Republic of Iraq
Ministry of Higher Education
& Scientific Research
University of Baghdad
College of Dentistry

IMMEDIATE DENTURE: TYPES AND CONSIDERATIONS

A graduation project submitted to the College of Dentistry, the University of Baghdad, Department of Prosthodontics in partial fulfillment of the requirement for a degree of B.D.S.

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2022 A.D. ***1443 A.H***

بسم الله الرحمن الرحيم

صدق الله العظيم

(سورة طه –ايه 114)

CERTIFICATION OF THE SUPERVISOR

I certify that this project entitled" ***Immediate Denture: Types and consideration"*** was prepared by ***Tabarek Ahmed Jumaa*** under my supervision at the College of the Dentistry/University of Baghdad in partial fulfilment of the graduation requirements for the Bachelor's degree in dentistry.

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April 2022

DEDICATION

I dedicate this research

To my Father

for believing in me,

To my Mother

who has been giving me support and love all the time,

To my Sister and Brother

and to my Friend

Farah for her endless support in this project.

Tabarek Ahmed Jumaa

ACKNOWLEDGMENT

First of all, I thank **God Almighty**, who has blessed me with wisdom, patience, and willpower to reach this level in my life.

I would like to express my gratitude to ***Prof. Dr. Raghad Al-hashimi,*** Dean of College of Dentistry, also, I express my thanks to Prof. ***Dr. Ali H. Al-Bustani*** Assistant Dean for Scientific Affairs, and students of the College of Dentistry-University of Baghdad for his continuing support to complete this work., and ***Prof. Dr. Abdalbasit Ahmed,*** Chairman of Prosthetic Department for his continuous care.

I would like to express my deepest gratitude and thanks to my supervisor ***Assist. lec. Mustafa Shakir Mahmood*** for his excellent scientific guidance and support.

LIST OF CONTENTS

No.	Subject	Page no.
	Acknowledgment	**I**
	List of contents	**II**
	List of figures	**IV**
	List of tables	**VI**
	List of abbreviations	**VII**
	Introduction	**1**
	Aims of the study	**2**
	Chapter One: Review of literature	
1.1	Immediate denture	**3**
1.2	Classification of ICD	**3**
1.2.1	Classification of ICD according to treatment plan	**3**
1.2.1.1	Conventional immediate denture (CID)	**3**
1.2.1.2	Interim immediate denture (IID)	**7**
1.2.1.3	Diagnostic dentures (splint)	**13**
1.2.2	Classification of the immediate complete denture according to flange design	**13**
1.2.2.1	Partial flange	**13**
1.2.2.2	Complete flange	**14**
1.2.2.3	Flangeless immediate denture	**14**
1.3	Comparison of flanged and open-face dentures	**15**
1.4	Diagnosis and treatment planning	**16**
1.5	The systemic conditions which can affect the basal seat in ICD	**17**

1.6	Local factors which are of significance in complete immediate denture treatment	**17**
1.7	Clinical procedures in the fabrication of ICD	**18**
1.7.1	Impressions of ICD	**18**
1.7.1.1	Single impression technique	**18**
1.7.1.2	Dual impression technique	**20**
1.7.2	Jaw relation records of ICD	**22**
1.7.3	Teeth selection and posterior teeth arrangement in ICD	**22**
1.7.4	Try-in in ICD	**23**
1.7.5	Arranging the anterior teeth in ICD	**23**
1.7.6	Waxing and processing the denture in ICD	**25**
1.7.7	Fabrication of surgical template in ICD	**25**
1.7.8	Extraction of teeth and insertion of ICD	**27**
1.8	Postoperative care	**28**
1.9	Digital Immediate Denture	**28**
1.10	Immediate removable partial denture	**29**
1.11	Immediate overdenture	**30**
Chapter Two: Conclusion		**31**
References		**32**

LIST OF FIGURES

No.	Title	Page no.
(1.1)	Template\surgical splint action of immediate denture.	**4**
(1.2)	Posterior teeth are extracted first and sockets are allowed to heal.	**5**
(1.3)	Fabricating a custom tray on the diagnostic cast	**5**
(1.4)	(A)Arbitrary trimming of the teeth to be replaced in the master cast : (B) Trimmed cast	**6**
(1.5)	The sockets in the refractory impression are to be filled with wax. The sockets in the refractory impression are to be filled with wax.	**8**
(1.6)	Resulting duplicate cast with teeth replaced in wax.	**9**
(1.7)	Base plate adapted and occlusal rim fabricated on master cast	**9**
(1.8)	The Trial denture should be transferred to the refractory cast.	**10**
(1.9)	(A)Dexaxing: (B)The empty anterior teeth sockets should be filled with tooth-colored acrylic	**10**
(1.10)	Extraction of teeth done	**11**
(1.11)	Types of the immediate denture	**15**
(1.12)	Preliminary cast	**18**
(1.13)	Preliminary cast with spacer	**19**

(1.14)	Stops placed in the wax.	**19**
(1.15)	(A) Custom tray fabrication. (B) Final impression.	**20**
(1.16)	Custom tray for edentulous area.	**20**
(1.17)	Border moulding of edentulous ridge	**21**
(1.18)	Impression of edentulous area.	**21**
(1.19)	Impression of teeth using irreversible hydrocolloid	**22**
(1.20)	Posterior teeth setting	**23**
(1.21)	Completion of maxillary anterior teeth setting after removing maxillary teeth from cast	**24**
(1.22)	Steps in removing existing natural teeth from cast	**24**
(1.23)	Waxing completed.	**25**
(1.24)	Surgical template	**25**
(1.25)	Anterior alveolectomy and denture insertion	**26**
(1.26)	Conventional immediate denture	**26**
(1.27)	Extraction of anterior teeth	**27**
(1.28)	Immediate denture insertion	**27**

LIST OF TABLES

No.	Legend	Page No.
	Comparison between CID & IID	**12**

LIST OF ABBREVIATIONS

ID	Immediate denture
ICD	Immediate complete denture
CID	Conventional immediate denture
IID	Interim immediate denture

INTRODUCTION

INTRODUCTION

The world's population is aging considerably, and forecasts show that people over 60 years will surpass 2 billion by 2050, the absence of all teeth in at least one of the arches in the 60 years old age group will be a clinical common finding.

Complete denture rehabilitation is considered the most common treatment for total toothless patients, and, together with the improvement of Osseointegrated implant rehabilitation, the number of studies evaluating full dentures has increased. Furthermore, assessment of the quality of life and patient satisfaction indicate the importance of this kind of treatment as a viable alternative in the current rehabilitation context **(Gavazzoni, Rosso Júnior and Pereira, 2015)**.

