Immediate denture

When many of teeth are loose or painful, they may be beyond saving. This condition is usually caused by advanced periodontal disease or by decay. Periodontal disease causes bone to be lost; if it's not caught in time, there's so little support for the teeth that they have to be removed. Removing teeth & replacing them with a denture may be the best way to eliminate the infection & restore the health of patient's mouth. When the entire procedure is completed in one day, it's called an immediate denture.

**Immediate denture** is "any removable dental prosthesis fabricated for placement immediately following the removal of natural tooth.

Immediate denture are more challenging to make than routine complete denture for both the dentist and the patient because the try–in is not possible beforehand, the patient may not be completely comfortable with the resulting appearance and fit on the day of immediate denture is inserted. Immediate dentures may be either single immediate dentures or upper and lower immediate dentures in the same patient. The latter should be made together to ensure optimal esthetics and occlusal relationships.

**PATIENT SELECTION: INDICATION**

1. Hopeless remaining teeth(caries, periodontal disease or malocclusion).
2. Educated patient with daily social.
3. patient with stable health condition (the patient for immediate denture is the philosophical type, their motivation for denture is the maintenance of health & appearance).
4. patient don't mind some additional visits or cost.
CONTRAINDICATIONS

1. patients who are in poor general health or who are poor surgical risks (e.g., post irradiation of the head and neck regions & cardiac or endocrine gland disturbances).

2. patients who are identified as uncooperative because they cannot understand and appreciate the scope, demands, and limitations to the course of immediate denture treatment.

3. patients is not willing to accept the treatment mentally & psychologically.

4. patient at risk from bacteremia.

5. patient with recurrent history of post extraction hemorrhage.

6. the presence of oral sepsis, acute periapical or periodontal diseases, extensive bone loss.

7. patient don't mind being edentulous for a period of time till complete healing.

Types of immediate dentures: According to treatment plan:

1. Conventional (or classic) immediate denture (CID): After this ID is placed and after healing is completed, the denture is refitted or relined to serve as the long-term prosthesis.

2. Interim (or transitional or nontraditional) immediate denture (IID): After this ID is made and after healing is completed, a second new CD is fabricated as the long-term prosthesis. The interim prosthesis designed to enhance esthetics, stabilization and/or function for a limited period of time, after which it is replace.
Comparison between these types of ID:

<table>
<thead>
<tr>
<th>Conventional Immediate Denture (CID)</th>
<th>Interim Immediate Denture (IID)</th>
</tr>
</thead>
</table>
| 1. Intended as definitive or long-term prosthesis  
   2. After healing is complete, it is relined.  
   3. Esthetics of the CID cannot be changed. |
| 1. Transitional or short-term prosthesis  
   2. After healing, a second denture is made.  
   3. The second denture procedure after the IID allows an alteration of esthetics and any other factors if indicated.  
   4. At the end of the treatment, the patient has a spare denture to use in case of extenuating circumstances.  
   5. Because posterior teeth need not be removed before fabrication of the IID, the vertical dimension of occlusion may be preserved.  
   6. Indicated when only one surgical visit is preferable to maximize insurance benefits. |
| 4. At the end of the treatment, the patient has one denture. |
| 5. If all posterior teeth are initially removed, the OVD is not preserved, opposing premolar can be maintained for this purpose. |
| 6. Indicated when two extraction visits are feasible. |

Advantages for all types of IDs:

**A. Related to the patient:**

1. The primary advantage of an immediate denture is the maintenance of a patient's appearance because there is no edentulous period.
2. Circumoral support, muscle tone, OVD, jaw relationship, and face height can be maintained. The tongue will not spread out as a result of tooth loss.
3. Less postoperative pain & bleeding is likely to be encountered because the extraction sites are protected.
4. The patient is likely to adapt more easily to dentures.
5. Speech and mastication are rarely compromised, and nutrition can be maintained.
6. Overall, the patient's psychological and social well-being is preserved.
**B. Related to the dentist:**

1. It is easier to duplicate (if desired) the natural tooth shape and position, plus arch form and width. If desired, the horizontal and vertical positions of the anterior teeth can be more accurately replicated.
2. Achieving good appearance.
3. Hemostasis, when ID are inserted, they act as a bandage & help to reduce bleeding.

