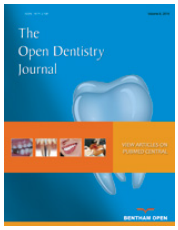

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Supplementary Material

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Effects of Cariogenic Bacteria and Sealant Evaluated by International Caries Detection Assessment System

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Abstract:

Aim:

Evaluation of tooth surface level effect of cariogenic bacteria and sealant.

Background:

International Caries Detection Assessment System (ICADS) is a clinical scoring system that can assess the non-cavitated early stage of dental caries by surface level. Scores used in ICDAS are ordinary and each tooth within one individual is not statistically independent.

Objective:

In this study, by applying mixed effect modeling, the effect of cariogenic bacteria and fissure sealant for tooth surface-level caries progression was analyzed.

Methods:

Ninety-eight patients who had been regularly visited the dental hospital for the regular check-ups were enrolled in this study. Among them, patients who visited at baseline, after one and two years, were included for the analysis. Fifty-two patients were dropped out. The study population consisted of 25 boys and 21girls and their mean ages were 9.3 +/- 2.1. Salivary levels of cariogenic bacteria were measured by qPCR. Mixed effect modeling with repeated measures was applied for the analysis.

Results:

Salivary levels of *S. mutans* and *Lactobacilli* were affected by the progression of the ICDAS score. Maxillary teeth, molars and buccal and occlusal surfaces were tended to progress. Maxillary tooth, molar tooth and buccal, approximal, and occlusal surface were tended to be affected by both cariogenic bacteria.

Conclusion:

By applying mixed effect modeling, highly-detailed surface-level analysis can be available.

Keywords: ICDAS, Mixed effects modeling, Cariogenic bacteria, Fissure sealant, Follow up study, Dental caries.

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SUPPLEMENTARY TABLES AND FIGURE

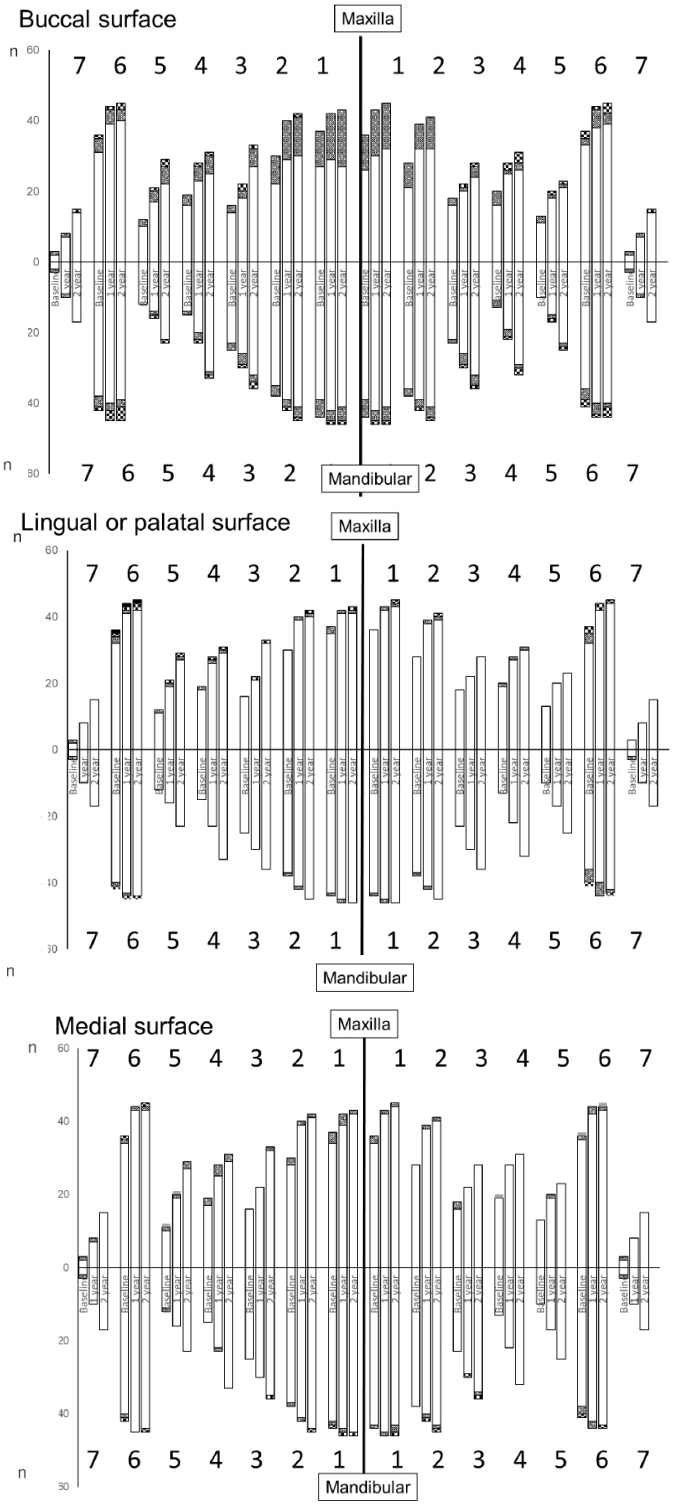
Buccal surface
Maxilla
Mandibular
Lingual or palatal surface
Maxilla
Mandibular
Medial surface
Maxilla
Mandibular

