Techniques for Interim Rrestorations in Fixed Partial Denture Prosthesis – A Review

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Abstract:

It is important for the tooth or teeth to be protected and that the patients be kept comfortable while a permanent restoration is being fabricated. By successful management of this phase, the dentist can gain patients confidence and favorably influence the ultimate success of the final restoration. Therefore costly chair side time must not be wasted but the dentist must produce an acceptable restoration. This paper reviews the techniques for custom provisional restorations.

Keywords: Aesthetics; Custom made restoration; External surface form; Interim restoration; Preformed matrix.

Introduction

Interim restoration is a fixed or removable prosthesis, designed to enhance esthetics, stabilization and/ or function for a limited period of time, after which it is to be replaced by a definitive prosthesis^{1,2}. Provisional restorations play a key role in gaining the patients confidence and also save the valuable clinical chair side time. They also provide psychological support till the final restoration is fabricated³.

Requirements of Provisionals^{1,2}:

Biologic Requirements

Pulp protection
Periodontal Health
Occlusal harmony
Positional Stability
Protection of margin

Mechanical Requirements

Adequate Compressive/Flexural Strength
Good Retention & Stability

Esthetic Requirements

Color stability, Easily contourable, Translucency

Rationale for provisional restoration³

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1. To immediately replace missing teeth.
2. To prevent migration of abutments.
3. To improve esthetics.
4. To aid in developing occlusal scheme before final prosthesis is made.
5. To evaluate vertical dimension, phonetics and masticatory function.

Provisional luting materials should possess⁵:

1. Tooth adhesion to resist bacterial and molecular penetration.
2. Sufficient working time to place the restoration.
3. It must be fluid enough to allow complete seating of the restoration.
4. It must quickly form a hard mass strong enough to resist functional forces.

The most important function of these materials is to provide an adequate seal between the provisional restoration and prepared tooth. The most common luting materials used for interim purposes are Calcium hydroxide, Zinc oxide eugenol, Non eugenol materials. As eugenol interferes with the acrylic resin polymerization and hardening process, eugenol free provisional luting materials have gained popularity.

Steps in fabrication of interim restorations^{1,2,3}

1. Diagnostic wax up on study models.
2. Fabrication of matrix/external surface form.
3. Contouring the tissue surface form of provisional restoration.
4. Cementation and evaluation of restoration

Diagnostic wax up on the study models (Fig.1)

It is to be done to change or correcting occlusal abnormalities.

To restore/alter the V.D.O.

It also help to fabricate the customized matrix form.

The diagnostic wax up has to be done and all occlusal interferences should be eliminated and then utilized for further procedures.

Fig.1 : Diagnostic wax up on the study models

External surface form

1. Preformed matrix.
2. Fabrication from Diagnostic wax up.

Preformed matrix are of different types:

Polycarbonate crowns.(Fig.4)
Cellulose acetate crown forms.
Metallic crown/shells.

Aluminum Shells/Anatomic crowns (Fig.2)

Stainless steel Crowns
Nickel-Chromium crowns (Fig.3)
Tin-Silver & Tin-Bismuth Crowns

Fig.2 : Aluminium anatomic crowns available in a variety of sizes and shapes. The manufacturers has produced two maxillary and four mandibular shapes for the left and right side of the mouth, each in six sizes².

Fig.3 : Ni-Cr anatomic crows. These are available in an array of sizes and shapes, including once for the primary teeth with straight and contour axial surfaces².

Fig.4 : Polycarbonate crowns. Available in maxillary and mandibular incisor, canine and premolar shapes²

Customized Surface forms

It can be done by using different materials:

Alginate
The putty material
Vacuum Adopted Thermoplastic sheets.
Wax

Table 1 : Characteristics of resins used for provisional restorations^{2,8}

Type	Brand	Manufacturer	Advantages	Disadvantages
Poly(methyl methacrylate)	Alake Cf & Br Resin Duralay Jet	GC America LD Caulk Reliance Dental Lang Dental	Good margin fit Good transverse strength Good polish ability Durability	High exothermic heat increase Low abrasion resistance Free monomer toxic to pulp High volumetric shrinkage
Poly(ethyl methacrylate)	Snap	Parkeli Biomaterials	Good polish ability Minimal exothermic heat increase Good strain resistance Low shrinkage	Surface hardness Transverse strength Durability Fracture toughness
Poly(vinylethyl methacrylate)	Trim	Harry Bosworth	Good polish ability Minimal exothermic heat increase Good strain resistance Good abrasion resistance Flexibility	Surface hardness Transverse strength Durability Fracture toughness
Bis-acryl composite	Protemp II	ESPE-Premier	Good marginal fit Low exothermic heat increase Good abrasion resistance Good transverse strength Low shrinkage	Surface hardness Less stain resistance Limited shade selection Limited polish ability Brittle
VLC urethane di methacrylate	Triad	Dentsply York	High Surface hardness Good transverse strength Good abrasion resistance Controllable working time Color stability	Marginal fit Less strain resistance Limited shade selection Expensive Brittle

Fig.5 : External surface form removed².

Contouring of the tissue surface form^{2,3}

- Direct Technique
- Indirect Technique
- Hybrid Technique

Direct technique³

The direct technique is performed by making the provisional directly in the mouth. It is usually chosen when a single unit or small span bridge is being fabricated. It is cost-effective to fabricate the provisional directly and requires less chair time. For instance, choosing a polycarbonate crown form for an anterior tooth and relining it with acrylic will save time since it is not necessary to take impressions, pour models or make a template. There are numerous ways to fabricate a provisional utilizing the direct technique. The most common ones are the polycarbonate crown forms, alginate impressions, preformed crowns, clear matrices and baseplate wax.

Indirect technique

After tooth preparation the impression of the arch is made and poured with the quick set stone or plaster and the provisional restoration is fabricated on the cast so it is called indirect technique.

Putty index technique / shell fabricated provisional restoration⁸:

- Diagnostic wax up is done
- Putty index is made from diagnostic wax up.
- Trimmed acrylic shells are oriented in the putty index.
- Auto polymerizing resin is filled in the putty index.
- The index is stabilized on the prepared sectional cast.
- Provisional restoration is finished.

Hybrid technique or indirect-direct technique

The diagnostic tooth preparation is carried on models and slightly the tooth is under prepared and these are used as tissue surface forms. The provisionals are fabricated by indirect technique and when the preparation is completed in the clinic the provisionals are relined by self curing resin chair side.

Provisional restorations in different clinical conditions for anterior teeth: Single crown⁴

- If tooth has normal contours, contacts, then same tooth form is retained by custom made matrix.
- If tooth is grossly destructed then the diagnostic wax up has to be done followed by matrix formation or preformed matrix can be used.
- After tooth preparation, the exposed tooth surface is covered with a layer of petroleum jelly.
- Self curing resin is mixed and loaded into the matrix.

Once the mix loses its shine, the matrix should be placed on to the prepared tooth, & held undisturbed till the initial polymerization.

Fabrication of provisional restoration for post & core treated tooth^{2,3}(Fig.6-9)

- After the radicular preparation of the tooth, if adequate coronal structure is present, the retention for provisional restoration is obtained by both coronal and radicular part.
- If the remaining is very short, the retention is entirely depends upon radicular extension.
- Fabrication of provisional restoration by using orthodontic wire or endodontic file by both direct and indirect technique.

Interim post preparation

Fig.6 : Wire marked, so that the bend is made at the correct level. When in position, the wire must not interfere with external surface

Fig.7 : A 180° or greater bend in the lining resin.

Fig.8 : Wire in the post space just before placement of the filled external surface form (ESF). A gauze throat pack is recommended to protect the patient from aspirating or swallowing wire.

