

# 齒冠補綴物 製作에 사용되는 Nickel-Chromium系 合金의 齒頸部 邊緣에 關한 適合性

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*Abstract*

## The Marginal Fit of Nickel-Chromium Metal Alloys used for the Production of Crown and Bridge Prosthetics

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The purpose of this study was to determine the marginal fit of recasting by used nickel-chromium metal alloys, Hi-Crown, New-Crown and CB-80.

Ninety crown prosthetics were divided into eighteengroups according to new to old metal ratios.

Each crown was seated on its master die and then the marginal gaps were measured under optical microscope(× 50).

All groups were showed good marginal fit, except group 3 of Hi-Crown(156μm).

The results suggest that the marginal fit of Ni-Cr metal alloy casting bodies were good as without concerned to mixed ratios and metals.

## 1. 서론

가  
1970  
nickel-chromium(Ni-  
Co가  
Cr)  
Ni-Cr  
Co-Cr  
가  
가  
Cr  
Ni-Cr  
1600 2000  
가

15

가

가

2) (spruing)  
(investing)

(incisal edge)

18gauge wax

(reservoir)

10mm

(crucible former)

(wax pattern)

wetting

agent Surcast(G. C. Dental Industrial Co., Japan)

가

Hi-Crown, New-Crown, CB-80 가 Ni-Cr

(W/P ratio) 0.16

100% 20% 6

1

0.8mm

(asbestos strip)

(ring)

6mm, ring

49mm,

50mm

II. 실험재료 및 방법

1. 실험재료

가

nickel-chro-mium Hi-Crown(Mond-DentalCo., Japan), New-Crown(Ruby Dental MFG Co., Japan), CB-80(Sankin Industry Co., Japan) Hi-Temp(Whip-Mix Co., U.S.A.)

3) (burn-out), (adaptation)

(casting)

Hi-Temp

800

2

430

30

800

30

30

가 (oxyacetylene

gas)

spring tension

Kerr

(Kerr Co., U.S.A.)

3

(rewinding)

2. 실험 방법

1)

(die)

(Bayer

Dental Co., West Germany)

(artificial stone )

aluminium oxide

sand blasting

50µm

10

Crown, CB-80 가 Hi-Crown, New-Crown, Ni-Cr

6

5

30

90

24

20 gauge

1

6

micrometer

CHB

(Olympus Co., Japan)

50

sheet wax

inlay wax

1. Groups according to new to old metal alloy ratios(n=5, N =30)

Group	New to old metal alloy ratio
Group 1	all new metal alloy
Group 2	80 : 20
Group 3	50 : 50
Group 4	40 : 60
Group 5	30 : 70
Group 6	20 : 80

4 94 ± 37.1 μm, 30 : 70  
 5 112 ± 23.9 μm, 20 : 80  
 6 82 ± 11.0 μm  
 New-Crown 1, 2, 3, 4, 5  
 6 64 ± 21.9 μm, 68 ± 39.0 μm, 64 ± 15.2 μm,  
 70 ± 10.0 μm, 92 ± 39.7 μm, 52 ± 11.0 μm, CB-  
 80 1, 2, 3, 4, 5 6  
 78  
 ± 16.4 μm, 98 ± 33.5 μm, 64 ± 15.2 μm, 108 ± 23.9 μm,  
 82 ± 8.4 μm, 94 ± 37.9 μm ( 2).

