Case Report:

Laminates –The Esthetic of Smyle

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Abstract:
Dental ceramics holds a special place in dentistry with its application for the last 150 years. As we say that “Beauty lies in the eyes of the beholder, presence of a vivacious smile goes a long way to enhance the beauty of the face”. This article describes the application of dental ceramics especially the pressable system and various steps involved to enhance the esthetics and improve the smile on your patients face. This article shows a case, how to create an esthetic smile through esthetic laminate veneers.

Keywords: Dental ceramics

Introduction
The average dentist has a tendency to think only in terms of articulation and function with a little thought of esthetic thrown in for good measure. We should always keep in mind that we are dealing with organs, which can change an individual’s entire visual personality. The laminate veneer is a conservative alternative to full coverage for improving the appearance of an anterior tooth. A porcelain laminate veneer is an extremely thin shell of porcelain applied directly to tooth structure. Tooth preparation is minimal, remaining within enamel. The restoration derives its strength from the ability of a composite resin luting agent, with a silane coupling agent, to bond with etched porcelain and etched enamel.

The newer material i.e. IPS EMRESS 2 (ivoclar vivadent) has Core component of Lithium-Di-Silicate glass ceramic & Lithium Orthophosphate crystals with a flexural strength of 350 Mpa, The second component is a new layer / laminated material comprised of a fluorapatite –glass crystals. This material has shown fantastic results.

EVOLUTION OF THE CONCEPT:

- Ceramics first mentioned for use by Pierre Fauchard (1678-1761), who described application as jewelers’ enamel to artificial teeth of thin gold plate
- 1937: Dr Charles Pincus attached thin labial porcelain veneers temporarily with denture adhesive powder to enhance the appearance of Hollywood stars
- 1962: Weinstein described the first successful metal ceramic restoration
- 1963: Adair and Grossman developed the first commercial porcelain
- 1968: MacCulloch first proposed the use of glass ceramic in dentistry
- 1984: Adair and Grossman developed a ceramic system by controlled crystallization of a glass (Dicor)
Glass infiltrated ceramics (Inceram) were introduced in 1988. The strength of these ceramics is about 3 to 4 times greater than earlier alumina core material.

In 1990s, Pressable glass-ceramics (IPS Empress) containing 34 vol % leucite that provided a strength and marginal adaptation was introduced.

Later IPS Empress 2 was introduced consisting of Lithium disilicate glass ceramic as a frame work and with Increased flexural strength, it has a core component of Lithium- Di- Silicate glass ceramic & Lithium Orthophosphate crystals with a flexural strength of 350 Mpa. The second component is a new layer / laminated material comprised of a fluorapatite –glass crystals.

CASE REPORT
A 20 year’s old female came to the department of prosthodontics with the chief complaint of ‘I have spaces in my front teeth, I want it to get corrected & I want to mask their discolorations also.’ The patient gives history of spaces in upper front teeth seen since last 6 years & discolorations since last 10 years. She had no relevant systemic, medical or dental history. The extraoral oral examination revealed no abnormality detected. In the intraoral soft tissue examination, no abnormality was detected. In intraoral hard tissue examination following abnormalities were detected
1) 2 to 3mm of spacing between maxillary anteriors
2) root canal treated 11 with composite restoration filling, tenderness negative with 11.
3) discoloration with maxillary anteriors suggestive of enamel hypoplasia.

After case history and investigations following treatment options were given to patient
1) Orthodontic correction of anterior spacing followed by masking the discoloration with restoration
2) Correction of diastema using composite laminates
3) Correction using porcelain laminates

After explaining merits, demerits, expenses, duration of each treatment option, patient had chosen the treatment option of correction with porcelain laminates. After taking patient’s consent treatment was started. Treatment was carried out under following steps

Step 1 – Pre operative planning
1) Diagnostic impressions were taken in alginate impression material and casts were fabricated in dental stone, after that face bow relation was recorded and transferred it on the whip mix semiadjustable articulator.
2) Diagnostic mock up was done with mock up wax (M.P. sai products, Mumbai) and it was shown to patient and her relatives.
3) Alginate impression of the mock up cast was taken and poured in dental stone, and on that cast a vacuum formed biostar sheet was fabricated for temporization purpose.
4) A2 Shade with slight cervical staining was selected.
5) The type of tooth preparation selected was full veneer with incisal lappingdesign extending subgingivally that includes the entire incisal surface.

Step 2- tooth preparation
Tooth preparation was carried out in the following manner Cervico-labial reduction of 0.3mm, Inciso-labial reduction of 0.5mm, Incisal lapping of 0.5mm
Proximal reduction ending just facial to the contact...
areas and tooth preparation for all ceramic crown with 11.

**Step 3 – gingival retraction and impression**
Gingival retraction was carried out with expasil retraction material, and two step putty wash impression was made with an exaflex addition silicone material.

**Step 4 - temporization**
All the prepared teeth were spot etched for 10 seconds and bonding agent was applied on spot etched areas and light cured for 20 seconds. Then flowable composite (3M ESPE) was loaded into biostar sheet and it is then placed into oral cavity and each tooth was cured for 40 seconds. After that biostar sheet was removed and composite finishing and polishing was carried out.

**Step 5 – lab procedures**
Models were obtained from the impression and IPS Empress 2 all ceramic crown with 11 and laminate veneers with 12, 13, 21, 22, 23 were fabricated according to manufacturer’s instructions. Diagnostic mock up and previously fabricated biostar sheet were used for reference.

**Step 6- try in and cementation**
before going for final shading and glazing a bisque try in was taken and crowns were evaluated for their marginal fit and shape. After all necessary adjustments final shading and glazing was carried out. All the crowns were cemented using veriolink resin cement (ivoclar vivadent) using transparent shade according to manufacturers instructions.

**Step 7- postoperative instructions**
Following instructions were given to patient

- Avoid hard food
- Avoid extremes in temperature (hot or cold)
- Avoid alcohol.
- Maintenance-Routine cleaning is a must at least every 4 months with a hygienist
- Use soft tooth brush with rounded bristles.
- Use less abrasive tooth paste and less fluoridated tooth paste.
- Avoid excess biting force and habit pattern

**Conclusion:**
Laminates is more conservation preparation then full coverage preparation and at the same time provide good esthetics. Laminates are the conservative preparation that required less tooth reduction. It provides equally good esthetics as compared to full coverage crowns. Problem of retention of laminates was also eliminated by the introduction of composite resin luting cements.

![Fig. 1 – preoperative intraoral photograph](image-url)
REFERENCES: