



Layered Injection Molding: A Pre-clinical evaluation of a clinical possibility

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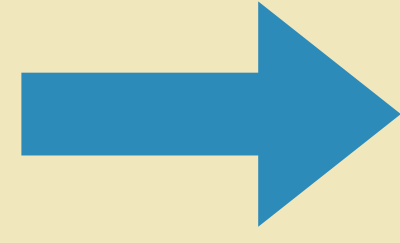
Objective

To evaluate a predictable technique which combines layering and injection molding for easy, efficient and consistent polychromatic anterior restorations with uncompromised esthetics.

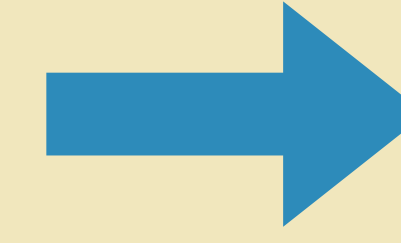
Materials and Method



Nissin 300 Series Standard Jaw
Model GNR300-UL



Clear stent
Exaclear Impression Material



Prepared diastemata

TRADITIONAL INJECTION MOULDING

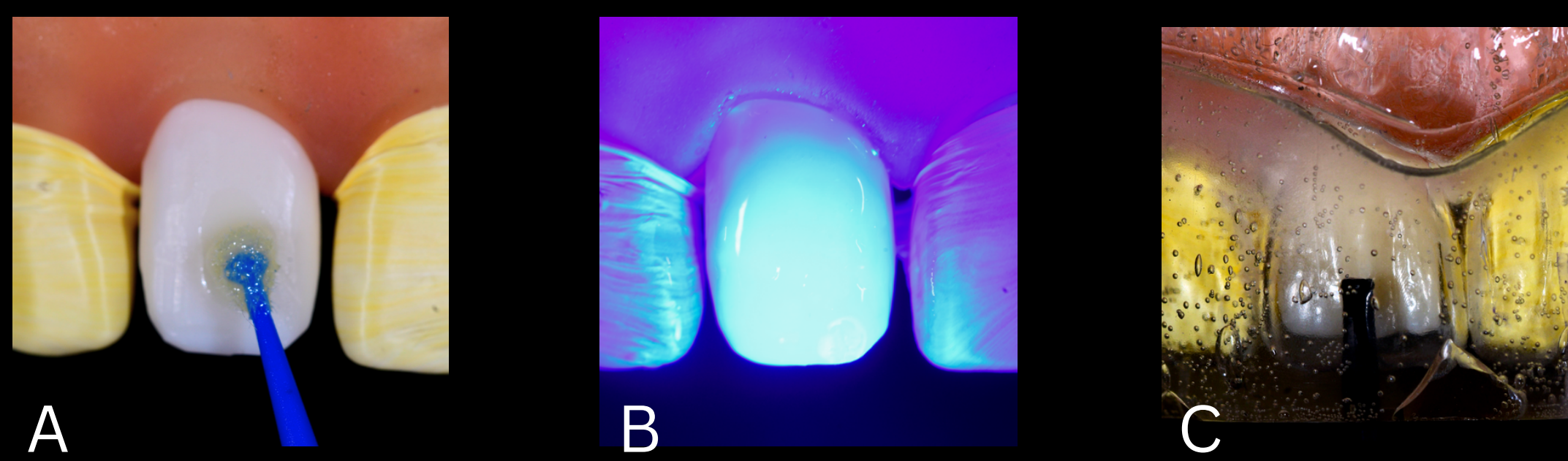


Figure 1. Traditional injection moulding. Bonding protocol was followed (A-B). Injectable composite (G-aenial Universal Flo shade A1) was injected into the Exaclear stent (C).

