

CDC 4Y051O

Dental Assistant Journeyman

Volume 3. Clinical Procedures—Part II



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In this third volume of CDC 4Y051O, *Dental Assistant Journeyman*, pertains to clinical procedures performed in several specialty areas of dentistry. The areas include prosthodontics, orthodontics, and pediatric dentistry.

Unit 1 covers information about subject knowledge and clinical treatment procedures related to prosthodontics, orthodontics and pediatric dentistry. This includes the identification of equipment and instruments as well as standard procedures for each specialty.

A glossary is included for your use.

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Date	Figure Name	Catalog Page	CDC Figure Number
1992	#7 Wax Spatula	268	F1-4
1992	Roach Carver	270	F1-7
1992	Crown & Collar Scissors	298	F1-10
1992	Single-ended band pusher	297	F1-34
1992	Band pusher/scaler	297	F1-35

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Date	Figure Name	Catalog Page	CDC Figure Number
1992	Direct bond bracket holder	246	F1-31
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1992	Band contouring pliers	281	F1-32
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1992	Buccal tube convertible cap removing pliers	285	F1-38
1992	Debracketing instrument	285	F1-39
1992	Ligature wire cutter	282	F1-42
1992	Distal end cutter	282	F1-43
1992	Triple-beaked pliers	280	F1-44
1992	Tweed loop-forming pliers	280	F1-46
1992	Weingart utility pliers	280	F1-47

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NOTE:

In this volume, the subject matter is divided into self-contained units. A unit menu begins each unit, identifying the lesson headings and numbers. After reading the unit menu page and unit introduction, study the section, answer the self-test questions, and compare your answers with those given at the end of the unit. Then complete the unit review exercises.

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Unit 1. Prosthodontic, Orthodontic and Pediatric Dentistry

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STUDIES SHOW THAT many people are unhappy about the look of their smile, with 25 percent of Americans saying their smile and/or teeth is the one facial feature they would change to boost their self-esteem. The prosthodontists are the experts in improving these appearances by restoring broken, discolored, malpositioned, and/or misshapened teeth. A better smile and improved oral function can greatly improve a person's self-image. Functional teeth help to maintain general health and well-being. Proper chewing of food is essential, especially as you grow older. The inability to chew food properly and thoroughly may result in poor nutrition, gastrointestinal disorders, health compromises, and a loss of the quality of life.

1–1. Basics of Prosthodontics

To be an effective prosthodontic assistant, there is some basic prosthodontic information you must know. For example, you need to know and understand the function of prosthodontics, the different types of fixed and removable prosthetics, and the function and use of DD Form 2322, Dental Laboratory Work Authorization. Some of the prosthetic procedures are fairly standard, regardless of the type of prosthesis being made. One of the most important tasks of the prosthodontic assistant is to know how to complete the DD Form 2322 and be familiar with its many uses. It's equally important that you coordinate treatment cases with the dental laboratory personnel.

401. Description of prosthodontic functions and procedures

Prosthodontic dentistry deals with the substitution or replacement of oral structures. Prosthodontic dentistry can include anything from replacing one missing tooth to constructing an intricately designed device to replace missing structures of the face such as eyes, ears, or in a cleft palate. Prosthodontic treatment is concerned *primarily* with replacing missing teeth with some type of artificial substitute. Substitutes for natural teeth are called prosthodontic appliances. Prosthodontic appliances are either fixed permanently into the patient's mouth or removable from the mouth by the patient. Fixed appliances include inlays, onlays, crowns, and fixed partial dentures (bridges). Removable appliances include complete dentures, removable partial dentures, and special maxillofacial appliances.

Functions

A prosthodontist is a dentist with specialized training in replacing missing teeth; however, many general dentists are able to provide prosthodontic care. The *most* difficult cases are usually referred to

the prosthodontist. As the dental assistant, you form part of the prosthodontic team. Your prosthodontic assisting duties are very similar to those in other specialties. The *primary* differences are the types of treatment the dentist performs, the material you mix or manipulate, the instruments the dentist and you use, and the coordination required with the dental laboratory.

Procedures

The basic clinical procedures are essentially the same as in all direct patient care in dentistry. The prosthodontic procedures, sequence of treatment, and materials required vary with the specific treatment requirements for the patient and individual dentist. You must be adaptive and well prepared to assist in the various procedures at the proper time and desired manner. This is not as difficult as it sounds. If you are familiar with the prosthodontic procedures and materials, you should have little trouble mastering any variations.

Most prosthodontic cases require a series of appointments. It's your duty as the prosthodontist's assistant to schedule these appointments. Two basic factors influence the scheduling of prosthodontic patients:

1. Procedures to be done during the appointment.
2. Laboratory time required between appointments.

These factors dictate the time allocation and date for rescheduling the patient.

You must understand the sequence of prosthodontic treatment procedures and appointment lengths, and know the varying amounts of time that you *must* allow for laboratory work between visits of a patient. Never hesitate to ask the dentist and coordinate with the laboratory concerning time allocation for various procedures so the dentist's and laboratory technician's time is used efficiently.

Each new prosthodontic patient requires an evaluation, which could include complete oral radiographs. The dentist uses radiographs to diagnose cysts, residual roots, unerupted teeth, impacted teeth, periodontal conditions, caries, bone density, and other conditions requiring restorative or surgical correction before prosthodontic treatment is started. At the evaluation appointment, you make the preliminary impressions. Because of natural tooth and soft tissue undercuts, elastic impression materials are used. Irreversible hydrocolloid (alginate) is the material commonly used for making preliminary impressions. Diagnostic casts are then poured from the preliminary impressions.

Whenever you make preliminary impressions, you initiate a DD Form 2322, have the dentist sign it, and take it along with the disinfected impression to the dental laboratory for the fabrication of diagnostic casts.

Dentist and prosthodontist use diagnostic casts to reveal irregularities of the occlusion that must be corrected before beginning prosthodontic treatment. These casts also reveal irregularities that will be a factor in determining the type of appliance to be constructed. In addition, diagnostic casts are used to construct custom trays for fixed and removable treatment procedures. A diagnostic cast has additional value in fixed prosthodontic treatment procedures—it's frequently used for making interim (temporary) fixed restorations.

In planning prosthodontic treatment, complete all oral surgery, periodontic, endodontic, and general dentistry treatment before beginning prosthodontic treatment.

402. Coordination with the dental laboratory

Whenever dental laboratory work is required to support prosthodontic treatment, a DD Form 2322 must be completed. This form has several purposes:

- Contains patient information and fabrication instructions.
- Used as a precious metals voucher.
- Used as an entry form for composite laboratory value (CLV) codes.

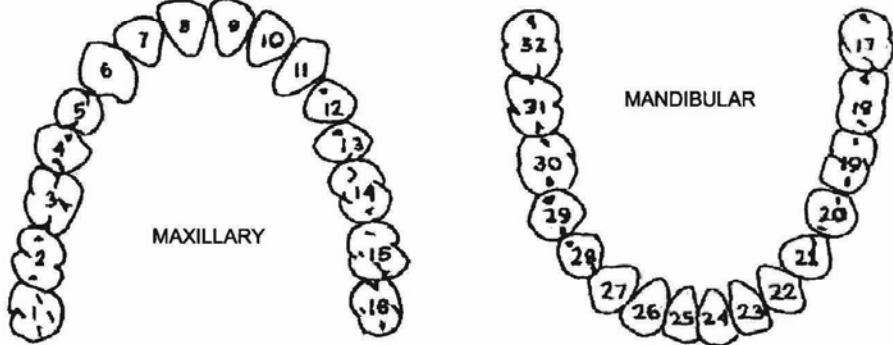
The responsibility for initiating this form usually is delegated to you, the dental assistant. In doing so, you need to take care to fill out the form completely and accurately. It advises the laboratory, in writing, of exactly what materials to use and the services to provide. An incomplete or inaccurate form could result in the lack of necessary items to fabricate the appliance or an unsatisfactory restoration. Figures 1-1 and 1-2 show a completed form. Instructions for completing this form are included in AFI 47-101, *Management and Administration of Air Force Dental Services*.

The number of DD Form 2322 copies accompanying a prosthetic case will depend on whether the case is sent to another laboratory, and whether precious metals are expended. The number of copies required is as shown here:

The lab work will be completed:	Number Copies Required
Locally requiring precious metals	3
Locally not requiring precious metals	2
Another base (Part or all of fabrication) requiring precious metals	4
Another base (Part or all of fabrication) not requiring precious metals	3

The submitting laboratory retains the last copy and forwards the remaining copies, including the original, to the servicing laboratory. The servicing laboratory keeps *one* copy for its records and puts the original in its Register of Precious Metals and Alloys if precious metals are expended. The servicing laboratory returns a copy with the completed prosthesis. The laboratory can refuse to accept any request that is incomplete. Each laboratory involved in the prosthesis fabrication or repair retains a file copy of the DD Form 2322. If additional copies need to be prepared, the laboratory officer may sign these on behalf of the requesting provider.

As the assistant, you should check with the laboratory on the amount of time needed before scheduling the next appointment. Each clinic has a different timeline to complete specific procedures.

1. Local Case No.		Schoolhouse xxx William Rd. FSH, Texas 78234		3. ADL Case No.	
4. Patient's Name (Last, First, Middle Initial) Doe, Jane D.		5. Grade E-5	6. Age 26	7. Date Initiated 20120211	
8. Beneficiary Type 20	9. Organization, Duty and Home Telephone Nos. 001 TRG/ 808-XXXX/ 001-000-0000			10. Date Forwarded	
11. Type of Prosthesis or Restoration #12 Crown		12. Shade and Mold by Guide XXXXXXX		13. Date Delivered	
14. Prosthesis Design					
					
Request(s) (Check appropriate box(es))		15. <input type="checkbox"/> Framework Only		16. <input type="checkbox"/> Set-up	
17. <input type="checkbox"/> Process	18. <input checked="" type="checkbox"/> Fully Fabricate	19. <input type="checkbox"/> Bisque Bake		20. <input type="checkbox"/> Consultation	
21. <input type="checkbox"/> Diagnostic Casts	22. <input type="checkbox"/> Jaw Relation Record	23. <input type="checkbox"/> Radiographs		24. <input type="checkbox"/> Other (See remarks)	
25. Clinician's Remarks/Instructions Fabricate gold crown #12.					

26. Typed Name and Grade of Dental Officer John Doe, Capt	27. Signature
--	---------------

DD Form 2322, APR 2009

Dental Laboratory Work Authorization

PREVIOUS EDITION IS OBSOLETE.

Figure 1-1. Sample, DD Form 2322 (front).

LABORATORY DATA

1. Name of Dental Laboratory Schoolhouse								
2. Date Received	3. Date Completed	4. Teeth, Facings or Pontics						
		Location	Tooth Nos.	Shade	Guide	Mold		
		Max Ant						
		Max Post						
		Man Ant						
		Man Post						
5. Articulator Number and Settings		6. Metals Voucher No:						
		Metals Used		Out		In		Used
		Type	DWT	GR	DWT	GR	DWT	GR
7. Laboratory Remarks, Instructions, or Consultation Report								

8. Typed Name and Grade of Laboratory Officer	9. Signature
---	--------------

DD Form 2322 (Back), APR 2009 Adobe Professional 8.0

Figure 1-2. Sample, DD Form 2322 (back).

403. Description of basic prosthodontic instruments

Any technician who has the skills in laboratory procedures is an asset to his provider. Some basic prosthodontic instruments you will use in the dental laboratory are not used in the dental treatment room (DTR). Some are used initially in the treatment room and then taken to the laboratory, where the procedure is completed. To accomplish these procedures, you need to know some of the basic prosthodontic instruments that are used.

Custom trays

These trays are made in the dental laboratory from tray acrylic. Since custom trays are made for individual patients (customized), you must have a dental cast of the patient's teeth (fig. 1-3). These trays are generally used to make final impressions for crowns, fixed partial dentures, and complete dentures.

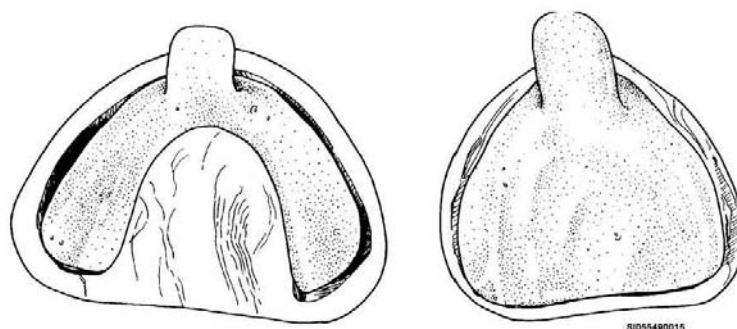


Figure 1-3. Maxillary and mandibular custom trays.

Prosthodontic spatulas

Spatulas are used in prosthodontics for handling dental waxes. The wax spatulas commonly used are the Beale #7 and Gritman #31. The #7 spatula, (fig. 1-4), is much shorter and has small, spoon-shaped double working ends for detailed waxwork. The #31 spatula, (fig. 1-5), is double-ended with one large, rounded spoon-shaped end and one large, sharp-pointed spoon-shaped end. Spatula #31 is used on the less delicate waxwork where detail is *not* a requirement. Both wax spatulas are used to hold small bits of wax over a Bunsen burner flame. Once the wax melts, it is then poured onto an occlusion rim or added to a wax denture base. At times, wax spatulas are heated over a flame and used to smooth or adjust wax patterns, occlusion rims, and baseplates.

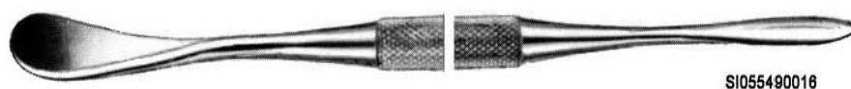


Figure 1-4. #7 Wax spatula.
(Courtesy of Hu-Friedy).



Figure 1-5. #31 Wax spatula.

