Pediatric Esthetic in Dentistry

Lecture By,

Dr. SHANTANU CHOUDHARI

Esthetic restoration of primary anterior teeth

- **1.) Direct Restorative:**
- Composite Resin
- Traditional GIC
- Resin Modified GIC
- Compomers

- **2.) Full Coronal Restorations:**
- Strip Crowns
- Open faced stainless steel crowns
- Pre-veneered stainless steel crown

Choice of restorative material depends upon:

- **Number of surfaces involved:**

1. 1 surface restorations
2. 2 surface restorations
3. 3 surface restorations

- **Secondary Factors:**

1. Caries Risk
2. Cooperative ability
3. Age of exfoliation

1 surface restoration

- Includes class V cervical cavities, pit & fissure
- Composite is a material of choice
- Others are traditional GIC, RMGIC's,compomers

Techniques:

- Isolate the tooth
- All caries is removed using no. 330 or 2/3rd round bur.
- Pulpal floor of the cavity is convex, parallel to the external labial enamel
- Place a short bevel on the enamel
- improve mechanical retention by giving undercuts along cervical and incisal walls of the cavity by small inverted cone bur. (35 No.)
- Apply 30% phosphoric acid on enamel followed by dentin surface
- Rinse with water and dry the tooth
- Apply a layer of bonding agent
- Cavity is filled with flowable composite
- Finishing of the restoration.

Special consideration:

- Retentive lock on facial or lingual wall
- A slot preparation with lingual or labial dovetail
- Short bevel on cavosurface margin
- Reduction of entire labial surface (0.5mm)

2 surface restoration

- Include class-3 cavities on the proximal surface involving either labial or lingual surface.
- Not include all three surfaces.
- Labial/ Lingual surface acts as a base of restoration
- Material of choice is composites and alternatively GIC’s.

3 surface restorations

- Involves all three surface like proximal, lingual and labial and extension is not beyond one-third the clinical height of crown.
- Large 3 surface restoration: caries involves more than three surfaces or extends more than 1/3rd the crown height or in severely decayed teeth, full crown restoration recommended.

Technique for 2 & 3 surface restoration:

- Additional and different steps than 1 surface restoration:
- To improve retention dove tail or long bevel is created
- Mylar strip placed inter-proximally and it should extend 0.5 mm subgingivally
- Wedge can be placed to secure matrix
- Incremental placement of composite
- Gross finishing & polishing done with fine diamond burs or carbide polishing bur.
- Final done with abrasive disc and diamond polishing paste
- Interproximal finishing done with abrasive finishing strips.

Special Considerations

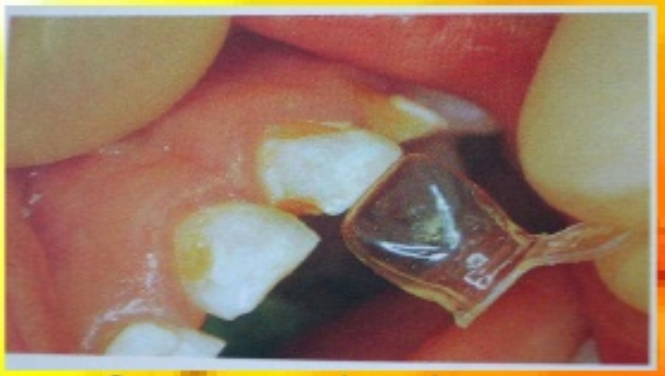
- Use self etch bonding systems
- Application of cavity conditioner prior to placement of GIC restorations
- In deep cavities sandwich technique is recommended.

Strip Crown placement technique:

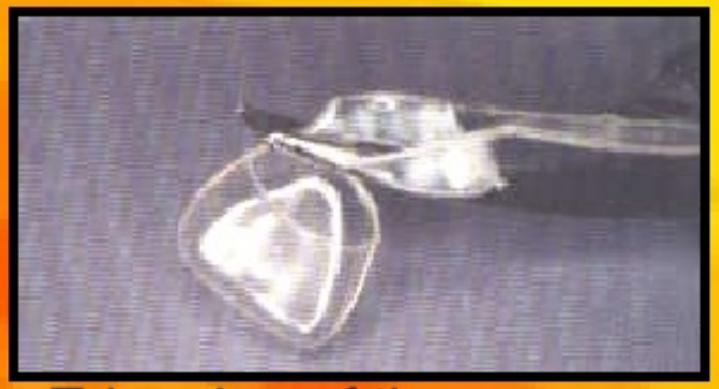
- Isolation is used and anesthetised.
- Choose a crown of same mesio-distal diameter
- Remove all caries and if needed then endodontic therapy to be done
- Reduce the incisal edge by 1.5 to 2 mm (169L bur). Slice the tooth inter-proximally 0.5mm.
- Labial surface by 1mm and lingual by 0.5mm
- Cervical margin feather edge.
- Round off all line angles

- Place small undercuts on labial & lingual surfaces in the cervical 1/3rd
- Cervical border of crown is trimmed with curved scissor.
- Vent holes in incisal corners
- Fill the crown with composite resin of required shade.
- Etching and application of bonding agent
- Seat the crown gently
- Remove excess with explorer
- Polymerize the resin from both facial & lingual aspects
- Strip the crown with explorer or b.p. blade
- Adjust the form and irregularities and check the occlusion
- Finishing & polishing

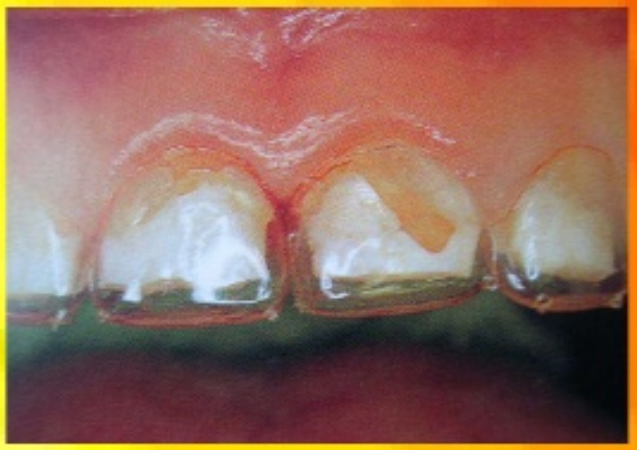
Strip crowns



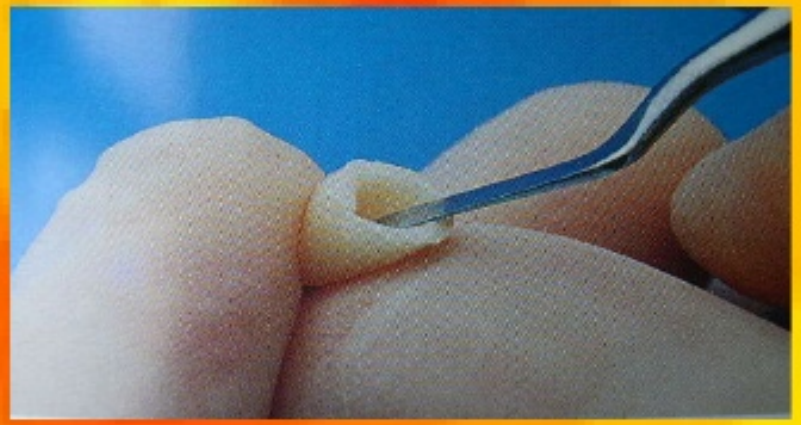
Crown selection



Trimming of the crown



Trial fitting of the crowns



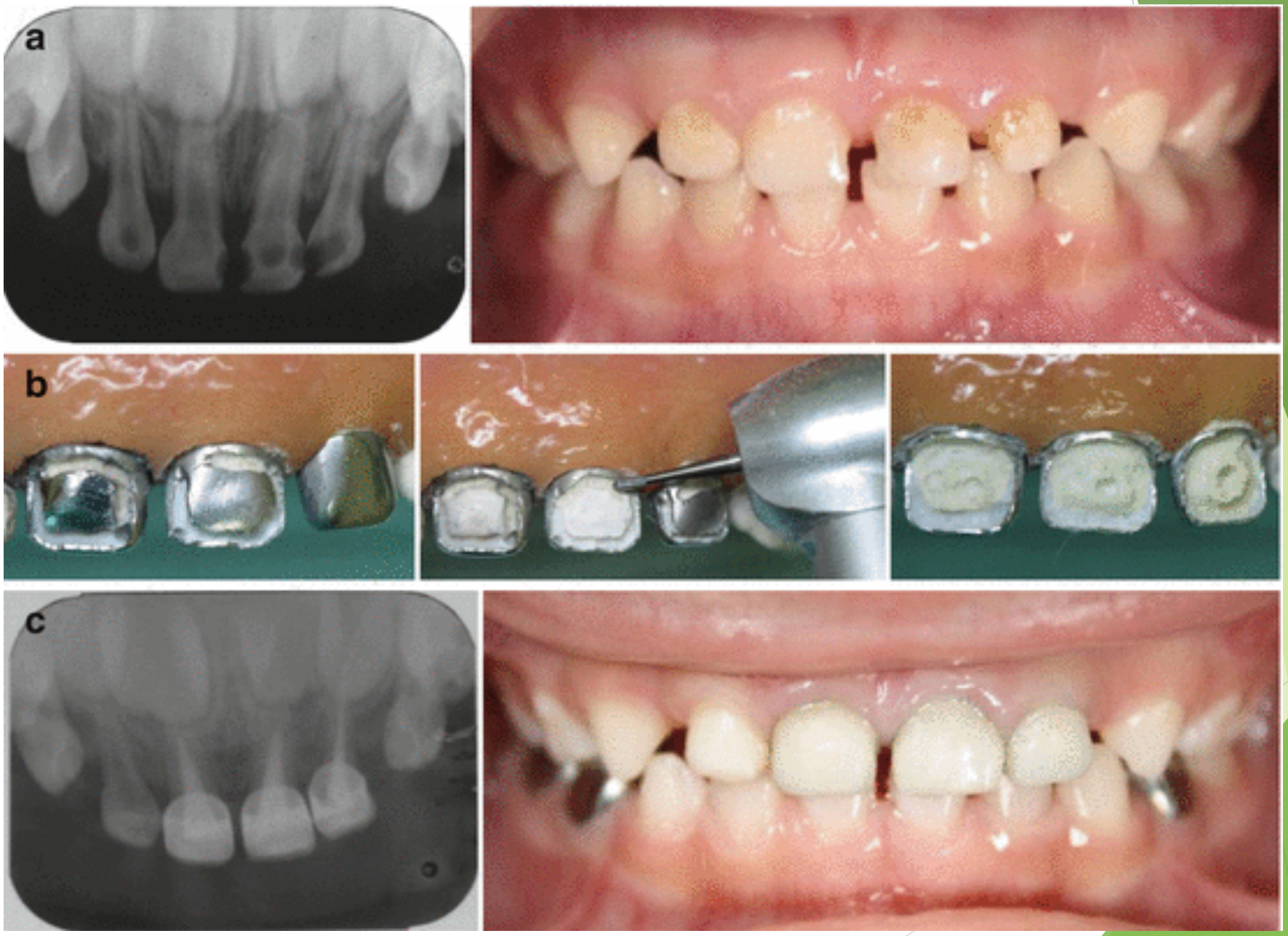
Filling the crown with composite

Open faced stainless steel crown placement technique

- Step 1-6 are the same as strip crown
- After preparation, selected crown tried in mouth
- Squeeze the crown mesio-distally
- Seat the crown gently, rocking it facio-lingually using finger pressure.
- The crown should be snugly fitted and it should be difficult to dislodge with finger pressure.
- Crimping is done
- Anterior stainless steel crown do not require trimming and if required than it should be done with alpine stone

- Remove the crown, crimp and smoothen the cervical surface and cement it.
- After cement has completely set, cut open a labial window using carbide metal cutting bur, extending from the gingival crest to just above the incisal margin.
- Proximally it should extend to the line angles such that very little metal is visible from the facial surface.
- Alternatively the labial window of anterior stainless steel crown could be pre-cut. After trial seating the crown, the margins of the window could be extended so that minimal metal is visible labially. Crown then cemented using RMGI luting cement.

