

# Removable Prosthesis

Dental Materials Lecture #13

# Lecture Outline

- Review Edentulism
- Review Different Treatment Modalities for Edentulism
- Review Fabrication Process for Complete Denture
- Review Fabrication process for Removable Partial Denture
- Review Homecare/Maintenance for removable protheses
- Review cleaning removable prostheses during hygiene visits
- Review denture complications and potential treatments

# Role of Hygienist

- Understand the steps/timeframe involved in fabricating a denture
- Be able to explain pros/cons of different treatments for edentulism
- Be able to instruct patient on denture home care and maintenance
- Cleaning dentures during hygiene visits
- Identify and know treatment of denture complications

# Learning Objectives

- Understand different treatments for edentulism and their respective advantages/disadvantages
- Understand the number of visits and overall timeframe to make a denture
- Learn homecare techniques for removable prostheses
- Learn how to clean removable prostheses during office visits
- Understand common complications of removable prostheses and how to address them

# Edentulism

- **Edentulism** is defined as the absence or complete loss of all natural dentition (teeth). While tooth loss has long been considered an inevitable part of the aging process, significant changes in oral disease patterns have occurred in the twentieth century relative to the rate of **edentulism** in the United States.

# Missing Teeth?



Partially Edentulous



Fully Edentulous

# Treatments for Missing Teeth

- **Removable Complete Denture**
- **Removable Partial Denture**
- Fixed Partial Denture (FPD or Bridge)
- Dental Implant
- **Implant Overdenture**
- Implant retained removable prosthesis
- Implant retained fixed prosthesis

# Why Does a Hygienist Need to Know about all of these different Treatments?

- Very often the patient will ask the Hygienist's opinion about what is the best treatment.
- Depending on the patient's prosthesis, there are different clinical signs and symptoms that must be looked for during a hygiene visit.
- Oral Hygiene Instruction will change depending on the patient's dental condition/dental prosthesis



# Complete Denture

- A **complete denture** or **full denture** replaces an entire arch of missing teeth.
- A complete denture also replaces alveolar bone, which resorbs when teeth are missing.
- The denture teeth are made out of **acrylic** and are held together by an **acrylic** base.
- Acrylic materials are colored to replicate the missing tissues.



# Denture Acrylic Resin

- **Acrylic resins** are hard, brittle, glassy polymers.
- Acrylic resin systems set by addition polymerization in the same manner as dental composites; however, **they are chemically cured**.  
**(NOT light-cured)**



Powder: poly (methyl methacrylate) resin

Liquid: methyl methacrylate monomer

The polymerized resin is  
Poly (methyl methacrylate) or PMMA

# Allergic Reaction

- Some patients can react to the components of the denture materials
- If excessive free methyl methacrylate monomer is present in the denture base, it can irritate and inflame the tissues.
- Dental personnel who work with the materials can develop contact dermatitis through repeated exposure of unprotected skin to the materials.
- PPE should be worn when handling denture materials.
- Dental resins are not known to cause systemic toxic reactions

To prevent contact dermatitis, avoid contact with methyl methacrylate even with gloved hands. Most resin monomers easily pass through gloves!! Remove gloves and wash hands thoroughly if contact occurs.

# Steps to Fabricate a Complete Denture

1<sup>st</sup> Appointment: Preliminary Alginate Impression

(Dental Lab uses model from alginate to make Custom Trays)

2<sup>nd</sup> Appointment: Final Impression with More Accurate Impression Material

(Dental Lab uses model from Final Impression to make Wax Rims)

3<sup>rd</sup> Appointment: Try-In- Establish Vertical Dimension, Proper Bite, Midline, Shade, Tooth Size

(Dental Lab Sets the Acrylic Denture Teeth in Wax)

4<sup>th</sup> Appointment: 2<sup>nd</sup> Try-in (after adjustments have been made). Patient Tries teeth set in wax

(Dental Lab processes or “Finishes” the Denture for Delivery)

5<sup>th</sup> Appointment: Complete Denture Insertion.