Extruder gun

The extruder gun, (fig. 1-6), is used to mix polyvinylsiloxane impression material and express it onto the tooth preparations and custom trays. The gun is loaded with twin tubes of catalyst and base, which are automatically mixed in the dispensing tip of the gun. The mixing tip is disposable and must be discarded after use on each patient.

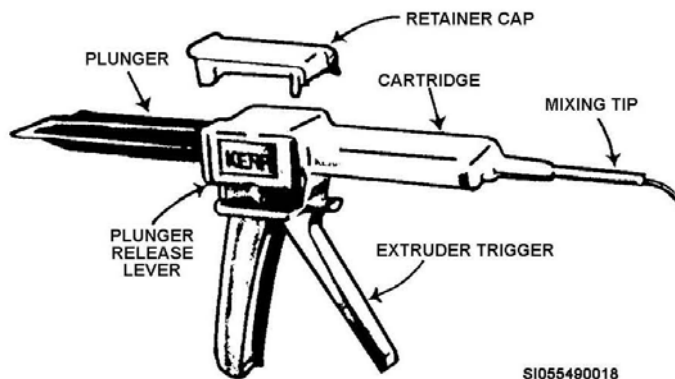


Figure 1-6. Extruder gun with disposable tips.

Roach carver

The roach carver is a double-ended instrument used to cut, smooth, and carve dental waxes. At first glance, it appears to be a wax spatula (fig. 1-7). A closer examination reveals a spear-shaped blade at one end, with a deep-welled, very small spoon at the other end. Both ends have very sharp edges. The deep-welled end is also used to carry melted wax.



Figure 1-7. Roach carver.
(Courtesy of Hu-Friedy).

Prosthodontic knives

Usually, two kinds of knives are used in the prosthodontic treatment room: the compound knife and plaster knife. As the names imply, one is used with compound and the other with plaster.

Compound knife

The compound knife (fig. 1-8) has a fairly large, red plastic handle and detachable blades. Routinely, the #25 blade is used to trim impression compound, wax, and other materials that require an extremely sharp cutting edge. This blade is almost identical to a larger version of the #11 surgical blade. Your primary concern with the compound knife will be to replace broken or dull blades.



Figure 1-8. Compound knife with #25 blade.

Plaster knife

The plaster knife is a heavy-duty knife used to trim and chisel plaster of Paris and impression compound. As you can see in figure 1-9, it has a large flat blade at one end with a wide screwdriver-appearing projection at the other end. The handle is made of wood and riveted in place. You *must* keep its blade sharpened.



Figure 1-9. Plaster knife.

Collar and crown scissors

The primary use of the collar and crown scissors in the prosthodontic section is to shape copper bands. The same scissors are used in restorative dentistry to cut and contour matrix bands. Collar and crown scissors are listed in two different types: straight and curved (fig. 1-10). All of these are heavy-duty scissors because they are used to cut the metal matrix bands and strips as well as copper bands. These scissors are fairly maintenance free. They measure from 4 $\frac{1}{4}$ to 4 $\frac{3}{4}$ inches in length.



Figure 1-10. Crown and collar scissors (Courtesy of Hu-Friedy).

Denture trimming burs

Denture trimming burs are used to trim acrylic resin denture base materials. These burs are available for use only in the straight handpiece and lathes found in the dental laboratory. Denture trimming burs are made of steel or carbide, and the working end is nearly as large as the crown of a tooth. These bur shapes are round, pear, and flame (fig. 1-11).

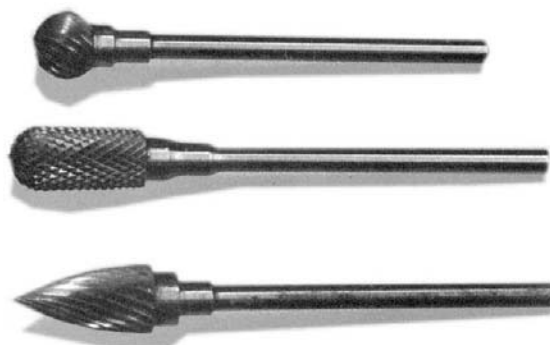


Figure 1-11. Denture trimming burs. Top to bottom: Round, pear, flame.

Dental pliers

Dental pliers have several functions. Some of the more common ones used in prosthodontics are the clasp bending, contouring, and clasp adjusting types (fig. 1-12). The #104 has a flat nose with serrated beaks used for wire bending. The #121 Langbeck appears similar to the #104; however, the beaks are longer, and it has general treatment room and laboratory uses. The #107 pliers have a round nose and are used for bending wire and shaping crowns and bands. The #139 angle appears somewhat similar to the #107; however, the #139 beaks are cone- and pyramidal-shaped beaks for sharp angle and smooth curve wire bending.

The beaks of the #114 Johnson pliers are similar to a ball and socket. They are used to contour crowns and fit bands. The #134 McKellops are designed with ridges across one of the beaks, which is useful when bending clasps. Another set of pliers, commonly referred to as three-prong pliers, is the #201 Aderer used for wire and clasp bending. This group provides the prosthodontist with a variety of working jaw shapes for adjusting, bending, and contouring prosthodontic appliances. Some of these pliers are used in orthodontics as well. Once again, your responsibilities are to identify the pliers by function and learn which pliers the dentist you're assisting prefers. If you do these things, you'll have the desired instrument available when needed.

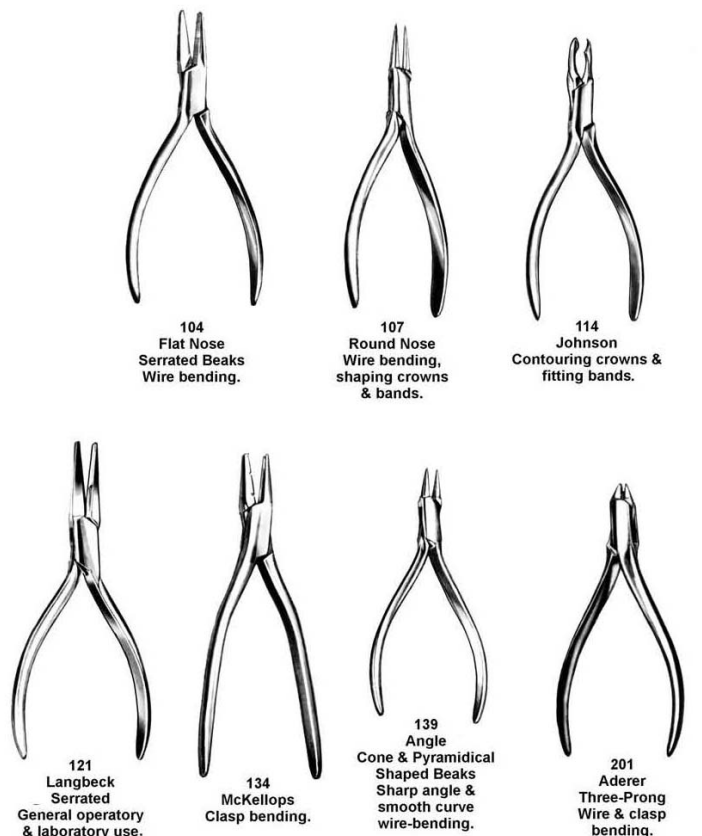


Figure 1-12. Dental pliers (Courtesy of Hu-Friedy).

Crown remover

There are times when a dentist must remove a gold crown from a tooth. To do so, the dentist may use a crown remover instrument (fig. 1-13). The handle on this crown remover is encircled with a heavy-steel weight that slides from one end of the handle to the other. Two interchangeable points make up the working end. One of these points is contra-angled and the other is straight. Both points have a right angle projection at the top. When the crown remover is used properly, the tip is placed over the margin or junction of the crown and tooth first. Then, the sliding weight on the handle is tapped against the bottom part of the handle.



Figure 1-13. Crown remover.

Articulator

This mechanical device is used to reproduce the patient's jaw movements. The dental casts made from impressions are mounted onto the articulator, (fig. 1-14). This allows the dentist and dental laboratory technician to recreate the normal movement of the patient's jaw during the fabrication of the prosthesis. There are several types of articulators available. The type of articulator used will depend on the type of prosthesis being fabricated.

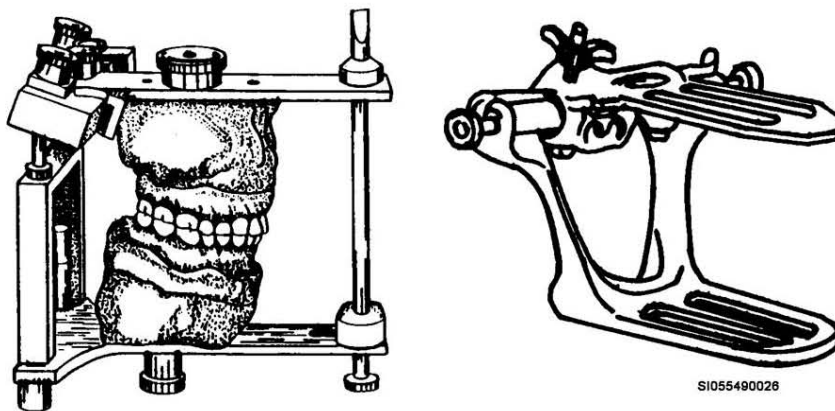


Figure 1-14. Whip-mix (left) and plain line (right) articulators.

Face-bow

This mechanical device (fig. 1-15), is used to duplicate the position of the maxilla to an articulator. The face-bow rests on the patient's face and a wax bite plate is inserted into the oral cavity to record the patient's bite. There are several types of face-bows available. Once again, the type of face-bow used will depend on the type of prosthesis being made. It's also important that the face-bow be compatible with the articulator.

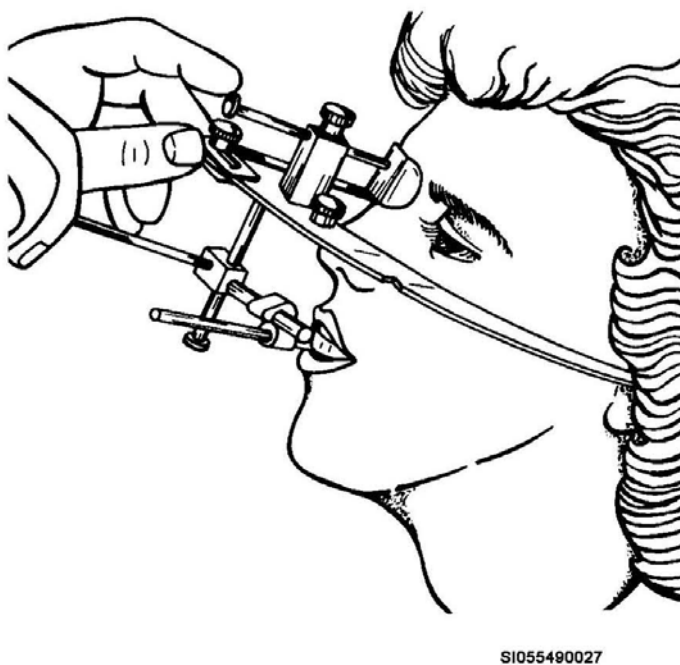


Figure 1-15. Whip-mix face-bow.

404. Fabricating custom impression trays

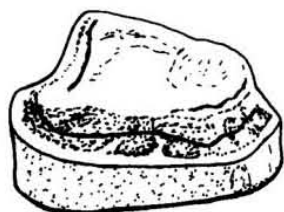
Prefabricated trays are made to fit everyone moderately well, but to fit no one very well. On the other hand, a custom tray provides a dentist with an impression material carrier that permits dentists to make a more accurate impression than they could make using a stock (prefabricated) tray. The custom tray is made on a diagnostic cast. The dentist draws the border outlines of the proposed custom tray on the diagnostic cast (fig. 1-16), and gives other directions (e.g., the handle position and the need for vertical stops). Then, make the tray so it conforms to the design. Two of the *most* popular ways of making custom trays are the self-curing resin dough method and the vacuum method. We limit what we cover to the *most* frequently used method—the dough method.

Spacers

Dentists usually prefer a custom tray that provides room for a controlled thickness of impression material. Spacers used to develop vertical tissue stops accomplish this purpose. The stops are made to hold the tray off the cast by a distance equal to the thickness of the spacer. When the spacer is removed and the tray is placed in the patient's mouth, the stops hold the inner surface of the tray out of contact with the patient's tissue. The space between the tray and the tissue is filled later with impression material.

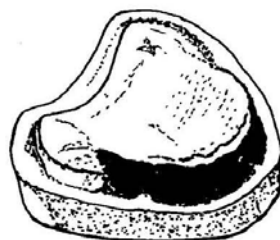
Fabricating trays without spacers

Custom trays for complete denture patients are often made without spacers and adapted directly to the ridge. If a spacer is *not* used for tray construction, the undercuts on the cast must be eliminated very carefully using record base wax. Failing to do so will surely result in a damaged cast or tray when you attempt to remove the hardened tray.



A. TRAY DESIGN

Figure 1-16. Design and blockout for a custom tray.



B. BLOCK OUT UNDERCUTS

Figure 1-17. Design and blockout for a custom tray.

Preparing the cast

After you adapt the base plate wax, paint the cast with two layers of tinfoil substitute to prevent the acrylic resin from sticking. Next, use record base wax to fill in all undercuts generously within the tray area outlined on the cast as shown in figure 1-17.

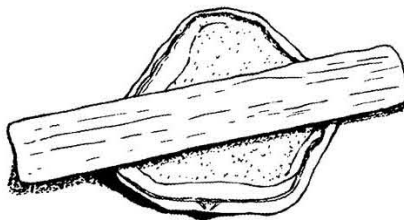
Mixing the resin

Using premeasured amounts of monomer and polymer, add the powder to the liquid and mix the materials. Allow the mix to set until it reaches the doughy stage.

Adapting the resin

Use a simple stone mold to control the shape and thickness of the resin dough. This preshaped resin mass results in a tray of consistent quality when adapted to the cast.

Lightly coat your fingers with petrolatum before placing the dough in the stone mold. Be sure the mold is also coated with petrolatum. Cover the dough with a moistened polyethylene sheet. Quickly roll out the resin to match the mold's shape and thickness (fig. 1-18). Trim away the excess dough and lift the acrylic resin blank from the mold.

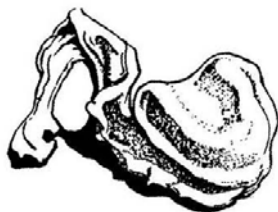
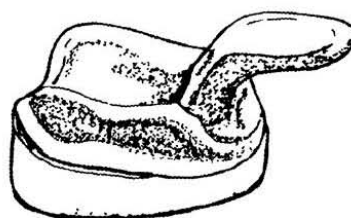


A. ROLL OUT RESIN DOUGH

Figure 1-18. Fabricating custom trays using the dough method.

Center the resin over the cast and rapidly adapt the dough by hand to the cast's surfaces. Be careful you do not create thin spots by pressing too hard. Shape the resin to the borders and cut away the excess with a sharp knife (fig. 1-19).

Next, attach a handle to the tray. Make sure the handle is strong enough to withstand considerable biting force, and that its shape does not interfere with lip movements. If you work fast enough, you should be able to use the unpolymerized excess from the first mix for the handle. If not, mix another small amount of tray resin. When polymerization reaches the dough stage, form it into an L. Use a few drops of monomer to moisten the attachment site between the handle and the tray. Press the base of the handle onto the moistened area. The fluid monomer should provide good bonding (fig. 1-20).

B. APPLY RESIN WAFER;
CUT AWAY EXCESS**Figure 1-19. Fabricating custom trays using the dough method.**

C. FORM A HANDLE

Figure 1-20. Fabricating custom trays using the dough method.

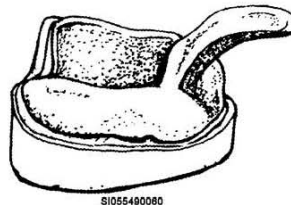
Finishing the tray

After the acrylic resin has set, remove the tray from the cast and remove any wax adhering to the inside of the tray. Trim the tray's flanges back to the dentist's peripheral border markings (fig. 1-21). Use an arbor band to remove bulk. The posterior border of a maxillary custom tray is supposed to extend a short distance onto the soft palate. Mandibular custom trays cover the retromolar pads. Use acrylic finishing stones and burs for finer details. Be sure there are no sharp edges on the tray's borders.

The complete procedure to fabricate trays is listed below:

- Identify and mark borders of tray on cast.
- Block out undercuts on cast if tray will be made without a spacer.
- Heat base plate wax sheet until softened.
- Form softened wax over cast to create spacer.
- Trim excess wax to specified tray design and apply petrolatum.
- Cut out tissue stops in wax spacer IAW dentist's directions.
- Apply separating medium to cast.
- Mix tray material to dough-like consistency.

- Do *not* handle resin with ungloved hands.
- Form tray material to 3.0 mm thickness on cast.
- Put excess tray material in bowl of cold water.
- Form handle/finger rests from excess tray material.
- Dampen attachment site with monomer and promptly attach handle/finger rests to tray.
- Remove tray from cast when impression tray reaches initial set and still warm.
- Remove wax from tray and cast as prescribed.
- Finish tray with bur.
- Clean and disinfect tray.



D. FINISHED TRAY

Figure 1-21. Fabricating custom trays using the dough method.

Fabricating trays with spacers

The preceding paragraphs described trays that were closely adapted to the diagnostic cast. In contrast, custom trays for fixed restorative patients are always made over wax spacers. The design for this type of tray appears in figure 1-22, view A. With the exception of the tray's design and the use of a wax spacer, the procedures for fabricating a fixed custom tray are the same as we mentioned before. Take a brief look at the differences.

Applying a wax spacer

After you trace the outline on the diagnostic cast and fill the undercuts, adapt two layers of record base wax to the tray area on the cast. Adapt each layer of wax, one layer at a time. Cut out four small pieces of the record base wax over the crest of the ridge at areas outlined in the molar and premolar regions for the tissue stops as shown in figure 1-22, view B. Apply a tinfoil substitute to the gypsum surfaces of the cast to prevent the acrylic resin from sticking. Apply a thin layer of petroleum to the surface of the record base wax to make removing the wax from the polymerized tray easier.

Fabricating the tray

Use the self-curing dough method to make the tray. After the resin is hard, remove the tray from the cast and pull the record base wax off the tissue surface of the tray. Four tissue stops should appear on the ridge areas where the four pieces of record base wax were originally cut out. Trim any excess acrylic resin to the outline border on the cast. Round and smooth the borders of the tray. Your finished trays should appear like those in figure 1-22, view C. *Be certain to clean away all traces of petrolatum that might be present on the tissue surface of the tray.* Shell blasting does this very effectively. Clean and disinfect tray, and replace it on the cast for storage.

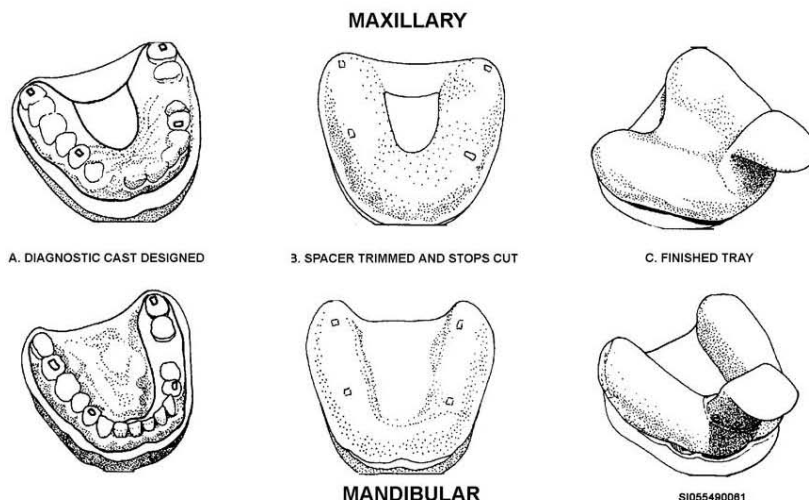


Figure 1-22. Fabricating custom trays over wax spacers.

405. Fabricating mouthguards and provisional stints

In addition to pouring and trimming study casts, and fabricating custom trays, you may be called on to fabricate mouthguards and provisional stints. Many of the steps involved in fabricating these devices are similar and fairly simple to learn.

Fabricating mouthguards

Mouthguards are appliances constructed of acrylic resin or vinyl-like material to cover all of the teeth in the arch. The purpose of a mouthguard is to reduce the potential for injury to the teeth and surrounding tissues. Although a mouthguard does *not* prevent the teeth from fracturing, it does keep the fragments from lacerating or embedding in the oral tissue. The mouthguard also reduces the risk of concussion by acting as a shock absorber. If the head is impacted, the guard cushions part of the force, reducing the risk of concussion.

Preparing the cast

The first step in fabricating a mouthguard is to draw the outline of the mouthguard on the cast with a soft lead pencil. The mouthguard is designed by drawing a line around the maxillary arch in the buccal flange area at the highest point the material is to extend. Normally, the mouthguard extends to the point where the soft tissue meets the attached gingival. Next, trim the working cast as close to the outline as possible as seen in figure 1-23, view A. The thickness of the cast base should not exceed 6 mm. The reason for trimming the cast as specified is to facilitate the vacuum formation and to minimize stretching and thinning of the vinyl plastic during the molding. For the same reason, drill a hole in the palate with a large pear-shaped bur. Soak the cast in water for a couple of seconds to prevent the hot thermoplastic material from adhering to the cast. Remove excess water from the cast. Place the wet cast on the perforated plate of a vacuum-forming device.

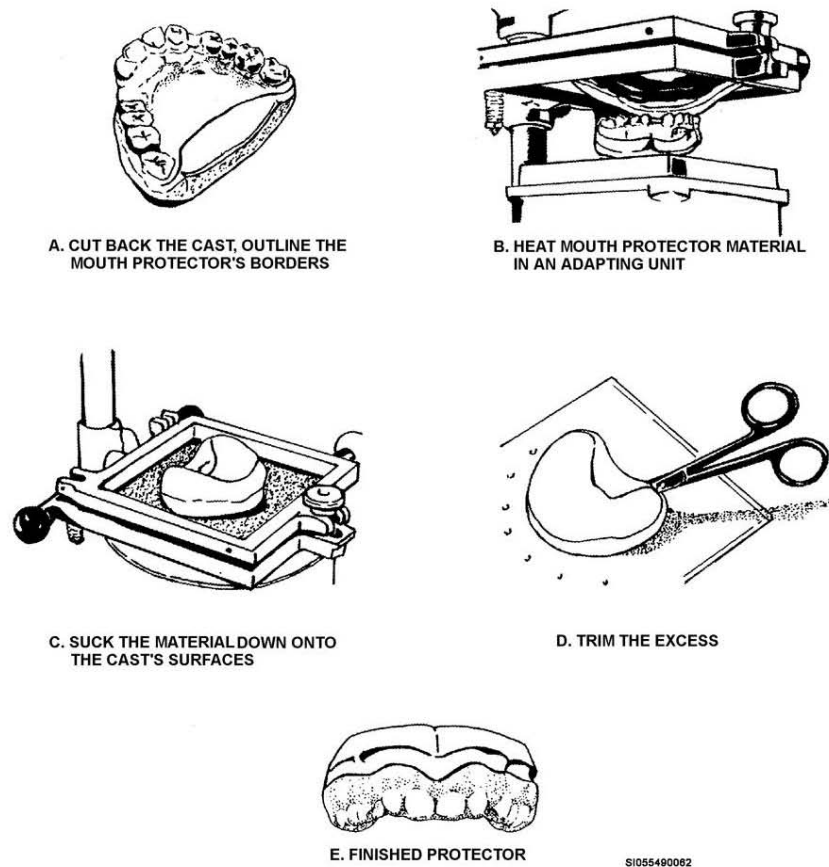


Figure 1-23. Fabricating mouthguards.

Vacuum-forming the mouthguard

There are several different types of vacuum-forming machines in use today that can be used to adapt thermoplastic materials. Most machines consist of a perforated plate connected to a source of vacuum, an electrical heating element, and a metal frame in which the vinyl plastic blank can be clamped. Regardless of the machine's manufacturer, the procedures used to adapt the material are basically the same.

Completing the mouthguard

The completed mouthguard should conform to the general outline presented in figure 1-23, view E. Notice that the posterior border of this maxillary appliance ends on the hard palate, and that the facial flanges do not restrict the movement of any frena. The posterior border may end in the rugae area to increase the patient's speech and comfort.

The construction procedure for a mouthguard consists of the following steps:

- Draw outline of mouthguard design on cast.
- Apply spacer if required.
- Drill hole in palate/tongue area of cast using bur.
- Soak cast in water.
- Remove excess water.
- Place mouthguard material in vacuum former.
- Elevate material to heating element of vacuum former.

- Turn on heating element.
- Allow material to drop (slump) approximately one and one-half inches, (fig. 1-23, view B). Avoid prolonged heating, it will stretch and thin the material.
- Place cast on vacuum former platform.
- Turn on suction unit of vacuum former.
- Swing safety element away for safety.
- Drop heated mouthguard material on cast (fig. 1-23, view C). Hold it in this position until the vinyl plastic is completely adapted to the contours of the cast.
- Once the material is fully adapted, turn off heating element and suction unit of vacuum former.
- Allow vinyl plastic to bench cool until firm.
- Remove from vacuum former.
- Cut excess vinyl material.
- Heat tip of Bard-Parker over Bunsen burner.
- Cut mouthguard material to design using Bard Parker (fig. 1-23, view D).
- Remove mouthguard from cast.
- Polish the periphery with pumice, or lightly flame the mouthguard with an alcohol torch. Remove mouthguard carrier from cast.
- Disinfect mouthguard carrier.
- Replace mouthguard carrier on cast.
- Place mouthguard and cast in denture bag.

Fabricating provisional stints

Provisional fixed restorations are usually made using some type of matrix or template. Two methods more commonly used for providing these templates are the impression method and the vacuum-forming method. The template or impression is a shell that will be filled later with tooth-colored resin and seated on the prepared teeth, forming the provisional restoration. For this lesson, you'll only learn about making a provisional stint using the vacuum-forming method, since you are already familiar with how to make an impression.

Provisional stints are made using clear stint material (.020-inch), a vacuum-forming machine, and a cast. If the teeth that the dentist intends to prepare have large cavities, fill in the defects with dental cement and carve the cement to the proper shape. If the temporary prosthesis is for a proposed partial denture FPD site, also adapt spare resin denture teeth to the edentulous space as shown in figure 1-24. Sticky wax them in place and, if needed, adjust the occlusion.

Place the cast on the vacuum-forming table and mount the plastic sheet below the heating element. Heat the material until it sags about 1½ to 2 inches, and vacuum form the clear stint material over the cast. At first, the material will appear cloudy and then become clear. You know the material is overheated when you begin seeing small bubbles appear.

Stint material is not pliable like mouthguard material, making it difficult to remove from the gross soft tissue undercuts that could be present on the cast. Use a heated Bard-Parker knife to cut away the excess material in the sulcus areas and around the base of the cast. You should now be able to pry the arch form template off the cast for final trimming with scissors. Cut out the section needed for the provisional restoration *plus* one or two uninvolved teeth anterior and posterior to it as shown in figure 1-25. When you are finished, clean and disinfect the template, and place it and any of the unused arch sections back on the cast so they won't distort. Often, subsequent restorations are made for the same patient, and the unused arch sections are kept in case they will be needed later.

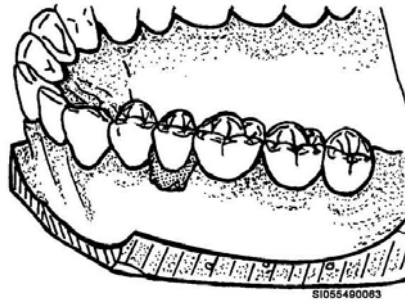


Figure 1-24. Adapting a denture tooth to the endentulous space.