- Sandblasting the labial margin and the inner surface of the pre-cut crown followed by application of alloy primer prior to cementation and composite veneering significantly improves the metal resin bond and enhances the longevity of the restoration.
- Remove a layer of the luting cement and smoothen the surface, using an inverted cone bur create under cuts to improve retention.
- Etch and bond the labial surface and apply a layer of masking agent so as to hide the metal margins.
- Composite is added incrementally so as to achieve the desired.
- Finish the composite veneer using abrasive discs moving them from resin to metal to avoid discoloration on the resin surface.


a
b
c

Pre-veneered stainless steel crown

- Commercially available as kinder crowns, dura crowns, Nu smile primary crowns.
- These crown offer better esthetics combined with the durability of stainless steel crowns especially in areas where there is haemorrhage and salivary contamination.
- Reduced chair side time
- It cannot be adjusted

Advance pediatric esthetics

- Tooth discoloration
- Bondable reinforcement fibers
- Prosthetic replacement of primary anteriors

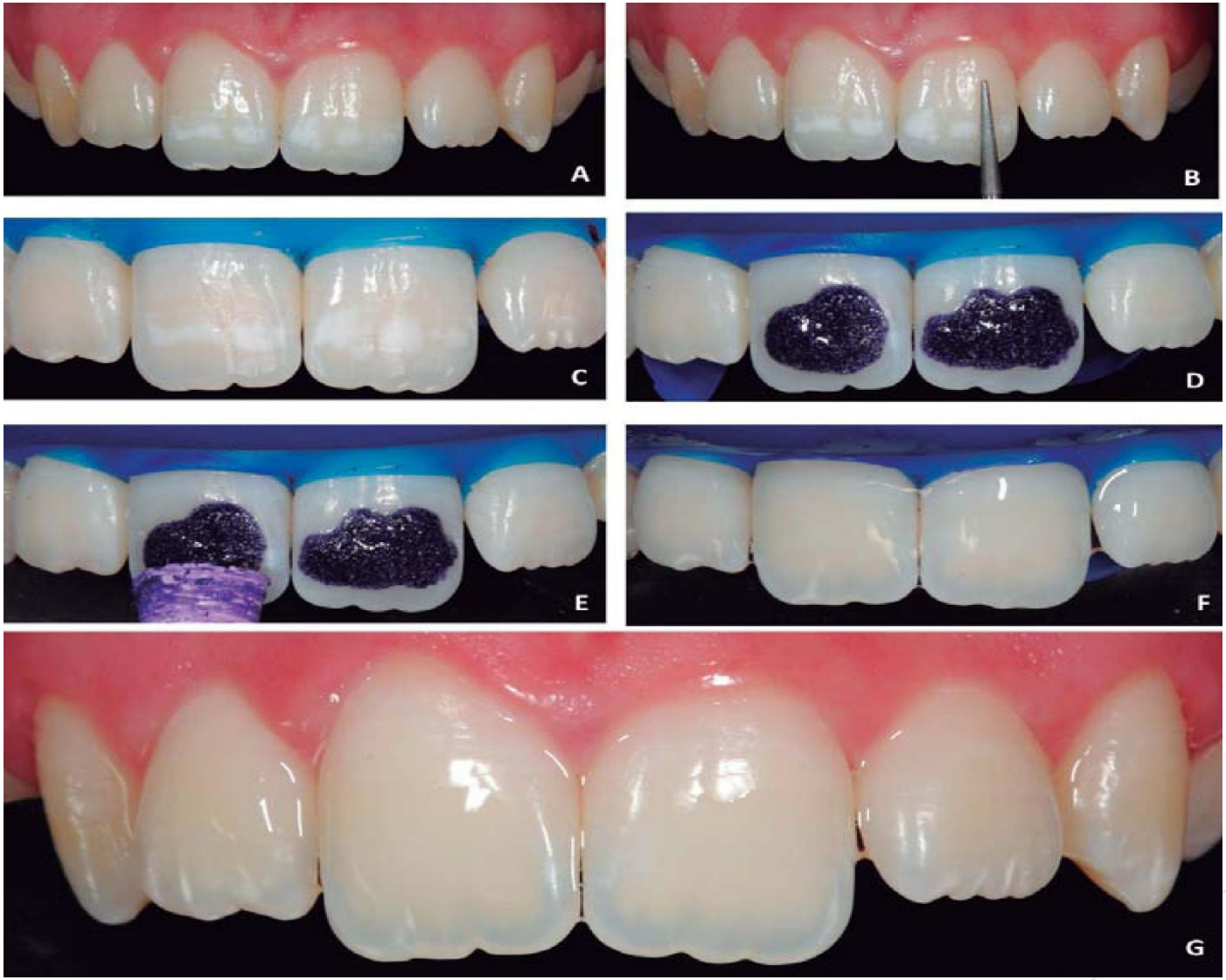
Tooth discoloration:

- Most common causes are result of trauma, enamel/dentinal hypoplasia, intrinsic staining
- These can vary from small discrete spots to the most severe yellowish brown mottling of fluorosed teeth.

