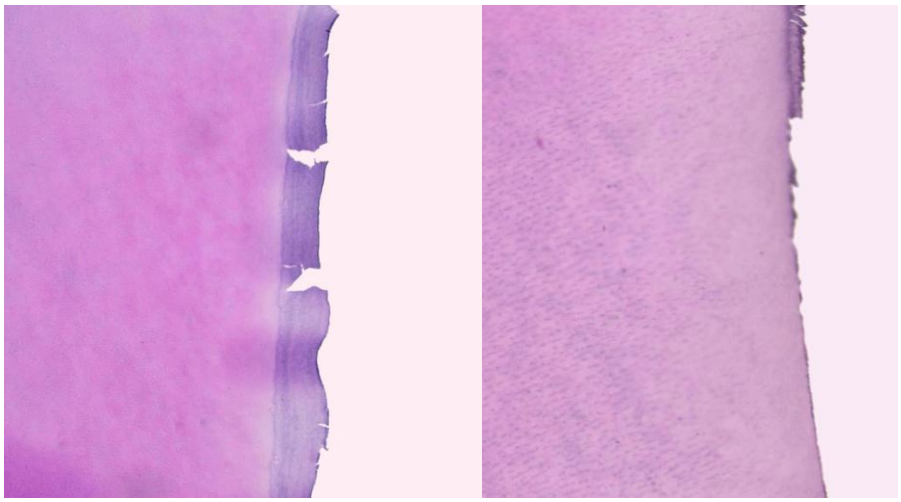


(a) 106RD ×10 (b) 106RD

(b) SF106RD ×10 (d) SF106RD

Fig.3
Showing the Figure 3 by using 106RD or SF106RD and preparation of root.
Forming surface shows the serrate, and the marginal types was chamfer. The coping margin place on c Fig.1

ementum .There were no chipping and cracking of cementum. It was smooth surface formation of SF106RD from 106RD better.



(a) Ultrasonic scaler (b) Hand scaler

Fig.4
SRP using a hand scaler is found most cementum had been removed from SRP using a ultrasonic scaler.

2. Margin was seen in 8 of 10 non-conforming to these samples. And they were observed around the coping margin at a magnification 100. (fig5)

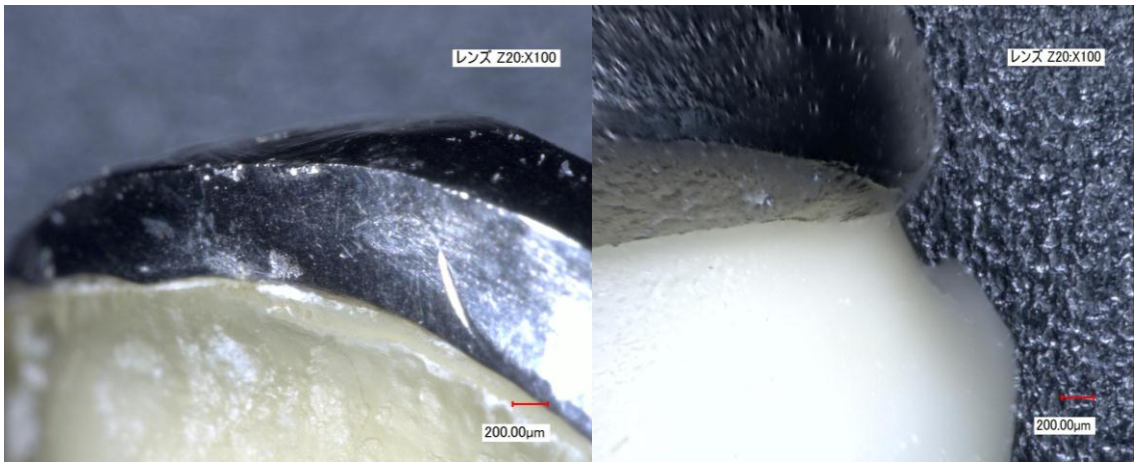


Fig.5

Discussion and Conclusions

It is concluded that prepared cementum of root surface with diamond point has little influence on root surface. On the other hand, chipping or cracking of cementum was observed in SRP using an ultrasonic scaler. This crack is because the abundance of sharp fiber in cervical tooth cementum, prom to cracking along this fiber. Base upon the results of this study, the coping margin place on cementum, it may be caused by non-conforming margin by SRP.

Based upon the results of this study, it is concluded that prepared cementaum of root surface with diamond point has little influence on root surface. Many of the extracted teeth with the margin of the coping, There are steps between the coping and the root surface, non-conforming margin was observed.

References

1. T. Ishigami, Observation on Cervical Enamel Margins studied by Scanning Electron Microscopy, The Journal the Stomatological Society, Japan 50 (2) : 299-337,1983