6<sup>th</sup> Appointment: Follow-up Adjustments. (Often multiple appointments will be needed for denture adjustments.)

# 1<sup>st</sup> Denture Visit: Alginate Impression

## 1<sup>st</sup> Visit Labwork: Custom Tray



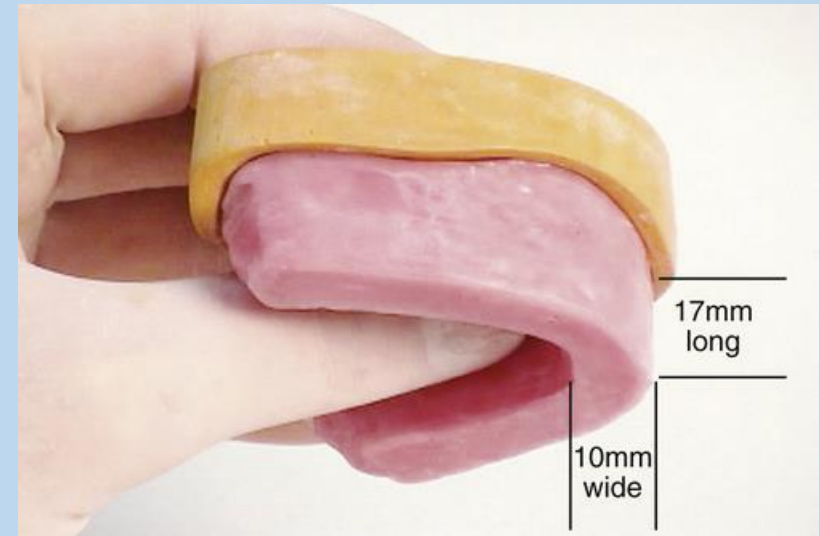
Stock Tray used to take Alginate



Once the alginate is poured with gypsum stone, a custom tray is made from the working model.

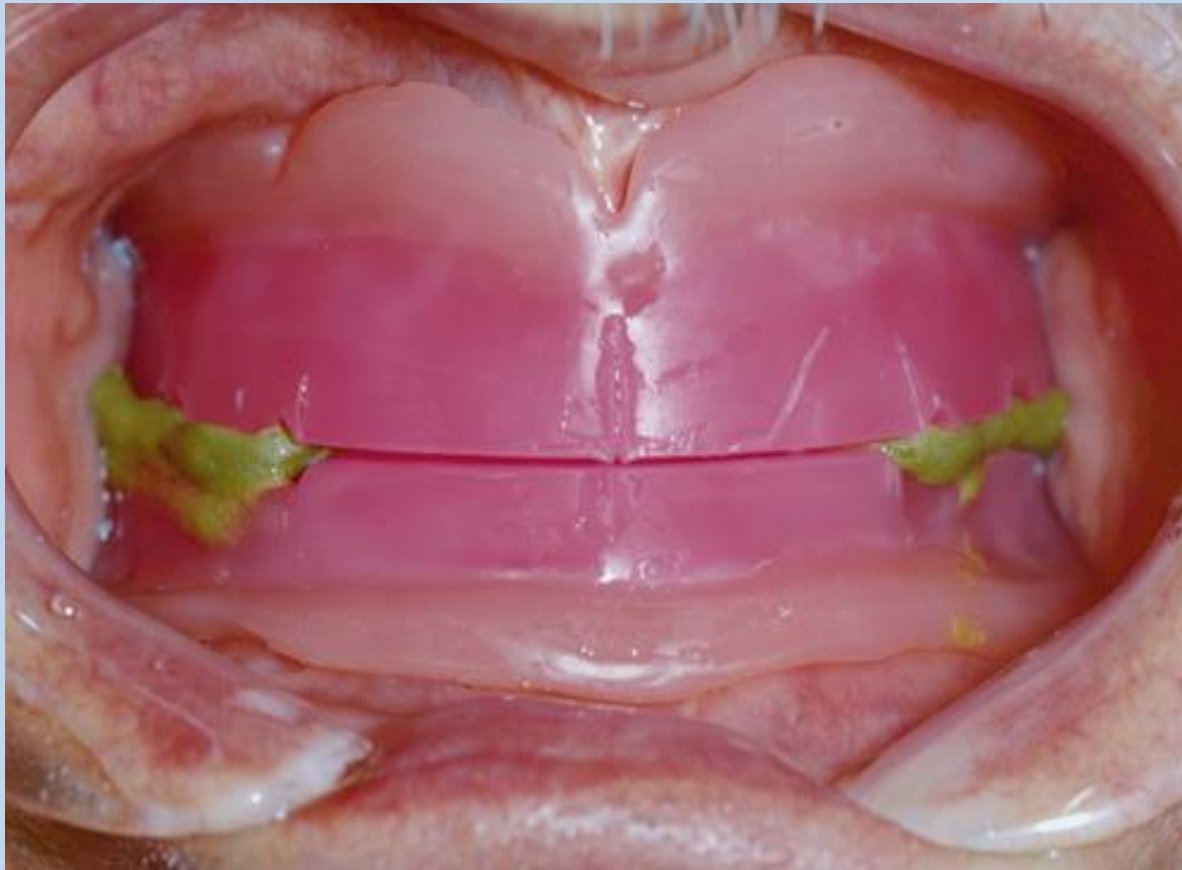
# 2<sup>nd</sup> Denture Visit: Final Impression

## 2<sup>nd</sup> Visit Labwork: Fabricate Wax Rims



3<sup>rd</sup> Denture Visit: Bite Registration

3<sup>rd</sup> Visit Labwork: Mount Casts/Tooth Setup



4<sup>th</sup> Denture Visit: Tooth Try-in

4<sup>th</sup> Visit Labwork: Processing/Finishing Denture

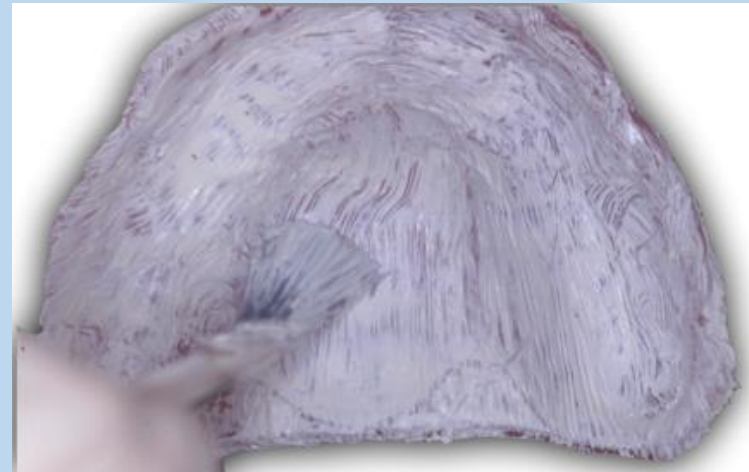




# 5<sup>th</sup> Denture Appointment: Denture Insertion



# 6<sup>th</sup> Denture Appointment: Denture Adjustment



# Why Does a Hygienist Need to Know These Steps?

- Very often patients will ask the Hygienist about how long a denture takes.
- Sometimes patients will even complain to a hygienist about how long the denture is taking.
- It is important that a hygienist can explain to patient that between each appointment the case must be sent to the dental laboratory and back. That is what takes so much time.