Fig.9 : Filled external surface form seated.

Fabrication of provisional restoration for porcelain laminates⁵

- After tooth preparation, impression is made & cast is fabricated.
- The preparation is covered by petroleum jelly, the composite resin of appropriate shade is placed on it properly contoured and light cured.
- The composite laminate is recovered & petroleum is cleaned.
- Three areas of about 1mm² are etched on the prepared tooth & bonding agent is applied only in that areas and laminate is pressed against the tooth and cured for 20 secs.

Indirect technique for multiple laminates⁵

- The diagnostic wax up is done on the cast and matrix is fabricated. After tooth preparation impression is made and cast is poured.
- The matrix is utilized to fabricate the provisional restoration by indirect technique.

Provisional restoration for adhesive bridges³

- The diagnostic wax up for the adhesive bridges is made and the matrix is prepared after the tooth preparation.
- The pontic is placed and is connected to adjacent retainers by small amount of light curing resin.

Provisional restoration for pin ledge restorations

- After the tooth preparation the prepared grooves are protected by placing the plastic pins and the auto polymerizing resin is added by brush bead technique and thus the provisional restorations are fabricated.

Provisional restoration for severely fractured anterior tooth

- The severely fractured teeth are indicated for endodontic treatment or pin retained restorations till the completion of the endodontic treatment and fabrication of the definitive prosthesis the provisional restorations are indicated.
- The impression is made & obtained cast is utilized for matrix formation.

Provisional restoration for the abutment tooth of the R.P.D

- In some clinical conditions the existing removable partial dentures have to be restored by complete coverage crowns.
- The provisional crown is fabricated by indirect which is under contoured. The crown is placed on the abutment tooth and the self curing resin is mixed & placed at the occlusal rest area & retentive terminal area.
- The C.P.D is inserted into the oral cavity & removed several times to mould the self curing resin. Once the resin reaches the rubbery stage the crown is removed & polymerized in hot water or pressure pot.

Provisional restorations for optimizing esthetics in anterior maxillary implants^{7,8}

- Two provisional abutments were fitted on the implant analogs and modified according to the desired restoration contour with silicon keys from the wax up.
- In order to improve the esthetic appearance & minimize plaque accumulation, the labial side of the restoration was formed by using veneers from acrylic denture teeth.
- The veneers were attached on a silicon index from the wax up and the restoration was completed with heat polymerizing acrylic resin.
- The use of acrylic veneers for the construction of provisional restoration is definitely a technique sensitive & time consuming procedure, but improved esthetic performance can be thus achieved, compared with the use of only heat polymerizing acrylic resin.

Provisionals for ITI solid abutments⁹

This article describes several methods for the direct intraoral fabrications of provisional restorations for the ITI solid abutment.

1. Burn out coping technique
2. Resin coping technique
3. Impression cap technique
4. Protective cap technique

Polycarbonate Crown Form Technique^{1,2,3,8}

Pre-fabricated polycarbonate crowns are easily adapted to produce esthetic provisional crowns in an expeditious manner on prepared single anterior tooth in most patients

Table 2. Steps using Polycarbonate Crown Forms

1.	Select the crown form with the best fit. The fit will probably not be perfect, but it can be adjusted. The width of the adjacent teeth is important when selecting the polycarbonate form. If the length is long, trim the margins down by utilizing an acrylic bur or crown and collar scissors. Do not trim the incisal edge to correct the length. Keep trying the form on the tooth after each trimming until the length and width are approximately the correct size.
2.	Open the contact areas. Make a V-shaped cut into the mesial and distal contacts by utilizing a pointed acrylic bur. Make this opening approximately 3/4 of the way down the contact area. This allows the acrylic to pick up the adjacent teeth contacts.
3.	Coat the tooth with a separating medium.
4.	Mix the acrylic material until it is homogenous and then pour the acrylic into the crown form. Placing your fingers on the mesial and distal walls will help form the acrylic until the shell is placed on the tooth.
5.	Insert crown on prepared tooth once the acrylic loses its shine.
6.	When the material starts to set, gently remove and replace the crown form from the tooth in approximately 10-second intervals, until it reaches final set. This should be done for approximately 2 to 3 minutes until material is set.
7.	Remove the crown.
8.	Trim accordingly.

