

SCIENTIFIC REPORT

GrandioSO / GrandioSO Heavy Flow – 2-year clinical study

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With the GrandioSO range of Nanohybrid composites, VOCO now offers dentists materials which set new standards in restorative treatment with their tooth-like physical properties. At the University of São José dos Campos, Prof. Torres et al. studied the clinical success of class II restorations fabricated with the conventional Nanohybrid composite GrandioSO and the flowable Nanohybrid composite GrandioSO Heavy Flow. This Scientific Report summarises the results after 2 years.^[1]

The aim of this study was to clinically evaluate class II restorations using one sculptable (GrandioSO) and one high-viscosity nanohybrid composite (GrandioSO Heavy Flow) in combination with a 1-bottle self-etch adhesive (Futurabond M).

Study design

A total of 47 patients were selected, who received both a class II restoration with GrandioSO and a class II restoration with GrandioSO Heavy Flow. Very deep cavities were firstly filled with a calcium hydroxide cement (Dycal, Dentsply) and then with a thin layer of a conventional glass ionomer cement. Deep fillings were lined with a conventional glass ionomer cement. Futurabond M was used as the adhesive for all the restorations. The restorations were evaluated by two independent experts in accordance with the modified USPHS criteria developed by Cvar and Ryge.^[2] The intervals for the evaluations were one week (initial), six months, 12 months and 24 months after placement of the filling. Table 2 shows the overview of the recall rate.

Table 1: Evaluation criteria based on modified USPHS criteria^[2]

| | |
|---------|---|
| Alfa | Good-quality restorations of an excellent clinical standard |
| Bravo | Good-quality restorations but not ideal (acceptable) |
| Charlie | Poor-quality restorations which require replacement as a preventive measure |
| Delta | Restorations which are already loose, damaged or lost |

Table 2: Recall rate

| Composite | Number of assessed restorations | | | |
|----------------------|---------------------------------|---------------------------|----------------------------|----------------------------|
| | Initial (47 patients) | 6 months (44 patients) | 12 months (44 patients) | 24 months (40 patients) |
| GrandioSO | 47 | 44 | 44 | 40 |
| GrandioSO Heavy Flow | 47 | 44 | 42 | 38 |
| Total | 94 | 88 | 86 | 78 |