# Removable Partial Denture

- A removable partial denture replaces the missing teeth in a partially edentulous arch.
- Flexible Partial Denture (Valplast, Flexiplast)
- Acrylic Partial
- Cast Partial
- An RPD for only 1-2 missing teeth is often referred to as a “Flipper”
- Very often Flippers are interim treatment until an implant can be placed and restored with a permanent crown

# Acrylic Removable Partial Dentures

- Acrylic RPDs are made out of the same acrylic denture teeth and acrylic resin base as a complete denture
- Acrylic RPDs often have Wrought Wire Clasps that “grip” onto the remaining natural teeth for improved retention.
- Wrought Wire Clasps are very malleable and put the least amount of strain on abutment teeth.
- Usually require less appointments than a complete denture

# Acrylic Removable Partial Dentures



# Cast-Metal Removable Partial Denture

- Cast Metal Partial Dentures involve acrylic teeth and an acrylic base that is supported by a metal framework that attaches by way of clasps to the patient's natural teeth.
- Cast Metal RPDs are much stronger than acrylic or flexible RPDs
- Cast Metal RPDs generally have superior retention to acrylic or flexible RPDs
- Cast Metal RPDs require around as many visits and similar time frame to fabricate as a complete denture
- Cast Metal RPDs are more expensive and require more visits than a flexible partial

# Cast Metal Partial Dentures

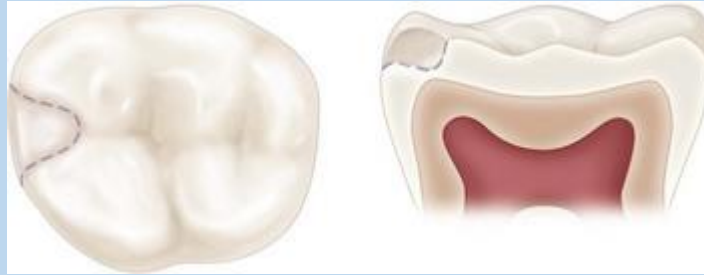




# Cast Metal RPD

- The Metal Framework is usually made of a chrome cobalt alloy. The most common chrome cobalt alloy used is called Vitallium 2000.
- It is rare for patients to develop an allergy to the chrome cobalt.
- During the first appointment, rest seat preparations are made on the natural teeth. Then an impression is taken with either Alginate or an Elastomer (PVS or Polyether).

# Cast Metal RPDs Involve Tooth Preparations



Rest Seat  
Preparations:  
#18D, #21M,  
#28D,  
#31M and D



# Flexible Partial

- Most **flexible dentures** are made of a thin thermoplastic such as nylon, compared to the thicker, more rigid acrylic used in full **dentures**.



# Flexible Partial Pros and Cons

- Pros:
  - minimum/no mouth preparation
  - Often require less visits than cast-metal partials or complete dentures.
  - good retention
  - thin and lightweight
  - no metal clasps (can be aesthetically superior)
- Cons:
  - Cannot reline (cannot alter the partial once it has been made)
  - Difficult to Repair
  - Can be prone to staining if not polished properly and cleaned regularly
  - Very often needs multiple adjustment appointments (this is the case with all removable prostheses)
  - Less retention than a cast-metal partial

# Flipper

- Usually replaces 1-2 missing teeth
- Usually can be done in two appointments.  
First Appointment: Take Impressions, Bite Registration, Select Shade  
Second Appointment: Delivery of Flipper to Patient
- Can be a permanent treatment for a missing tooth
- Usually used as a interim tooth replacement until an implant can be placed.
- Can be made as a flexible partial (ie – Valplast) or from acrylic

# Flipper Examples

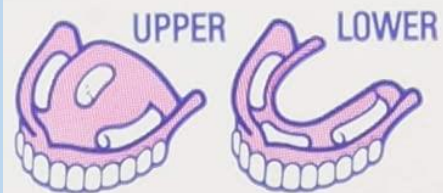


# Denture Adhesive

- **Denture adhesive** is a product that is applied to the intaglio surface (underside) of **dentures** and comes into contact with the gums as the **dentures** are worn.
- It improves retention and prevents the dentures from moving around or slipping out of place.
- Popular Brands are Fixodent and Poligrip.



# Denture Adhesive



Actual size of each strip:



- 1) Clean & Dry Dentures.
- 2) Apply Adhesive in thin strips as shown.
- 3) Insert Dentures and hold briefly in place.