Alginate Paint Thin Shell Technique^{1,2,3,8}

This technique utilizes an alginate impression prior to the tooth preparation. If you cannot obtain an impression, you cannot use this technique. This technique can save chair time because the restoration is partially fabricated prior to preparation appointment.

Table 3. Steps using alginate paint thin shell technique

1.	Prior to tooth reduction, prepare the tooth by adding wax to fill in any missing tooth structure. Take an accurate alginate impression, preferably with a triple tray to accurately reproduce the occlusion. Wrap impression in a moist paper towel or store in a humidifier until ready to use.
2.	Utilizing two dappen dishes or a triple dappen dish, place acrylic monomer in one and polymer in the other.
3.	Use a paint brush to transfer the acrylic material to the impression.
4.	Paint the acrylic into the impression until the buccal/lingual or facial/labial walls are covered. If the material is too thick, use a little monomer on the brush to thin out what was placed in the impression. The contact areas should not be included.
5.	Once the material is set, use a pointed instrument to remove the shell from the impression.
6.	If upon removal you notice any voids, paint a small amount of acrylic over the discrepancies.
7.	It may be necessary to hollow out the inside. This can be done using a #8 round bur.
8.	Use this shell to make your provisional by relining with acrylic.
9.	Place on tooth and have patient bite into place.
10.	Carefully place and remove until set.
11.	Trim accordingly.

Free-hand (Block) Technique⁸

Recommended for experienced dentists. No matrices or impressions are used with this technique. It allows for good marginal adaptation and proper occlusion.

Table 4 – Steps using free hand technique

1.	Lubricate prepared tooth.
2.	Mix a thick viscosity of acrylic.
3.	When the acrylic has lost its luster, place an appropriate amount of material (about the size of the tooth or teeth that are prepared) on top of the tooth or teeth and form.
4.	Form the acrylic buccally and lingually to the adjacent teeth and have the patient bite down to establish occlusal height.
5.	Once the material has started to get firm and before final set, place and remove from preparation to prevent provisional from locking in undercuts or on tooth.
6.	Before final set, place a very thin mix (pouring consistency) of acrylic inside the crown and place it back on the tooth. This will give you a more definite margin and reduce the need for touch-up with a brush later.
7.	Once final set is achieved, trim and finish.

Preformed Anatomic Metal Crown Technique^{2,8}

Aluminum, gold anodized and stainless steel crown forms all fall into this category. They can be used by themselves, relined with acrylic or a combination of both. These crown forms cannot be utilized for multiple units. The gold anodized forms seem to work the best for this technique because of the softness of the material.

Table 5- Steps using preformed metal crown

1.	Select the most appropriate size form.
2.	Check occlusal height. If the height is too high, utilize crown and collar scissors to trim the gingival margin.
3.	Cut a U out of both the mesial and distal contacts only if there is an adjacent tooth. If no adjacent tooth, cut slit on proximal surface.
4.	Gently pull the buccal and lingual walls open.
5.	Mix the acrylic and place into preformed crown.
6.	When the acrylic has lost its shine insert on the lubricated prepared tooth in the mouth or on a model.
7.	When material starts setting, gently remove and insert the crown on the tooth until the acrylic has set, approximately 2 to 3 minutes.
8.	Trim the flash.
9.	Remove the metal crown form with the crown and collar scissors.
10.	Refer to trimming section to finish.

Wax Technique⁸

Used to fabricate all single unit provisionals. No crown forms or alginate impressions are necessary, so fairly inexpensive.

Table 6: steps using wax technique

1.	Warm up a piece of baseplate wax and place over unprepared tooth.
2.	Trim and save the wax impression.
3.	After preparation, dispense material and fill the wax impression.
4.	Place on prepared tooth.
5.	Follow steps 3 through 8 as in the polycarbonate technique to complete.

Aluminum Shell Technique^{2,8}

Table 7. Steps Using an Aluminum Shell

1.	Once you have found the appropriate size, try it on the tooth to make sure the distance between contacts is correct.
2.	See how much is necessary to trim at the gingiva. If the crown is 2 mm above the adjacent teeth, then you would trim 2 mm all around at the gingiva using a crown scissors. It is important to trim in a smooth manner so as not to leave sharp or uneven edges that can irritate the gingiva.
3.	Use contouring pliers to crimp the margins of the crown inward (Contouring pliers Nos. 112, 114 and 115 are most common.) Using the contouring pliers helps in adapting the crown to the finish line. It is possible to omit the contouring and reline the shell with methylmethacrylate (self curing acrylic). This will give you a better internal fit and more exact margins and is probably preferable since it helps avoid a metal overhang.
4.	Once the crown is seated on the prepared tooth, instruct the patient to bite down normally. This helps establish an initial occlusal anatomy onto the soft aluminum shell.
5.	Further check the occlusion with articulating paper and make adjustments.
6.	Check crown for rough metal margins. These can be smoothed using sandpaper, discs or a rubber wheel.

Pre-fabricated Light-cured Composite Crown Technique^{1,2,8}

These crowns are malleable, light cured, preformed, and are available in a variety of shapes and sizes. They are a simple and esthetic solution for posterior provisionals. These types of tooth-colored pre-fabricated crowns can be quickly adjusted prior to light curing.

With no impression or matrix needed, fabrication is quick and relatively easy. Start with the smaller size crown, as it can easily be contoured to modify to a slightly larger size. Trim the crown short, rather than leaving it too long. The tack cure should be no longer than 2-3 seconds per surface.

Table 8. Steps Using Pre-fabricated Light-cured Composite Crown

1. Measure mesial to distal width to determine width of provisional.
2. Select the appropriate size according to the manufacturer's chart.
3. Open unidose container and remove from the protective plastic covering.
4. Using crown and bridge scissors, trim following gingival contour of the tooth.
5. Seat trimmed crown gently on the preparation. Using your gloved fingers, ensure that the crown is in line with the teeth. Establish interproximal contacts and margins.
6. Have the patient gently close to establish occlusion.
7. Once the provisional is correctly adapted and adjusted, tack cure the provisional crown with a curing light - while in the patient's mouth - for 3 seconds on buccal/labial, occlusal and lingual.
8. After tack cure, remove crown, then carefully put the crown back in place a couple of times to ensure fit before the final cure.
9. Final cure for 60 seconds, per manufacturer's directions.
10. Finish and polish

Acrylic Preliminary Impression Technique^{1,2,8}

This procedure requires an accurate impression prior to and after the tooth preparation. If the tooth is broken down, or a bridge is being constructed to replace a missing tooth, this technique may not be effective without adding wax to those areas.

Always remember to place the provisional on and off during setting to prevent locking provisional on the tooth.

Table 9. Steps Using Preliminary Impression with Acrylic

1. Add wax to re-create any missing tooth structure.
2. Obtain an accurate impression before the teeth are prepared. Make sure the impression is free from debris and tears in the area.
3. Disinfect the impression. If using alginate, keep moist until needed. Do not let an alginate impression dry. This will alter it, causing distortion.
4. After the teeth are prepared, place a small amount of a selected shade of self-curing acrylic in your dappen dish. Rubber dappen dishes work nicely for this since they are easy to clean.
5. Dispense enough monomer to saturate the polymer. Always cover your monomer container since it is very volatile.
6. Use a spatula or instrument to mix to a homogenous consistency.
7. Wait 2-3 minutes until resin has lost its luster and has reached a doughy stage.
8. Rinse disinfectant off the impression and place material in the area of the prepared teeth.
9. Use a separating medium, as in other techniques.
10. Place the impression filled with acrylic back in the mouth.
11. Carefully remove the provisional from the impression and place back on the prepared teeth. This will avoid additional shrinkage during final setting. Excess acrylic can be trimmed during the doughy stage using a scissors.