**DISADVANTAGES FOR ALL TYPES OF IDs**

It is important for the dentist to fully explain to the patient the limitation of ID:

1. The anterior ridge undercut (often severe) that is caused by the presence of the remaining teeth may interfere with the impression procedures and therefore preclude also accurately capturing a posteriorly located undercut, which is important for retention.
2. The presence of different numbers of remaining teeth in various locations (anteriorly, posteriorly, or both) frequently leads to recording incorrectly the centric relation position or planning improperly the appropriate vertical dimension of occlusion.
3. The inability to accomplish a denture tooth try-in in advance on extractions precludes knowing what the denture will actually look like on the day of insertion. Careful planning, operator experience, attention to details of the technique, and explanation to the patient best address this inherent problem.
4. Because this is a more difficult and demanding procedure, more chair time, additional appointments, and therefore increased costs are unavoidable.
5. Increased maintenance & more clinical visits.
6. Functional activities as speech or mastication are likely to be impaired, however this a temporary convenience.

**DIAGNOSTIC STEPS MUST INCLUDE:**

- **Good oral hygiene** is essential before starting any prosthodontics treatment.
- **Patient's systemic condition** is very important to check the general health of the patient because multiple extraction may not be tolerated by all patients. Patient under medical control & do not interfere with the steps of denture construction including several teeth extraction can be included, medical consultation is advisable.
- **Full dental history** must be recorded in the case sheet.
- **Periodontal condition** of the remaining teeth must be assess, this must include teeth mobility, measurement of the pockets; because this might affect surgical step of treatment course. Severe cases of periodontal disease may suggest some surgical correction after extraction to have well contoured residual ridge covered with firmly attached mucosal tissue.
- **Radiographic examination** is essential for immediate denture patients. Periapical radiograph may be useful for localized area; OPG view give general view for both jaws in single image.
- **Teeth mold & shade** must be recorded, proper communication with the patient about his teeth shade & form is essential furthermore teeth alignment & any individual variations as diastema, spacing, rotation of the teeth if the patient like to preserve same appearance or improvement could be suggested by you for better appearance.

- **Occlusal plane adjustment** is necessary because the factors that necessitate tooth extraction are often associated with occlusal discrepancies. These also interfere with the centric relation record as well as with the proper determination of occlusal vertical relation. Proper location of the low & high lip lines must be determined to determine the required changes in teeth position or angulations.

- **Presence of any infection or inflammation** in the soft & hard tissues. Periapical abscess, granuloma & cysts may make the estimated tissue changes at the time of extraction & healing & remodeling process unpredictable, this may increase of the risk of unfitted.

- **Previous prosthesis**: if present must be checked as an additive reference for the jaw relations or teeth selection. It also may help the dentist to explain some of treatment or correct some errors.

- **Diagnostic cast** is essential, that could serve a lot in the treatment plan & communication with the patient, also can be used as pre-extraction record.

- All ID patients must have good oral prophylaxis, proper scaling & good oral hygiene, this will reduce post-operative edema & infection. Other treatment as restoration crown & bridges or even RPD all must be one coincidence with ID planning.

- In the diagnosis step; with all the collected information you have to decide type of surgical procedure, ID can be constructed with one of the surgical procedure:

1. Extraction of teeth only.
2. Extraction of teeth with alveoloplasty. In some cases simple correction may be needed at the sight of extracted teeth to improve the shape of the alveolar process in order to facilitate & improve denture objectives, in this cases surgical splint construction important.

**TOOTH MODIFICATION**

Many immediate dentures will require modification of opposing teeth to correct the occlusal plane or to eliminate prematuritites in centric relation.

Occlusal plane adjustment is necessary because the factors that necessitate tooth extraction often are associated with occlusal discrepancies.

- **In case of hyper mobile anterior teeth** impression materials can act as instrument of extraction, so avoiding of the problem can done by:

  1. applying a lubricant medium to the teeth.
  2. in case of adjacent teeth to each other's applying molding soft wax into sub-contact point spaces and around the necks of teeth so that impression material is prevented from locking into the undercuts.
  3. in case of solitary tooth placing a loose fitting cupper band over the tooth before taking impression.
  4. placing holes in the tray and using an amalgam condenser to release the tray over the loose tooth.