## **IMPORTANT:**

- **DO NOT** use more than 6 strips for full dentures.
- **DO NOT** use product more than once a day. This tube should last at least 2 to 3 weeks. Write date opened here: \_\_/\_\_/\_\_.
- **DO NOT** use excess product for poorly fitting dentures.

## HOW TO USE FIXODENT





# Immediate Denture

- Placed the same day that the teeth are taken out
- Can be Immediate Complete Denture or Immediate Partial Denture
- Usually requires less visits to fabricate than a conventional denture
- Usually made out of acrylic. Sometimes immediate RPDs are made out of a flexible thermoplastic material (like Flexiplast)
- Will often require more follow-up appointments for adjustment
- Often don't fit as well
- Patients should NOT use denture adhesive underneath for at least the first week
- During the first 24 hours after insertion of an immediate denture, patients should leave their denture in. Otherwise due to swelling, they may not fit for several days until the swelling calms down.

# Questions to ask denture patients during Hygiene Visits:

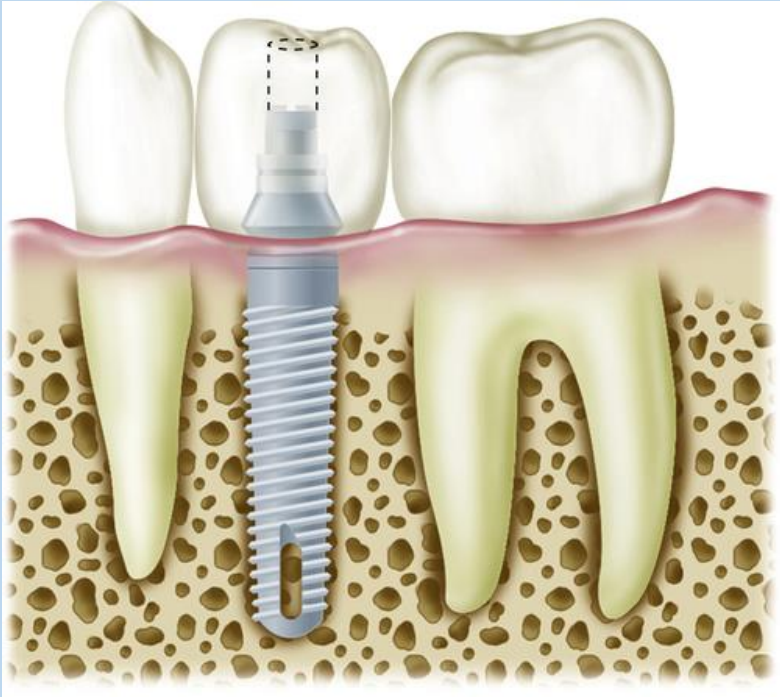
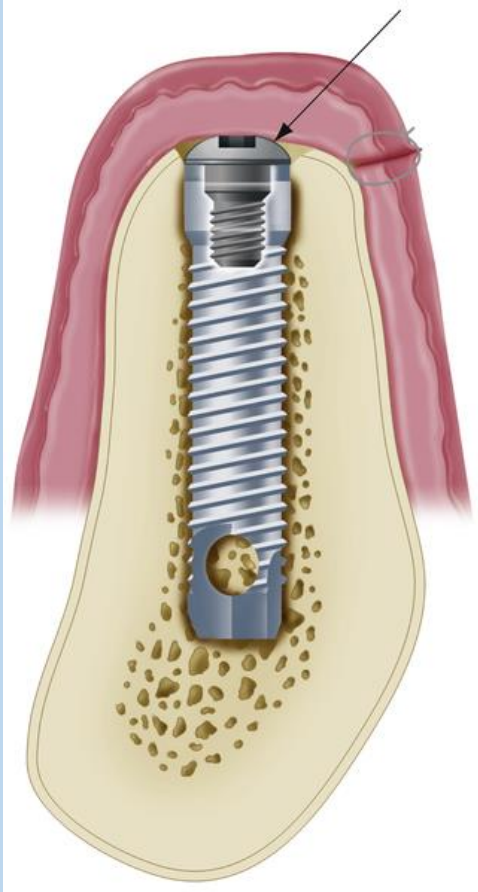
- How is your denture fitting?
- Is it still comfortable?
- Is it staying in well?
- Are you happy with how it looks?