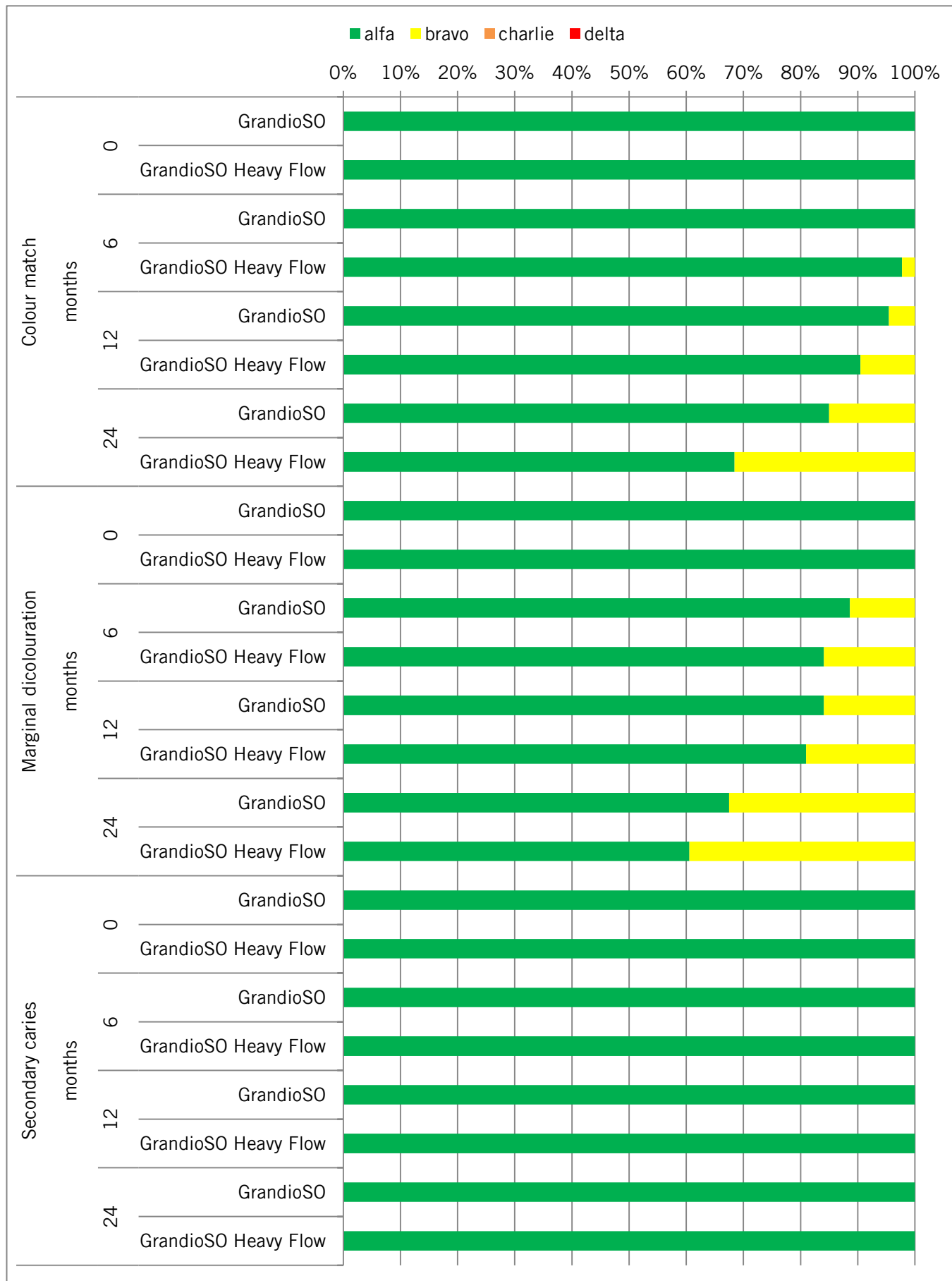


Figure 1: Clinical evaluation one week (initial), 6, 12 and 24 months after placement of the restoration. Parameters: Shade match, marginal discoloration, secondary caries