An immediate complete denture is a restoration fabricated before the extraction of a tooth, which is placed in the patient's mouth immediately following the removal of the remaining teeth. Tooth loss leads to numerous consequences for the patient, such as problems with speech, poor chewing, and loss of facial aesthetic. Besides the physical aspect, poor oral health can trigger emotional or behavioral changes in patients, damaging their self-esteem and quality of life **(Gavazzoni, Rosso Júnior and Pereira, 2015).** This study sought to present some treatment features of edentulous patients through ICD, its advantages, disadvantages, indications, contraindications, and post-installation care. Guidelines for surgical procedures that must be followed before the placement of ICD in one or both dental arches were presented as well **(Gavazzoni, Rosso Júnior and Pereira, 2015)**.

The success of immediate dentures depends on the correct indication and precise execution of clinical and laboratory fabrication procedures. Although patients may have many difficulties in the first year of their immediate denture wearing, the majority of patients are generally satisfied **(KraljeviÊ, 2001).**

AIMS OF REVIEW

The aim of this review is to draw the dentist's attention to the need for immediate denture fabrication. The aims, advantages, and disadvantages of immediate dentures, as well as contraindications, are described in detail. Modern procedures for immediate complete denture fabrication as well as instructions to patients about wearing the denture and mouth and denture hygiene are given.

The functional, aesthetic, and psychological success of immediate dentures depend on the correct :

1- Indication

2-Diagnosis

3-Treatment planning,

4- Precisely executed fabrication procedures.

CHAPTER ONE

REVIEW OF LITERATURE

REVIEW OF LITERATURE

1.1 Immediate denture

The immediate denture is a dental prosthesis constructed to replace the lost dentition, associated structures of the maxillae and mandible, and inserted immediately following the removal of the remaining teeth **(Caputi *et al*., 2014).** Immediate denture can be classified according to the type of restoration into Immediate complete denture (ICD), immediate partial denture, and immediate overdenture **(Zarb *et al.*, 2013)**.

1.2 Classification of the immediate complete denture (ICD)

The immediate complete denture (ICD) can be classified according to treatment plan into Conventional immediate dentures, interim or transitional dentures **(Zarb and Bolender, 2004)**, and diagnostic dentures. Also, it can be classified according to flange design into complete flange, flangeless type (open face), and partial flange **(LaVere and Krol, 1973)**.

1.2.1 Classification of the immediate complete denture according to the treatment plan

1.2.1.1 Conventional (or classic) immediate denture (CID)

It is an immediate denture, which can be later modified to serve as a permanent prosthesis. It is placed and after healing is completed, the denture is refitted or relined to serve as a long-term prosthesis **(Zarb *et al*., 2004).** It is usually done for patients undergoing total extraction. The treatment outline while preparing a conventional immediate denture consists of the extraction of the posterior teeth

followed by the extraction of the anterior teeth. The ridges in the posterior region are allowed to heal before the extraction of the anterior teeth. The denture is inserted at the appointment for extraction of the anterior teeth **(Veeraiyan *et al*., 2003); (George, 2006); (Veeraiyan, 2017).**

CID is indicated for patients with periodontal weak teeth indicated for extraction and for socially active people who are very self-conscious about their appearance **(Veeraiyan *et al*., 2003); (George, 2006).**

The advantages of CID include a psychological benefit to the patient, the patient does not appear edentulous at any point in time. Muscle tone, tongue size, and vertical dimension are preserved, and centric jaw relation is easy to record. Less postoperative pain, because the extraction sockets are protected. Tooth size, shape, shade selection, and arrangement are easy. It is easier for the patient to adapt to the permanent prosthesis. Postoperative hemorrhage and infection are also prevented due to the protective action. It acts as a splint for the tissues (Figure1.1), **(Veeraiyan, 2017).**

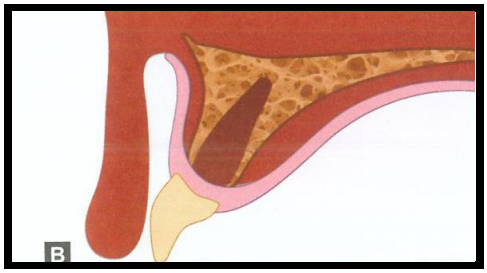

Figure (1.1): Template\surgical splint action of an immediate denture **(Veeraiyan, 2017).**

The disadvantages of CID include more chair time, more expensive. Due to the different positions of the teeth centric relation and centric occlusion are difficult to record. The try-in procedure is not possible, hence the dentist cannot have any

idea about the outcome of the denture. The patient might find speech and mastication difficult for a short period of time **(Veeraiyan, 2017).**

The treatment procedure for CID is the posterior teeth are extracted and the sockets are allowed to heal (this does not affect the aesthetics of the patient), (Figure1.2).

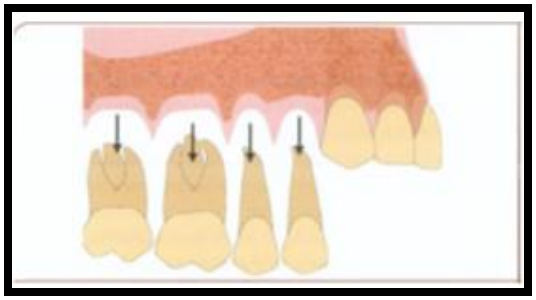

Figure (1.2): posterior teeth are extracted first and sockets are allowed to heal **(Veeraiyan, 2017).**

An alginate impression is made with the help of a stock tray. A diagnostic cast is prepared from the impression.

Two layers of wax are used to block out the undercuts in the edentulous areas of the cast. A custom tray is fabricated over this diagnostic cast; the borders of the tray are trimmed 1 mm below the sulcus for border molding (Figure 1.3).

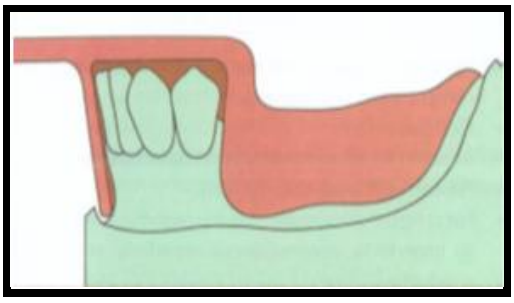

Figure (1.3): Fabricating a custom tray on the diagnostic cast **(Veeraiyan, 2017).**

Border molding is done using a greenstick compound. The spacer is removed and perforations are made on the body of the tray for the escape of the impression material during impression making. Light-body elastomer is used as the impression material.

Occlusal rims are fabricated over a temporary denture base covering the edentulous area. Posterior teeth setting and try-in are completed. The anterior teeth in the master cast are broken away and trimmed up to the cervical margin and smoothened. The ridge lap (cervical) portion of the artificial teeth is trimmed and arranged on a master cast (Figure 1.4).

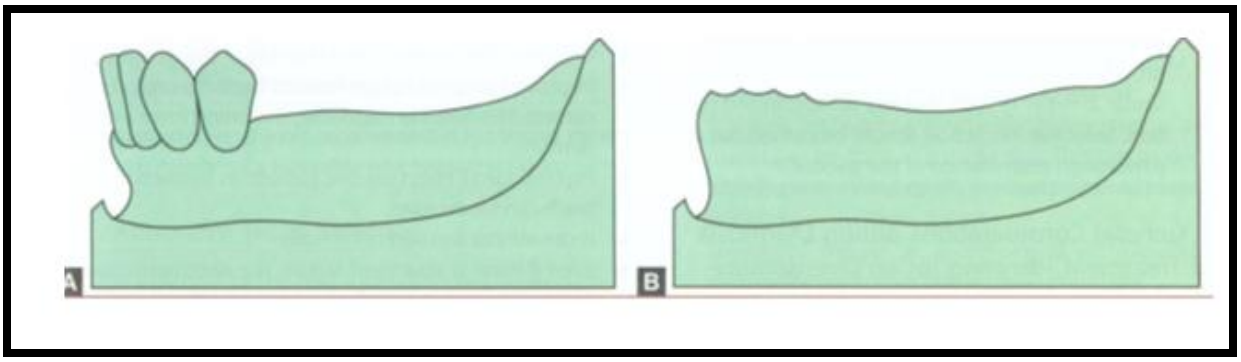

Figure (1.4): (A)Arbitrary trimming of the teeth to be replaced in the master cast. (B) Trimmed cast **(Veeraiyan, 2017).**

Artificial teeth are arranged over the area where the teeth are to be extracted. The teeth arrangement should be in harmony with the existing teeth as well as the prosthetic teeth. The denture is flasked, dewaxed, packed, processed, and finished. During the insertion appointment, the remaining anterior teeth are extracted as traumatically as possible, preserving the soft tissues and bone. The finished denture is seated in the patient's mouth. If the denture does not seat properly, the tissue surface of the denture should be reduced till the denture seats properly.

Occlusion should be refined. If the denture has poor adaptation, tissue conditioners should be used to line the tissue surface of the denture **(Veeraiyan, 2017).**

1.2.1.2 Interim (or transitional or nontraditional) immediate denture (IID)

The interim denture is defined as, "A dental prosthesis to be used for a short interval of time for reasons of aesthetics, mastication, occlusal support, or convenience or to condition the patient to the acceptance of an artificial substitute for missing natural teeth until more definitive prosthetic therapy can be provided"—GPT**.**

After this immediate denture is made and after healing is completed, a second, new complete denture is fabricated as the long-term prosthesis **(Zarb GA *et al*., 2004).**

They are mainly indicated in patients with periodontal disease going in for total extraction. They help to preserve the contour of the ridge until a permanent denture can be fabricated **(Gupta, 2009).**

The advantages of interim dentures include improving the shape and height of the ridge, and improving the psychology of the patient. It can be worn during the construction of new dentures (temporary replacement). It Provides information about jaw relations and aesthetics during the construction of conventional complete dentures. The patient has the benefit of having a spare denture. The procedure is quick as the patient’s existing teeth or old partial dentures are used to replicate the artificial teeth. Rehabilitation of the temporomandibular joint and the oral musculature for patients who show atrophic changes due to long-term edentulousness **(Rangarajan and Padmanabhan, 2017); (Veeraiyan, 2017).**

The treatment procedure for IID is that: two sets of alginate impressions are made. One impression is used to make a cast for processing the denture (duplicate cast). The other impression is used to make a cast to prepare the base plate, occlusal rims, record jaw relation, and teeth arrangement (master cast). Before pouring the duplicate cast, molten wax is poured into the teeth (to be extracted) of the refractory impression (Figure1.5).

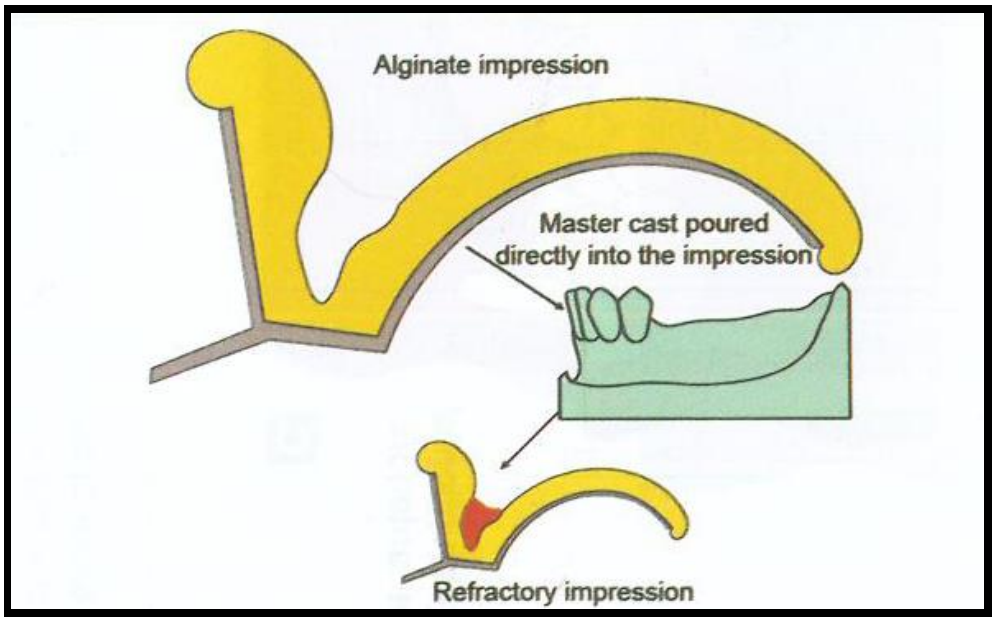

Figure (1.5): The sockets in the refractory impression are to be filled with wax **(Veeraiyan, 2017).**

Once the wax cools; the duplicate cast is poured into dental stone. The duplicate cast will have all the anatomical structures in dental stone except the teeth to be extracted, which will be in wax (Figure1.6).

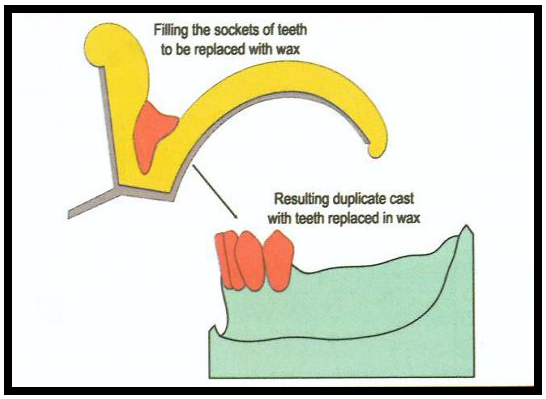

Figure (1.6)**:** Resulting duplicate cast with teeth replaced in wax **(Veeraiyan, 2017).**

The master cast is poured directly into the master impression using a dental stone without filling any wax. The master cast which is totally made of dental stone is the one used for adapting the base plate, fabricating the occlusal rim, and teeth arrangement. A base plate is adapted and occlusal rims are fabricated on the master cast (Figure1.7).

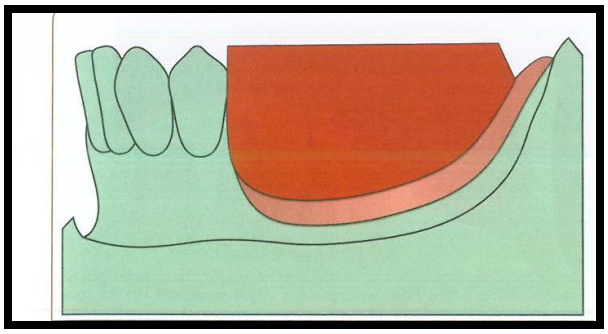

Figure (1.7)**:** Base plate adapted and occlusal rim fabricated on the master cast **(Veeraiyan, 2017).**

Jaw relation is recorded. The master casts are articulated using the jaw relation records and the artificial teeth are arranged. Try-in verification is carried out.

After try-in, the trial denture is shifted to the refractory cast. Remember the teeth to be replaced are composed of wax in the refractory cast. Hence, we have a

trial denture, which replaces the missing teeth, and a wax form, which replaces the teeth to be extracted (Figure1.8).

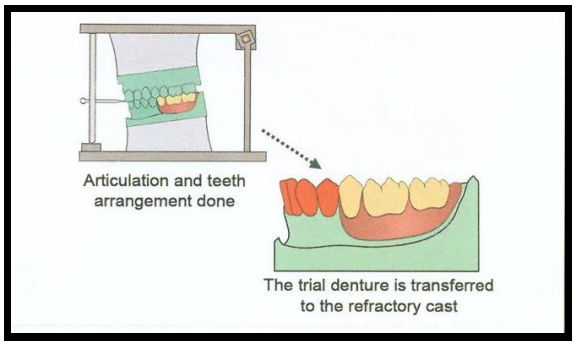

Figure (1.8)**:** The Trial denture should be transferred to the refractory cast **(Veeraiyan, 2017).**

The wax pattern is flasked and dewaxed. The teeth to be extracted will be hollow in the flask mold. Even the arranged prosthetic teeth are removed. Tooth-colored self-cure acrylic is placed into all the teeth molds (the ones to be extracted and the ones already extracted) in the flask using the sprinkle-on method (Figure 1. 9).

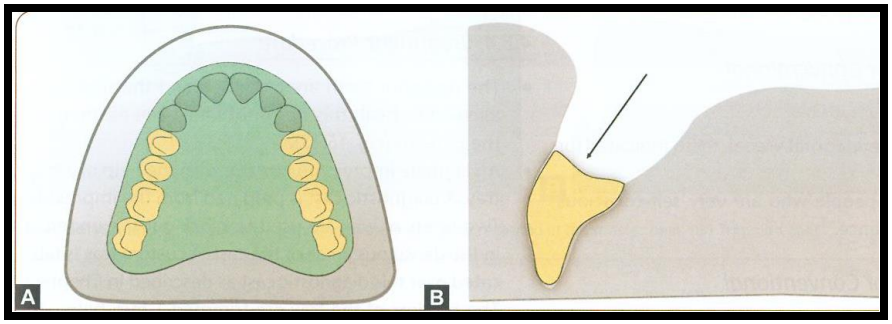

Figure (1. 9): (A) Dexaxing
(B)The empty anterior teeth sockets should be filled with
tooth-colored acrylic **(Veeraiyan, 2017).**

This is done so that all the teeth have the same shade because it is impossible to match self-cure teeth with factory-made denture teeth.

Heat-cure denture base resin is packed into the remaining mold space and polymerized. The finished denture will contain even the teeth to be extracted.
Extraction of teeth is done during the insertion appointment. The teeth should be extracted as atraumatically as possible. Care should be taken to preserve soft tissues after alveoloplasty and suturing (Figure1.10).

Insertion of the interim denture is the beginning and not the end of treatment. The patient should be recalled frequently to make occlusal adjustments, replacement of tissue conditioning materials, *etc.* (Table 1.1) **(Veeraiyan, 2017).**

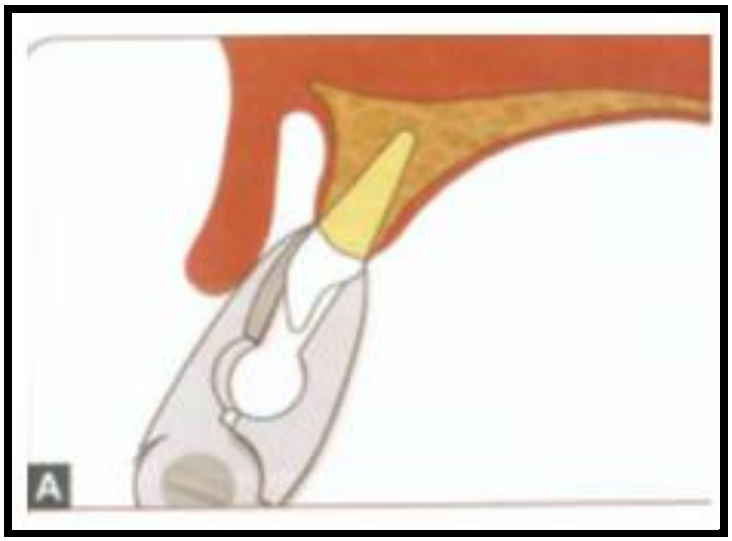

Figure (1.10): Extraction of teeth done **(Veeraiyan, 2017).**

Table (1.1): Comparison between CID & IID **(Gupta, 2009);**

(Rangarajan and Padmanabhan,2017)

CID	IID
Intended as the final or long term prosthesis	Intended for short term use only
After healing, it is relined with acrylic resin	After healing, a second denture is made
Indicated when two extraction visits are feasible	Indicated when only one surgical visit is preferable to maximize insurance benefits
The esthetics of the denture cannot be changed	The second denture procedure allows an alteration of esthetics, and all other factors, if indicated
At the end of treatment, the patient has one denture	At the end of treatment, the patient has a spare denture to use in case of extenuating circumstances
If all posterior teeth are initially removed, the vertical dimension of occlusion is not preserved. (however, opposing bicuspids can be maintained)	Since posterior teeth need not be removed, the vertical dimension of occlusion may be preserved
Contraindication for patients who will need complicated treatment plans involving both arches, such as periodontal therapy, crowns and fixed, partial dentures and dentures opposing removable partial dentures	Often indicated when the patient will become edentulous in one arch and partially edentulous in the opposing arch for the first time. An interim complete denture can be made. Then any periodontal procedures, crowns, and fixed, partial dentures, can then be done during the initial healing stage
Costs less – denture and relining	Costs more – two dentures
Time to provide immediate denture is longer as posterior teeth if present have to be extracted and area is healed	Less time as all teeth are extracted in the same time

1.2.1.3 Diagnostic dentures (splint)

Diagnostic dentures are used primarily to diagnose a patient's problem. The diagnostic denture is one in which the anterior segment contains the artificial teeth, while the posterior segment consists of flat occlusal blocks made of plastic resin The posterior teeth are extracted in the same manner as that for the usual complete dentures, and a period of healing is allowed; or all of the natural teeth may be extracted at one time, and the diagnostic dentures are placed in the same manner as that for transitional dentures **(Singh *et al*., 2019).**

Diagnostic dentures are indicated for patients with advanced periodontal disease. Due to the movement and extrusion of the natural teeth, the correct vertical dimension and centric relation may be difficult to determine for these patients. By reducing or adding to the flat acrylic resin posterior segment, the correct centric relation and occlusal vertical dimension can be restored. In addition, the patient's esthetic requirements may be incorporated into the new dentures. In many instances, patients may masticate with lateral mandibular movements. With flat occlusal surfaces, the patient is not "locked-in" an occlusion, and a study of the masticatory habits may be undertaken **(Akulwar, 2021).**

1.2.2 Classification of the immediate complete denture according to flange design

1.2.2.1 Partial flange

The partial flange is indicated for immediate dentures when:

1. Undercuts are present on the labial and buccal sections of the residual ridge.
2. The flange should serve as a surgical splint **(Gooya *et al*., 2012).**

The partial flange is contraindicated for immediate dentures when:

1. The economic condition of the patient renders multiple corrective procedures impractical.
2. The patient has an unusually active lip line which would cause the denture flange to be unaesthetic due to exposure of its labial border **(Gooya *et al*., 2012).**

1.2.2.2 Complete flange

A labial flange may be used for the majority of patients when:

1. No large anterior bony undercuts are present.
2. The lip line and lip activity are normal.
3. The teeth are periodontally involved and supporting bone is lost.

A flange on an immediate denture is contraindicated when:

1. Pronounced undercuts are present in the anterior labial region of the alveolar residual ridge.
2. Fullness of the lip would produce an unaesthetic result **(Gooya *et al*., 2012).**

1.2.2.3 Flangeless immediate dentures

The flangeless immediate dentures are indicated when

1. Deep undercuts are present on the anterior labial and buccal residual ridge.
2. A high lip line and an active lip would expose an unaesthetic flange.
3. Minimal amount of surgery is considered desirable.

Flangeless immediate dentures are contraindicated when:

1. Periodontal disease exists with a substantial amount of bone loss which makes an acceptable cosmetic effect difficult.
2. An anterior fixed partial denture has been worn resulting in an uneven contour of the anterior residual ridge **(Gooya *et al*., 2012).** (Figure 1.11).

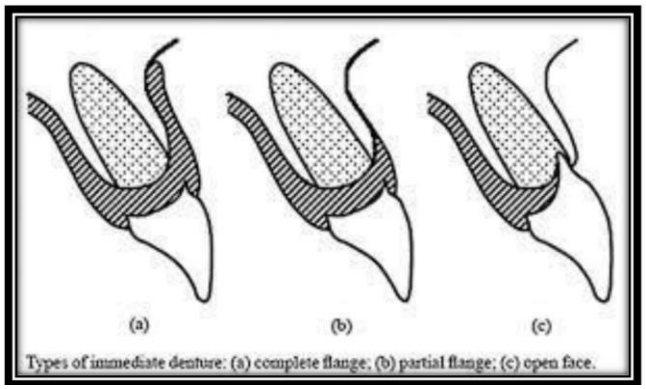

Figure (1.11): Types of the immediate denture **(Gooya *et al.*, 2012).**

1.3 Comparison of flanged and open-face dentures

The appearance of a flanged denture does not alter after fitting whereas the appearance of an open-face denture, although good initially, can deteriorate rapidly as resorption creates a gap between the necks of the teeth and the ridge. The flange design allows considerable freedom in positioning the anterior teeth for optimum effect, whereas the anterior teeth on the open face denture have to be positioned with their necks in the sockets of their natural predecessors **(Zarb and Bolender, 2004).**

A flange on an upper denture creates a more effective border seal and therefore better retention than is achieved with an open-face design. In the lower denture, a border seal is not normally so significant. However, stability is of the greatest importance and this is improved by a labial flange because it helps to resist posterior displacement of the denture **(Zarb, 2013).**

The presence of a labial flange produces a stronger denture, which is less likely to fracture as a result of accidental impacts or high occlusal loads. A labial flange will also make the denture stiffer so that the likelihood of a midline fatigue fracture caused by repeated flexing across the midline is reduced **(Jonkman *et al.*, 1997).**

As the bone resorbs following extraction of the teeth, the immediate denture becomes loose and a reline is required. The presence of a labial flange makes it easier

to add either a short-term soft lining material or a cold-curing polymethylmethacrylate relining material as a chair-side procedure.

Like the color of some of the chairside reline materials is not always ideal they may be visible and unsightly when used with an open face denture, but discreetly concealed by a flange **(Şakar *et al.*, 2010).**

The flanged denture covers the clots completely and protects them more effectively than does an open-face denture. The flanged denture also exerts pressure on both lingual and labial gingivae, reducing the likelihood of post-extraction hemorrhage **(Johnson, 1977).**

There is always the danger that the patient will fail to attend a maintenance appointment. The consequent wearing of an ill-fitting denture can, if it is open-faced, produce a scalloped ridge in the region of the socketed teeth. This danger is avoided in the case of a flanged denture, which also has the advantage of distributing the functional loads more favorably to the underlying ridge, thus minimizing bone resorption **(Chowdhary and Chandraker, 2010).**

1.4 Diagnosis and treatment planning of ICD

The periodontal status, caries rate and current state of edentulism must be considered. Debridement of the existing teeth should be done with an initial prophylaxis followed by oral hygiene instructions. The health of the remaining dentition must be assessed and the strategic nature of salvageable teeth also should be considered. Irregularities in occlusal plane and opposing dentition must be evaluated as the retention of strategically malposition teeth could result in adverse force transmission to the underlying structures, thereby resulting in greater functional and anatomical deficit **(Nayak *et al.*, 2020).**

1.5 The systemic conditions which can affect the basal seat in ICD

The systemic conditions which can affect the basal seat are

1. Uncontrolled diabetics.
2. Cardiovascular and cerebrovascular diseases – these present a problem of the poor clotting mechanism.
3. Mucosal disorders such as desquamative stomatitis.
4. Keratosis, hyperkeratosis, and dyskeratosis can result from deficiency of vitamins A and B.
5. Dermatological diseases, such as psoriasis, pemphigus, or erosive lichen planus.
6. Collagen disorders such as lupus erythematosus.
7. Osteoporosis resulting from bone matrix defect during the extraoral examination, facial form, facial symmetry, facial profile, and temporomandibular joint (TMJ) are evaluated. It is followed by a complete clinical examination of the hard and soft tissues, which also includes assessing the periodontal condition of the remaining teeth. It is supplemented by full mouth radiographic series (IOPA and bitewing) which help evaluate the extent of the bone loss due to periodontal disease **(Dibart and Dietrich, 2010).**

1.6 Local factors which are of significance in complete immediate denture treatment (Keyvan, 2018)

1. Periodontal status of the remaining teeth to be extracted
2. Location of the teeth in the arch
3. Presence and severity of soft and hard tissue undercuts
4. Presence of bony exostosis
5. Condition of the bone adjacent to the remaining teeth
6. Lack of muscular coordination **(Keyvan, 2018).**

1.7 Clinical procedures in the fabrication of ICD

1.7.1 Impressions of ICD

1. Preliminary impressions are made with irreversible hydrocolloid.
2. Preliminary cast is poured (Figure 1.12) and a custom tray is fabricated.

Figure (1.12): Preliminary cast **(Rangarajan and Padmanabhan, 2017).**

Final impressions can be made using two methods:

1. Single impression technique using a custom tray covering the teeth and edentulous ridges.
2. Dual impression technique using a custom tray covering only the edentulous space and lingual surface of anterior teeth **(Rangarajan and Padmanabhan, 2017).**

1.7.1.1 Single impression technique

Custom tray is fabricated in auto polymerizing acrylic resin as follows:

1. **Spacer:** One sheet of baseplate wax (2 mm) covers the edentulous ridges, while two sheets of wax (4 mm) cover the natural teeth (Figure 1.13).

Figure (1.13): Preliminary cast with spacer**. (Rangarajan and Padmanabhan, 2017).**

2. **Stops:** One anteriorly and two posteriorly on either side – in the first molar area (Figure 1.14).

Figure (1.14): Stops placed in the wax **(Rangarajan and Padmanabhan, 2017).**

3. Peripheral extension – 2 mm short of the vestibule.

4. Border moulding of the entire border is performed using a low fusing green stick compound.

5. The interdental spaces between the anterior teeth are blocked out with wax.

7. Final impression is made with regular/medium body elastomeric impression material (Figure 1.15), **(Rangarajan and Padmanabhan, 2017).**

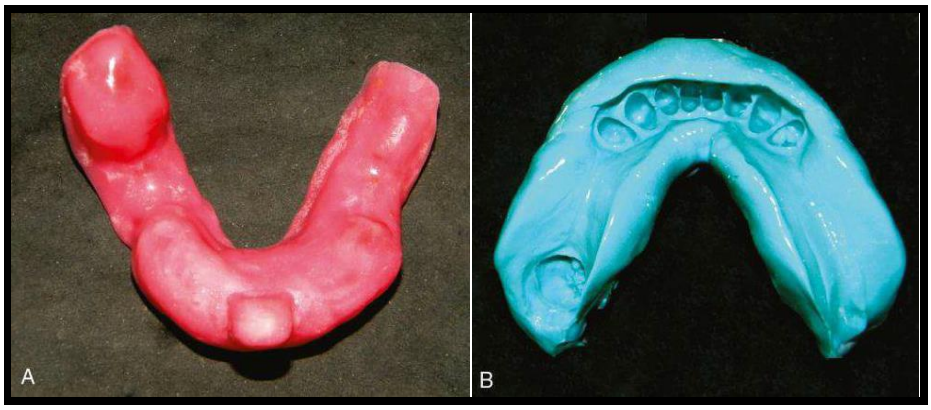

Figure (1.15): **(A)** Custom tray fabrication. **(B)** Final impression **(Rangarajan and Padmanabhan, 2017).**

1.7.1.2 Dual impression technique

1. Custom tray is fabricated covering only the edentulous space and lingual surface of anterior teeth (Figure 1.16).

Figure (1.16): Custom tray for the edentulous area **(Rangarajan and Padmanabhan, 2017).**

2. Custom tray is inserted and only the edentulous section is border moulded with a green stick low fusing compound (Figure 1.17).

Figure (1.17): Border moulding of the edentulous ridge **(Rangarajan and Padmanabhan, 2017)**

3. Final impression is made of the edentulous area and lingual part of the anterior teeth with zinc oxide eugenol (ZOE) impression paste or regular/medium body elastomeric impression material (Figure 1.18).

Figure (1.18): Impression of edentulous area **(Rangarajan and Padmanabhan, 2017).**

4. After this material sets, the impression is removed from the mouth and the tray handle is cut off.

The impression is reseated in the mouth and a second impression is made over the edentulous impression and anterior teeth with a stock tray using irreversible hydrocolloid (Figure 1.19)

Figure (1.19): Impression of teeth using irreversible hydrocolloid. **(Rangarajan and Padmanabhan, 2017)**

5. A master cast is made and a record base with an occlusal rim is fabricated for the edentulous posterior regions **(Rangarajan and Padmanabhan, 2017).**

1.7.2 Jaw relation records of ICD

Well adapted record bases are made and occlusal rims are fabricated. Face bow record and centric relation are recorded in the usual manner and transferred to the articulator **(Rahn *et al*., 2009).**

1.7.3 Teeth selection and posterior teeth arrangement in ICD

The shape, size, and shade of the teeth are selected using the existing dentition of the patient **(Prakash and Gupta, 2017).** Acrylic resin denture teeth are indicated as they are easier to trim and adjust.