Composite Resin Preliminary Impression Technique

This procedure requires an accurate impression prior to and after the tooth preparation. If the tooth is broken down, or a bridge is being constructed to replace a missing tooth, this technique may not be effective without adding wax to those areas. Select the provisional material that is the closest to the natural tooth color. You can adjust the color by mixing colors or by adding a veneer of flowable composite to the exterior of the provisional after adjusting.

Table 10. Steps Using a Composite Resin with Preliminary Impression

1. Add wax to re-create any missing tooth structure.
2. Obtain an accurate impression, using a triple tray, before the teeth are prepared. Make sure the impression is free from debris and tears in the area.
3. Disinfect the impression. If using alginate, keep moist until needed. Do not let an alginate impression dry. This will alter it, causing distortion.
4. After the teeth are prepared, try in the impression to determine the appropriate path of insertion. Remember how it fits into the mouth so you are able to repeat this when the provisional material is inside the impression.
5. Using a composite-resin auto mix cartridge, dispense a small amount of the material onto your tray or a piece of gauze. This will help determine when the material is set.
6. Place the provisional material from the automix cartridge into the area needed. Fill the impression for the teeth involved only about 75% full (or less). Prevent air bubbles by keeping the tip of the cartridge under (inside) the material as it is extruded.
7. Place the impression into the mouth, following the correct path of insertion.
8. Instruct the patient to close into the impression. Once closed, the patient must not open or move their teeth until the provisional material is set.
9. Monitoring the small amount of material you dispensed on your tray, determine when the material is set. It may set faster in the mouth due to the increased temperature.
10. Remove the impression from the mouth. The provisional may remain on the tooth or inside the impression.
11. Remove the provisional.
12. Using crown and bridge scissors, cut away any excess material.
13. Try the provisional on the tooth. Adjust as needed.
14. Polish and cement.

Vacuum Form Acetate Shell Technique^{3,8}

This procedure utilizes the vacuum forming machine. It allows you to duplicate existing teeth prior to preparation. However, it also duplicates broken or missing portions of the teeth. Therefore, after the alginate is taken and poured, you should repair any existing discrepancies prior to using the vacuum former. If a tooth is missing, there are many ways to fill the space prior to making your template. They include: use of an acrylic tooth (denture tooth), use of a mix of acrylic formed using opposing model to establish occlusion, and the use of light-cured resin to form a tooth.

The clear matrix has the following advantages:

- Allows easy access and visibility throughout the procedure.
- Can serve as a tooth preparation/reduction guide.
- Provides a smooth, void-free surface that gives a better finish to the surface of the provisional.
- Can be used with self- or light-cured materials.
- Is inexpensive to produce.

Table 11. Steps Using a Vacuum Form Acetate Shell

1. Obtain an alginate prior to preparation.
2. Pour with quick setting stone.
3. Separate and trim models.
4. Repair any discrepancies or add missing teeth.
5. Heat vacuum former until material sags 1-1 1/4 inches.
6. Turn motor on and pull frame over model that is facing up. Let run for 15 seconds.
7. Trim material around model using scissors and lab knife.
8. Cut out area to be used in mouth. For instance: if making #13, you would trim keeping #12, #13 and #14 intact. Always trim material keeping one tooth mesial and distal. This will prevent over seating the template or matrix.
9. Lubricate teeth.
10. Mix a homogeneous mass of material to be used.
11. Place provisional material into matrix using either bulk-mix method or a syringe method.
12. If using acrylic, wait till luster has gone.
13. Fully seat the matrix, allowing excess to extrude beyond the borders.
14. Instruct patient to bite down.
15. If using a light-cured material, cure for 1 minute and remove. Place in machine for final cure. Cure according to material directions.
16. If using an acrylic resin, when material becomes rubbery, trim excess with scissors and replace. The matrix should be placed and removed a few times to prevent excess material from locking in embrasure spaces.
17. When final set is achieved, separate and peel away matrix with an instrument.
18. Reline or remarginalize the provisional to pick up the fine details with an incremental powder/liquid (Nealon) technique.
19. Trim and polish.