Fig. S1 cont.....

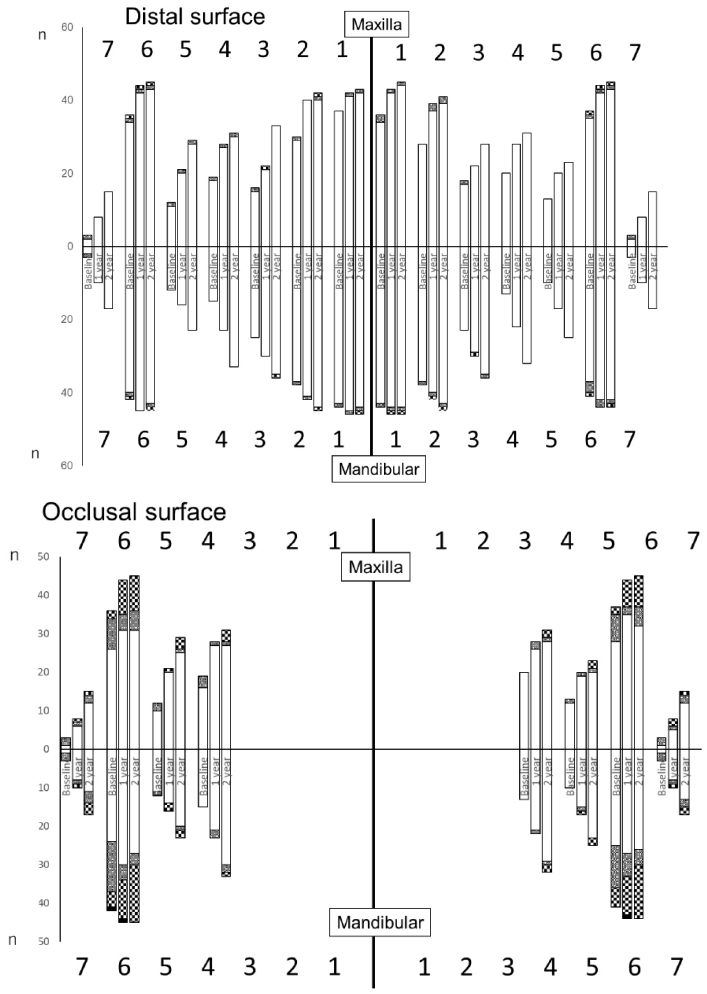

Fig. (S1). Prevalence of dental caries classified by tooth surface.
Results were separately shown by tooth surface: Buccal surface, lingual or palatal surface, medial surface distal surface and occlusal surface.
Bar charts show the number of dental caries evaluated by the ICDAS score.
Most of the teeth surfaces were complete. For the lingual or palatal surface and approximal surface, the prevalence of dental caries evaluated by the ICDAS score was rare. A relatively higher prevalence of dental caries was observed in maxillary anterior tooth and occlusal surface of 1st molar tooth.