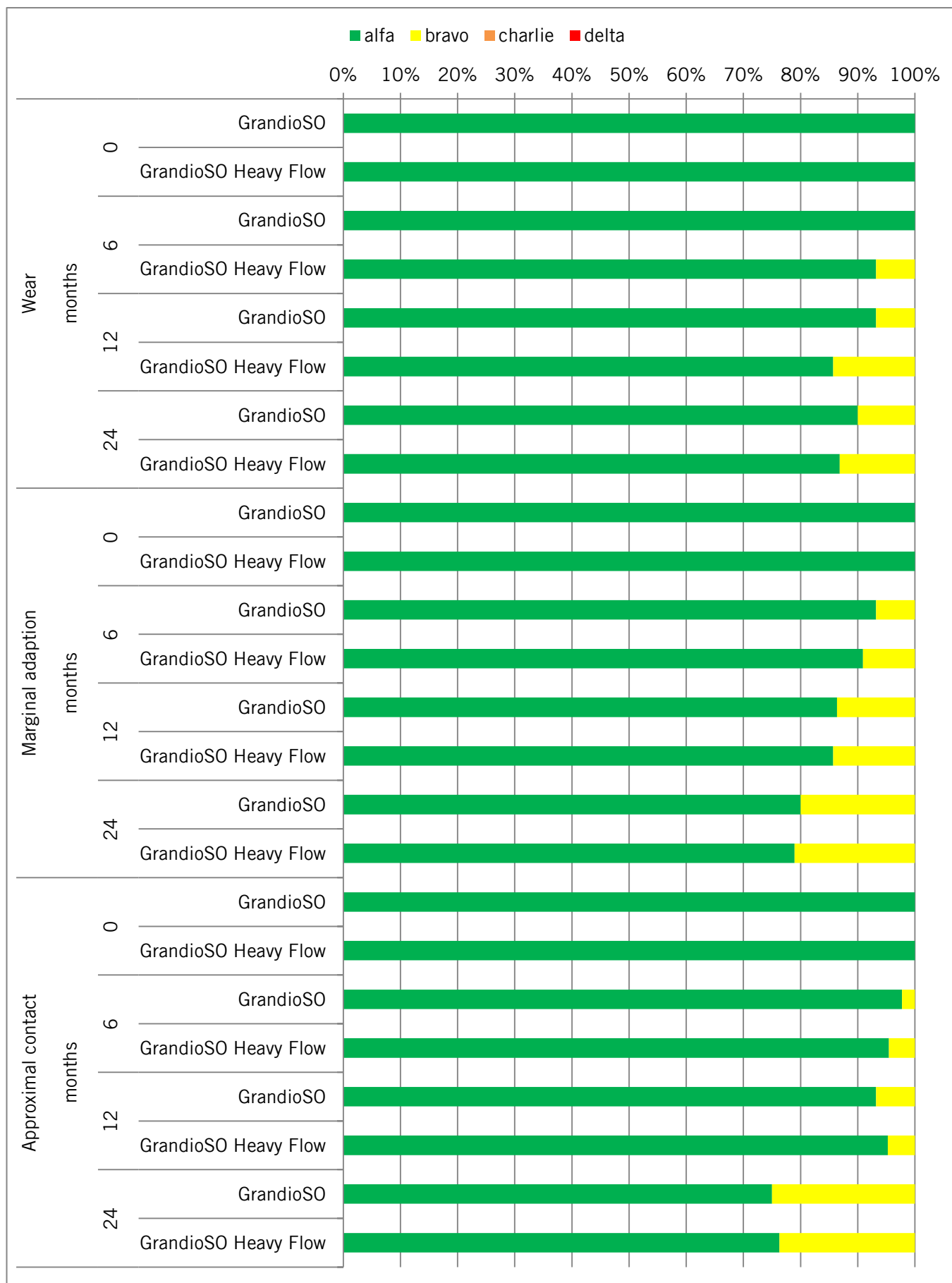


Figure 2: Clinical evaluation one week (initial), 6, 12 and 24 months after placement of the restoration. Parameters: Abrasion, marginal adaption, approximal contact.