Posterior teeth are arranged with tight, multiple centric contacts in centric relation. Bilateral balancing contacts are given in eccentric movements (Figure 1.20), **(Rangarajan and Padmanabhan, 2017).**

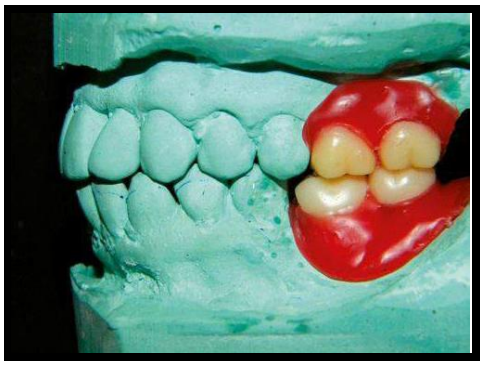

Figure (1.20): Posterior teeth setting **(Rangarajan and Padmanabhan, 2017)**

1.7.4 Try-in in ICD

A try-in of the posterior teeth is scheduled. Centric relation, vertical dimension, and occlusion are verified **(Rangarajan and Padmanabhan, 2017).**

1.7.5 Arranging the anterior teeth in ICD

- Depends on whether the patient wants to duplicate the existing arrangement or not.
- If the patient desires to have his anterior teeth in the original position, alternate teeth are cut away on the cast and the labial portion of each root is excavated to a depth of 1–2 mm on the labial side and flush with the gingival margin of the lingual or palatal side. The selected teeth are placed in their specific positions and modified. By removing only one tooth at a time, the dentist can position the teeth in their original position.
- If the existing arrangement is not required, the casts are made edentulous and the desired tooth arrangement is created irrespective of where the natural teeth were (Figure 1.21), **(Rangarajan and Padmanabhan, 2017).**

Figure (1.21): Completion of maxillary anterior teeth setting after removing maxillary teeth from the cast **(Rangarajan and Padmanabhan, 2017).**

- The method of removing the existing natural teeth on the cast is shown in (Figure 1.22).

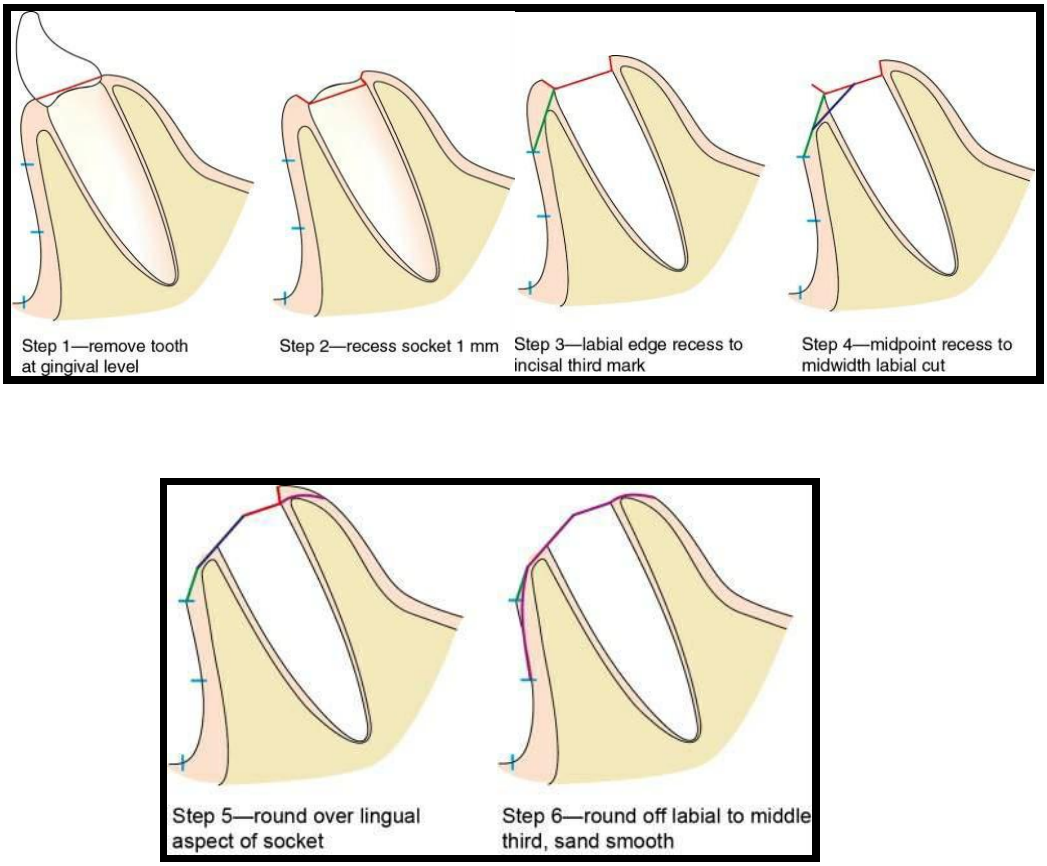

Figure (1.22): Steps in removing existing natural teeth from the cast **(Jerbi, 1966).**

1.7.6 Waxing and processing the ICD

The waxing is completed (Figure 1.23) and the dentures are processed, and resultant changes in occlusion are corrected before removal of the dentures from their casts for final finishing. The dentures are then finished and polished **(Rangarajan and Padmanabhan, 2017).**

Figure (1.23): Waxing completed **(Rangarajan and Padmanabhan,2017).**

1.7.7 Fabrication of surgical template in ICD

A clear surgical template duplicating the surface of the immediate denture after modification of the stone cast is used at the time denture placement as a guide for surgically shaping the alveolar process. The clear template allows the dentist to visualize the adaptation of the denture base to the residual ridge **(Nayak *et al.*, 2020)**, (Figure 1.24).

Figure (1.24) : Surgical template **(Nayak *et al.*, 2020).**

The surgical template will be inserted before closure of the surgical site and any areas of tissue blanching, which will be evident through the clear template, should be corrected by minor alveoloplasty **(Nayak *et al.*, 2020),** (Figure 1.25).

Figure (1.25) : Anterior alveolectomy and denture insertion **(Nayak *et al.*, 2020).**

The patient will return to the dental office during that 24-hour time frame when the denture will be removed by the clinician and adjusted accordingly to eliminate soft tissue irritation and diminished denture retention **(Nayak *et al.*, 2020),** (Figure 1.26).