**Impression:**

**Primary impressions:**

- Use dentate or partially edentulous stock trays
- **Ideal impression material** is accurate, minimal tissue displacement, not complicated, not requiring many equipment, and not time consuming.
- Select perforated stock tray, contour the tray by using wax or compound, mix alginate and load in the tray, pour an impression and construct diagnostic cast.

- There are many types of special trays and impression techniques.

- There are two basic ways to fabricate the final impression tray, depending on the location of the remaining teeth and operator preference, both are successful:

**Type one: single full arch custom tray**

**Type two: two trays or sectional impression tray.**

**Type one: single full arch custom tray**

This technique can be used for conventional ID & the only tray used for interim ID, also: it is the used when the patient have anterior teeth only or ant. & post. remaining teeth.

- The try cast outline the tray extension to be shorter than the vestibular depth by 2mm.

- The remaining teeth must be covered with single layer of sheet wax; then second layer is used to cover all the area needed to be recorded by the impression & covered with the denture; this technique usually used in conventional ID while in interim ID all teeth & denture foundation area are blocked using 2 layers of wax.

- A stops effect is provided by making 4-5 regular holes through the wax, symmetrically distributed anteriorly & posteriorly.

- Special tray is fabricated and covering the denture bearing area and remaining teeth, by using the cold cure acrylic resin, & the handle is attached in the anterior region.

- Make three tissue stoppers one in the incisal edge and two in posterior.
Check special tray in the patient mouth.

Border molding of the edentulous area.

Take impression by alginate for the edentulous area and remaining teeth.

Pour impression and construct the master cast.

Two trays or sectional impression tray (Split impression technique)

This method used only when the posterior teeth are not present. It involves fabricating two trays on the same cast, one in the posterior which is made like in complete denture (close fitted). Fabricate special tray for edentulous area only, and the handle can be placed on the palatal surface. Border molding, make impression for edentulous area by ZOE, silicon or rubber base, remove impression after setting and remove excess material, replace the impression in the patient mouth, select proper stock tray and make an overall impression. Remove the impression as one unit and pour the impression and fabricate master cast. The most important thing in sectional tray technique is the accuracy and proper seating of the trays and reassembling both, care must be taken not to be distorted this assembly during tray removal from the mouth or during pouring therefore it’s advisable to bed & box the impression before pouring.
Impression of the edentulous area with zinc oxide eugenol

Second impression with alginate (double tray)

**Beeding & boxing:**

All the impression must be beeded before pouring. Wax may not stick to the alginate impression materials, therefore care must be taken to insure proper beeding. Once you fix beeding wax, boxing wax sheets can be easily stick to the impression. In the sectional impression, be careful to seat the sections properly on the indices. Pour the impression & remove the tray as in the conventional manner.
**Record base and occlusion rim:**

If the patient have enough number of remaining ant. & post. teeth no need for record base or bite rim as in most of interim ID while if there isn't enough number of remaining teeth as in all of conventional ID & some of the interim ID cases; bite rim must be constructed.

After record base & occlusal rim are constructed, leveling of the wax must depend on some anatomical landmarks as the retromolar area & you may use the remaining teeth but not always. Record base extension & occlusal rim height must be evaluated clinically. Lip lines: high & low must be determined & marked on the cast, in this way any correction or modifications can be done or marked on the cast to be considered in the teeth setting.

---

**Jaw relation**

- If we have vertical stops between two opposing posterior teeth, these relation are maintained unless further corrections are needed to improve esthetic or function. Evaluation of the existed OVD must be accomplished & dentist must decide if this going to be restored or modified.

- If the ID complete; leave first premolars bilaterally to maintain vertical & horizontal relations & facilitate recording of the jaw relations.

- Doing that by using record bases and occlusion bite rims, and the vertical dimension recorded, centric relation is recoded also and transferring to articulator in the normal procedure used with complete or partial denture. Setting the posterior teeth, verifying jaw relation, and try-in of posterior teeth appointment.
Try-in stage

- A try-in procedure is not always possible (when all teeth or number of posterior teeth are present). But the mounting casts should still be confirmed at patient visit.

