



PREVENTATIVE AND CORRECTIVE ORAL APPLIANCES

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PREVENTATIVE AND CORRECTIVE ORAL APPLIANCES

- ▶ Prevent Damage
 - ▶ Keep Teeth from Shifting and Prevents Supraeruption
 - ▶ Orthodontically Move Teeth
 - ▶ Prevent Sleep Apnea and Snoring
 - ▶ Hold Materials in Close Proximity to Dentition
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- A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, set against a blue gradient background.

ROLE OF DENTAL HYGIENIST

- ▶ Perform a comprehensive assessment
 - ▶ Recommend an appropriate oral appliance
 - ▶ Fabricate Appliances? (Impression, Pour, Trim Model, Fabrication?)
 - ▶ **Patient Instruction on usage and care**
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The Purpose of Oral Appliances

Table 18.1 The Purpose of Oral Appliances

Appliance	Purpose
Appliances for non-nutritive sucking habits	To help stop the habit of sucking thumb/fingers
Athletic mouthguards	To prevent orofacial injury
Bleaching trays	To hold bleaching solution in close proximity to dentition to "whiten teeth"
Fluoride custom tray	To hold prescription fluoride gel trays in close proximity to dentition; to decrease the occurrence of demineralization and increase remineralization
Orthodontic retainers	To stabilize teeth after movement
Nightguards	To alleviate tooth surface wear
Periodontal stints	To hold anesthetic and antiseptic materials after periodontal surgery and/or to hold gingival flaps during surgery
Snoring/sleep apnea appliances	To advance the mandible, which will decrease airway obstruction during sleep, thus alleviating snoring and mild-to-moderate cases of sleep apnea
Space maintainer	To temporarily hold teeth in position
Tooth positioners	To provide minor tooth movement

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2013, p. 235

MATERIALS USED IN FABRICATION

Thermoplastic Materials

- ▶ Softens upon heating
- ▶ Hardens into final shape upon cooling
- ▶ Enables individualization

Types of thermoplastic materials

- ▶ **Polyethylene** (most common)
- ▶ Polyvinyl chloride
- ▶ Polypropylene
- ▶ Polystyrenes
- ▶ polycarbonates

Table 18.4 Use of Thermoplastics

Material	Application
Polycarbonates	Temporary crowns and bridges
	Orthodontic retainers
Polyethylene	Mouthguards
	Tooth positioners
	Nightguards
	Space maintainers
	Fluoride custom trays
	Stints
Polypropylene	Temporary crown and bridge molds
Polystyrenes	Custom impression trays
	Denture bases
Polyvinyl chloride	Splints
	Dual laminates
	Temporary removable partial denture (flipper)
	Ortho retainers

Gladwin & Bagby,
2013, p. 240

NIGHTGUARDS



NIGHT GUARDS (BRUXISM MOUTH GUARDS)

What is their purpose?

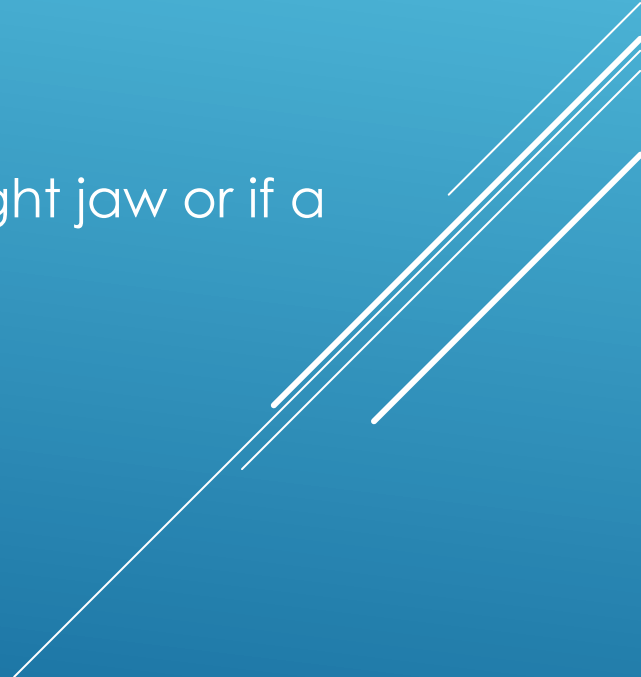
- Protects teeth from clenching and grinding
- DOES NOT prevent teeth grinding