LAYERED INJECTION MOULDING

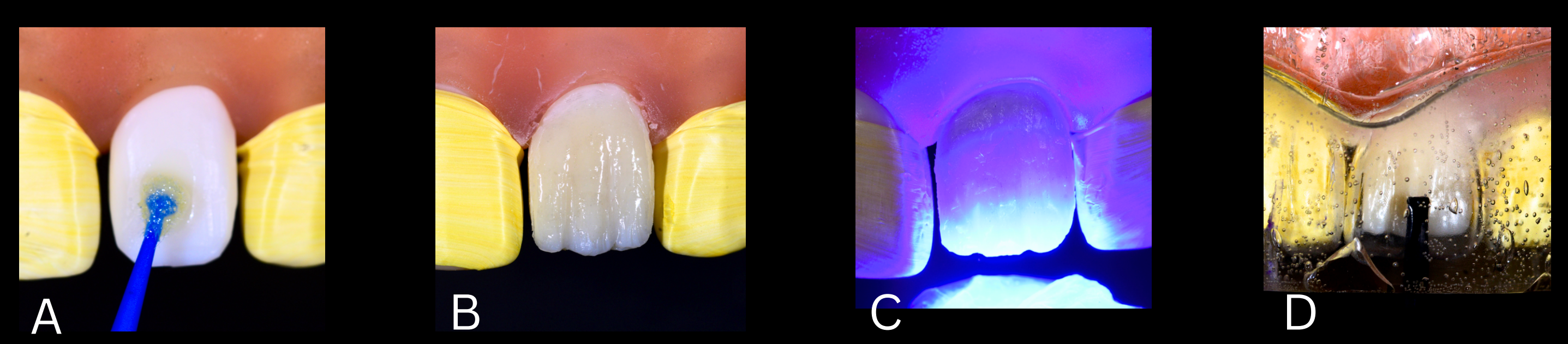


Figure 2. Bonding protocol was followed and composite layering was done using 3M packable composite. The anatomy of dentin was mimicked while leaving space at the edge for a dentin free zone (A-C). Injection moulding was done using G-aenial Universal Flo shade A1 (D).

Less time consuming
More convenient

Monochromatic restorations
Absence of histological layers

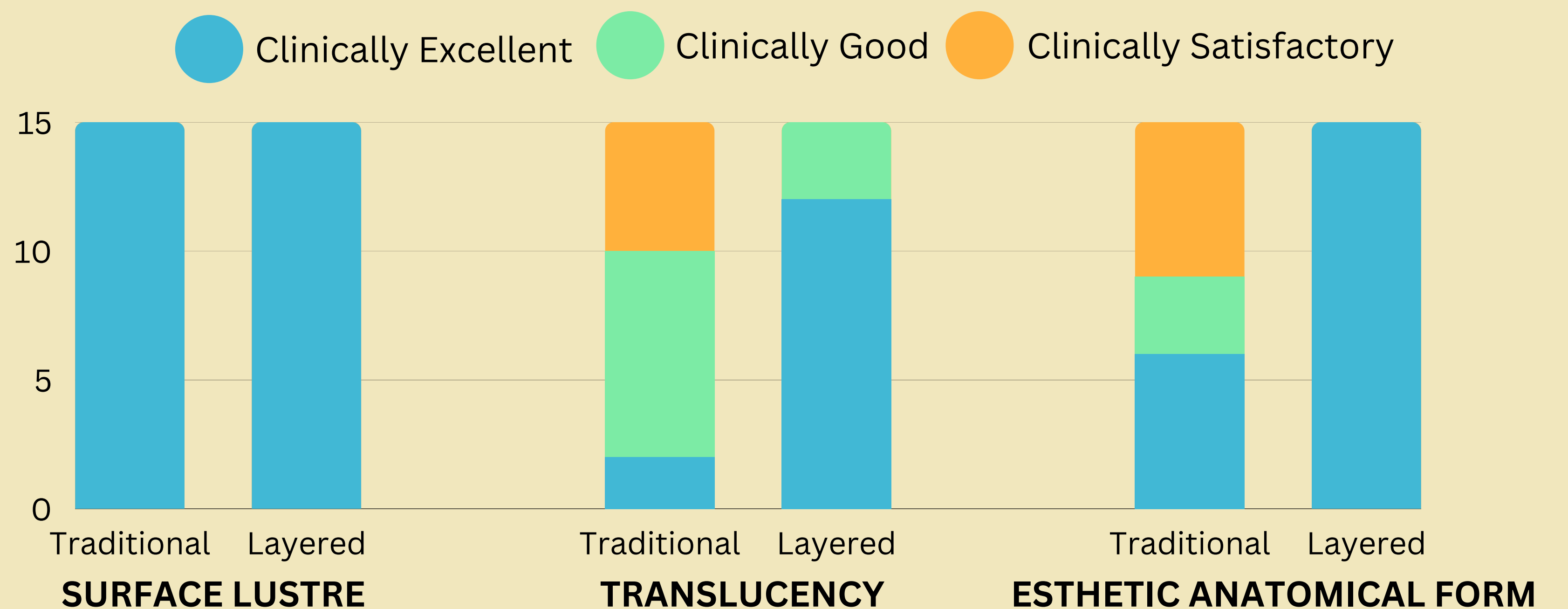


Polychromatic life-like restorations
Control over anatomic features

Requires skill of the practitioner
Requires knowledge of specific materials

FDI CRITERIA USED FOR EVALUATION

Hickel R, Peschke A, Tyas M, Mjör I, Bayne S, Peters M, Hiller KA, Randall R, Vanherle G, Heintze SD. FDI World Dental Federation: clinical criteria for the evaluation of direct and indirect restorations-update and clinical examples. *Clin Oral Investig.* 2010 Aug;14(4):349-66.



Results

- Both techniques were found to result in **similar surface lustre** as this property is more dependent on finishing and polishing protocol and the material's properties.
- The **overall contour and anatomy of the restorations did not vary** as the same stent was used for the outermost layer.
- The teeth restored with layered injection moulding showed significantly visible internal anatomic characteristics such as mamelons and lobes.
- Layered injection moulding technique had good colour match and a **clear difference in translucency** in comparison with traditional injection moulding.

Conclusion

On evaluation, layered injection moulding technique was found to be more esthetic as it was stratified and replicated natural internal anatomy and translucency much better than its counterpart.