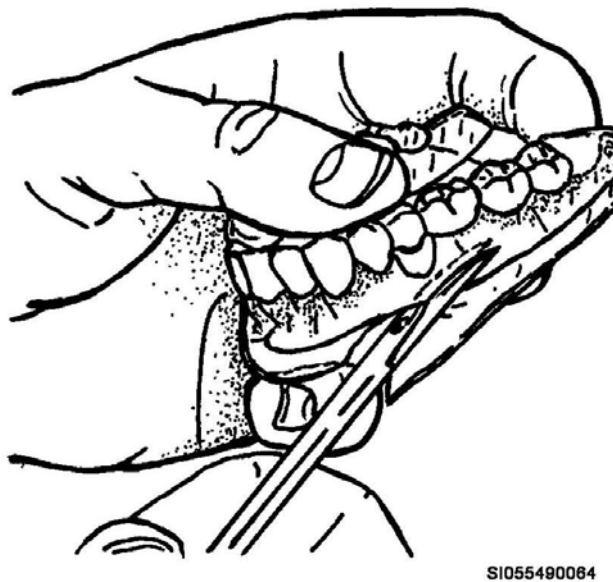


Figure 1-25. Trimming away excess material with scissors.

The construction procedure for a provisional stint consists of the following steps:

- Apply spacer if required.
- Drill hole in palate/tongue area of cast using bur.
- Soak cast in water.
- Remove excess water
- Place stint material in vacuum former.
- Elevate material to heating element of vacuum former.
- Turn on heating element.
- Allow material to drop (slump) approximately one and one-half inches, (fig. 1-23, view B). Avoid prolonged heating, it will stretch and thin the material.
- Place cast on vacuum former platform.
- Turn on suction unit of vacuum former.
- Swing safety element away for safety.
- Drop heated stint material on cast (fig. 1-23, view C). Hold it in this position until the vinyl plastic is completely adapted to the contours of the cast.

- Once the material is fully adapted, turn off heating element and suction unit of vacuum former.
- Allow vinyl plastic to bench cool until firm.
- Remove from vacuum former.
- Cut excess vinyl material.
- Heat tip of Bard-Parker over Bunsen burner.
- Cut stint material to design using Bard Parker
- Remove stint from cast.
- Disinfect stint carrier.
- Replace stint carrier on cast.
- Place stint and cast in denture bag.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

401. Description of prosthodontic functions and procedures

1. What is the function of prosthodontic dentistry?
2. Define the term prosthodontic appliances.
3. What are two basic types of prosthodontic appliances? Give examples of each.
4. How does a prosthodontist differ from a general dentist?
5. Whose responsibility is it to schedule the series of appointments that most prosthodontic cases require?
6. What factors influence the scheduling of prosthodontic patients? Why?
7. As a prosthodontic assistant, what information *must* you know and understand?
8. What should you do if you are uncertain about the time allocation for various procedures and why?

9. What is required for each new prosthodontic patient?
10. How does the dentist use radiographs?
11. What type of impression material is used to make preliminary impressions?
12. Explain what you must do to initiate the fabrication of diagnostic casts when preliminary impressions are made.
13. What will diagnostic casts reveal and how are the casts used?

402. Coordination with the dental laboratory

1. When *must* a DD Form 2322 be completed?
2. What information does the DD Form 2322 contain and what are some of its uses?
3. Who is the responsibility for initiating the DD Form 2322 delegated? Why must it be filled out completely and accurately?
4. What determines how many copies of the DD Form 2322 are required?
5. How many copies of the DD Form 2322 are required if a case is to be fabricated locally and requires precious metal? How many for cases if precious metals are not required?
6. If a case is sent to another laboratory, for either part or all of the fabrication, how many copies of DD Form 2322 are necessary for work requiring precious metals? How many are required for work not requiring precious metals.
7. Which copy is retained by the submitting laboratory? Which copies are sent to the servicing laboratory?

8. Explain what the servicing laboratory does with the copies of the DD Form 2322.
9. If additional copies of the DD Form 2322 need to be prepared, who may sign these on behalf of the requesting provider?

403. Description of basic prosthodontic instruments

1. Describe the custom trays.
2. List and describe the prosthodontic spatulas used with dental waxes?
3. How is the extruder gun used?
4. Describe the uses and design of the roach carver.
5. Name and describe the uses and appearance of each of the two prosthodontic knives.
6. What are the uses of collar and crown scissors? What are the two different ones used?
7. Name and briefly describe the shape and uses of each of the commonly used dental pliers.
8. Which prosthodontic instrument has a heavy-steel weight that slides up and down its handle?
9. Explain how articulators are used.
10. Explain how face-bows are used.

404. Fabricating custom impression trays

1. What two features of custom tray design are used to provide room for impression material and hold the tray off the cast?
2. Why is it necessary to block out undercuts when making a custom impression tray?
3. What material is applied to the cast to prevent the acrylic from sticking to it?
4. What material is used to moisten the attachment site between the handle and the tray to improve bonding?
5. How do you make a spacer for a custom tray?
6. Where are the tissue stops located?

405. Fabricating mouthguards and provisional stints

1. What is the purpose of a mouthguard?
2. What determines the extension of the facial boundary of a mouthguard?
3. When fabricating a mouthguard, what causes the mouthguard material to stretch and thin out?
4. How is the periphery of the mouthguard polished?
5. What purpose does a provisional stint serve?
6. What type of material is used to make this stint?
7. If the temporary prosthesis is for a proposed FPD site, what must you do first?

8. How will you be able to tell if the material is overheated?

9. What area of the arch should the stint include?

1-2. Orthodontic Dentistry

The name orthodontics brings to the mind of most people the braces you often see on the teeth of a teenager. While these braces, which are more properly called orthodontic appliances, represent the essence of orthodontics, there are many other services provided by orthodontists. Traditionally, the orthodontic assistant is tasked with providing numerous aspects of treatment. For example, you may be required to take preliminary impressions, pour study casts, fit and try bands, assist with cementing the appliances, and make minor appliance adjustments. You may also perform coronal polishing before bands are cemented or brackets bonded, and remove excess cement from around the edges of the bands.

406. Orthodontic function and types of treatment

Orthodontics is the specialty of dentistry concerned with the study and supervision of the growth and development of the dentition, correction of abnormalities of growth and development, and related anatomic structures in children and adults. Orthodontics includes procedures that involve evaluating, treating, and maintaining a functional relationship between the teeth, dental arches, and supportive tissues of the face and skull. The goal of orthodontic treatment is to achieve occlusion and facial contour that is as normal as possible for the patient.

Function

People seek orthodontic treatment for a variety of reasons. Perhaps the biggest reason is appearance. The appearance of the teeth (also referred to as esthetics), if unpleasant to the patient, can cause psychological problems. Another factor is a deformity that impairs the dental function. If a person cannot chew or speak adequately due to malalignment of the teeth, the orthodontist may be able to correct the problem. The most desirable approach is for the orthodontists to treat situations in their early stages. If an orthodontist can bring about the proper alignment of patient's teeth by early extractions and guidance, more complex treatment could be avoided later.

Types of orthodontic treatment

There are three basic types of orthodontic treatment: preventive, interceptive, and corrective. You'll briefly study each of these types. The general dentist and pediatric dentist perform preventive and interceptive orthodontics most often.

Preventive orthodontics

This treatment refers to recognizing and eliminating causes of irregularities in the occlusion as they develop. One of these treatments is control of caries to prevent premature loss of primary teeth. When a tooth is lost, the adjacent teeth tend to drift into the vacant space. If a child loses a primary tooth before the permanent tooth is ready to erupt, adjacent teeth may drift or tip into the space left by the early loss leaving the permanent tooth trapped in the bone and unable to erupt into its normal position (fig. 1-26). To prevent the teeth from tipping or drifting into the space, the dentist will insert a space maintainer. The space maintainer holds a space to allow the permanent tooth to erupt into normal position. Space maintainers are either fixed or removable. For space maintenance to be effective, the dentist must see the child shortly after the primary tooth is lost. As an example, figure 1-27 shows the results of the premature loss of the primary second molar. An important function of the primary second molars is to guide the permanent first molars into proper position during eruption. If the

second primary molar is lost prematurely, the permanent first molar can erupt out of position into a mesial direction. This is called an ectopic eruption. It can cause impaction or abnormal positioning of the second premolar. A special type of space maintainer, called a distal shoe, can be inserted after loss of the primary second molar to guide the eruption of the permanent first molar into place.

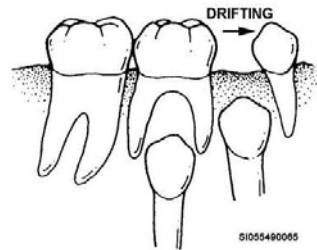


Figure 1-26. Drifting or tipping of adjacent tooth as a result of premature loss of the primary first molar.

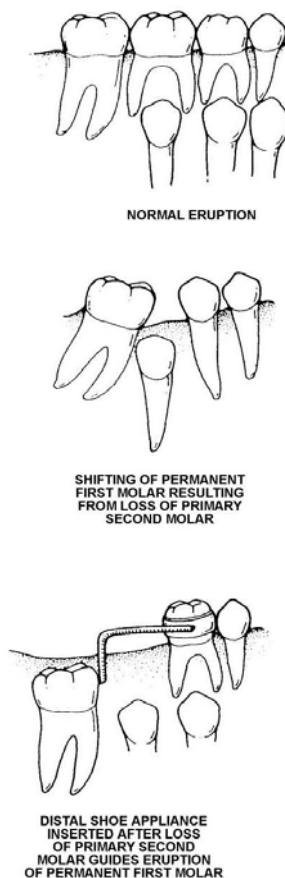


Figure 1-27. Comparison of normal eruption with the results of premature loss of primary second molar and the use of a distal shoe appliance.

Correction of oral habits, such as tongue thrusting, thumb or finger sucking, bruxism, and mouth breathing, is another phase of preventive orthodontics. For example, behavior modification to eliminate a thumb-sucking habit prior to the eruption of the permanent incisors could prevent a malocclusion.

Interceptive orthodontics

There is a fine line dividing preventive and interceptive orthodontics. Interceptive orthodontic treatment is aimed at correcting developing problems to prevent them from becoming worse. The procedures in the table refer to actions taken to prevent more complex orthodontic problems.

Name	Action Taken
Serial extraction	Early removal of primary or permanent teeth to allow room for the remaining teeth to erupt in a more orderly arrangement. It is done usually when there is inadequate room for all the teeth to come in their normal arrangement.
Space regaining	When adjacent teeth have drifted into a space left by a lost tooth, space regaining is necessary. An appliance to regain teeth will exert pressure on the offending teeth to push them gently back out of the space into which they have migrated. This may be done by the use of springs or elastics.
Crossbite control	Normal arrangement of the teeth calls for the facial aspect of the maxillary teeth to be located facial to the mandibular teeth. If a maxillary tooth is somehow diverted so that its position is lingual to the mandibular teeth, it is said to be in crossbite. One, or many teeth may be in crossbite. Correction of this situation attempts to move the malpositioned tooth back to the facial position in relation to the mandibular teeth.

Corrective orthodontics

This treatment involves the use of mechanical appliances to restore the dentition to fully functional and esthetic condition. This complex treatment involves wearing the appliances for long periods of time. The principle of tooth movement is based on applying sufficient force for a sufficient period of time to cause a tooth to move to a specific position in the alveolar bone. The appliances fabricated by the orthodontist are designed to move the tooth by applying a force in a specific direction.

407. Basic orthodontic instruments

Like dentists in other specialties, the specific instruments that orthodontists use vary from one dentist to the next. These instruments include the basics to numerous pliers used for band forming, band removal, ligature tying, wire bending, safety wire cutting, etc. In addition, there are band seaters, elastics, brackets, etc. But, to be an effective orthodontic assistant, you'll need to know the specific instruments of the dentist you work with and have a basic understanding of orthodontics.

Bands

Orthodontic bands are cemented to the teeth and serve as a means of holding or grasping a tooth so that a bracket can be attached to move it. Bands are made of stainless steel and are preformed and anatomically shaped to fit the teeth. They are fabricated in specific shapes for the following individual teeth:

- Molars.
- Bicuspids.
- Cuspids.
- Incisors.

Each shape comes in a wide range of sizes to accommodate individual tooth variations. Bands are divided into maxillary and mandibular and, in some cases, right and left sides to compensate for individual tooth differences. Most bands have an occlusal-lingual taper to fit the tooth. The incisal edge is straight and the cervical edge contoured, similar to the cemento-enamel junction. Band material varies from ductile and easy to deform, to hard and less malleable.

Bands are available with facial or lingual attachments already welded or soldered on the band, or plain without the attachments presoldered (fig. 1-28). Facial attachments on bands are brackets. They serve as an attachment for arch wires or buccal tubes (hollow channeled brackets) generally found on the last molars in each arch (fig. 1-29). Lingual attachments are placed on the back of the band and

consist of lingual buttons, sheaths, cleats, or seating lugs. A seating lug is placed on the band to provide a spot for a fulcrum to seat the band on the tooth.