Table 12. Use of a Vacuum Former Machine

1.	Place the model on the platform of the vacuum former with the teeth upright (Figure 9).
2.	Mount a sheet of plastic coping material on the holding frame (.020).
3.	Turn on the heating element and soften the coping material. When the material sags in the middle approximately 1 to 1 ¼ inches, turn on the vacuum motor. Quickly lower the holding frame over the model. The vacuum will draw the material onto the model and tightly adapt to the shape of the teeth.
4.	Turn off the machine after 15 seconds of adaptation and remove the model.
5.	The coping material can be initially cut away from the model with a scalpel blade or lab knife. Remove template from model and trim with a crown and collar scissors for a more precise trimming. Trim to 3 to 4 mm below the gingival margins of the teeth, along the gingival tissue. This is important to give a more positive seat on the preparation model. The tooth to be prepared and at least half of each adjacent tooth should remain intact to create the mold or matrix for the provisional. If you are making a roundhouse or a three or more unit provisional, you need a core. A core fits over the vacuum form and is made of stone and slurry water. This is helpful to insure proper placement of the vacuum form over the prepared teeth model.

Reline Previous Crown Technique

An existing crown can be used as a provisional if it remains intact upon removal and is smooth and aesthetically pleasing. When a crown is removed or remade, keep in mind the reasons for replacement. If it is for esthetics, you would want to make a new provisional. If it is because of poor fit, you can reline with acrylic to serve as a provisional. In most cases, it is best to make a new well-fitting provisional.

Celluloid Crown Form Technique

A celluloid crown form can be used to fabricate a single unit provisional. It is extremely helpful when using light-cured materials because the material can be cured through the clear form.

Inlay and Onlay Provisional Technique

An inlay and onlay should be fabricated by a proficient assistant. The small size and intricate margins require precise fabrication and trimming. This technique closely relates to the freehand technique discussed earlier. The only difference with this technique is that the whole clinical crown is not covered.

Provisional Over Implant Technique

To fabricate a provisional over an implant, the assistant must be familiar with implants and their coordinating parts. Indirect technique is recommended.

Long-term Provisional Technique

Provisional crowns may have to be fabricated to last several months. In such instances, metal bars or a mesh material may be used to help provide durability. For an anterior provisional, the material should be placed on the lingual surface; for posterior teeth, the material should be placed on the occlusal surface. Placing mesh prior to pouring material can be very difficult. The mesh

may move during the pouring process and be in the wrong position while final set occurs. For the inexperienced, it is easier to cut a long groove in the occlusal Or lingual surface. Then place the bar or mesh and cover with material. Before placing the material over a metal bar reinforcement, make sure the bar will not interfere with the patient's occlusion.

Limitations^{1,2}:

- 1.Lack of inherent strength
- 2.Poor marginal adaptation
- 3.Colour stability
- 4.Poor wear properties
- 5.Inadequate bonding characteristics
- 6.Time expenditure for fabrication can be prohibitive.

Conclusion

The utilization of proper provisional prosthodontic appliance will permit a higher rate of success of the treatment. This phase of restorative treatment should not be merely considered a temporary but as a template for the ensuing prosthesis. The information that is obtained in this phase of treatment will reduce the problems that may be encountered in the definitive treatment.

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