The dentist will always appreciate when the hygienist asks these questions in advance of the prophy check. Depending on the patient's answers, the hygienist can give the dentist a brief overview at the start of the clinical exam.

# Evaluating for Mobility

- An abutment is a tooth that supports a fixed or removable prosthesis.
- Abutment teeth are subject to more force than non-abutment teeth.
- If the abutment teeth for a removable partial denture are subjected to too much force, they can start to become mobile.
- If mobility is found during the hygiene exam, inform the dentist.

# Dental Implant



# Implant Overdenture

Implant supported overdentures significantly improve retention. This is especially helpful in patients with atrophied alveolar ridges.



# Implant Overdenture

- Implant supported overdentures significantly improve retention. This is especially helpful in patients with atrophied alveolar ridges.
- In this case, four mandibular implants were placed with locator abutments that attach to the mandibular denture and improve retention.

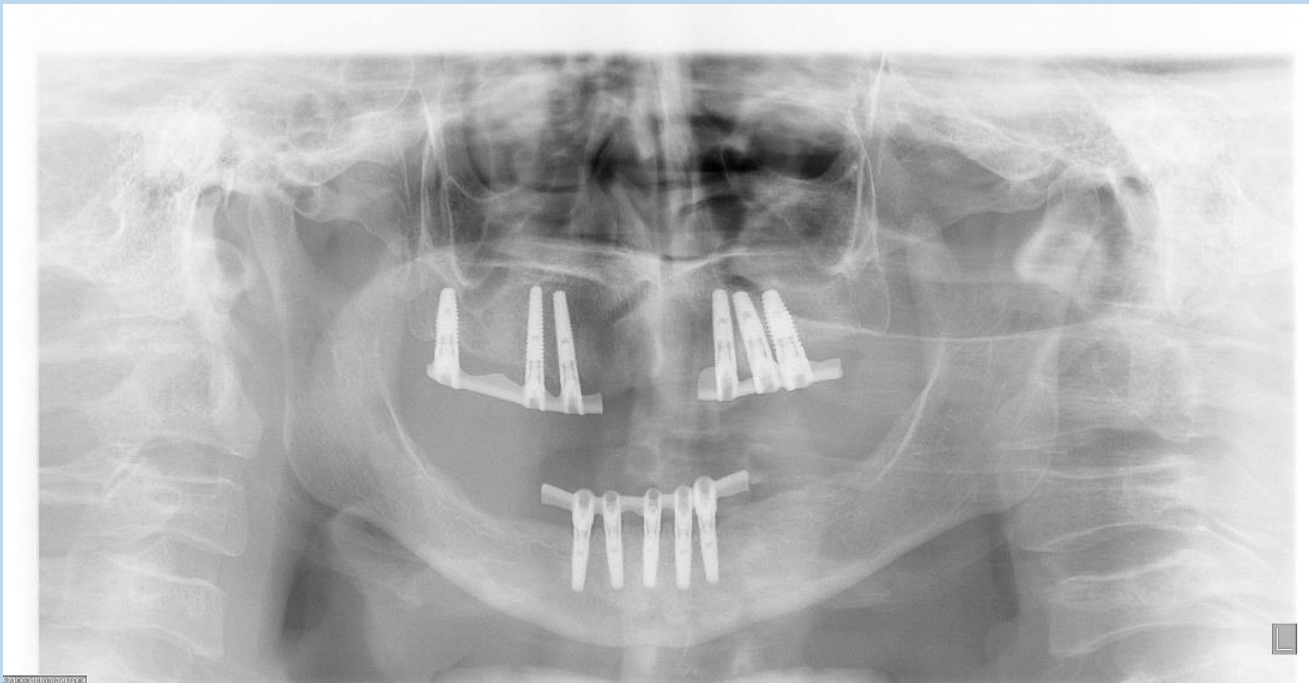


# Implant Overdenture



# Implant Retained Removable Prosthesis

- In this case, several implants were placed and connected by a milled titanium bar.
- The removable prosthesis attaches to the bar for improved retention.





