J. NEHRING, T. IMBERY, C. JANUS, and P. MOON, Virginia Commonwealth University - VCU/MCV, Richmond, VA

Saturday, March 6, 2010: 11:45 a.m. - 1 p.m.
Location: Exhibit Hall D (Walter E. Washington Convention Center)

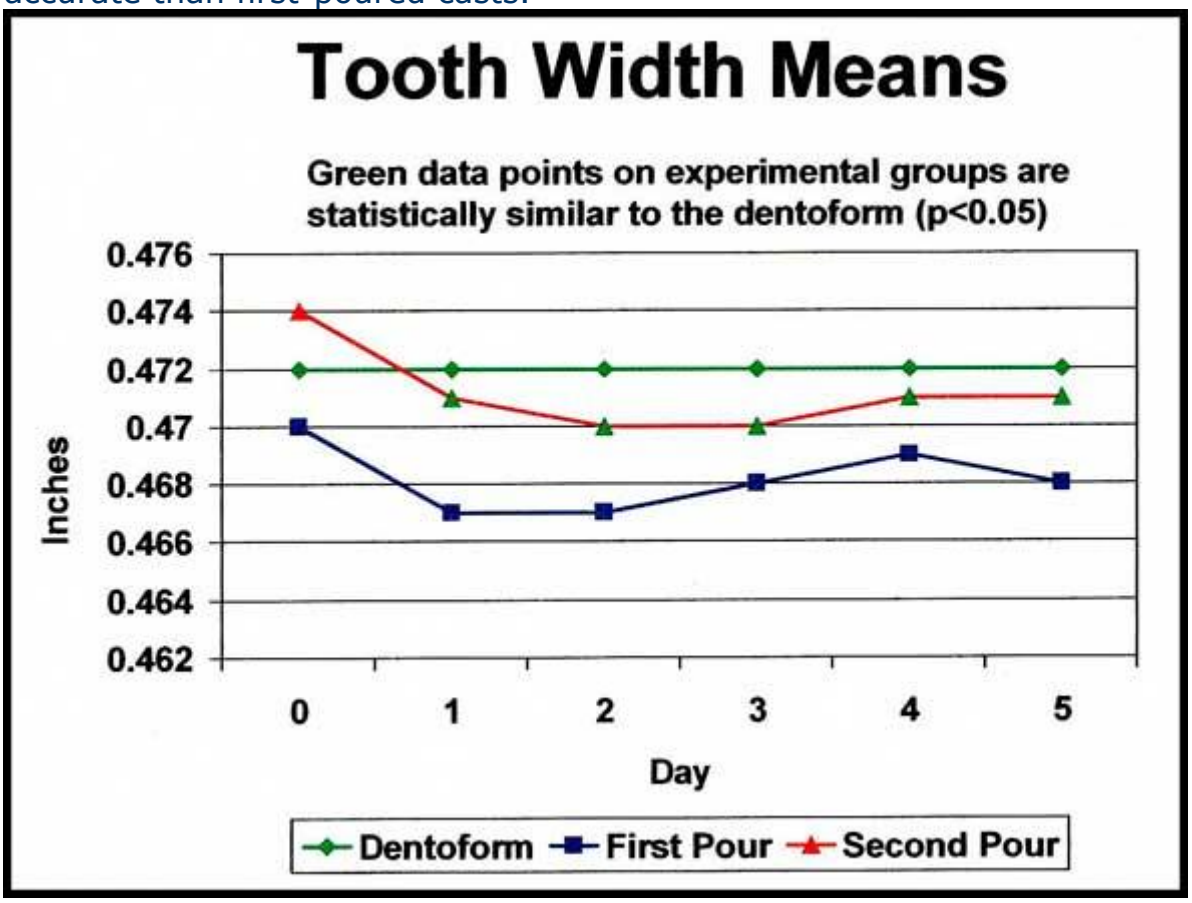
Objectives:
To evaluate dimensional stability of casts generated from first and second pours of Cavex Color Change an alginate material purported to allow multiple pours and remain dimensionally stable for five days.

