

7 Accuracy of The Canary System with opaque dental sealants

Wednesday, March 20, 2013: 1:30 p.m. - 3 p.m.
 Location: Room 608 (Washington State Convention Center)
 Presentation Type: Oral Session

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Objective: We determined the sensitivity and specificity of The Canary System (CS) when used to monitor caries underneath the commonly used opaque dental sealants.

Method: 124 potential sound and carious pits/fissures, on occlusal surfaces of 60 extracted human molars and premolars, were examined using ICDAS criteria. Fifteen mixed sound and carious teeth were randomly assigned to each of four sealant groups (Helioseal® F, Embraceä WetBondä, Delton®, UltraSeal XT® plusä). After scanning marked pits/fissures on each tooth with CS and DIAGNOdent (DD), teeth in each group were sealed with their respective sealant by an experienced clinician. Following sealant placement, the marked pits/fissures were re-scanned with CS and DD. Using polarized light microscopy as the gold standard, the status (cariou/non-cariou) of each examined pit/fissure was confirmed. The sensitivity (SS) and Specificity (SP) of each caries diagnostic method before and after sealant placement was calculated in overall and for each type of sealant.

Result:

Method	Overall				Delton				Embrace				Helio				UltraSeal			
	Before Sealant		After Sealant		Before Sealant		After Sealant		Before Sealant		After Sealant		Before Sealant		After Sealant		Before Sealant		After Sealant	
	SS	SP	SS	SP	SS	SP	SS	SP	SS	SP	SS	SP	SS	SP	SS	SP	SS	SP	SS	SP
CS	.77	1	.59	.94	.79	1	.67	1	.87	1	.78	1	.65	1	.39	1	.75	1	.5	.67
DD	0.2	1	.93	.13	.29	1	1	.29	.22	1	.9	0	.26	1	1	0	.1	1	.8	0
ICDAS	.49	.94	-	-	.5	1	-	-	.57	1	-	-	.52	0	-	-	.35	1	-	-

Conclusion: While the caries detection ability of CS was not affected by sealant, the sensitivity of DIAGNOdent was increase at the expense of the specificity, which was drastically reduced possibly due to the high false positive readings after sealant placement.

Keywords: Canary System, Caries, Diagnosis, Preventive dentistry and Sealants

Presenting author's disclosure statement: Employee of Quantum Dental Technologies

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