1. Discrete spots/ localised stains limited to superficial enamel.

- Can be treated by microabrasion by acidic abrasive paste.
- Paste is 18% hydrochloric acid

- Procedure:
- Isolation
- Paste with pumice gently rubbed using rubber cup in slow speed hand-piece for 5 seconds.
- Procedure is repeated till lightening of stain is seen but not exceed 15 seconds
- It is minimally invasive and not require placement of restoration
- It cannot be used repeatedly and not effective for deeper stains.
- Important concern about the safety of hydrochloric acid-pumice abrasion procedure is the low viscosity and high concentration of the acid.
- Carefully sealed rubber dam is essential for the same procedure and the patient as well as the dentist must wear protective eyewear.


A
B
C
D
E
F
G

Mild discoloration

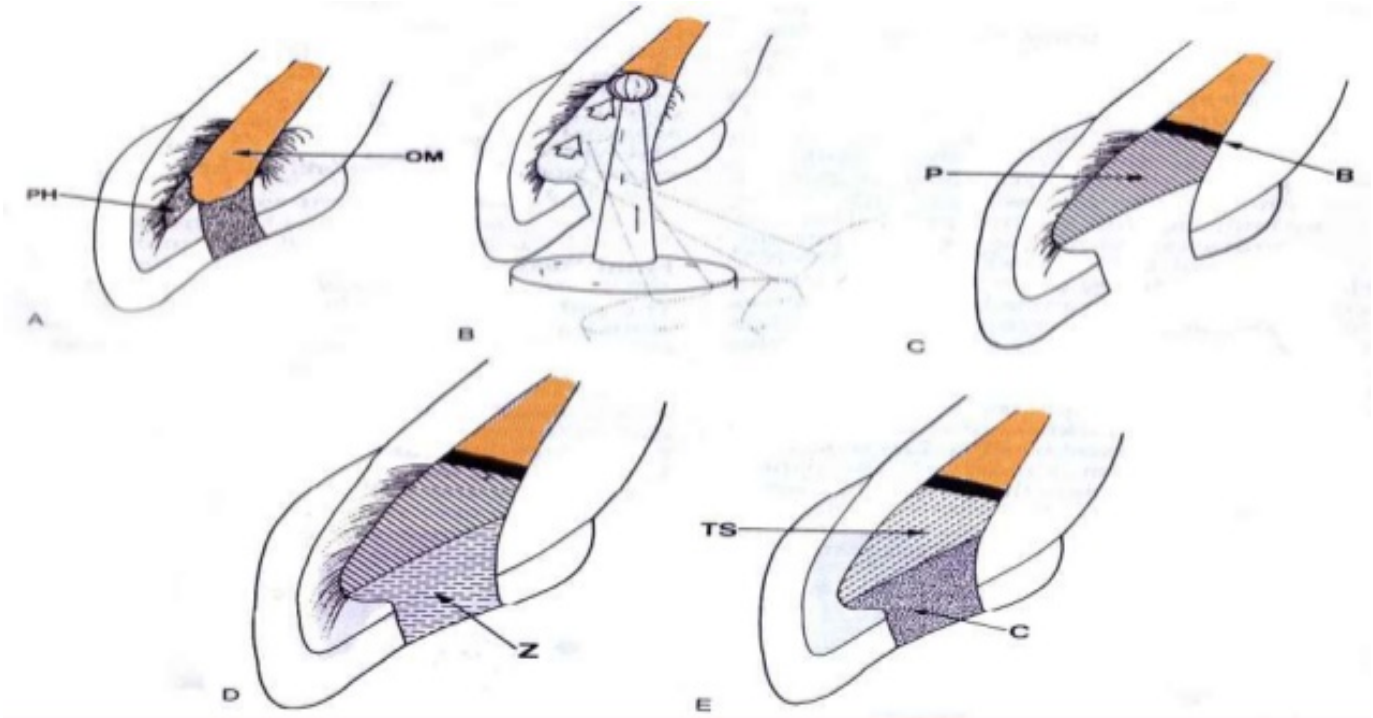
- Treated by vital bleaching
- Vital bleaching can be done in office procedure or at home or night guard bleaching.
- Most available bleach contain carbamide peroxide 10-35%
- It breaks into H2O2 & urea
- Free oxygen radicals enters the tooth to break up dark protein bonds enabling light refraction, thus the tooth appears lighter.
- In children office bleaching is not usually recommended as it involves long chair side time and has a high reported post treatment sensitivity which may be worsened due to the charge pulp chambers in young permanent teeth.