AKA Occlusal Guards or Bite Splints

Signs that a patient may need a night guard:

- Wear Facets
- Chipping/Wear of Incisal Edges
- Stress cracks in teeth
- Fractured Cusps/Cracked Teeth
- Mobility
- Sore muscles of Mastication
- Enlarged Masseters
- Recession
- Abfraction

“I KNOW I DON’T GRIND MY TEETH”

- ▶ Grinding often occurs during sleep and patient’s are not aware
 - ▶ It is a cumulative 5 minutes over the course of an entire night (5 seconds here, 20 seconds there, another 10 seconds etc...)
 - ▶ During the exam you can ask if the patient ever wakes up with a tight jaw or if a significant other or family member has ever heard them grinding
 - ▶ You can also ask if the patient is stressed.
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NIGHT GUARDS (BRUXISM MOUTH GUARDS)

How are they made?

- Over the Counter (OTC)
- Professionally from Casts

What is the Hygienist's Role?

- Recommend**- Take Impressions, pour models, fabricate, **educate**

TMJ Dysfunction → TMJ Splint

- Keep maxillary and mandibular teeth separated
- Takes stress off joints (TMJ)
- Protects Teeth


TMJ = TEMPOROMANDIBULAR JOINT

TMD = TEMPOROMANDIBULAR DISORDERS

Patient's constantly say "I have TMJ."

What the patient usually means is "I suffer from TMD" aka "I clench or grind my teeth and I am symptomatic"

NIGHTGUARDS

- ▶ Protect against clenching and/or grinding
 - ▶ For TMJ Dysfunction
 - ▶ Attempts to keep condyles in Proper/ideal position
 - ▶ Protects TMJ, Teeth, PDL
 - ▶ Can be OTC or Lab-Fabricated
 - ▶ There are soft nightguards, hard/soft nightguards, hard nightguards
 - ▶ Usually fabricated for Maxilla, but can be made for either arch
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OVER-THE-COUNTER (OTC) NIGHTGUARDS

- ▶ Minimal Expense
- ▶ Often Uncomfortable
- ▶ Poor Retention
- ▶ Least Amount of Protection
- ▶ Occlusion is probably not ideal



LAB-FABRICATED NIGHTGUARD

- ▶ Require Two Appointments

 - 1st Appointment: Alginate Impression or Digital Scan

 - 2nd Appointment: NG Delivery (evaluate retention and check occlusion)

- ▶ Soft


- ▶ Hard/Soft

- ▶ Hard

- ▶ NTI Device ----



SOFT NIGHTGUARD

- ▶ Most Comfortable Type of Nightguard
 - ▶ Provides the least amount of protection and tooth retention
 - ▶ Made in dental office or lab
 - ▶ Soft: Thermoplastic sheets
 - ▶ Polyethylene material
 - ▶ Anecdotaly a soft NG can exacerbate clenching
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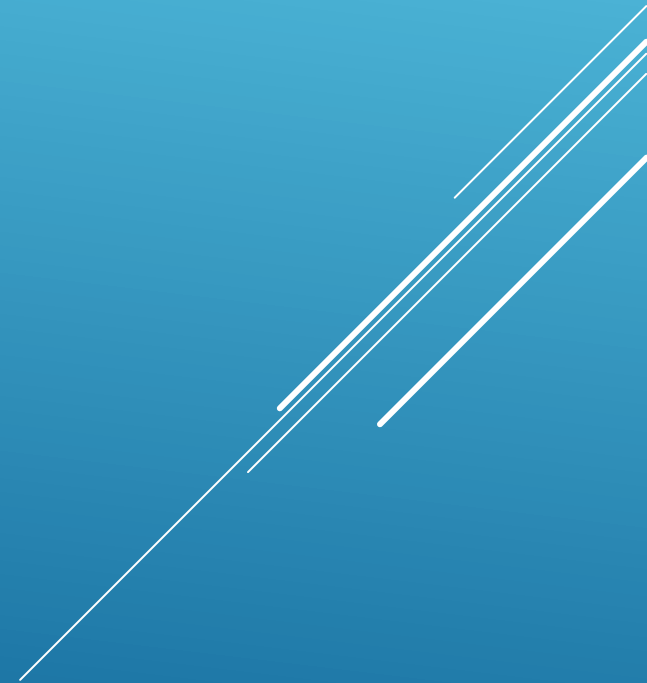
HARD/SOFT NIGHTGUARD