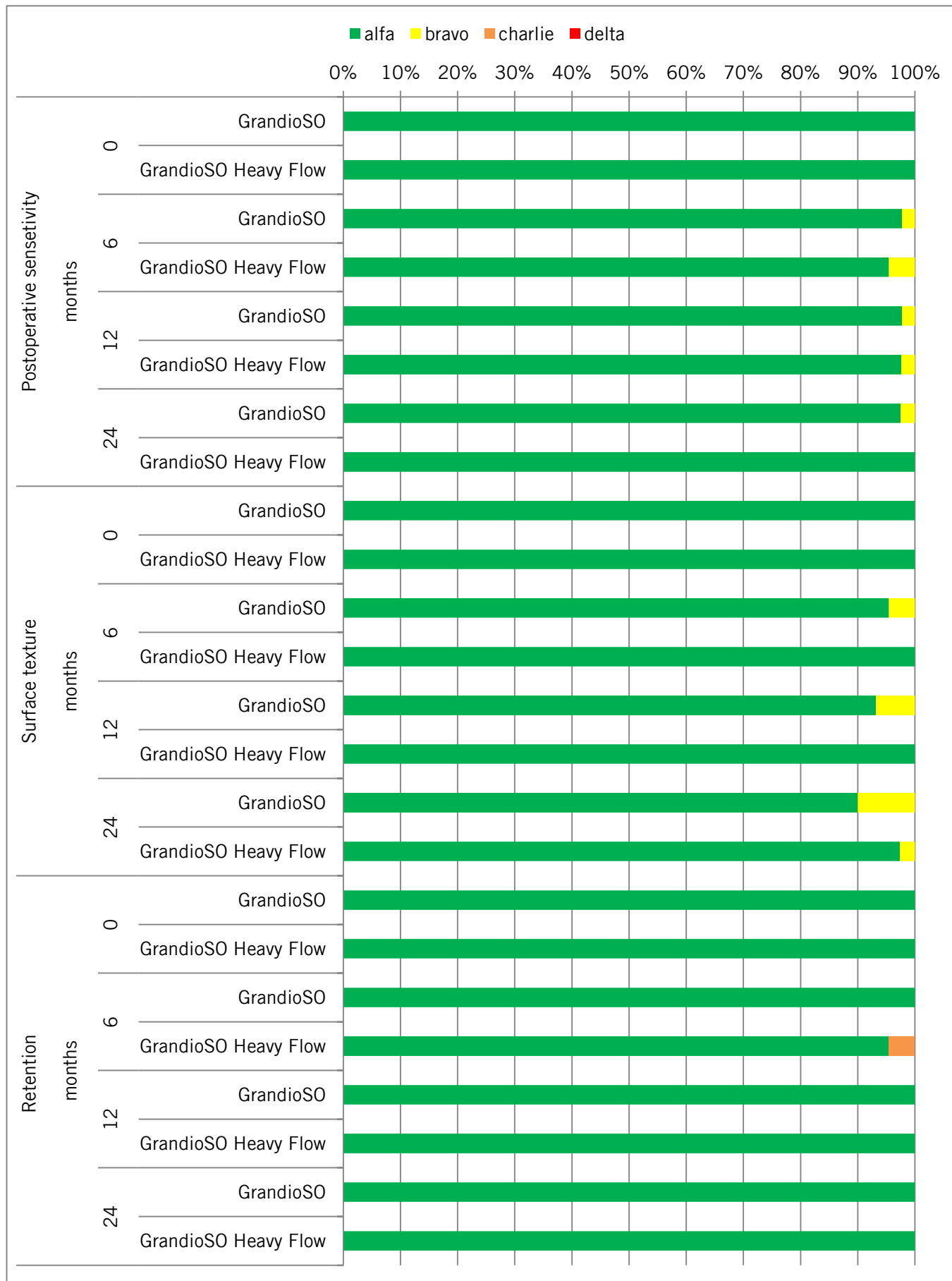


Figure 3: Clinical evaluation one week (initial), 6, 12 and 24 months after placement of the restoration. Parameters: Postoperative sensitivity, surface quality, retention.

Results

The results of the individual evaluation criteria for the restorative composites used, GrandioSO and GrandioSO Heavy Flow, are shown in Figures 1-3. After 24 months, 40 patients were still participating in the clinical study and it was possible to evaluate 78 restorations in total. No secondary caries was observed at any time during the study. Minor changes were noted for almost all parameters after six months. After 24 months, the largest number of changes (from alfa to bravo) were observed for the parameters of marginal discoloration and shade match, followed by the parameters of approximal contacts and marginal adaptation. The changes for the parameters of abrasion, surface quality and postoperative sensitivity were minimal. Only two fillings displayed a loss of retention after 24 months. Less than 5% of all the restorations displayed postoperative sensitivity. The chi-square test reported no significant differences between the two materials for any of the analysed parameters. After 24 months, all the fillings still in place were intact and all the studied criteria were predominantly classified as being clinically excellent.

Conclusion: No significant differences were identified between the conventional nanohybrid composite GrandioSO and the flowable nanohybrid composite GrandioSO Heavy Flow. Both materials displayed good clinical behaviour as restoratives for class II cavities.

[1] Torres, Carlos Rocha Gomes et al. *A split-mouth randomized clinical trial of conventional and heavy flowable composites in class II restorations* Journal of Dentistry, 2014, Volume 42, Issue 7, 793-799, 2014

[2] Cvar JF, Ryge G. *Reprint of criteria for the clinical evaluation of dental restorative materials 1971*. Clin Oral Investig 2005; 9(4):215-32