- Home bleach / night guard bleach involves the fabrication of a custom made tray with reservoirs on the facial surface.
- Usually 10% carbamide peroxide gel is loaded onto the tray and the patient is advised to wear the tray for 6-8 hours daily 10 days.
- Only disadvantage is tooth whitening effect is transient and self limiting.

Severe discoloration

- Combination of micro-abrasion/vital bleaching followed by composite veneer.

- Procedure:
- In case of tooth discoloration in endodontically treated teeth, intra-canal bleaching using 35% carbamide peroxide .
- Gutta percha is removed upto level of cervical margin
- 2mm layer of GIC placed to seal off apical diffusion of the bleaching products
- Endo-bleach sealed into coronal cavity and checked periodically.



Walking bleach, A, Internal staining of dentin caused by remnants of obturating materials (OM) in the chamber as well as by materials and tissue debris in pulp horns (PH). B, Coronal restoration is removed completely. C, A protective cement base (B) is placed over the gutta-pecha. A paste (P) of sodium perborate and hydrogen peroxide is placed. D, A thick mix of

Bondable reinforcement fibres

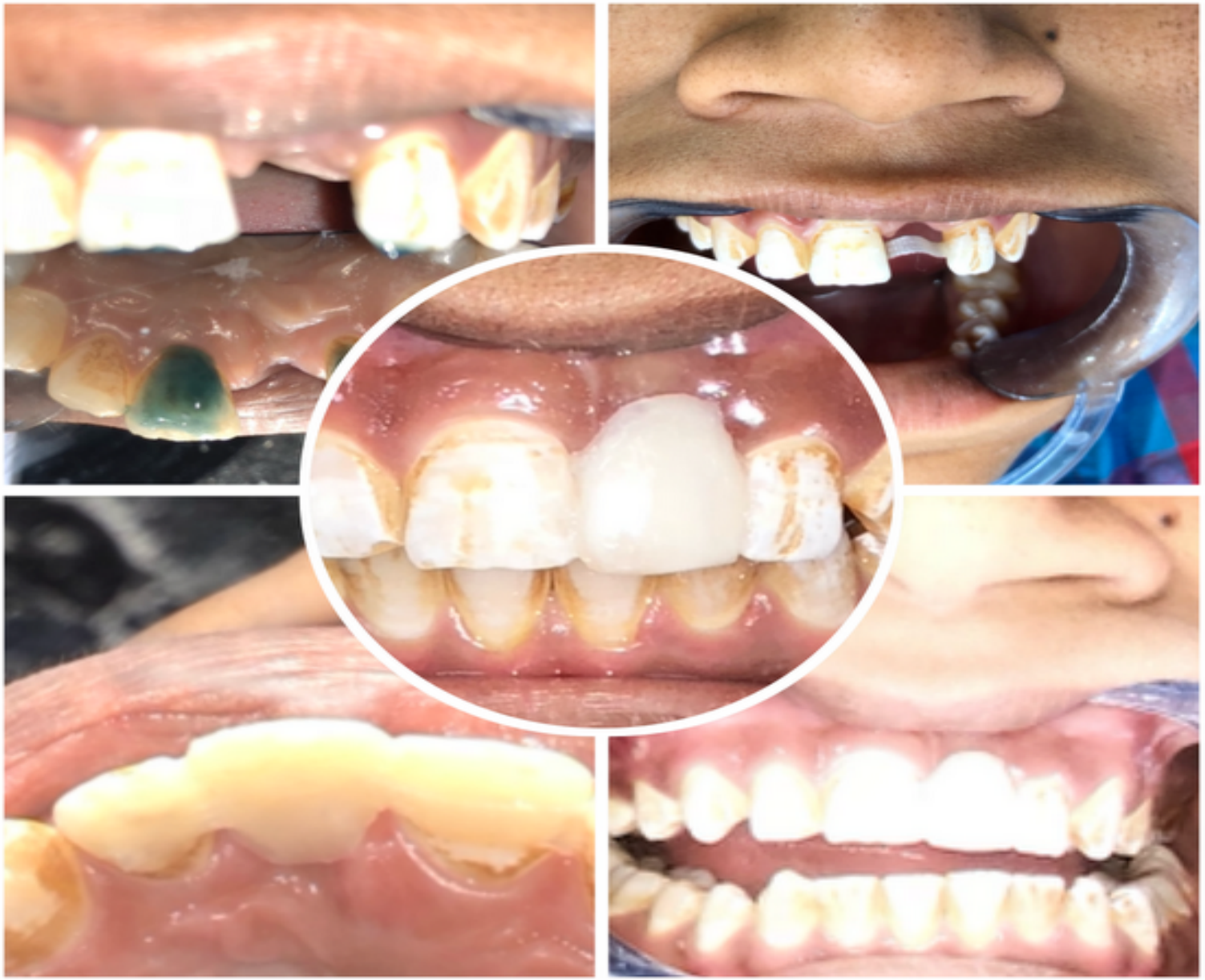
- Having chemical bonding between resin & fibre
- Once the light cured, the moldable ribbon can attain ultrahigh tensile strength, higher than that seen with stainless steel orthodontic wire.