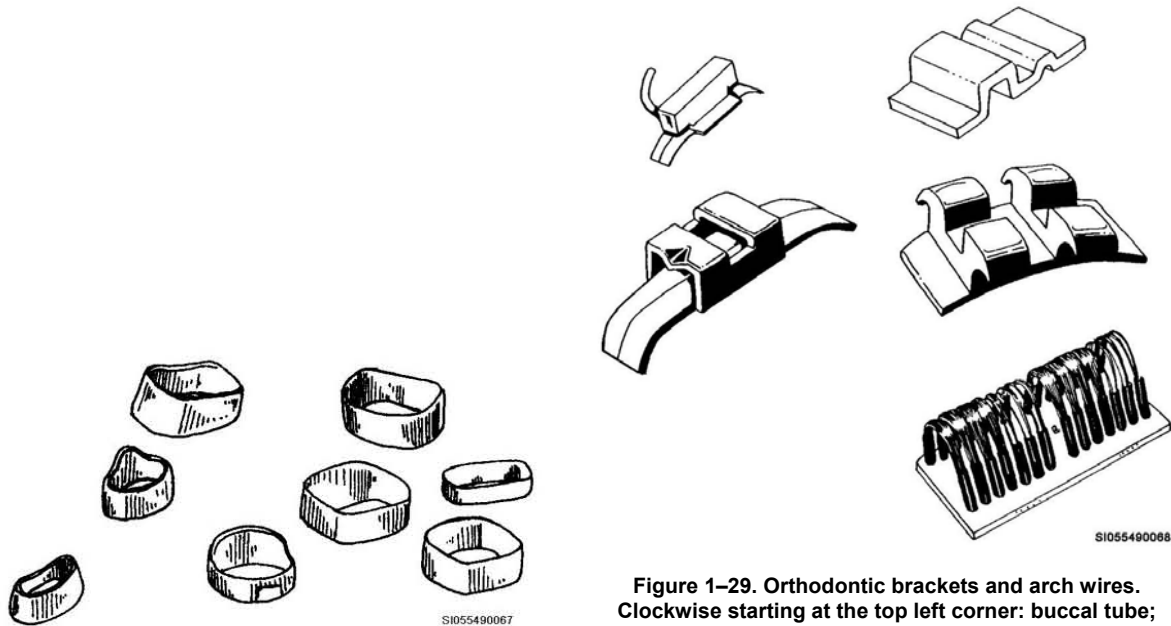


Figure 1-28. Orthodontic bands.

Figure 1-29. Orthodontic brackets and arch wires. Clockwise starting at the top left corner: buccal tube; universal double molar lug (short size); standard edgewise bracket; preformed edgewise arch wires; vertical slotted edgewise bracket.

Bonded attachments

Prior to the development of orthodontic bonding in the 1970s, bands were the only types of fixed orthodontic attachment. Today, bonded attachments have largely replaced bands for anterior teeth. There are two reasons for this: the orthodontic bonds are smaller than bands and bonds are more attractive. Bonded orthodontic attachments are a combination of a base and an orthodontic bracket (fig. 1-30). The bracket is the portion of the attachment with a slot for wire and wings for tying in the wire. The milled slots on brackets vary in size and shape according to the orthodontic technique. The bonding base or pad is the flat portion behind the bracket used to hold the orthodontic bracket to the tooth. A mesh screen, whose design varies with the manufacturer, is welded to the back side of the base. Composite resin grips the mesh screen and etched enamel to hold the attachment to the tooth in a manner similar to the acid etch technique used for restorative treatment. The bracket and pad portions are individually designed in size and shape to fit the particular contours of each tooth. The bracket is also individualized so that the orthodontic wire will properly position the tooth. Once in place, the brackets and bases provide a positive grip on the tooth for arch wire or auxiliary attachments. A direct bond bracket holder (fig. 1-31), is used to place the bracket after the bonding material is placed on the bracket.

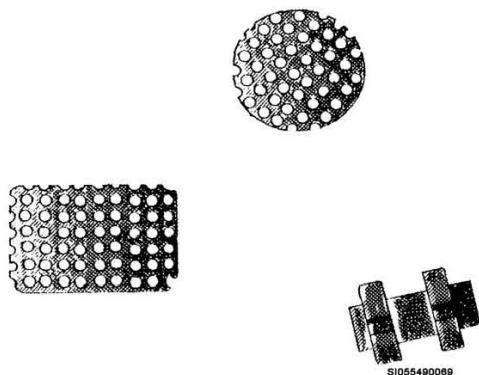


Figure 1-30. Bonded attachment pads and bracket.



Figure 1-31. Direct bond bracket holder (Courtesy of American Orthodontics).

Arch wires

An arch wire is a small length of wire formed in the shape of the dental arch (refer back to fig. 1-29). These wires are deformed when tied into the brackets of the malaligned teeth and generate the force that aligns the teeth. Arch wires are made of stainless steel, cobalt-chromium, or titanium alloys. The size and shape of the wire, along with the type of material the wire is made from, determine how much force the wire generates, how long it remains active, and the type of control it provides. Wire supplied in both straight lengths and preformed arches can be customized by bending the wire with pliers.

The arch wire is held in the attachment by either ligatures or a self-locking mechanism. Wire and elastomeric ligation (tying and binding) are used most often today. Wire ligation uses a thin, flexible stainless steel wire to hold all types of orthodontic arch wires in the attachment. An advantage of wire ligation is that it holds a wire more tightly in the slot. An elastomeric ligature is a small loop of clear or gray plastic material stretched around the bracket wings to secure the arch wires. Elastomeric ligatures are usually easier to place for the assistant, more comfortable for the patient, but *not* as strong as wire ligatures.

Band contouring pliers

These pliers (fig. 1-32), are used to recontour the orthodontic band for a better band adaptation around the tooth. They have two long, tapering, slightly bowed beaks. The opposing ends fit together in a ball-and-socket manner. The diameter and shape of the convex and concave tips vary with the manufacturer.

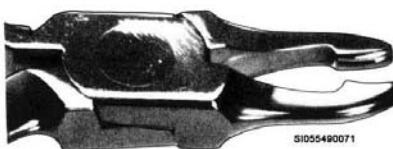


Figure 1-32. Band contouring pliers (Courtesy of UNITEK/3M).

Band seater

This instrument, (fig. 1-33), is used for seating and positioning posterior bands during the sizing and fitting of bands. The tip is used to engage the occlusal edge of the band. It is sometimes referred to as a bite stick because the patient is required to use occlusal biting pressure with the instrument to seat the band. The tips are serrated to provide a positive grip on the band edge and are available in several

shapes. The handle and tip are either one piece or have a replaceable nylon tip to cushion the biting force. Some molar band seaters are available with a metal handle.



Figure 1-33. Band seater.

Band pusher

The band pusher is used to position and seat the band properly on the tooth. It is also used to burnish and adapt the band edges around the tooth, as well as tucking the metal ligature “pigtailed.” A band pusher is a single ended instrument, such as the Mershon in figure 1-34, or a double-ended pusher/scaler instrument (fig. 1-35). Both instruments have long shanks with an angled tip at one end. The angled tip is rectangular and serrated on all five sides to prevent slippage of the instrument during use. The scaler end on the double-ended instrument is used to remove excess cement.



Figure 1-34. Single-ended band pusher (Mershon)
(Courtesy of Hu-Friedy).

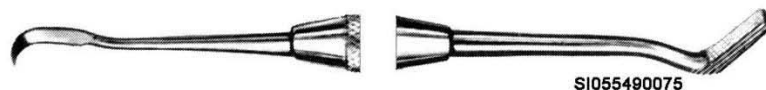


Figure 1-35. Band pusher/scaler (Courtesy of Hu-Friedy).

Band driver

This single-ended instrument (fig. 1-36), has a large, hollow handle with a spring that creates a pushing force to the tip when the handle is compressed and released. Used in this manner, it aids to seat bands onto the teeth with the pushing force. The tips are interchangeable, with either a straight, serrated tip or a curved tip.

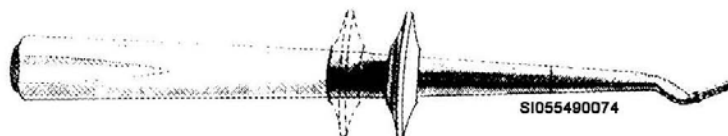


Figure 1-36. Band driver.

Band-removing pliers

This instrument (fig. 1-37), is used to remove bands or brackets during trial fitting or debanding. One beak has a replaceable plastic pad perpendicular to the opposing curved, flat-sided beak. To use the instrument, the beak with the plastic pad is placed on the occlusal surface and the opposing beak positioned on the gingival portion of the band or bracket to remove it.

Buccal tube convertible cap removing pliers

This precision stainless steel instrument (fig. 1-38), uses reciprocal pliers action to shear off the temporary cap on a convertible first molar buccal tube. Conversion is quick, easy, consistent, and nontraumatic with this instrument. Replacement tips are available for this instrument.

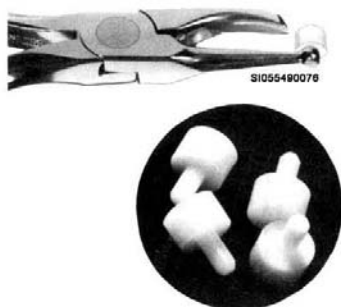


Figure 1-37. Bracket and band removing pliers, and replacement pads (Courtesy of UNITEK/3M).



Figure 1-38. Buccal Tube convertible cap removing pliers (Courtesy of UNITEK/3M).

Debracketing instrument

This instrument (fig. 1-39), is designed for use with metal brackets only. The unique design of the instrument allows easy removal of brackets with less discomfort to the patient. To use it, place the wire at the tip of the instrument over any tie wing. Next, position the instrument to straddle the bracket and lightly squeeze until both contact surfaces rest evenly on the tooth surface. Continue to squeeze slightly harder until the bracket lifts off.



Figure 1-39. Debracketing instruments (Courtesy of UNITEK/3M).

Coon ligature-tying pliers

Coon ligature-tying pliers (fig. 1-40), are reverse-action pliers used to tie metal ligatures. They have opposing handles, shank, and tip that join just below the shank in a round, metal cylinder with a channel. The blunt opposing tips are forked for passage of the ligature wire. The opposing handles are attached by a spring that holds them apart, causing the tips to touch when the pliers are not in use. As the handles are compressed, the tips spread and the channel locks the end of the ligature wire automatically. Because of the reverse action, the initial twist and pressure are exerted at the bracket-arch wire junction and then twisted way from the bracket. This gives the ligature a tighter fit around the bracket, forcing the arch wire completely into the slot.

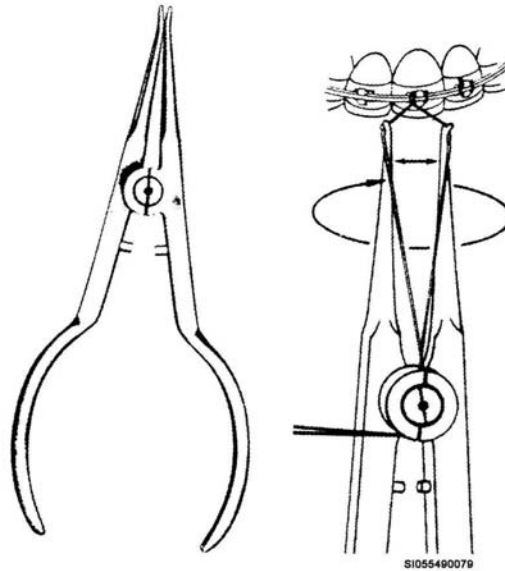


Figure 1-40. Coon ligature-tying pliers.

Mathieu ligature pliers

The Mathieu ligature pliers is a precision stainless-steel ligature tying instrument with fine, serrated tips and a quick-release, positive locking mechanism on the rear of the handles (fig. 1-41). A free sliding leaf spring on the inner surface opens the beaks when the lock is released. The tips vary in length and taper by manufacturer, and are available in regular or small sizes.

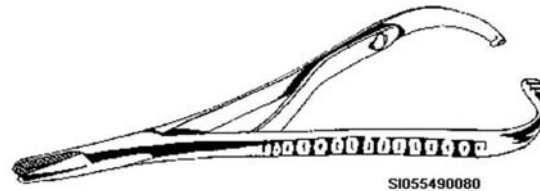


Figure 1-41. Mathieu ligature pliers (Courtesy of American Orthodontics).

Ligature director

The ligature director is used to tuck and direct ligatures under arch wire or bracket wings. It can also be used to push arch wires or auxiliaries into position. The tips of the instrument are notched to hold wires. The double-ended instrument has a straight, notched tip at one end for use on anterior brackets, and an angled, notched tip at the other end for easier access to posterior brackets.

Ligature wire cutter

This instrument (fig. 1-42), is used to cut ligature wire and pins of any size, and arch wires up to .56 × .71 mm. Ligature wire cutters are also used to remove bonded brackets by grasping the bracket at the base of the margins and twisting to remove. There are two tapered and pointed opposing beaks with sharp cutting edges. This instrument is available with various cutting angles, and the taper and size of the tips vary with the manufacturer.

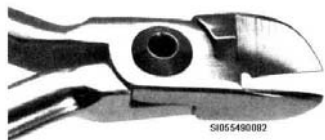


Figure 1-42. Ligature wire cutter.
(Courtesy of UNITEK/3M).

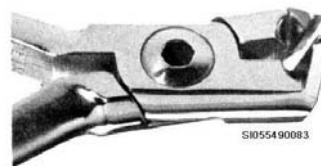


Figure 1-43. Distal end cutter (safety hold).
(Courtesy of UNITEK/3M).

Distal end cutter

The distal end cutter (fig. 1-43), is used to cut the distal ends of arch wires intraorally. The safety hold features a uniquely designed ledge behind the cutting edges to grasp the cut portion of wire. This prevents the loose wire from impacting and embedding into the intraoral tissue. The end cutter pliers have opposing cutting edges, with beaks at right angles from the long axis of the pliers. These pliers will cut round wires up to .5 mm and rectangular wire up to .56 × .71 mm in diameter.

Heavy duty cutter

This heavy duty cutter is ideal for cutting heavy face-bow wire up to 2 mm. It features super tough cutting edges, and locks in the closed position. The handles will sometimes have vinyl grips for handling comfort and ease.

Face-bow adjusting pliers

These heavy-duty pliers are used to adjust or contour the inner and outer arches of face-bows and heavy wires up to 1.6 mm diameter. One of the three beaks opposes and fits between the other two parallel beaks when the pliers are closed. These pliers are easily identified because each beak has a rounded notch at a right angle to the beak near the tip.

Triple-beaked pliers

This instrument, also known as three-prong pliers or three-jaw wire-bending pliers, is easy to identify because of its distinguished beak style (fig. 1-44). One beak has two matched, parallel prongs, while the other beak has an opposing single beak that aligns precisely between the two prongs. These pliers are used with a squeezing motion to adjust and place sharp bends in heavier wires on face-bows and retainers.