1. Set the posterior teeth.
2. The denture base and posterior teeth are try-in the mouth:
   - Verifying vertical dimension of occlusion
   - Centric relation as with complete denture
3. Record landmarks on the cast to confirm the patient's esthetic
   A: Midline or newly selected midline is recorded on the base area of the master cast.
   B: The anterior plane of occlusion
   C: Ala-tragus plane should be located and noted.
   D: High lip line should be determined on the cast.
4. Anterior teeth selection is confirmed with patient.

Cast trimming guideline (rule of third):

It’s a modification of the rule of third as suggested by Kelly who recommends dividing the labial aspect of the ridge into 3 equal bands of space between the gingival line and the depth of the vestibular space.

- Remove tooth at gingival level: cut away those parts of crowns of the teeth that are visible (the cut is made at a line drawn around the teeth at free gingival margin.)
Step 1  step 2  step 3  step 4  step 5  step 6

- Recess Socket 1 mm: trim the cast so that the site of the previously removed crown are recessed approximately 1mm.

- Labial edge recess to incisal third mark: flat cut across the facial surface of the ridge, starting the cut at the labial depth of the recess made in the cast during step 2. The removal of this amount of stone represents the collapse of the labial gingival tissue towards the alveolus.

- Mid-point recess to mid-width labial cut: another flat cut across the facial portion of the ridge. This cut begins at the crest of the ridge (labio-lingual center) and extends to the mid-width point of the cut made in step 3. This procedure begins the contouring of the labial surface of the ridge.

- Round over lingual aspect of socket: trim the part of the crest which is lingual to the teeth. Most casts present a reproduction of the continuous roll of the gingival tissue. Note that the amount of grinding is very minimal on the palatal side, this is because the remodeling after extraction is usually minimal in this side.

- Round off labial to middle third, sand smooth: shape and smooth the surface of the cast that have been trimmed in the previous steps.

- Do not change or trim the essential landmarks as incisive papilla or any frenum.
In case of elimination moderate labial alveolar undercut (alvealoplasty)

The denture is constructed on a working cast which is trimmed to the anticipated contour of the ridge after surgery.

1. The gingival margins are marked and teeth removed.
2. Guidelines are drawn on the cast.
3. All the part of the cast contained within these two lines is trimmed away and the edges are rounded over.
4. A clear acrylic template is processed on a duplication of this cast and is used as a guide to control the amount of bone removal at operation.

Waxing & flasking:

Generally ID is thinner than the conventional CD, but be careful at time of insertion & in the presence of undercut the acrylic must be thick enough to be adjusted. In this step you have to custom any selected personalization criteria must be caved.

Surgical Template:

- A thin, transparent form duplicating the tissue surface of an immediate denture and used as a guide for surgically shaping the alveolar process. It is essential when there is a need to do some alveolar corrections after teeth extraction or ridge recontouring or correction of the interseptal bone or in multiple teeth extraction. Make alginate impression to the cast after trimming, pour the impression, make the clear template processes either by heat or light, vacuum from & sprinkle-on method can be used also.

- **Advantages:** help to remove any expected pressure area at the sight of extraction thus minimize insertion time & adjustment at the insertion time.
If the arrangement of the natural anterior teeth is to be reproduced in denture a recording of their position must be obtained in one of the following ways:

✓ **First way:** produce a labial index of the natural teeth before they are cut off the cast.

- The index can be produced quite simply by molding silicone putty against the labial surface of the teeth and ridge on the cast.
- Then the artificial teeth are then set into the index while its held against the cast.

✓ **Second way:** remove teeth singly from the cast and immediately wax an artificial teeth into position so that the adjacent teeth serve as a guide to the position of the artificial replacement.

### Arrangement of the anterior teeth in open face denture:

1. Preparation of tooth socket on the cast, 2-5mm depth depending on the amount of the gingival retraction which depend on the degree of pocketing and bone loose that is present around the natural teeth.
2. the neck of the artificial tooth is placed in preparation site.

3. at the time of insertion the neck will just enter the socket of natural tooth after extraction.

**Processing & finishing:**

It is the same as in the conventional CD; do not remove posterior undercut & try to modify the path of insertion. Keep both the denture & the splint template in the disinfectant to delivery.