Supplementary Table 1. Descriptive analysis of the characteristics of the subjects analyzed in this study and prevalence of dental caries evaluated by ICADS against tooth surface.

–	–	Mean	SD	Median	25 Percentile	75 Percentile
Age(Y/MM)	Baseline	9/3.22	2/ 1.24	9/ 0.50	8 / 4.75	10 /11.5
Stimulated saliva (mL/3min)	Baseline	2.71	2.99	2.00	1.50	3.50
	One year	3.00	2.03	2.75	1.50	4.00
	Two Year	3.29	1.93	3.00	2.00	5.00
S. mutans	Baseline	363462	706678	20149	0	419918
	One year	228673	401803	53823	463	291469
	Two Year	372400	722094	117365	0	347457
Lactobacillus	Baseline	320273	1126023	0	0	11153
	One year	3290808	16219415	0	0	285681
	Two Year	1860247	7796732	0	0	54152
def	Baseline	2.78	3.571	1	0	6
	One year	2.17	2.946	0	0	5
	Two Year	1.35	2.350	0	0	2

Supplementary Table 2. Characteristics of the tooth surface and changes of ICDAS score.

–	–	After One Year				–	After Two Year			
–	–	**Stable**	**Progressed**	**Improved**	**Total**	–	**Stable**	**Progressed**	**Improved**	**Total**
Gender							–			
Female	–	1226 (93.2%)	23 (1.7%)	66 (5.0%)	1315		1206(91.7%)	39 (3.0%)	70 (5.3%)	1315
Male	–	1432 (89.6%)	125 (7.8%)	41(2.6%)	1598		1438(90.0%)	119 (7.4%)	41 (2.6%)	1598
Maxilla Mandibular										
Mandibular	–	1444 (93.6%)	61 (4.0%)	38 (2.5%)	1543		1429(92.6%)	69 (4.5%)	45 (2.9%)	1543
Maxilla	–	1214 (88.6%)	87 (6.4%)	69 (5.0%)	1370		1215(88.7%)	89 (6.5%)	66 (4.8%)	1370
Tooth type										
Anterior	–	1447 (96.0%)	39 (2.6%)	22 (1.5%)	1508		1415(93.8%)	59 (3.9%)	34 (2.3%)	1508
Premolar	–	503 (89.0%)	43 (7.6%)	19 (3.4%)	565		512 (90.6%)	38 (6.7%)	15 (2.7%)	565
Molar	–	708 (84.3%)	66 (7.9%)	66 (7.9%)	840		717 (85.4%)	61 (7.3%)	62 (7.4%)	840
Tooth surface										
Lingual or Palatal		626 (95.1%)	55 (8.4%)	27 (4.1%)	658		623 (94.7%)	14 (2.1%)	21 (3.2%)	658
Buccal	–	576 (87.5%)	30 (4.6%)	39 (5.9%)	658		572 (86.9%)	57 (8.7%)	29 (4.4%)	658
Approximal	–	1247 (94.8%)	48 (3.6%)	24 (1.8%)	1316		1251 (95.1%)	28 (2.1%)	37 (2.8%)	1316
Occlusal		209 (74.4%)	15 (5.3%)	17 (6.0%)	281		198 (70.5%)	59 (21.0%)	24 (8.5%)	281
Cariogenic Bacteria										
S. mutans	-	730 (98.1%)	5 (0.7%)	9(1.2%)	744		730 (97.6%)	8 (1.1%)	10 (1.3%)	748
	+	1928 (88.9%)	143 (6.6%)	98 (4.5%)	2169		1914 (88.4%)	150 (6.9%)	101 (4.7%)	2165
LB	-	2066 (93.5%)	115 (5.2%)	29 (1.3%)	2210		2028 (91.9%)	125 (5.7%)	53 (2.4%)	2206
	+	592 (84.2%)	33 (4.7%)	78 (11.1%)	703		616 (87.1%)	33 (4.7%)	58 (8.2%)	707

P-values were not calculated, because there was a risk for type I error.

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