THE DENTAL ADVISOR
Improving Patient Care Through Research & Education

Research Report

R. Yapp, M.S., J.M. Powers, Ph.D.
THE DENTAL ADVISOR Biomaterials Research Center
Ann Arbor, Michigan

Number 61 – August 2014

Comparative Durability of Super-Snap X-Treme and Sof-Lex Disk Systems

Purpose: To compare the effect of multiple finishing and polishing cycles on the performance of ***Super-Snap X-Treme*** and ***Sof-Lex*** four-step finishing and polishing system disks.

Experimental Design:

Composite: ***Filtek Supreme Ultra Universal Restorative*** [shade A2] *(3M ESPE)*

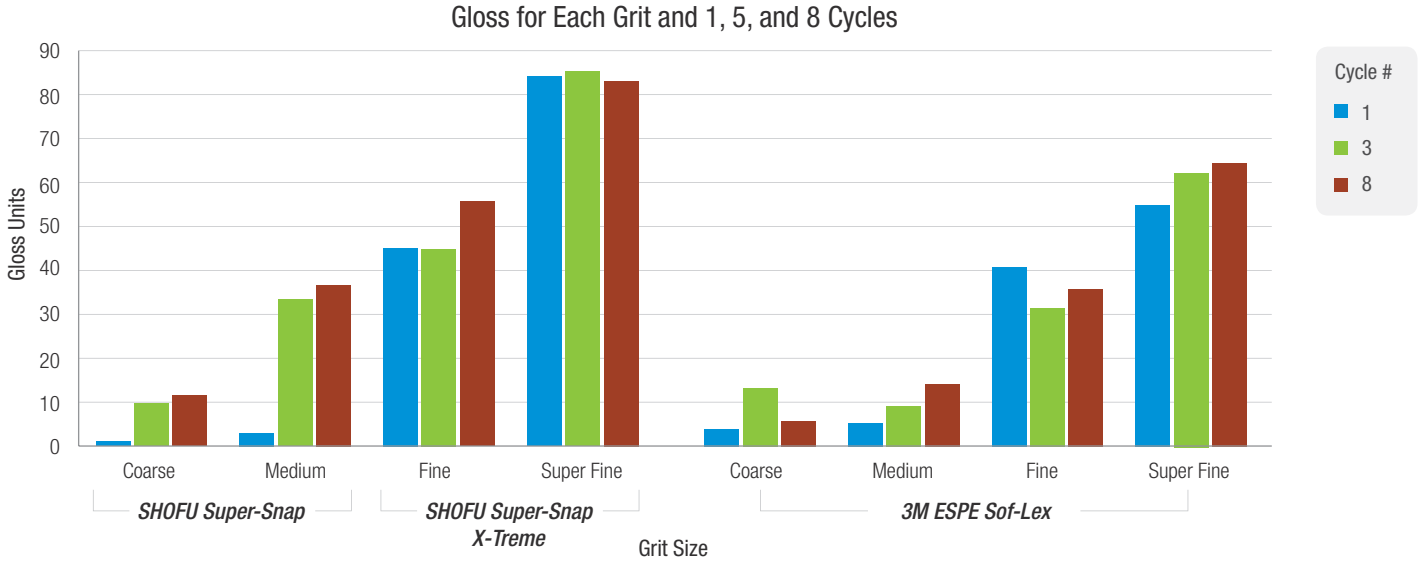
Finishing and polishing systems: Mini disks of ***(1) Super-Snap Contouring and Finishing Disks (Coarse*** and ***Medium grits)*** and ***X-Treme Polishing Disks*** (fine and superfine grits, 8.15 mm diameter, *SHOFU DENTAL CORP.*) ***green*** and ***red grits*** (8.15 mm diameter, *SHOFU),* and ***(2) Sof-Lex Contouring and Polishing Disks*** (coarse through superfine, 9.65 mm diameter, *3M ESPE*) used with Kavo INTRAmatic 10 E low speed (25,000 RPM max) [physically blocked at controller to produce 15,000 rpm] handpiece.

Test Conditions and Measurements: 320-grit initial finish, followed by surface preparation with the one step coarser disk and then measurements of gloss (measured with the small area gloss meter [Novo-Curve]) at each preparatory step and after each finishing or polishing step.

Number of cycles: Three specimens of each disk grit size were repeatedly cycled through eight 15 second finish/polish cycles. Eight cycles was chosen as the terminus of the experiment as it was at least two cycles past the point where the disks appeared warn or caked with composite debris which could not be removed with a 30 psi air syringe blast. Each cycle started with a surface which was prepared with the coarser grit disk.

Results:

Data are presented in the bar chart below and the following table.
Average gloss units produced at the 1st, 5th, and 8th cycle for each finishing and polishing system shown in bar chart below.



Average Gloss Values for all Eight Cycles and Each Grit

SHOFU Super-Snap and Super-Snap X-Treme Disks				
	Coarse	Medium	Fine	Super Fine
Cycle #	Average Gloss Units	Average Gloss Units	Average Gloss Units	Average Gloss Units
1	1	31	45.1	84.1
2	7	31.1	43.2	78.9
3	9.7	33.3	44.9	85.2
4	8.5	30.2	45.1	84.3
5	10	34	52.3	82.8
6	11.2	36.5	52.4	81.8
7	18.3	37.7	55.2	83.8
8	11.6	36.7	55.7	83.1

3M ESPE Sof-Lex Disks				
	Coarse	Medium	Fine	Super Fine
Cycle #	Average Gloss Units	Average Gloss Units	Average Gloss Units	Average Gloss Units
1	4	5.3	40.9	55
2	7.8	6.9	40.2	64.6
3	13.3	9.3	31.6	62.4
4	12.6	12.6	37.3	62
5	8.3	11.2	42.2	56.3
6	6.9	14.8	36.2	64.5
7	5.9	17.9	41.4	62.7
8	5.8	14.2	35.8	64.5

Discussion:

1. The change in gloss for the fine and super fine ***Sof-Lex*** disks was significantly greater than for the coarse and medium ***Sof-Lex*** disks and the gloss change for the super fine ***Sof-Lex*** disks was less than that of the fine ***Sof-Lex*** disks suggesting that the grit size step between medium and fine grits and between fine and super fine grits is not equally distributed. ***Super-Snap*** and ***Super-Snap X-Treme*** disks produce a more uniform change in gloss from medium through super fine grits. This may be the reason that ***Super-Snap*** and ***Super-Snap X-Treme*** disks produce a higher end gloss.

2. The ***Sof-Lex*** product was difficult to use without the tip of the attachment mandrel or the metal eyelet of the disk coming in contact with the work-piece. This occurred in spite of the fact that the test composite specimen was flat and easily manipulated to give a relatively consistent touch down angle. It is speculated that it would be considerably more difficult to navigate around a multiply contoured tooth inside a mouth without touching these parts of the ***Sof-Lex*** polishing disks to the restoration surface, and consequently marring the finish and causing it to have to be re-finished.

3. Testing was terminated after 8 cycles due to visually apparent wear and caking of composite debris on the disk. Clinicians were asked if they would continue to use these disks and every one said that they would have discarded them several cycles earlier but were pleased to know that they worked as long as they did.

Conclusion:

Over all, ***Super-Snap*** and ***Super-Snap X-Treme*** disks were long lasting and produced consistently greater gloss than the ***Sof-Lex*** system product.

Research was supported in part by SHOFU DENTAL CORPORATION.