- ▶ Soft Internal layer made of polyurethane
- ▶ Hard External layer made of copolyester
- ▶ Very popular, easily tolerated by patients
- ▶ Internal layer will stain over time
- ▶ “The soft internal surface rests comfortably against the teeth and gums, while the hard occlusal surface provides durability and bonds with acrylic for easy modification.”
- ▶ Made In Laboratory




HARD NIGHTGUARD

- ▶ Most Durable/Most Protection
- ▶ For Heavy Clenching and Grinding
- ▶ Slightly less comfortable than soft or hard/soft nightguards
- ▶ Can be made on a traditional Vacuform-type machine in laboratory or via 3D-printing
- ▶ Usually made from acrylic
- ▶ Looks very similar to the hard/soft NG



NIGHT GUARDS (BRUXISM MOUTH GUARDS)

- ▶ Maxillary Coverage (most popular)
 - ▶ Mandibular coverage
 - ▶ Anterior coverage (Can cause malocclusion)
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- A decorative graphic consisting of several parallel white lines of varying lengths, slanted diagonally from the bottom right towards the top right, set against a blue gradient background.

NTI-Nightguard-(Anterior Coverage)

NTI-TSS (Nociceptive trigeminal inhibition Tension Suppression System)



NTI MOUTH GUARD: DISOCCLUDES POSTERIOR TEETH

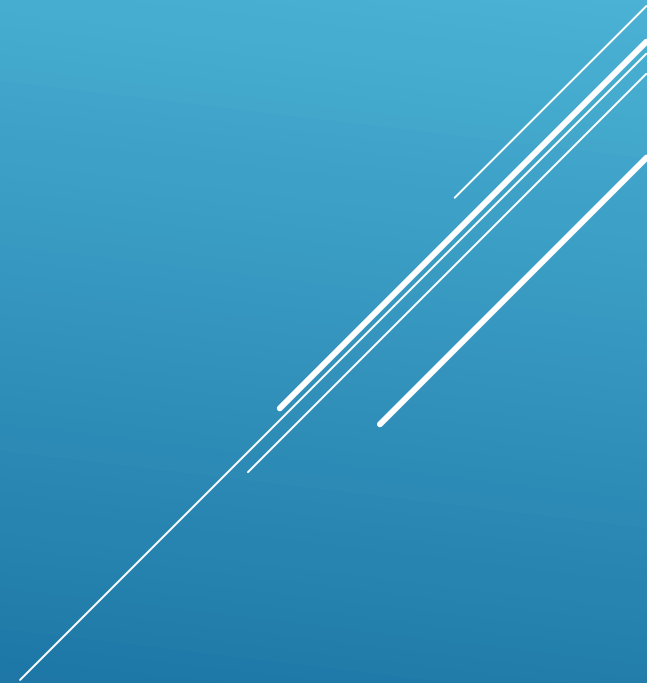
► **Indications:**

- Migraines and Tension headaches
- Tooth wear from bruxing and clenching
- Muscle pain associated with muscle parafunction
- TMD
- Diagnostic treatment planning

**NTI's
CAN RESULT
IN
ANTERIOR
OPEN BITE**



ATHLETIC GUARDS



SPORTS MOUTH GUARDS (ATHLETIC GUARDS)