Figure 1-44. Triple-beaked pliers (three-jaw wire-bending plier).
(Courtesy of UNITEK/3M).

Bird-beak pliers

Bird-beak pliers are used for bending small wire and spring forming. The beaks (fig. 1-45), are parallel, yet one is shaped as a cone and the other a pyramid. The bird-beak pliers are used to contour brackets by placing the brackets between the rounded or cone beak. These pliers are available with beaks of various lengths. The overall appearance of the beaks resembles that of a bird's beak, hence the name.

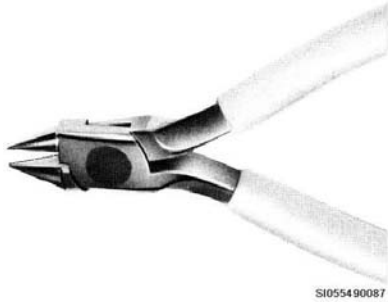


Figure 1-45. Bird-beak pliers.
(Courtesy of American Orthodontics).

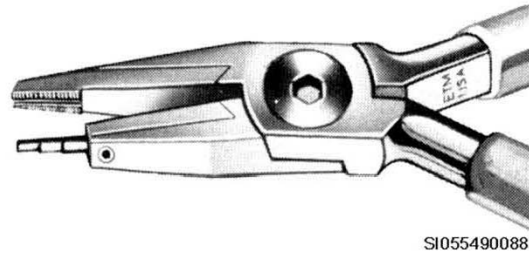


Figure 1-46. Tweed loop-forming pliers.
(Courtesy of American Orthodontics).

Tweed loop-forming pliers

These pliers (fig. 1-46), are used to form various loops required in orthodontic treatment. Tweed loop-forming pliers have two opposing parallel beaks, one concave and one round. The round beak generally has three sections of various diameters. The outer one-third of the concave beak is serrated to avoid wire slippage.

Hollow chop pliers

These pliers have mating convex and concave beaks. Hollow chop pliers are used for reshaping and contouring arch wires.

How pliers

These utility pliers are used mainly for grasping the arch wires during placement and removal, or adjusting bends in the wire. How pliers can also be used to seat anterior bands and tie ligature wires. These pliers have two long, rounded beaks that taper to a pyramid shape and bow to meet at the end by serrated pads. The pliers are either straight or offset, which is determined by the angle of the serrated pads. The straight pliers have serrated pads at right angles to the long axis of the beaks, whereas the pads of the offset pliers are modified with a 45° angle. The size of the serrated pads varies with the manufacturer.

Weingart utility pliers

These pliers are used to hold or grasp the arch wire to make adjustment bends, or place the arch wire in, and remove it from, the mouth. The Weingart utility pliers has two beaks with opposing serrated tips (fig. 1-47). The oblong, pointed tips are either straight or curved from the long axis of the pliers for a better working angle to make intraoral adjustments. The serrated pads at the tips are designed near the pliers' center of rotation to provide better balance.

Miscellaneous pliers

There are several other pliers (fig. 1-48), that are also used in orthodontics. The #118 Peeso pliers are used to shape and fit collars and cap crowns. The #120 Robinson has a flat hammer beak and rounded anvil beak used to shape bands and bend labial and lingual arches. Another style of pliers, the #139 Angle, has beaks that are cone and pyramid shaped. It is used for sharp angle and smooth curve wire-bending.



Figure 1-47. Weingart utility pliers.
(Courtesy of UNITEK/3M).

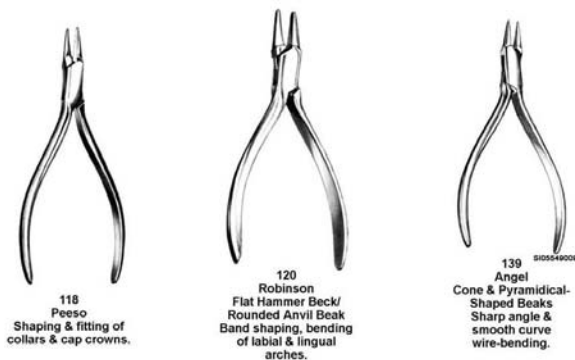


Figure 1-48. Miscellaneous pliers
(Courtesy of Hu-Friedy).

408. Assisting with orthodontic procedures

The orthodontic evaluation begins with the dentist reviewing and interviewing patients about their medical and dental health histories. The parent or legal guardian provides this information if the patient is a child. Along with the interview, the dentist uses AF Form 696, Dental Patient Medical History, to obtain and document information about the patient's medical health. The dentist reviews the SF 603, Dental Health Record, to obtain information on oral health and home care.

Diagnostic procedures

In the next part of the evaluation, the dentist begins the diagnostic procedures to identify the problem and determine the patient's treatment needs. In orthodontics, the diagnostic procedures are aimed at the evaluation of the teeth and skeletal relationships of the jaws, as well as the surrounding oral and facial soft tissues. The clinical extraoral and intraoral examination of the patient provides the dentist with an opportunity to analyze the patient's skeletal and facial profile, speech, swallowing pattern, and jaw movements, as well as examine the patient's dentition. During the examination, the dentist classifies the occlusion and identifies other dental conditions. As the examination takes place, you'll record the dentist's findings on the appropriate forms.

In addition to the information gained from the examination, the dentist will need diagnostic aids, such as radiographs, clinical photographs, preliminary impressions, and study casts, to formulate a complete diagnosis and treatment plan. For orthodontic treatment, the dentist may request full mouth periapicals and bite-wings, occlusal, cephalometric, and panoramic radiographs. With the *exception* of the cephalograms, the uses and techniques of the radiographs are the same as used in routine dental treatment. The dentist traces and analyzes cephalograms by linear and angular measurements. The dentist uses the cephalograms taken over a period of time to compare and assess the growth pattern of the patient, and the effect the orthodontic treatment has on skeletal development. You'll need additional training on the equipment and techniques used to expose cephalograms.

Clinical photographs

Since orthodontics is concerned with both the appearance of the face and dentition, clinical photographs generally are considered a customary part of the orthodontic patient record for comprehensive treatment and are required to meet medical-legal standards of care. Intraoral and extraoral photographs are made at pretreatment and post treatment stages and at various intervals as treatment progresses to document the treatment. Intraoral photographs document the dental esthetics and condition of the oral hard and soft tissues. A standard orthodontic intraoral photographic series includes five views: front, right and left lateral views (one each) with the teeth occluded, and maxillary and mandibular occlusal views (one each) with the mouth open. The extraoral facial photographs document the patient's clinical appearance. A standard extraoral series includes two

views directly in front of the patient with the patient's teeth visible (smiling) and not visible (lips at rest without smiling), and another view in straight profile, usually from the right lateral view. The full-face frontal views reveal the patient's overall frontal appearance.

Procedures at the initial appointment

At the initial appointment, the dentist or assistant makes alginate preliminary impressions of the patient's maxillary and mandibular arches. Orthodontic preliminary impressions and associated tasks are the same as those previously discussed in the text on prosthodontics. You must complete a DD Form 2322, Dental Laboratory Work Authorization, requesting orthodontic study casts and, of course, follow the proper infection control standards before taking the impressions to the dental laboratory. The dentist uses orthodontic study casts to record the patient's pretreatment dental status and to supplement the information gained during the clinical examination in order to formulate a diagnosis and treatment plan.

The dentist uses all of the information and data gathered from the interview, clinical examination, and diagnostic aids, to evaluate the patient's condition, diagnosis the problem, and develop a treatment plan. You'll schedule the patient with an appointment, at which time the dentist presents the treatment plan. At the treatment presentation, the dentist uses the radiographs, study casts, and other diagnostic aids to explain the diagnosis and treatment plan to the patient. The presentation also informs the patient of the approximate length of treatment, informed consent, and a clear statement of the patient's responsibilities in successful completion of the treatment. However, when treating orthodontic patients who are minors, the parent or legal guardian must provide consent. When treatment is complex or has risks, informed consent is required for children and adults.

If orthodontic patients require restorative dentistry or extractions, they are referred to general dentistry or oral surgery for the respective treatment before orthodontic treatment begins.

Basic elements of fixed appliances

Fixed orthodontic appliances are tailored to the individual patient's needs. Be familiar with some of the basic elements of some common fixed appliances. These elements include bands, brackets, arch wires, ligatures, elastics, tubes, and hooks or eyelets.

Orthodontic bands are circumferential stainless-steel bands that are fitted to individual teeth. They serve to connect the appliance to the teeth when cemented into place. Orthodontic bands are used primarily on posterior teeth and are available in a variety of sizes for each tooth. Brackets are attachments, designed to hold the arch wire in place and transmit the force of the arch wire to the teeth. Brackets are attached to orthodontic bands or bonded directly to teeth using an acid etch and composite material. Buccal tubes are virtually hollow-channeled brackets attached to molar bands.

Arch wires are the principal guide portions of the fixed appliance. The arch wire is attached to the brackets by wire or elastic ligatures on either the facial or lingual aspect of the teeth. Arch wires function either to move individual teeth or to hold them in a desirable fixed position. The most flexible portion of the wire is the active component, whereas the most rigid portion is the reactive or stabilizing component. Sometimes, other heavy wires are added to the fixed appliances for further stabilization. The forces from the arch wire are transmitted to the teeth through the brackets. The brackets and bands are the retentive components and keep the appliance from being displaced. Ligatures are fine wires used to tie, or ligate, the arch wire to the brackets. Elastic ligatures are available that can be used with lighter gauge arch wires instead of ligature wires. Elastics are the rubber bands that are used to exert force on teeth. These elastics are available in different lengths and thickness. They are used frequently to exert force between upper and lower teeth to improve occlusal relationships. Special buttons, hooks, or eyelets are attached to orthodontic bands or brackets and serve as connectors for the elastics (fig. 1-49).

Placement of orthodontic separators

Following examination, diagnosis, and treatment presentation, fixed orthodontic treatment usually begins with the placement of orthodontic separators. Orthodontic separators are devices placed between the teeth to move them apart. This creates space between the teeth so orthodontic bands can be fitted properly. Today, elastic separators are commonly used because they apply a constant force as the teeth move apart and are more comfortable for the patient. Elastic separators also cause fewer traumas to the soft tissue. In some patients with tight contacts, it's difficult to place elastic separators. In these instances, a separating spring is used (fig. 1-50).

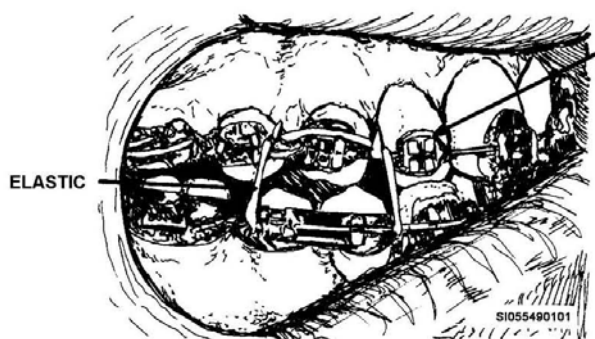


Figure 1-49. Elastics.

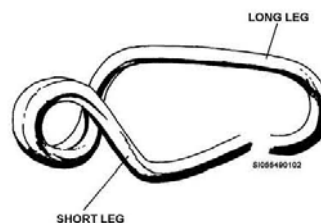


Figure 1-50. Separating spring.

With additional training, many dentists permit their dental assistants to place and remove separators for orthodontic procedures. Whether you can or cannot actually perform this task, it would be helpful if you are familiar with the basic techniques. Figure 1-51 shows the basic technique of placing an elastic separator with the orthodontic pliers. Elastic separators can also be placed using floss. The use of elastic and spring separators usually is required one to two weeks to provide adequate separation for banding. When the patient returns for removal of the separators, bands are placed. Elastic separators are removed by engaging the separator from the occlusal surface with a standard explorer and gently lifting upward.

Direct bonding of brackets

One of the most critical steps in achieving the best orthodontic result is the direct bonding of orthodontic brackets. Careful preparation and attention to detail contribute to effective bonding. Successful orthodontic bonding requires the following steps:

- Identification and selection of orthodontic brackets for the patient.
- Isolation and preparation of the teeth for bonding.
- Placement of orthodontic brackets and cleanup of any excess material.

Brackets are usually bonded to the anterior teeth for most patients because bonds provide acceptable esthetics and adequate strength. Direct bonding also offers the advantage of not having bands pass between the teeth, consuming space that could be used for tooth movement.

Bonding

Orthodontic brackets come from the manufacturers with identification for the tooth they are designed to fit. The brackets are stored in containers that separate them for different teeth. The dentist specifies which teeth are to be bonded. You'll then select the proper bracket for these teeth. After the brackets are selected for the patient, arrange them on the bracket tray or on a special sticky pad provided by the manufacturer, in sequence of the patient's teeth for quick identification during placement. The dentist will check the metal orthodontic brackets for adaptation to the tooth surface. The dentist will trim, modify, and contour the brackets, as needed, to fit each tooth. After the orthodontic brackets are selected, checked, and arranged for the patient, the patient's teeth are prepared for bonding.

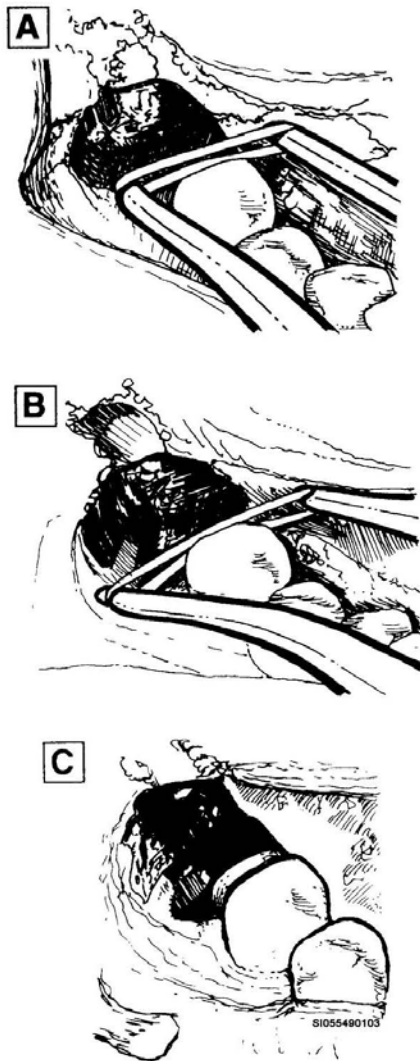


Figure 1-51. Placement of an elastic separator with orthodontic pliers: A. The elastic separator is stretched tightly between the beaks of the pliers and the separator directed between the teeth; B. The separator is pushed gingivally until half of the separator is below the contact area; C. The separator returns to its small size when released by the pliers and contracts around the contact and begins to move the teeth apart.