### 3. 자료분석

(one-way ANOVA)  
 (post-hoc) Duncan's Multiple-  
 Range Test  
 SPSS/PC+

가 가  
 (ADA Specification,  
 1978)  
 25 μm

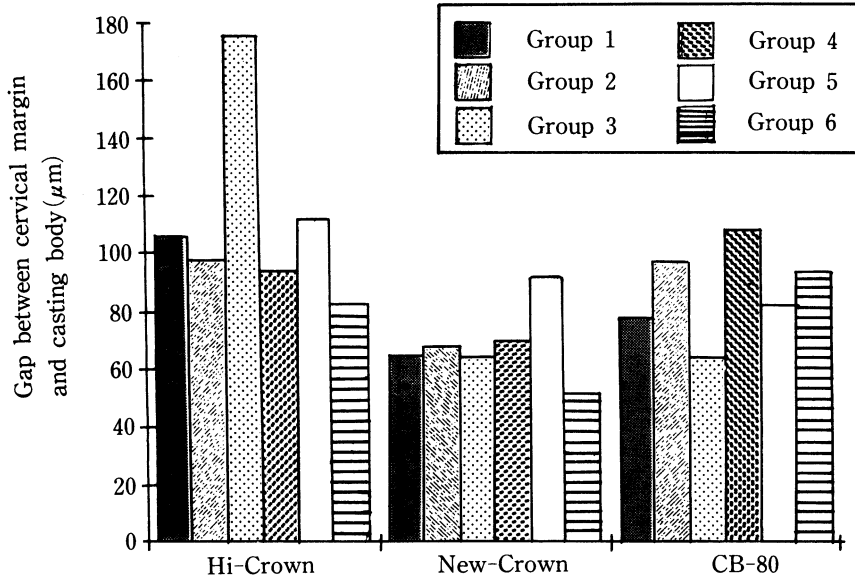
### III. 결과 및 고찰

Hi-Crown, 100%  
 1 106 ± 36.5 μm, 80 :  
 20 98 ± 43.2  
 μm, 50 : 50 3  
 156 ± 53.2 μm, 40 : 60

Christensen(1966) 10  
 (inlay)  
 가 2 51 μm  
 McLean (1971)  
 가 120 μm Assif  
 (1987) 140 μm

2. Mean and standard deviation of marginal gap according to new to old metal alloy ratios(μm)

Groups/Source	Hi-Crown	New-Crown	CB-80
Group 1	106 ± 36.5	64 ± 21.9	78 ± 16.4
Group 2	98 ± 43.2	68 ± 39.0	98 ± 33.5
Group 3	156 ± 53.2	64 ± 15.2	64 ± 15.2
Group 4	94 ± 37.1	70 ± 10.0	108 ± 23.9
Group 5	112 ± 23.9	92 ± 39.7	82 ± 8.4
Group 6	82 ± 11.0	52 ± 11.0	94 ± 37.9



1. Gap on cervical margin according to new to old metal alloy ratios. Group 3 was significantly different from group 6( $p<0.01$ ) and 2, 4( $p<0.05$ ) in Hi-Crown. In New-Crown, there was significant difference between group 5 and 6( $p<0.05$ ). In CB-80, there was significant difference( $p<0.05$ ) between group 3 and 4( $p<0.05$ ).

1

Hi-Crown Group 3  
 156 $\mu$ m 가 Group 6( $p<0.01$ ),  
 Group 2 4( $p<0.05$ ) 가 20  
 : 80, 80 : 20 40 : 60 가

New-Crown 92 $\mu$ m Group  
 5 52 $\mu$ m Group 6 가  
 ( $p<0.05$ )가 CB-80 108 $\mu$ m 33 50% Carig(1979)

Group 3 64 $\mu$ m Hi-  
 Crown 50 : 50 Hesby (1980)  
 Group 3 Assif 4  
 (1987) (cementation)

가 Group 3  
 가 Group 6 ( $p<0.05$ )  
 80 50 : 50 20 :

3. Summary of ANOVA between groups and metals.

Source	DF	SS	MS	F	P
Group 1	2	4573.3333	2286.6667	3.2981	.0722
Group 2	2	3000.0000	1500.0000	.9978	.3973
Group 3	2	28213.3333	14106.6667	12.8632	.0010
Group 4	2	3693.3333	1846.6667	2.7024	.1074
Group 5	2	2333.3333	1166.6667	1.5837	.2453
Group 6	2	4680.0000	2340.0000	4.2036	.0413

가 50 : 50  
 50 80% Hi-Crown 50 : 50  
 (1987) Assif 3 가  
 50% Carig(1979)가 , New-Crown CB-80  
 Ni-Cr . 50 : 50 Hi-Crown  
 50 : 50 Hi-  
 Crown

50%

V. 결론

Ni-Cr  
 ,  
 nickel-chromium Hi-Crown,  
 New-Crown, CB-80 18

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