- ▶ AKA Mouth Protectors or Mouth Guards
- ▶ Protect against sports injury
- ▶ Need to be thick and stiff (2mm light contact, 4mm heavy contact sports)
- ▶ Protect existing dental work, protect teeth, protect against laceration if patients are in traditional braces that would result from trauma
- ▶ Facts:
 - Sports guards prevent thousands of injuries every year
 - The risk of oral/jaw injuries increase 1.5-2x when guards are not worn
 - Can absorb 80% of the energy from a traumatic hit (Resilient-absorbs energy and returns to its original shape)

ADA RECOMMENDATION

Mouthguards should be worn during the following Sports:

Acrobatics

Surfing

Basketball

Baseball

Martial Arts

Volleyball

Boxing

Racquetball

Water Polo

Discus Throwing

Rugby

Wrestling

Field Hockey

Skate Boarding

Football

Gymnastics

Skiing

Handball

Sky Diving

Ice Hockey

Soccer


Lacrosse

3mm is the minimal thickness for high contact sports to prevent MTBI=concussion

FEATURES OF THE “IDEAL” MOUTHGUARD

- ▶ Is adequate in height that it covers all the teeth and the attached Gingiva but does not impinge on the Frena
- ▶ Has protective properties which include adequate thickness (4mm) to absorb forces as well as power dispersion bands
- ▶ Is comfortable and fits well
- ▶ Remains securely in place
- ▶ Allows the athlete to breath & speak clearly
- ▶ Is made of a durable material & is odorless & is tasteless & does not tear (EVA=ethylene vinyl acetate)

HOW MOUTHGUARDS WORK?

- 1) They spread the force of the blow over all the teeth that are covered by the mouthguard.
 - 2) They stop violent contact of the upper & lower teeth.
 - 3) They keep the lips away from the misaligned teeth protecting the lips, the teeth and any orthodontic treatment.
 - 4) They hold the jaws apart:
 - a) acting as shock absorbers.
 - b) preventing upward & backward displacement of the condyles in their fossa. So, they reduce the incidence of concussion from a blow to the chin.
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SPORTS MOUTH GUARDS

1) Stock Guards

- Over the Counter (OTC)
- Minimal Expense
- Uncomfortable and least amount of protection

2) Boil-and-bite guards

- OTC
- Molds to shape of mouth
- Difficult to Mold
- Fits better than stock mouth guard

3) Custom fit guards

- Made from model of patient's mouth
- Enhanced fit and comfort
- Made in office or dental lab
- More expensive



STOCK MOUTHGUARDS

- ▶ Preformed thermoplastic tray
- ▶ Sold in limited sizes
- ▶ Held in place by the wearer biting
- ▶ Interferes with speaking & breathing during the sport activity
- ▶ **Not recommended by ADA**



BOIL & BITE MOUTHGUARDS

- ▶ Thermoplastic- is softened in hot water
- ▶ Let it cool to a warm temperature which will be tolerated in the mouth
- ▶ Place it in the mouth & shape material with fingers
- ▶ Less adequate cushioning than custom guards
- ▶ Variable thickness therefore decreases protection



Note variable thickness

BOIL & BITE MOUTHGUARDS

- ▶ Also called: mouth-formed
- ▶ 2 varieties: thermoplastic or shell-liner
- ▶ Thermoplastic (EVA)
- ▶ Shell liner– outer shell= polyvinyl chloride & inner lining= acrylic gel or silicone rubber



Acrylic gel liner


CUSTOM MADE



CUSTOM MOUTHGUARD



CUSTOM MOUTHGUARDS

- ▶ For Class I & II the maxillary arch is used
 - ▶ For Class III occlusions, with prognathic jaw position, the mandible is used
 - ▶ Provide better retention & more comfortable to wear
 - ▶ Allows the athlete to breathe & speak
- 

MOUTHGUARD CARE

- ▶ Custom mouthguard is made from tough Erkoflex, but will still need to be taken care of to make it last for years.