**ID can classified According to flange design:**

1. **flange type.**
   - A. complete flange
   - B. partial flange

2. **flangeless type (open-faced or close fit)**

**Comparisons of flanged and open faced denture:**

1. Appearance
2. Stability
3. Strength
4. Maintenance
5. Hemostasis
6. Remodelling of the ridge
7. Tolerance of replacement denture

**Appearance**

1. Appearance of flanged denture does not altered after fitting where the appearance of open – face denture (although good initially) can deteriorate rapidly as resorption create a gap between the necks of the teeth and ridge.

2. The flanged denture allows freedom in the positioning of teeth, where, in open face denture teeth have to be positioned in the sockets of the natural teeth.

*so on case of malpositioned teeth we can do good alignment in flanged denture while we cannot in open face type.
**Stability:** In upper denture:

A flange on an upper denture create a more effective borders seal, therefore, better retention than is achieved with an open face denture

- In lower denture: open face denture is not usually constructed because of poor stability of lower denture during function, so flange denture is commonly used.

*so flange denture is better from the point of stability*

**Strength**

1. the presence of labial flange produces a stronger denture.

2. labial flange will make the denture stiffer so the midline fatigue fracture cause by repeated flexing across the midline is reduced.

*so from the point of strength the flange denture is better.

**Maintenance**

1. as the bone resorbed following extraction the denture become loose and a reline is required, so the presence of labial flange make it easier to add either a short – term soft lining materials or a cold curing relining materials as a chair side procedure.

2. as the color of some reline materials is not always ideal they may be visible when used with open face denture.

**Hemostasis**

1. the flange denture cover the clot completely and protect them more effectively

2. the flange denture exerts pressure on both lingual and labial gingiva reducing post extraction hemorrhage.

**Remodeling of the ridge:**

The consequence wearing of ill-fitting denture can lead to:
• If it is open face, will produce a scalloped ridge in the region of the socketed teeth.

• In flange denture, distribution the functional loads more favorably to the underlying ridge, thus minimizing bone resorption

*Tolerance of replacement denture*

• When patient have got used to an open face ID there is difficulty to accept a denture with labial flange in future and patient will complain from the fullness of the lip.

• If flange denture had worn from the beginning this problem does not occur.

• When the ridge morphology produce deeply undercut area it may not be possible to fit a full labial flange unless there is surgical reduction

• In this case the using of partially flange denture or open face denture is preferable when surgical procedure is contraindication.

• In these circumstances selection of the correct path of insertion of the denture is essential.

*Surgical procedure & insertion:*

1. Examine the patient intra-orally to check for any changes.

2. extraction of the teeth.

2. removal of the associated interseptal bone and reducing the undercut.

3. collapse (squeezing) of the labial cortical plate of the bone.

4. insertion of the clear acrylic template to check if bone removal has been sufficient.

5. further bone removal, if necessary, until re-insertion of the template cease to cause blenching.

6. suturing the socket and insertion of the immediate denture.
Insertion of the immediate denture is done, denture should seats well with good firm bilateral occlusion contact, no pressure area, check the freña relief.

If the denture will be found to be inadequately retentive, this is frequently occur in case of both anterior and posterior teeth were extracted, tissue conditioning liner can be placed at this stage.

Material should not be allowed to get into extraction sites.

Some authors recommended that instead of extraction of remaining teeth **decoration** of crowns (with pulpectomy) should done and roots should be removed after several days through 2-3 weeks.

**Advantages:** better visualization (less blood) shorter placement visit, minimum pain and swelling, easily distinguishing sore spots at adjustment visit.

**Disadvantages:** no tissue collapse that can be planned when setting denture, root extraction may be more difficult without the clinical crown.

**Contraindication of this procedure:** Acutely infected teeth and sever bilateral undercut.

**Postoperative Care and Patient Instructions**

**First 24 hours:** The patient should avoid rinsing, avoid drinking hot liquids or alcohol, and not remove the ID(s) during the first 24 hours. Because inflammation, swelling, and discoloration are likely to occur, their partial control can be helped with ice packs (20 minutes on, 20 minutes off) on the first day. Because of swelling, premature removal of the immediate denture could make its reinsertion impossible for 3 to 4 days or until reduction of swelling. In addition, if swelling occurs and the denture can be reinserted, the amount of sore spots created will be increased. The patient should be reminded that the pain from the
trauma of extraction would not be eliminated by removal of the dentures from the mouth.

