

치조정 골흡수에 대한 platform switching이 미치는 영향

Influence of platform switching on crestal bone resorption

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ABSTRACT

Purpose: Numerous studies have shown that crestal bone resorption around the implant was related to the location of the implant abutment junction(IAJ). Recently it was hypothesized that platform switching termed the inward horizontal repositioning of the IAJ might limit bone resorption around the implants. The purpose of this clinical study was to evaluate the effect of platform switching on crestal bone resorption.

Materials and Methods: The crestal bone loss of 65 external hex implants in 26 patients were radiographically measured at crown placement and follow-up examinations. 23 standard implants(non-platform switching group, NP) were connected with the matching abutments and 42 wide implants(platform switching group, PS) were connected with the 1 mm smaller diameter abutments.

Results: There was significant difference of crestal bone loss between NP group and PS group. For implants in the NP group, mean crestal bone loss was 1.18 ± 0.68 mm at crown placement and 1.42 ± 0.41 mm at follow-up. The mean bone loss in PS group was 0.47 ± 0.52 mm at crown placement and 0.60 ± 0.65 mm at follow-up. When the crestal bone changes according to placement depths of implants were compared, subcrestal position of IAJ had a significantly less bone loss in PS group, but it was not in NP group.

Conclusion: Within the limits of the present study, it was concluded that platform switching technique might decrease crestal bone loss around the implants. Additionally, when the IAJ of implant was placed 1 mm deeper in the alveolar bone, the effect of platform switching on bone loss was enhanced. (*J Korean Acad Periodontol 2008;38:135-142*)

KEY WORDS: dental implants; marginal bone loss; platform switching.

1.5-2.0mm

3)

가

가

1)

2)

4,5)

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: 2008 3 31 ; : 2008 4 5

가

가
 (implant-abutment junction, IAJ) 가
 1.5-2.0 mm 가
 piece , IAJ one stage two stage
 cell infiltrate, aICT)가 , 1 mm one stage
 4 mm countersink
 12-14) , 5 mm 6 mm
 countersink
 15-19) platform 가 , 5 mm
 4 mm platform 가
 IAJ platform switching , 6 mm 5 mm platform
 20,21) Platform switching 가 . Two stage
 IAJ cover screw
 platform cover screw
 IAJ aICT
 platform
 (Equi-Crestal Position),
 switching IAJ platform platform
 1 mm cover screw가
 가 (Sub-Crestal
 Position).
 one stage
 1. 4.5 (2~10)
 2003 4 2005 3 &
 Implant innovations/3i external hex platform

4 mm platform 가
 non platform switching (NP group)
 , 5 mm 6 mm 가 68 24 4 mm
 platform 1 mm platform platform switching
 가 platform switching (PS , 44 5 mm
 group) . 가 platform switching
 . NP PS
 3. 가 (Table 1).
 가 NP 31.4 (13~49), PS 29.4
 가 (12~49) .
 . XCP NP 1.06 mm, PS
 . 가 , 0.42 mm , 1
 , PS 0.52 mm (Table 2).
 platform NP PS
 가 (P<0.001).
 platform
 PS
 , (PEAK LUPE 15x, Japan) (Table 3). Platform
 0.1 mm . 0.19 mm,
 0.37 mm , platform
 4. 0.76 mm, 0.84 mm
 . NP
 Platform switching platform platform
 가 NP PS
 Mann-Whitney test .
 platform switching
 가 , NP PS .
 NP 0.90
 mm() 1.37 mm()
 가 가 NP PS , PS 0.46
 Mann-Whitney test mm() 0.85 mm() .

Table 1. Distribution of Implants According to Implant Placement Depth and Surgical Protocol

	Implant Placement Depth		Surgical Protocol	
	Equi-Crest	Sub-Crest	One-Stage	Two-Stage
NP(n=24)	13	11	9	15
PS(n=44)	21	23	16	28

Table 2. Crestal Bone Level at the Mesial and Distal Aspects at the Crown Placement and Follow-Up. Mean value(in mm) and standard deviation(\pm SD)

	Crown Placement			Follow-Up		
	Mesial	Distal	Average	Mesial	Distal	Average
NP	1.19 \pm 0.67	1.16 \pm 0.81	1.18 \pm 0.68	1.44 \pm 0.46	1.40 \pm 0.54	1.42 \pm 0.41
PS	0.56 \pm 0.59	0.37 \pm 0.67	0.47 \pm 0.52*	0.71 \pm 0.67	0.48 \pm 0.78	0.60 \pm 0.65*

* P<0.001

Table 3. Crestal Bone Level at the Crown Placement and Follow-Up According to Implant Placement Depth. Mean value(in mm) and standard deviation(\pm SD)

	Crown Placement		Follow-Up	
	Equi-Crest	Sub-Crest	Equi-Crest	Sub-Crest
NP	1.43 \pm 0.67	0.90 \pm 0.57	1.50 \pm 0.40	1.33 \pm 0.41
PS	0.76 \pm 0.46	0.20 \pm 0.42*	0.85 \pm 0.42	0.37 \pm 0.73 [#]

* P<0.001, # P<0.05

Table 4. Crestal Bone Level at the Crown Placement and Follow-Up According to Surgical Protocol. Mean value(in mm) and standard deviation(\pm SD)

	Crown Placement		Follow-Up	
	One-Stage	Two-Stage	One-Stage	Two-Stage
NP	1.59 \pm 0.28	0.91 \pm 0.73 [#]	1.56 \pm 0.34	1.33 \pm 0.43
PS	0.55 \pm 0.64	0.42 \pm 0.43	0.85 \pm 0.64	0.46 \pm 0.61 [#]

[#] P<0.05

switching IAJ platform 0.84 mm (plaque associated inflammatory cell infiltrate, P-ICT) IAJ, IAJ 1.5 mm PS 0.5 mm (abutment inflammatory cell infiltrate, aICT) IAJ 가 aICT 1.0 mm aICT Ericsson 12) 2 piece 가 2 가 , 2 piece 14)

Platform switching
가

16-19)
Platform switching
가

IAJ
aICT
21) aICT가
0.75 mm
aICT

platform switching
NP

platform switching
가

NP

platform switching
가

NP

2)
Todescan 22)
1 mm,
1 mm
3
mm
IAJ
가
aICT가
3
12-14)
PS platform

IAJ
piece
IAJ가
13) Ericsson
3
90%가
가
3
60%가
40%
가
4~12
aICT가
IAJ
가
PS
1
가

23,24)
platform switching
IAJ

25,26) Platform
PS
platform switching
platform
가
NP PS
가

가

가

platform

switching

platform switching

가

1 mm

platform switching

가

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