- ▶ **KEEP IT CLEAN!**

Washing and care instructions

- ▶ Keep your Custom Mouthguard clean and fresh by washing it after use in cold soapy water.
- ▶ Do not use warm, hot or boiling water as it will permanently change the shape of your custom Mouthguard causing it to no longer fit you.
- ▶ Do not use a toothbrush that has been in contact with toothpaste as all toothpastes contain pumice which is an abrasive agent and will abrade the polished surface of the plastic causing the pores of the plastic to open, allowing the coloring agents contained within the toothpaste to enter your custom Mouthguard.
- ▶ Only use a soft toothbrush to clean your custom Mouthguard
- ▶ If you find white calcium-like deposits forming on your Mouthguard then soak it in cold denture cleaning solution, (available from most chemists).

KEEP IT SAFE!

- ▶ Always transport your Mouthguard in the vented container supplied with it.
- ▶ Do not leave your Mouthguard in a warm place or near to a radiator or any heat source as the heat will permanently change its shape and it will no longer fit you.
- ▶ Never leave your Mouthguard in your pocket or allow it to go in to a washing machine or tumble dryer. Never leave it on a central heating radiator or anywhere a small child or pets who may attempt to eat it.
- ▶ Never handle or wear another person's mouthguard.

CLEAR ORTHODONTIC ALIGNERS



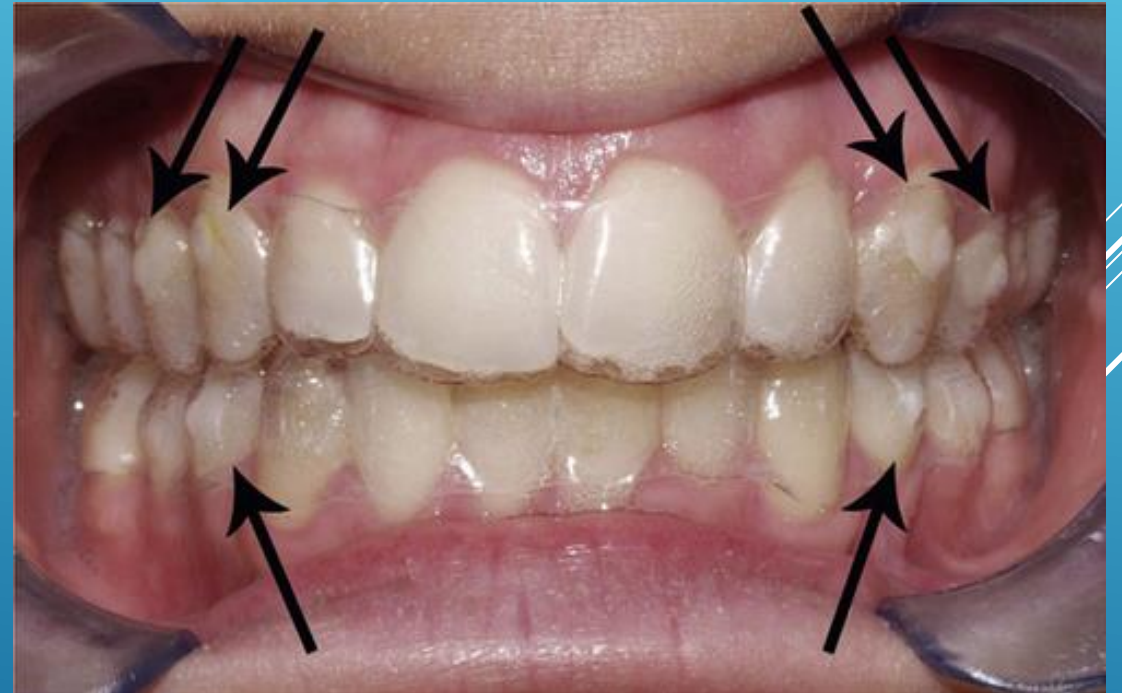
CLEAR ALIGNER THERAPY

- Patients must wear the clear plastic aligners 22hrs/day
- Patients switch aligners every 1-2 weeks until completion of treatment
- Following completion of treatment, patient must wear a retainer, otherwise relapse will occur
- Can bleach teeth while teeth are being straightened
- If patient has poor compliance, teeth will not move as desired
- Flossing is much easier with aligners than with traditional braces
- If patient loses an aligner, she/he can wear the previous week's aligner until a new one is ordered.