- Types:
- A) Ultrahigh molecular weight polyethylene fibres
- - Ribbond
- -Connect
- B) Glass fibres
- -GlasSpan (GlasSpan)
- -Fibre Splint ML(Polydentia)
- C) Pre-impregnated Fibre Reimforced Composite
- - Vectris (Vivadent)
- -Sculpture (Jeneric/Pentron)

- These embedded fibres stop crack propagation by transferring forces multi-directionally. Thus, these restorations behave like ‘Sandwich-Glass’ under impact.
- They impart 7 times the strength and 3 times the stiffness to commonly used composites.
- No memory, do not splay when cut, unravel or rebound when adapt.
- Translucent, colorless, highly esthetic, biocompatible.

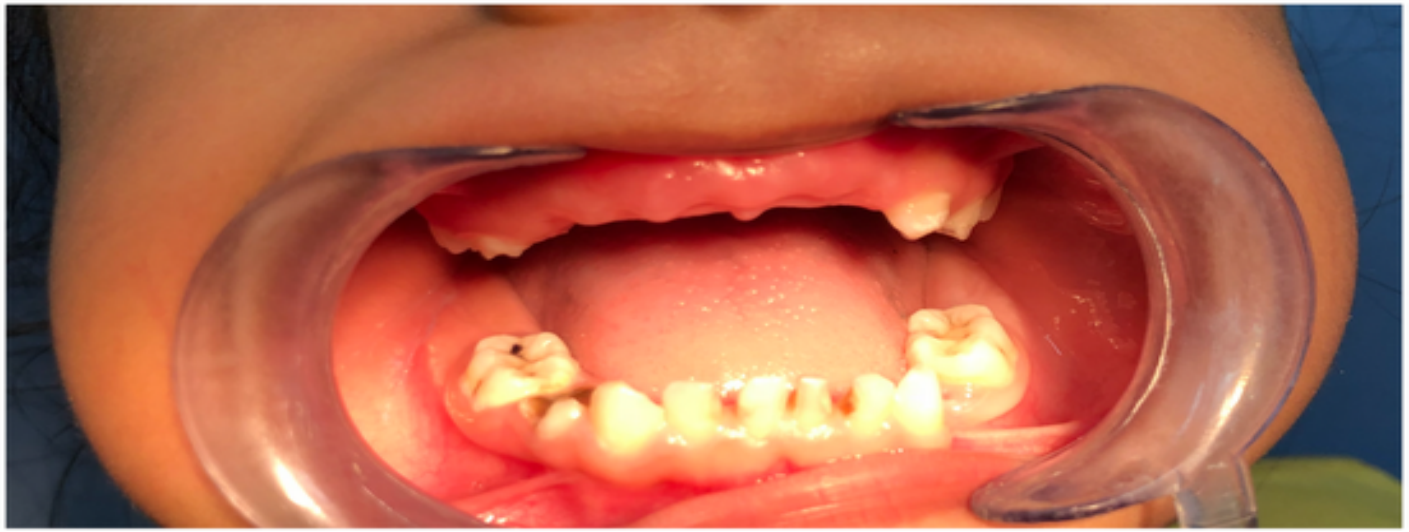
- The glass fibers or polyethylene fibers are hand impregnated by composite by composite or unfilled resin by the dentist or the laboratory technician during their use.
- Pre-impregnated fibre reinforced composites (FRC) differ from the polyethylene and glass fibers in that the fibre and the resinous matrix are coupled during the manufacturing process.
- This technique results in fibers that are uniformly impregnated.
- Not easy to adapt and mould as the glass or polyethylene fibre.