- Analgesic medications are prescribed as required. Patients should be alerted to expect minimal blood on their pillow during the first night

- The diet for the first 24 hours should be liquid or soft, if tolerated.

**The first adjustment should occur at the 24-hour visit:**

1. Ask patients where they feel sore. Warn them that you are going to remove the denture and that this will cause some discomfort. Have some dilute mouthwash ready for the patient to rinse with. Remove the denture and wash it.

2. Quickly check the tissues for sore spots related to the denture; these will appear as strawberry-red spots. Usually, these areas include canine eminences, lateral to tuberosities; posterior limit areas; and retromylohyoid undercuts.

3. These areas may be related to the denture bases visually or with the adjunctive use of pressure indicator paste. The corresponding areas are relieved in the acrylic resin. The denture should be kept out of the mouth only for a very short time.

4. Adjust any gross occlusal discrepancy in centric relation or excursions.

5. Reevaluate the denture for retention. Place a tissue conditioner if needed.

**First Week after extraction & insertion:**

Counsel the patient to continue to wear the immediate denture at night for 7 days after extraction or until swelling reduction. This ensures that a recurrence of nocturnal swelling will not preclude reinserting the denture in the morning. Remove the denture after eating to clean it and to rinse the mouth at least 3-4
times daily to keep the extraction sites clean. The denture should then be quickly reinserted and worn continuously. After 1 week, sutures can be removed, and the patient can begin removing the denture at night.

**Further Follow-up Care**

Second week is the next call, this is depend on the case. Then the patient should be seen during the first month after insertion, the patient is seen on request or else weekly as required for sore spot adjustments. Denture adhesives can be used during this period as an aid if retention is lost between visits.

**Subsequent Service for the Patient with an Immediate Denture**

After the sore spots are eliminated and the tissues have healed, a recall program for changing the tissue-conditioner liner is organized. The patient should be seen one month later, 4-6 months interval. Ridge resorption is fastest during the first 3 months. The frequency of changing these liners varies from patient to patient and is influenced by denture hygiene frequency and methods, diet, and smoking habits. New light-cured soft liners may last longer in some patients. The major determinants of the frequency of changing temporary liners are the rate and amount of ensuing bone resorption and the ability of the patient to keep the liner clean.

**Explanation to the Patient Concerning Immediate Dentures:**

1. They do not fit as well as complete dentures. They may need temporary linings with tissue conditioners & may require the use of denture adhesive.

2. They will cause discomfort. The pain of the extractions, in addition to the sore spots caused by the immediate denture, will make the first week or two after insertion difficult.
3. The esthetics may be unpredictable. Without an anterior try-in, the appearance of the immediate denture may be different from what you expected.

4. Many other denture factors are unpredictable such as the gagging tendency, increased salivation, different chewing sounds, and facial contour.

5. ID must be worn for the first 24 hours without being removed by the patient. If they are removed, they may not be able to be reinserted for 3 to 4 days. The dentist will remove them at the 24-hour visit.

6. Because supporting tissue changes are unpredictable, immediate dentures may loosen up during the first 1 to 2 years.

7. You may face difficulty eating & speaking initially, learning to eat & speak all over again.

**ID can classified according to type of restoration into:**

1. Immediate complete denture.
2. Immediate partial denture.
3. Immediate over denture.

The technique has been developed that allows placement of the full denture the same day that the remaining front teeth are removed, dentures made in this fashion are called ID. However, ID are properly better described by the more appropriate term of transitional denture. This term is more appropriate because the day that the last teeth are removed & the denture placed is the beginning or transition from natural to denture teeth. The transitional denture has three or four phases. The first phase is preparatory extraction of all posterior teeth in the arch to receive the denture. All molars & bicuspid are removed & the bone & overlying gums are allowed to heal. Sometimes upper & lower first bicuspid are left to
keep the bite dimension from changing as well as provide a broader smile during healing. The healing period varies but is usually 6-8 weeks. Some patients will have transitional RPD made to replace the back teeth. These PD are used only during the healing of the posterior areas phase. They can be placed the same day the back teeth are removed & will require some adjustments for fit & function during healing.