CLEAR ALIGNER THERAPY: ATTACHMENTS

- ▶ Composite “attachments” are placed on key teeth at the beginning of treatment
- ▶ This allows the aligners to grab on better and achieve different types/amounts of force
- ▶ Attachments are removed at the end of treatment



RETAINERS



RETAINERS

- ▶ The main purpose of a retainer is to maintain the teeth in their current orientation/alignment aka PREVENT ANY NEW TOOTH MOVEMENT
- ▶ Requires two appointments
 - 1st Appointment: Alginate Impression or Digital Scan
 - 2nd Appointment: Delivery
- ▶ Maintenance: Wash with toothbrush and soap and Water

TRADITIONAL HAWLEY RETAINER



CLEAR VACUFORM RETAINER



Figure 1 The Align Vivera retainer product packaging.



Figure 2 Close-up view of the Vivera retainer.

BLEACHING TRAYS



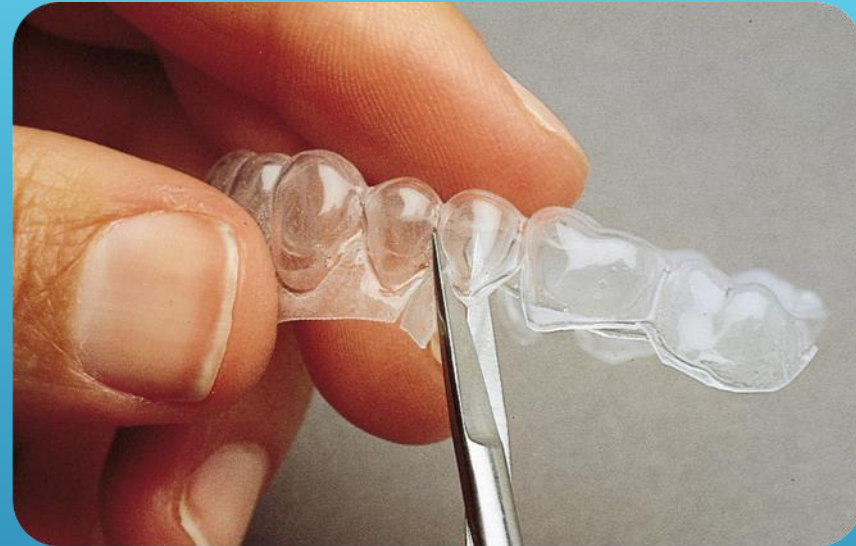
FLUORIDE CUSTOM TRAYS

When to Use Fluoride Trays?

- ▶ A high incidence or risk of dental caries, including rampant enamel or root decay
- ▶ Xerostomia
- ▶ Hypersensitivity
- ▶ Radiation Therapy (Xerostomia)
- ▶ Desensitization (especially prior to bleaching)

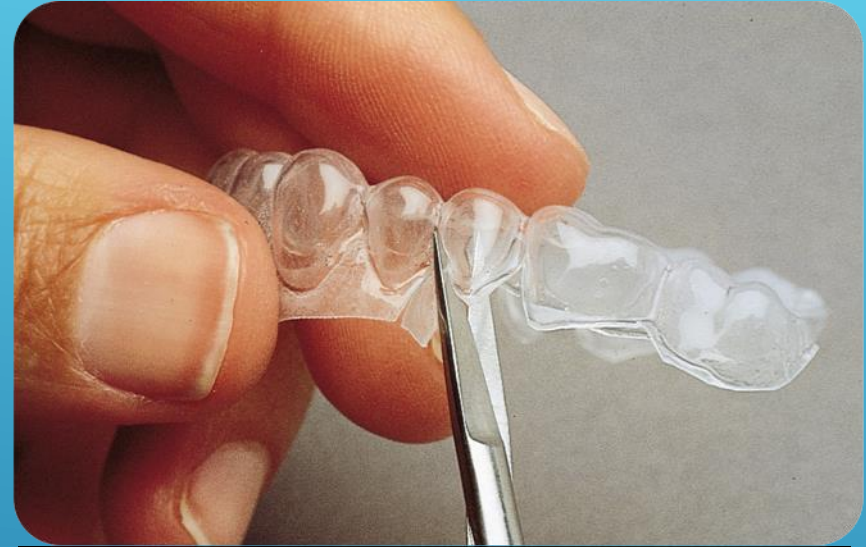
Compatible Gels:

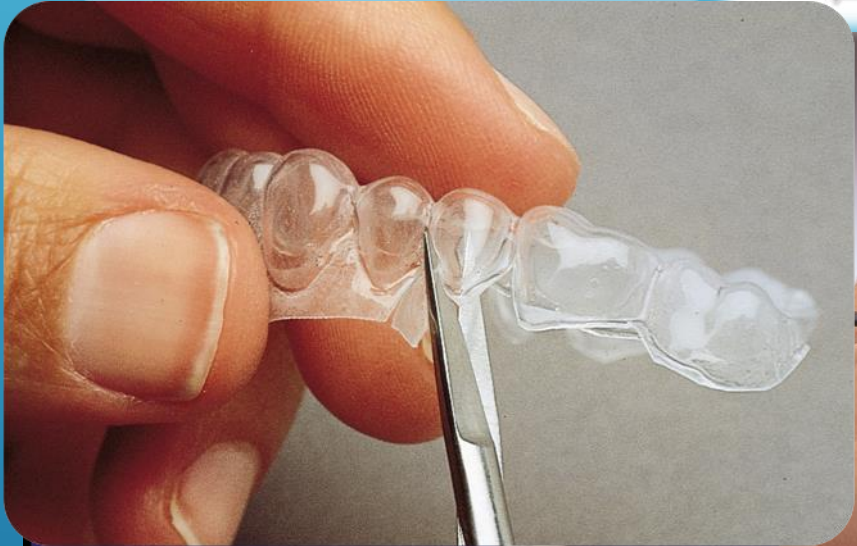
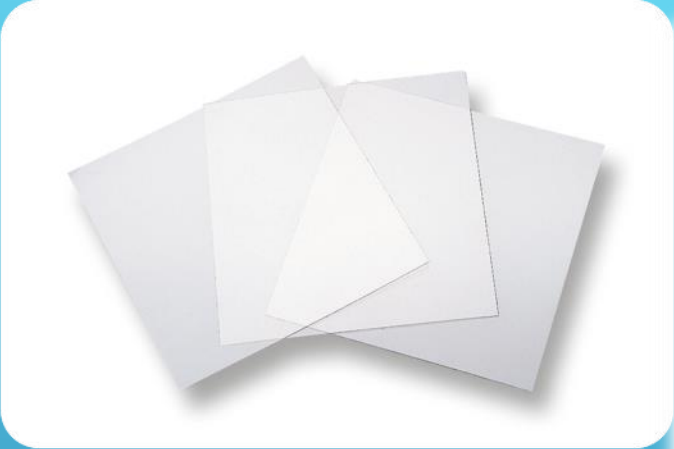
- ▶ Acidulated phosphate fluoride (0.5%)
- ▶ Sodium fluoride (1.1%)
- ▶ Stannous Fluoride (0.4%)