As the assistant, you may be delegated the task of polishing the tooth surfaces free of plaque and debris with a rubber cup in a slow-speed handpiece and pumice. It's important not to use fluoride paste since the fluoride will prevent etching of the enamel. After you have pumiced the tooth surfaces, thoroughly rinse and dry the teeth.

Figures 1-52 through 1-56 show the basic steps of direct bonding. To prepare the teeth for bonding, the dentist must first acid etch the teeth. You will need to rinse the teeth thoroughly, suction the oral cavity, isolate the teeth to be etched with cotton rolls, and dry the teeth with air to prepare for the acid etch. Follow the manufacturer's instruction for application of the etching material. After the dentist applies the etching material, you will remove the cotton rolls, thoroughly rinse the tooth surfaces with water, suction the oral cavity, and dry the etched teeth. The tooth surfaces should appear dull and chalky with a stain-like finish. If not, the dentist repeats the etching process.

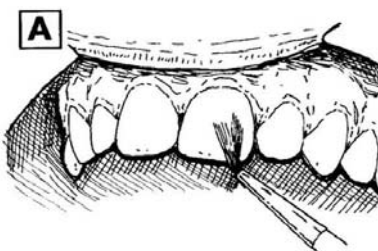


Figure 1-52. Direct bonding of orthodontic brackets: A. Tooth surfaces are acid etched.

The isolation and preparation procedure creates a clean and microscopic rough tooth surface to accept the bonding agent. In the bonding process, the resin material will fill the microscopic roughness in the tooth and flow into the mesh on the bracket pad to provide a strong union between the tooth and the bracket. Follow the manufacturer's instructions for application of the bonding agent. The bonding agent is dispensed prior to bonding and then applied either to the bracket or placed on the etched areas of the teeth (fig. 1-53).

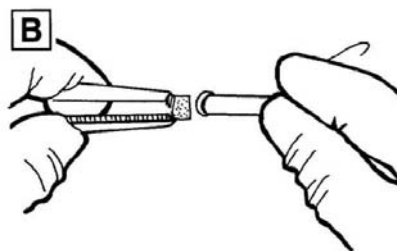


Figure 1-53. Direct bonding of orthodontic brackets: B. Bracket is held with cotton forceps or hemostats and bonding agent placed on bracket.

The brackets are then placed on the teeth with hemostats or cotton forceps (fig. 1-54), positioned with an explorer or scaler (fig. 1-55), and held in place until the bonding agent sets completely. Avoid touching the tooth surface side of the bracket. Contamination of this mesh-like surface can weaken the bond with the tooth.

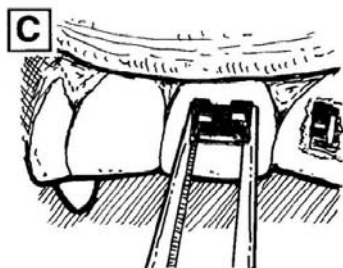


Figure 1-54. Direct bonding of orthodontic brackets: C. Bracket is placed firmly on the tooth with hemostat or cotton forceps.

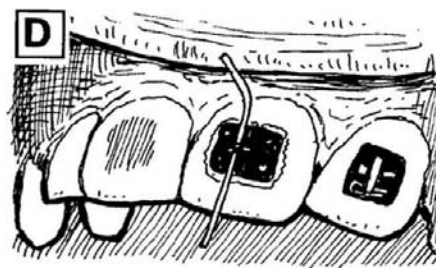


Figure 1-55. Direct bonding of orthodontic brackets: D. Bracket is positioned on the tooth surface at proper height and angulation with a scaler or explorer.

Remove any excess bonding agent extruded beyond the bracket with the tip of an explorer or scaler (fig. 1-56). Wipe the instrument tip clean with a 2×2 gauze. After the brackets are placed and allowed to completely set, a light force arch wire may be inserted and tied. The patient is usually given an appointment seven to 10 days later for band placement.

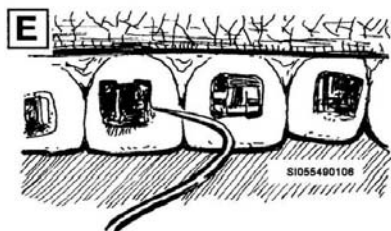


Figure 1-56. Direct bonding of orthodontic brackets: E. Excess resin extruded beyond the mesh pad is carefully removed from around the bracket with the tip of a scaler or explorer.

Rebonding

Immediately after bonding or during active treatment, orthodontic brackets can come loose. You can use the sequence described earlier for rebonding brackets with one exception: if a bracket bond fails, some bonding material often remains on the tooth. The retained bonding material must be removed before beginning the new bonding sequence. Retained bonding material can be removed by using a sharp scaler or a high-speed handpiece and carbide-finishing bur. Once the remaining bonding material is removed, the selection, modification, polishing, isolation, preparation, and bonding steps can proceed.

Band selection, trial sizing, and cementation

Orthodontic bands are still the attachments of choice for posterior teeth, especially for molars, where strength is more critical. Both bands and brackets have the same precision attachments for the placement of arch wires. Precise fitting and position of bands are just as important as they are for brackets. Placing orthodontic bands require the following steps:

- Separating the teeth using elastic or spring separators.
- Selecting the bands and trial sizing.
- Cementation and cleanup.

Band selection

Orthodontic bands are available in a large assortment of sizes for each tooth. Most manufacturers label the bands on the mesial aspect for easy identification. The dentist selects a band by visual inspection, estimating the size of the tooth to be banded. The dentist can place the band on the appropriate tooth of the patient's study model to determine the approximate size range.

Trial sizing

If the band appears to be close in size, remove the separators around the tooth to be banded. Place the selected band properly over the tooth and push the band cervically, using finger pressure initially. If the band will not move cervically with finger pressure, select a larger size.

After using finger pressure, use a band pusher for further seating. The band can be driven further gingivally because the stainless steel will stretch under pressure.

After you have pushed the band to the level of the marginal ridge, the patient can assist by gently biting on a bite stick or band seater.

This biting pressure far exceeds the pressure delivered by the pusher. A properly sized band should fit tightly around the tooth so that it does not rock when you place facial and lingual pressure. You can remove the band with band-removing pliers.

Place the Teflon beak of the pliers on the occlusal surface on the facial aspect of the tooth. The other beak engages the cervical edge of the band. Squeeze the plier handles and the band is lifted from the tooth.

Place the bands on a tray in the proper sequence for cementation on the patient's teeth. Sterilize trial bands not used before you return them to the storage container. If the selected bands are not cemented at this appointment, reinsert the separators until the cementation appointment.

Cementation

If cementation takes place at a separate appointment after trial sizing, remove any separators first. Before cementing the bands, polish the teeth with a rubber cup and pumice to remove any plaque and debris. After polishing the teeth, apply a fluoride treatment. Prepare the bands by placing utility wax over the brackets to prevent cement from becoming lodged in them during cementation. Some orthodontists also prefer to cover the occlusal aspect of the band with a small piece of tape during placement. This helps contain the cement in the band as it is carried and placed into position on the tooth. Then, place the bands with the gingival margin of the band upright. The dentist will determine the sequence in which the bands are cemented onto the teeth. Isolate the teeth receiving the bands by segments with cotton rolls and dry them thoroughly with air.

Prepare the cementing agent according to the manufacturer's instructions. Fill the inside of the band completely with cement and pass it to the dentist for placement on the teeth. Before band placement, immediately dry the tooth. The dentist seats the band on the dried tooth by using finger pressure, the band pusher, and band seater (bite stick), in that sequence. As the dentist seats the band, cement extrudes from under the gingival and occlusal-incisal margins of the band. Allow the cement to harden completely before removing any excess. After the dentist completely seats the band, retrieve the band pusher, band seater, and prepare the next band for cementation. Repeat the process of filling the band with cement, drying the tooth, and seating the band for each tooth. When tight contacts are encountered, the dentist may need to have several bands filled with cement and seat the bands at the same time.

After all of the bands are seated, the dentist may have the patient bite lightly on cotton rolls to reduce saliva contamination during final cement setting. When the cement is set, remove the cotton rolls and carefully remove the excess cement from the gingival and occlusal margins of each band using a scaler. You may need to use an explorer to remove cement lodged between the teeth. Be careful to avoid scratching the bands or injuring the gingival tissues. After removing all excess cement, remove the protective wax from the brackets and let the patient rinse his or her mouth. Either you or the dentist will then check each band to make sure the band is firm and fully seated during cementation by applying occlusally directed force with a scaler. Remove, clean, and recement any bands that were not fully seated during cementation.

Placement and ligation of arch wires

Once the bands are in correct position on each tooth, the bands are ready to receive the arch wires. The variety of arch wires, available today, allow the dentist to select a composition and size of arch wire that is best suited for the type of movement. The arch wire is tailored for the individual patient by bending the wire with pliers. Most arch forming is done with a bird beak or special arch-forming plier. Many assistants can learn to initially form the arch wire, which is later adjusted by the dentist.

After the dentist adjusts the appropriate arch wires, you may be permitted to place the arch wire in the attachments on the bands and brackets. Generally, orthodontists will train their assistants to complete ligation procedures routinely. Most often, wire and elastomeric ligation are used to hold the arch wire in the attachment. Wire ligation uses a thin, flexible stainless-steel wire to hold all types of orthodontic arch wires in the attachment. An advantage of wire ligation is its ability to hold a wire more tightly in the slot.

An elastomeric ligature is a small loop of plastic material stretched around the bracket wings to secure the arch wires. Elastomeric ligatures usually are easier for you to place and more comfortable for the patient. However, they are not as strong as wire ligatures. Although you may be responsible for completing placement and ligation procedures, the dentist must check your completed work. Following the placement and ligation of the arch wires, the patient is usually scheduled for adjustments in three to four weeks. Before patients are dismissed, they will require instructions relative to their orthodontic treatment and proper oral hygiene.

Oral hygiene instructions

As an orthodontic assistant, you may be given the task of providing oral hygiene instructions to the orthodontic patient. You must emphasize the importance of maintaining a clean mouth and teeth to avoid the occurrence of carious lesions on the teeth around the brackets and band margins during orthodontic treatment.

Instruct the patient to brush the teeth and appliances thoroughly after each meal, with particular attention to the margins of the bands, ligature wires, brackets, cervical areas, and occlusal, facial and lingual surfaces of all the teeth. The dentist may recommend a specific type of toothbrush capable of reaching all surfaces and cleansing the fixed appliances. Also instruct the patients in the use of superfloss and/or floss threaders to clean the mesial and distal tooth surfaces under the arch wires. The dentist may recommend a mouth rinse for use after brushing and flossing.

Include information on the patient's diet during orthodontic treatment in your instructions. Advise patients to avoid foods that are highly cariogenic or it will damage or dislodge the bands or ligature ties. Patients with fixed orthodontic appliances should avoid eating hard things like ice, hard candy, and even some raw vegetables (carrots). These foods can break, bend or loosen the appliances. Patients should also avoid very sticky things like taffy and similar candies that can get caught in the bands, brackets, or ligatures.

Appliance adjustments

Most tooth movement ceases after approximately three to four weeks. By this time, the cellular activity that permits tooth movement ends, and the active components of the appliance require reactivation. For these reasons, most active fixed appliances are reactivated in three to five week intervals.

At each adjustment appointment, carefully check the patient for any damaged or broken appliances. Common things to check for are loose bands and brackets. At first glance it's not usually obvious that a band is loose since it fits tightly around the tooth. Therefore, place the end of a scaler on the gingival edge of the band and tug lightly in the occlusal direction. If the cement is washed out, you will pull the band up. See that all loose bands are recemented as soon as possible. Decalcification and caries occur quickly underneath the margins of loose orthodontic bands.

It's easier to detect loose bonded brackets because a loose bracket will completely separate from the tooth. You can follow the steps we covered earlier for rebonding brackets. Sometimes you'll find broken or distorted arch wires. You will also need to remove and replace, or reform these.

You can expect a certain amount of breakage for most orthodontic patients. It's common for one or two orthodontic attachments to come loose during a 2-year course of treatment. If a patient has a large number of bands and bonded brackets that are loose at any one appointment, this may be a sign of appliance abuse. Chewing ice, eating nuts or sticky candy are frequent causes for a loose attachment. For a young patient with several loose attachments at one time, a review of diet and appliance care is appropriate. If numerous ligatures are missing, the patient is probably eating foods that displace the sharp end into the tissue, and he or she is tucking the sharp end back with his or her finger. After this is repeated several times, the ligature breaks. The patient also needs a review of appliance care instructions. Sometimes elastic ligatures are helpful for this type patient.

Review the patient's oral hygiene at each adjustment appointment. Poor oral hygiene requires attention to proper cleaning techniques. A review with the dentist is indicated for patients with severe or repeated poor hygiene.

At many of the adjustment visits, the arch wires will require attention. First, the dentist should examine the progress and determine which arch wires to remove. Then, you'll remove elastomeric or wire ligatures from the brackets and the arch wires from the patient's mouth. After the dentist adjusts the removed arch wires, place them back in the patient's mouth. Carefully engage the arch wires into the brackets and secure with new wire or elastomeric ligatures. Sometimes it will not be possible to engage a wire because the adjustment will not precisely line up with each tooth. When this happens, check with the dentist to make sure that the arch wire is placed in proper position. The last step in any adjustment appointment is to check the patient carefully to be sure that the appliances do not irritate any portion of the patient's cheeks or tongue.