Figure (1.26): Conventional immediate denture **(Nayak *et al.*, 2020).**

1.7.8 Extraction of teeth and insertion of the ICD

The dose and rate of administration of anesthesia are controlled to avoid volume changes in the tissues. The remaining teeth should be removed with a minimum of trauma (Figure1.27). Bony spicules and sharp edges of bone are carefully smoothed. Conservative surgery is preferable to preserve as much alveolar bone as possible. If sutures are necessary, use as few as possible and avoid excessive tension. The dentures can be inserted after the initial control of bleeding. The denture borders and surfaces should be examined and adjusted for any overextensions and areas of tissue surface projecting into the sockets (Figure 1.28). Once the denture is seated, gross occlusal prematurities can be eliminated while the patient is still under local anesthesia. The denture should be manipulated as little as possible to avoid further trauma to the extraction sites. Final corrections of the denture can be done at a later stage **(Bissasu, 2004).**

Figure (1.27): Extraction of anterior teeth **(Bissasu, 2004).**

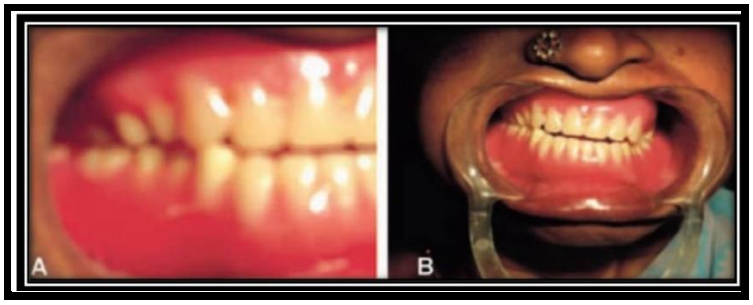

Figure (1.28): Immediate denture insertion **(Bissasu, 2004).**

1.8 Postoperative care

The patient will be seen in 24 hours to evaluate denture retention, support, and stability**.** In the first 24 hours**,** the patient should avoid rinsing, avoid drinking hot liquids or alcohol, and not remove the immediate dentures 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. Analgesic medications are prescribed as required. The diet for the first 24 hours should be liquid or soft if tolerated **(Nayak *et al.*, 2020).** 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 **(Khanna and Gurav, 2012).** At the 24-hour visit**,** quickly check the tissues for sore spots (strawberry-red) related to the dentures. Usually, areas include canine eminences, lateral to tuberosities; posterior limit areas, and retromylohyoid undercuts as well as any other undercut ridge areas. They are relieved in the acrylic resin. The denture should be kept out of the mouth only for a very short time. Place a tissue conditioner if denture retention is unsatisfactory **(Zarb *et al*.,2013).** In the first postoperative week**,** counsel the patient to continue to wear the immediate denture at night for 7 days after extraction or until swelling reduction. After 1 week, sutures can be removed and the patient can begin removing the denture at night. A reline or rebase of the denture is anticipated within the first year of clinical service **(Wiens *et al*., 2018); (Nayak *et al*., 2020).**

1.9 Digital immediate denture

Several procedures have been described to provide an immediate denture, but conventional methods of fabricating dentures have not changed in the past 50 years. The process typically involves multiple clinical appointments and lengthy laboratory

procedures, with each of the steps involved requiring considerable time and material. Therefore, the entire process is subject to human processing errors, inaccuracies, and additional time and cost **(Neumeier and Neumeier, 2016)**. Recently, computer-aided design and computer-aided manufacturing (CAD-CAM) technology has been used to fabricate complete dentures. The information needed for a CAD-CAM restoration in edentulous jaws is acquired extra orally from an impression or from a stone cast using laboratory scanners (**Kanazawa *et al*., 2011); (Goodacre *et al*., 2012).**

This technique has the same deficiencies as conventional impressions and stone casts **(Güth *et al*., 2012)**. To avoid errors in the CAD-CAM production workflow, digitalizing directly from the patient's mouth using intraoral scanners would be more Practical **(Quaas *et al*., 2007).** Digital dentures by CAD/CAM technology reduce clinical appointments, provide high accuracy in denture fit, allow less polymerization shrinkage of the denture base, and facilitate easier duplication of dentures **(Nayak *et al*., 2020).**

1.10 Immediate removable partial denture

Modern dentistry offers many options for the restoration of partially edentulous patients, like Removable Partial Dentures (RPDs). Many patients choose RPDs due to factors ranging from cost to physiology **(Thakral *et al*., 2012).** RPDs are utilized to improve the aesthetic and masticatory functions **(Khan *et al*., 2011).**

There are two types of RPDs depending on the fabrication and the timing of insertion, Conventional RPDs and Immediate RPDs **(Gunadi *et al*., 2013).** Immediate dentures could be inserted immediately following the natural teeth extraction, mainly anterior teeth so minimize the aesthetic problem. ID is a necessity to prevent anxiety and embarrassment because patient has no edentulous period and

can do the daily activities without worried **(Singh *et al*., 2015)**. ID can restore the phonetic and mastication functions, also preserve the remaining oral tissues **(Tiwari *et al*., 2013).**

1.11 Immediate overdenture

Immediate denture can be planned by removing all the affected teeth or by preserving a few teeth to be used as overdenture abutments. Less resorption of alveolar bone is seen with complete denture where few teeth are preserved under the denture. The periodontium around the retained teeth maintains the proprioceptive mechanism which stimulates the underlying bone and thus prevents loss of bone. Immediate overdenture with a few retained teeth gives the opportunity for a smooth transition from dentulousness to edentulousness **(Khanna *et al*., 2012).**

Retaining roots beneath dentures aids in the preservation of proprioception and reduce bone resorption. The selected abutment teeth were reduced so that only a 2 mm crown remains above the gingival margin. The reduction in crown height for overdenture has several advantages. This creates adequate space for the overlying artificial denture tooth and denture base and reduces the lateral stresses and lever action of the tooth. It also forms the basis of using periodontally compromised teeth that otherwise would have been indicated for extraction **(Khanna *et al*., 2012).**

The retained tooth roots, used for overdenture, transfer occlusal forces to the alveolar bone through the periodontal ligament and maintain alveolar ridge morphology**.**

Pacer and Bowman found that the overdenture patient possessed more typical sensory function which is closer to natural teeth than a complete denture patient in discriminating between occlusal forces. The periodontal receptors also actively influence the cyclic joint movements of mastication by influencing the muscles of mastication by their proprioceptive feedback mechanism. The two-phase procedure was followed to ensure proper healing of the posterior segment before denture placement and at the same time avoid initial rapid resorption in crucial maxillary and mandibular posterior regions **(Khanna *et al*., 2012)**.

CHAPTER TWO

CONCLUSION

CONCLUSIONS

An immediate denture is a rehabilitation procedure that promotes an immediate rehabilitation of edentulous patients, providing a significant improvement of functional and esthetic which, in turn, contributes to the improvement of the psychological and social well-being of patients. Such a health improvement increases self-esteem and quality of life. However, it is time-consuming and expensive and the patient should understand the limitation of this service.

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