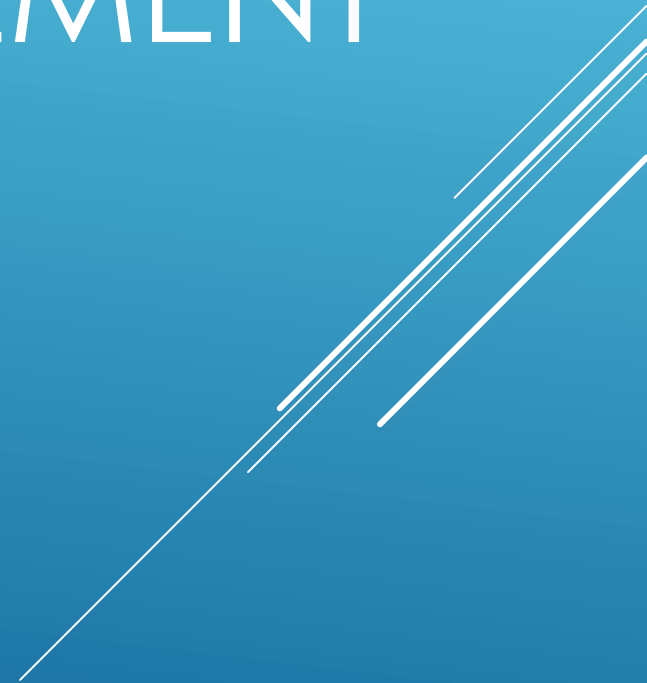
BLEACHING CUSTOM TRAYS

- ▶ Used for vital tooth bleaching
- ▶ Hydrogen Peroxide or Carbamide Peroxide
- ▶ Made using a dental model and vacuform machine
- ▶ Can be used interchangeably as a fluoride tray





MANDIBULAR ADVANCEMENT DEVICE




ORAL APPLIANCES FOR PREVENTION OF SNORING AND OBSTRUCTIVE SLEEP APNEA (OSA)

- ▶ Causes of snoring and OSA:
 - Relaxation of muscles
 - Narrowing or closing of airway

- ▶ Problems associates with OSA:
 - Hypertension, Heart Attack, Heart failure, stroke, neurocognitive dysfunction
 - Breathing is in adequate or stops

RISK FACTORS FOR OBSTRUCTIVE SLEEP APNEA

- ▶ Large Neck
 - ▶ Enlarged uvula
 - ▶ Obesity
 - ▶ Chronic nasal congestion
 - ▶ Hypertension
 - ▶ Diabetes
 - ▶ Smoking
 - ▶ Alcohol use
 - ▶ Narrow Airway
 - ▶ Men are 2x more likely to have OSA
- 

TREATMENTS FOR OSA

- ▶ Weight loss
- ▶ Exercise
- ▶ Reduced alcohol intake
- ▶ Smoking cessation
- ▶ Sleeping on side
- ▶ Use of nasal decongestants
- ▶ Oral appliance (Mandibular Advancement Devices)
- ▶ **CPAP machine (For more severe cases-** Patients don't always tolerate well)
- ▶ Surgery (may remove uvula in soft palate)

CPAP MACHINE

- ▶ For Severe cases of OSA
- ▶ Stands for Continuous Positive Airway Pressure
- ▶ Many patients find it uncomfortable and difficult to tolerate



ORAL APPLIANCES FOR PREVENTION OF OSA

- ▶ Mandibular Advancement Device (MAD)
- ▶ Moves the mandible forward.
- ▶ When the mandible is in a prognathic position, that helps to open the airway
- ▶ Similar to when you perform a “jaw thrust” during CPR
- ▶ “increase airway diameter with soft tissue displacement achieved by mandibular protrusion.”



MANDIBULAR ADVANCEMENT DEVICE

Oral appliance (TAP 3 Elite, Airway Management, Inc.) for obstructive sleep apnea positions the lower jaw forward to prevent the tongue and soft tissues of the throat from obstructing the airway. (Courtesy of Glidewell Dental, Newport Beach, CA.)



HOME CARE FOR NIGHT GUARDS, SPORTS GUARDS, FLUORIDE TRAYS AND BLEACHING TRAYS

- ▶ Wash with room temperature water and liquid soap
 - ▶ Brush with toothbrush or denture brush
 - ▶ DO NOT use alcohol containing mouthwash (it will degrade material)
 - ▶ Commercially available soaks– can be good for hard guards, but can degrade soft guards
 - ▶ Air Dry and store in a rigid, perforated container
 - ▶ Do not leave in warm/hot areas or expose to warm/hot water
 - ▶ Do not chew on guard
 - ▶ Dogs love nightguards (don't leave them near dogs)
 - ▶ Replace if worn, has tears or holes or no longer fits
- 