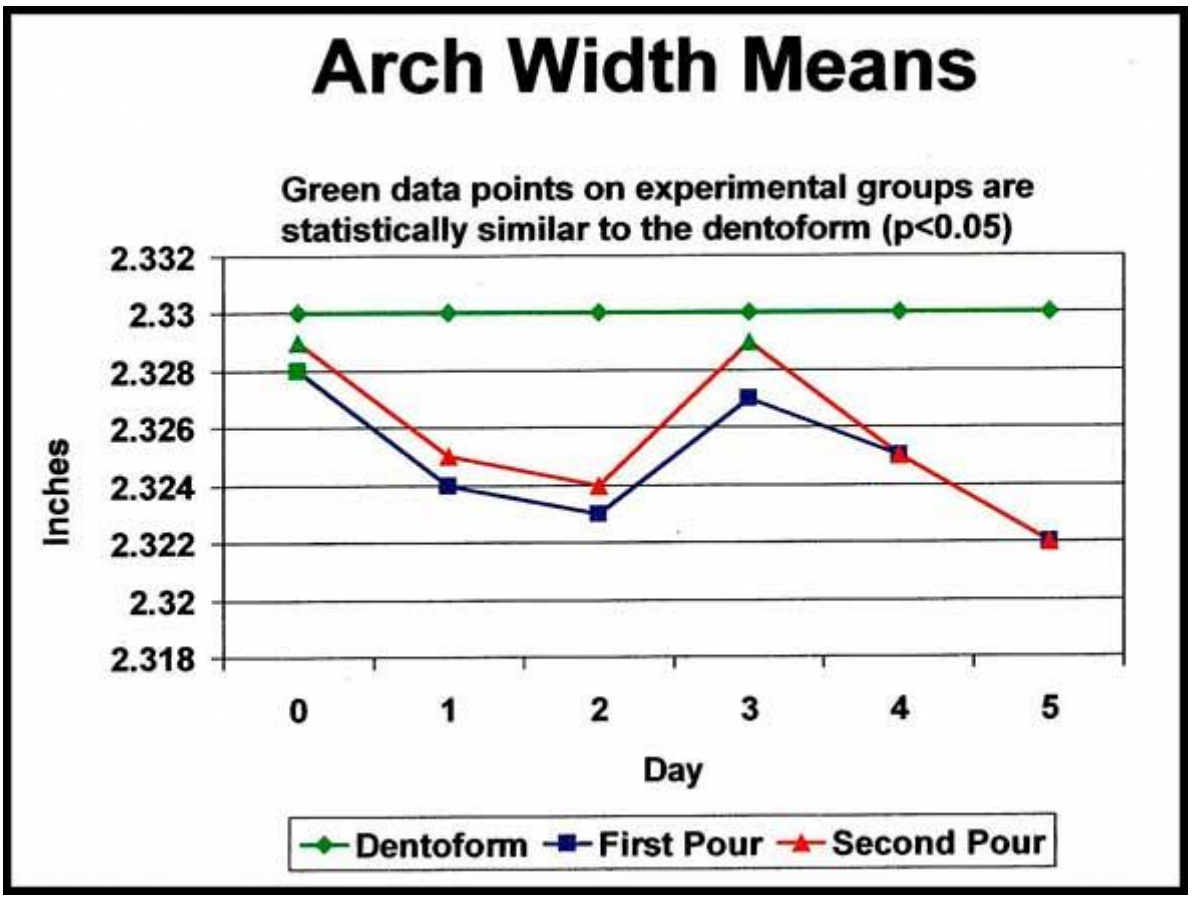
Methods:
Ball bearings 3mm in diameter were embedded in dentoform teeth allowing measurements of tooth width (0.472inches) and arch width (2.330inches). Trays modified with impression compound allowed uniform 4mm thickness of impression material. Cavex Color Change was vacuumed mixed following manufacturer's powder/water ratio, impressions made of the dentoform (n=5), placed in de-ionized water at 37ºC until set and separated from the dentoform. Casts were poured in vacuum mixed Microstone (140grams/40ml water) immediately after removal and at five additional time periods (1day, 2days, 3days, 4days and 5days). Impressions not immediately poured were stored in zip-locked bags at room temperature. Casts were separated from trays after 45minutes and a second cast was immediately generated. All casts were allowed to dry for 24hours prior to measuring to nearest 0.001inch. Tooth and arch widths were recorded by measuring the greatest distance between convexities of ball bearings or their cast reproductions with a micrometer. Measurements were recorded three times to calculate means and percentage of dimensional change.

Results:
Graphs/tables list means and percentage of dimensional change. Paired t tests compared experimental measurements to standard dentoform measurements. Casts generated from second pours were accurate for tooth width at days 1-5. With regards to arch width, first-poured casts were accurate when poured immediately and second-poured casts when generated immediately and at day 3.($p<0.05$). Dimensional change ranged from -.08% to -1.05% for first-poured casts and -0.42% to +0.42% for second-poured casts.

Conclusion:
Impressions imbibed water resulting in smaller first poured-casts. During gypsum setting, impressions lost water resulting in second-poured casts larger than first-poured casts. Second-poured casts were generally more

accurate than first-poured casts.





Tooth Width

Day	Mean (Inches)	p-value*	Dimensional Change
	First Pour		
0	0.470	0.042	+0.42%
1	0.476	0.001	-1.05%
2	0.476	0.001	-1.05%
3	0.468	0.000	-0.8%
4	0.469	0.019	-0.6%
5	0.468	0.000	-0.8%
	Second Pour		
0	0.474	0.022	-0.42%
1	0.471	0.323	-0.21%
2	0.470	0.100	-0.42%
3	0.470	0.100	-0.42%
4	0.471	0.302	-0.21%
5	0.471	0.323	-0.21%

Arch Width

Day	Mean (Inches)	p-value*	Dimensional Change
	First Pour		
0	2.328	0.057	-0.08%
1	2.324	0.0001	-0.25%
2	2.323	0.0001	-0.3%
3	2.327	0.002	-0.1%
4	2.325	0.0001	-0.21%
5	2.322	0.0001	-0.34%
	Second Pour		
0	2.329	0.188	-0.04%
1	2.325	0.0001	-0.21%
2	3.234	0.0001	-0.25%
3	2.329	0.211	-0.04%
4	2.325	0.0001	-0.21%
5	2.322	0.0001	-0.34%

*t test comparing difference between experimental means and dentoform tooth and arch widths. When the p value is less then 0.05 there is a statistically significant difference between the dentoform and gypsum casts.