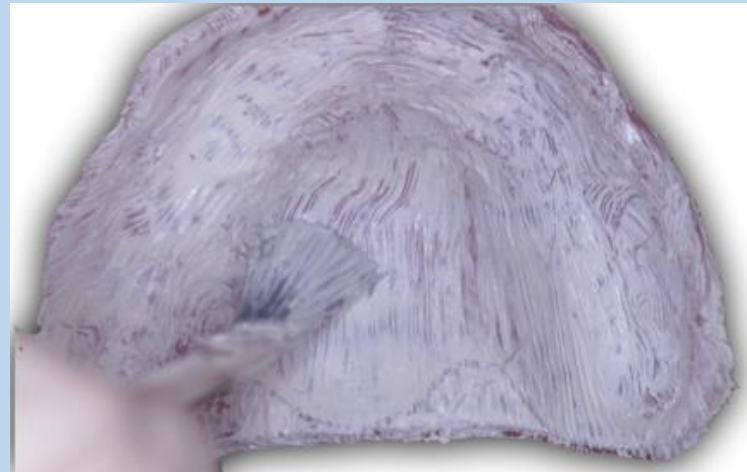
# Implant Retained Removable Prosthesis



# Partial Denture and Complete Denture Complications:

- Sore Spots
- Lack of Retention
  - Resorption of Alveolar Ridge
  - RPD clasps loosen
- Candida Infection
- Epilus Fissuratum
- Fracture

# Denture Sore Spots



# Denture Sore Spots



# Lack of Retention: Denture Reline

- Dentures lose their “fit” after a period of time, because the alveolar ridge atrophies and resorbs when teeth are not present.
- **Relining** adds a small amount of new material to the inside tissue area (intaglio surface) of the denture base to replace the additional alveolar ridge that has been lost since the denture was made. Relining a denture can be done either in a dental laboratory or chairside.

# Chairside Reline



# Partial Denture Lack of Retention

- Cast Metal RPDs and Acrylic with Wrought Wire will lose their retention over time as the metal clasps start to bend with use.
- The solution is to bend them back into place