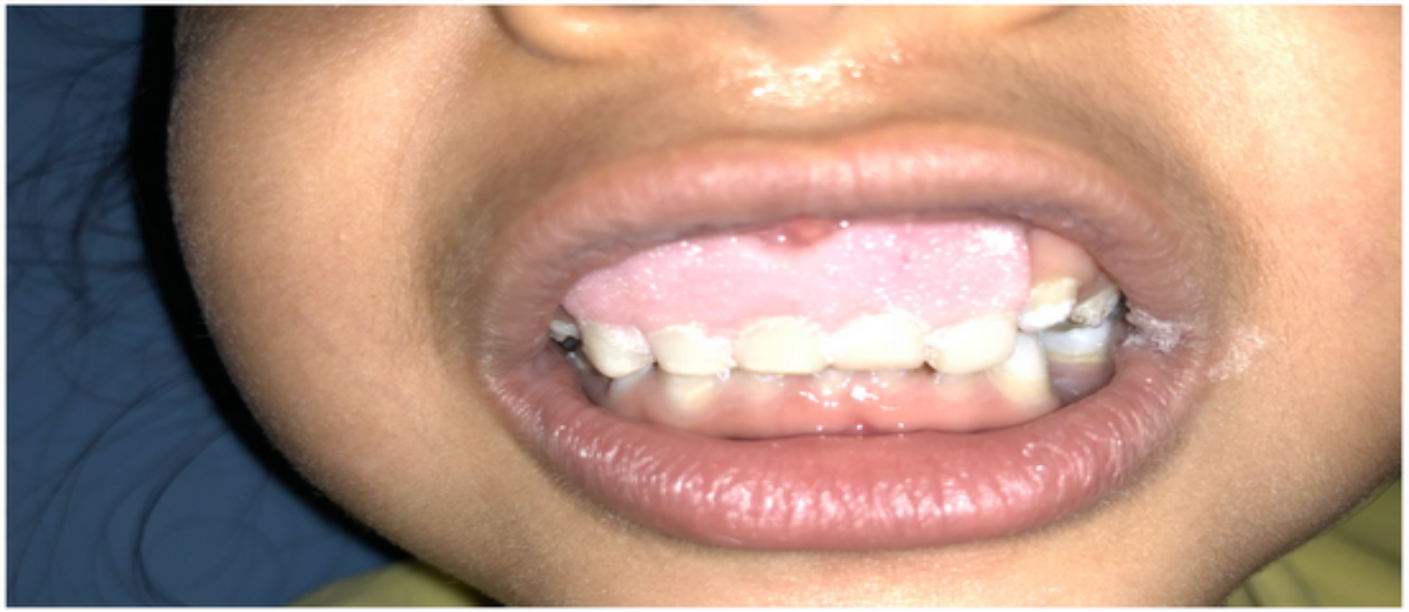
- **Uses:**
- Endodontic post & core
- Fibre-reinforced prosthesis
- Space Maintainance
- Large composite restorations
- Splinting
- -trauma
- -orthodontic retention
- -periodontal



Prosthetic Replacement of primary anteriors

- Prosthetic appliance can be fixed or removable
- Modified nance is preferable.
- Disadvantage is difficult to clean and distortion
- Frequent recementation can be required
- Fibre reinforced composite may also be used
- Drawbacks - it cannot be used if more than 2 teeth to be replaced,





Restoration of fractured teeth

- Composite is most commonly & frequently used.
- Stent technique is most commonly used