# Candida Infection

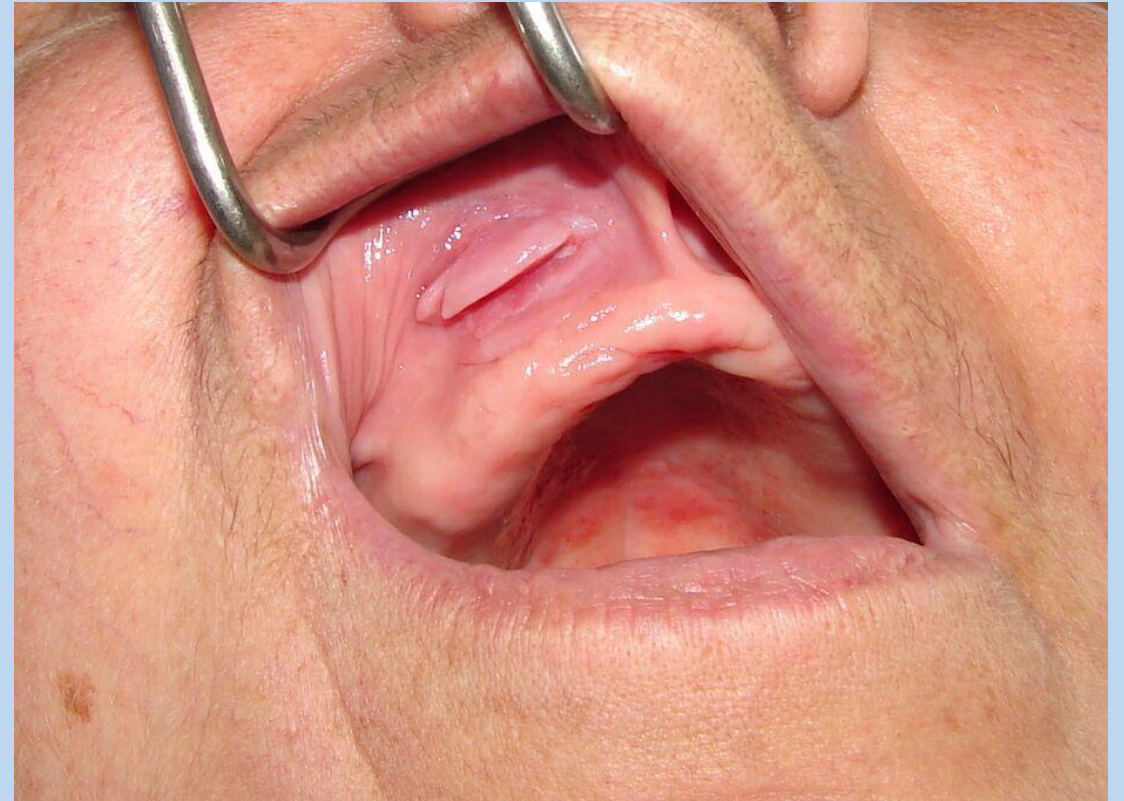
- Fungal Infection
- Candida infection can occur when patients don't remove their denture at night
- Treatment:
  - Nystatin Troches
  - Remove Denture At Night
  - Clean Denture after meals
  - Good Oral Hygiene





# Epulis Fissuratum

- Epulis fissuratum is a pathological condition caused by an ill-fitting denture.
- This will mostly occur with Complete Dentures and not RPDs
- It is a mucogingival hyperplasia that occurs as a reactive condition to excessive mechanical pressure on the mucosa.
- Treatment:
  - Excisional Biopsy
  - Adjust the denture accordingly.



# Broken Denture

- Almost always needs to be sent to the lab for repair. Must warn the patient that they will be without their denture for probably around 1 week
- Be prepared for the patient to complain.
- Usually requires a “pick-up” impression (and a bite registration, and a counter)
- Sometimes the denture simply cannot be fixed
- If the patient tries to superglue their denture at home, sometimes that can make it impossible to fix.

# Oral Hygiene Instruction for Partially Edentulous Patients

- Partially edentulous patients should continue to brush and floss as normal
- Very often they miss brushing the proximal surfaces mesial and distal to the edentulous area.
- It is important to point out to the patient any areas where the patient is not practicing good oral hygiene
- Don't sleep with removable prosthesis
- You can eat with removable prosthesis, but it should be cleaned after meals.
- **Don't brush a removable prosthesis with toothpaste.** The abrasives will wear it down over time. Instead you can brush with a toothbrush and soap + water.

# Oral Hygiene Instruction for Fully Edentulous Patients

- Don't sleep with removable prosthesis
- You can eat with removable prosthesis, but it should be cleaned after meals.
- Don't brush a removable prosthesis with toothpaste. The abrasives will wear it down over time. Instead you can brush with a toothbrush and soap + water.
- Even though fully edentulous patients don't have teeth to clean, they should still come to the dentist 1x/year for a dental exam/Oral Cancer Screening.
- For the implant overdenture patient, use a soft toothbrush and toothpaste, to brush the gum tissue throughout the mouth, the roof of the mouth, the tongue, as well as the locator abutments. Locator abutments can be brushed with a toothbrush and toothpaste.

# Homecare Denture Materials



# Cleaning Removable Prosthesis During Dental Visits

## Tartar and Stain Remover

-Ready to Use, Powerful ultrasonic acidic detergent removes calculus, tartar, tobacco, food stains and permanent cement from bridges, dentures and orthodontic appliances.