One of the most common areas that will irritate the patient between appointments is the distal ends of arch wires. Arch wires should either be cut flush with the end of the most distal attachment using a distal end cutter (fig. 1-57) or carefully bent away from the cheeks with a Wiengart plier (fig. 1-58). Sharp ligature ends are also common offenders of soft tissue. In addition to visually checking, run your finger tip over the facial surface of all appliances to check for sharp edges.

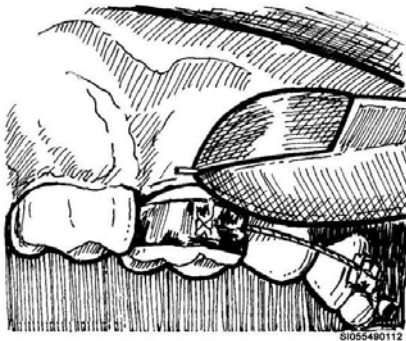


Figure 1-57. Cutting the maxillary arch wire flush with the distal end of the molar tube using a distal end cutter.

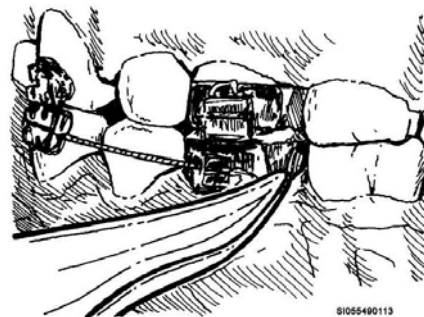


Figure 1-58. Bending the maxillary arch wire gingivally to prevent irritation to the patient's cheek using a Wiengart plier.

Removal of fixed orthodontic appliances

When the dentist decides to conclude the course of treatment with fixed orthodontic appliances, arrange an appointment for removal of the appliances. Special techniques are required to remove fixed appliances because of their secure attachment to the teeth. Orthodontic wire ligature wires, arch wires, brackets, and bands require different techniques for their removal, just as they require different techniques for their placement. It's critical that the patient, dentist, and assistant wear protective

eyewear as well as other personal protective equipment (PPE) during the removal of fixed orthodontic appliances.

Removal of ligature tie wires and arch wire

Use a scaler to pull the end of the ligature wire free from the bracket and arch wire. Hold the ligature wire with a hemostat in one hand and the ligature wire-cutting pliers in the other hand. Place the ligature wire-cutting pliers on the wire next to the end of the ligature and snip the wire. Use the hemostats to pull the cut wire free and place it on the tray. After you have removed all the ligatures ties, remove the arch wire by straightening the crimp in the posterior end of the wire in each quadrant. Then, pull the arch wire forward, free of the brackets.

Bracket and bond removal

Orthodontic bracket and bond removal can be completed while the bracket is still ligated to the arch wires or after the arch wires are removed. Leaving the arch wires ligated to the bonded bracket could prevent the patient from swallowing or aspirating the bracket when it is removed. Use a pin and ligature cutter, debracketing instrument, or debonding pliers to remove the brackets from the teeth. Remember, the patient's teeth may still be loose and sensitive to pressure. This could cause the patient to experience a brief period of pain as the bracket comes off the tooth. You can reduce the pain by stabilizing the tooth with your finger as you remove the bracket from the tooth.

After you remove the brackets, some of the bonding material may remain on the teeth. You can remove most of the excess bonding material with a sharp scaler. Use a rubber cup and pumice on the enamel to buff the tooth surface. If necessary, the dentist will use a handpiece with a carbide finishing bur to remove any remaining bonding material.

Band removal

Remove orthodontic bands by lifting the band in an occlusal direction with band-removing pliers. From the facial aspect of the tooth, place the beak of the instrument with the plastic pad on the occlusal surface and position the opposing beak on the gingival portion of the band. When you squeeze the handles of the pliers together, the cement bond should break loose, and the band can be removed from the tooth. After you remove all of the bands, remove any excess cement remaining on the surface of the teeth. Use either a hand scaler or ultrasonic scaler to remove the band cement. In some areas, the dentist may need to use a handpiece and finishing bur. After cement removal is completed, polish the teeth with a rubber cup and pumice. Apply professional strength topical fluoride treatment after you complete cement removal and polishing. The dentist should carefully examine the teeth for any fracture, decay, or remaining areas of cement. The dentist also checks the gingival tissues for irritation and subgingival cement. After checking the teeth thoroughly, instruct patients to brush and floss their teeth.

Retention and post-treatment recall

Following the active phase of orthodontic treatment comes the retention phase. The goal of the retention portion of treatment is to maintain the correction accomplished so that the patient has a functional and esthetic occlusion that is stable. Orthodontists use an interim removable appliance called a positioner or more often an appliance called a retainer. Both removable and fixed retainers are commonly used. Alginate impressions of the patient's corrected dentition are required for fabrication of all of these appliances. Dentists usually recommend retainer wear on a full-time basis for six months to one year and then on a decreasing schedule. The decreasing schedule allows patients to wear the appliances as little as possible while maintaining the correction. Most patients are recalled at one-, three-, and six-month intervals following treatment. After this time frame, yearly appointments are adequate.

We cover the fixed retainer at this point, and cover positioners and removable retainers later. Fixed retainers are commonly used on the lower arch in the form of a heavy wire bonded on the lingual aspect between the two cuspids (tooth numbers 22 to 27 or 21 to 28). The purpose of the retainer is to

prevent the cuspids from moving and keeps the incisors from tipping lingually. This appliance is used as a space maintainer for children. The fixed retainer does not require patient cooperation for wearing, but does require the patient to brush and floss carefully. Patients with fixed retainers should avoid hard and sticky foods that can cause the appliance to become debonded.

Active retainers

These appliances actually are used to achieve minor tooth movement, and are used primarily to tip teeth. In many cases, they are practical because the amount of tooth movement desired is not extensive to warrant fixed orthodontic therapy. The forces applied by active retainers are supplied by a variety of springs, spring-loaded screws, and elastics. Various additional features can be incorporated to enhance the development of better occlusion. Active retainers generally require strong clasps, such as Adam's clasps, to resist the dislodging forces of their component springs.

Hawley

Figure 1-59 shows the Hawley appliance, which is a popular removable appliance. This appliance can be designed in various ways to accomplish tooth movement and retention functions. After the desired tooth movement is accomplished, the Hawley appliance can be used as a passive retainer by deactivating the appliance. No further force is placed on the teeth by the appliance, yet it holds the teeth in the desired position until they become stable in the newly remodeled alveolar bone. The Hawley retainer should be worn for approximately six to 12 months, according to the patient's needs.

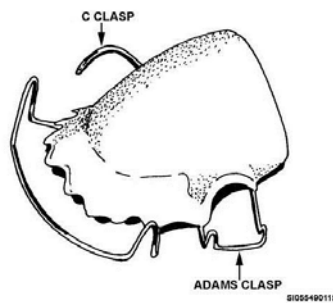


Figure 1-59. Hawley orthodontic appliance with an Adams and C clasps.

Activators

This is one type of a growth modifying functional appliance. There are both fixed and removable types of activators. These functional appliances are designed to promote the expansion of an arch. To expand the palatal arch, the acrylic in the palatal section of the appliance is split with a male-female attachment known as a jackscrew. With a removable appliance, the patient removes the appliance and turns the screw, causing the appliance to widen. The pressure of the appliance causes the palate to widen. The dentist tells the patient how much to turn the screw to widen the appliance.

Orthodontic positioners

The positioner is a custom appliance made of rubber or pliable acrylic that fits over the patient's dentition following orthodontic treatment. The positioner is designed to retain teeth in their desired position and permit the alveolus to rebuild support around the teeth prior to the patient wearing a retainer. When wearing the appliance, the patient is directed to bite into the positioner for several seconds and then release the pressure. The patient is usually instructed to wear the appliance for several hours during the day and throughout sleeping hours.

Removable orthodontic treatment therapy

A removable appliance is fabricated by first obtaining an alginate impression of the arch for which the appliance is to be made. The impression is then poured to form a study cast. The design for the appliance is specified by the dentist's work authorization to accomplish the tooth movement or

retention desired. The laboratory technician trained in the appliance fabrication then makes the removable orthodontic appliance.

At the time of orthodontic appliance delivery, have the following items available:

- Mouth mirror.
- Three-prong pliers.
- Bird beak pliers.
- Articulating paper and holder.
- Acrylic bur and handpiece.

The adjustment sequence begins when the dentist inserts the appliance and evaluates for impingement on the hard and soft tissues. Hard tissue impingement will keep the appliance from seating properly. Soft tissue impingement will blanch the soft tissue or cause the patient discomfort and tissue ulceration. After the dentist evaluates and corrects any impingements, he or she adjusts the retention of the appliance. The appliance should be retained tightly enough to resist displacement by using moderate finger pressure. This is achieved by bending the clasps into undercuts without impinging the soft tissue. Next, the dentist evaluates and corrects the occlusion to eliminate any pressure on the acrylic or wire components. The dentist then adjusts the active or passive, springs or bows. Approximately 2 mm of activation is given to most springs. Following the activation of the active component, the dentist must reevaluate the appliance to ensure that it is still retentive. Additional adjustments to the clasps may be necessary.

As the orthodontic assistant, you play a vital role at the initial delivery of a removable appliance. If trained, make some basic appliance adjustments and provide instructions and information to patients. Inform patients that the active appliance will make their teeth sore for several days because they are initiating tooth movement. Acetaminophen or ibuprofen will relieve the discomfort. However, the soft tissue should not become sore. If it does, inform patients to contact you or the dentist. Most appliances should be worn full-time, except when eating, brushing, or participating in very active sports. After eating, patients should clean their teeth and appliance with a brush and toothpaste. The appliance should not be soaked in mouthwash or other alcohol base liquids because they will dry out the plastic. Hot water will distort the plastic and cause the removable appliance not to fit. If the appliance is left out of the mouth for a period of time, it should be placed in a moist sealed container to prevent warpage of the acrylic. After informing patients on the proper care of the appliance, instruct them in appliance insertion and removal. Have patients demonstrate their understanding and ability of these tasks. Use the tell-show-do technique.

Removable appliances require adjustment appointments. For these appointments you'll need the following:

- Mouth mirror.
- Three-prong pliers.
- Study casts.

The casts provide the dentist with a record of the starting point of treatment so that progress can be monitored. Appliance adjustment appointments focus on relieving irritation on the soft tissue, improving appliance retention, and reactivating the springs.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

406. Orthodontic function and types of treatment

1. What is the function of orthodontics?

2. In general, what types of procedures are included in orthodontics?
3. What is the goal of orthodontic treatment?
4. For what reasons do people seek orthodontic treatment?
5. Match the types of orthodontic treatment in column A to the appropriate procedure listed in column B. Column B items are used only once.

*Column A**Column B*

- | | |
|---|-------------------------------|
| ____ (1) The complex treatment involving the wearing of appliances for long periods of time. | a. Preventive orthodontics. |
| ____ (2) May involve serial extraction, space maintenance, space regaining and crossbite control. | b. Interceptive orthodontics. |
| ____ (3) Recognizing and eliminating causes of irregularities in the occlusion as they develop. | c. Corrective orthodontics. |
-
6. Explain what happens when a child loses a primary tooth before the permanent tooth is ready to erupt. What orthodontic treatment can be provided to prevent this outcome?
 7. When must the dentist see the child for space maintenance to be effective?
 8. What is an important function of the primary second molars?
 9. What type of space maintainer can be inserted after loss of the primary second molar?
 10. What is considered another phase of preventive orthodontics?
 11. What is the aim of interceptive orthodontic treatment?
 12. What is serial extraction and when is it usually done?

13. What can be done if the adjacent teeth have already drifted into the space left by a lost tooth?
How is this done?

14. What does crossbite control attempt to do?

15. What is the principle upon which tooth movement is based?

407. Basic orthodontic instruments

1. How are orthodontic bands used?
2. Name each of the attachments welded or soldered on the bands.
3. Name and describe the two parts of bonded attachments.
4. What instrument is used to place the bracket after the bonding material is placed on the bracket?
5. What are arch wires? How are they used?
6. Briefly describe wire and elastomeric ligation.
7. Describe the uses and identification features of the following orthodontic instruments:
 - a. Band contouring pliers.
 - b. Band seater.
 - c. Band pusher.
 - d. Band driver.

- e. Band-removing pliers.
- f. Buccal tube convertible cap removing pliers.
- g. Debracketing instrument.
- h. Coon ligature-tying pliers.
- i. Mathieu ligature pliers.
- j. Ligature director.
- k. Ligature wire cutter.
- l. Distal end cutter.
- m. Heavy duty cutter.
- n. Face-bow adjusting pliers.
- o. Triple-beaked pliers.
- p. Bird-beak pliers.
- q. Tweed loop-forming pliers.
- r. Hollow chop pliers.

s. How pliers.

t. Weingart utility pliers.

408. Assisting with orthodontic procedures

1. What does the dentist analyze during clinical extraoral and intraoral examination of the patient?
2. What diagnostic aids will the dentist need to formulate a complete diagnosis and treatment plan for the orthodontic patient?
3. How are cephalograms used differently than other radiographs?
4. When are intraoral and extraoral photographs taken?
5. What do intraoral photographs document?
6. What does a standard orthodontic intraoral photographic series include?
7. What does the extraoral facial photographs document? What views are included?
8. What takes place at the appointment for treatment presentation?
9. Where are orthodontic bands primarily used? What purpose do they serve?
10. Where are brackets used? What is their purpose?
11. What are hollow-channeled brackets attached to molar bands called?

12. What are the principal guide portions of the fixed appliance? How are they attached?
13. What items are used to ligate the arch wire to the brackets?
14. What are elastics and how are they used?
15. What devices are placed between the teeth to move them apart prior to placing bands?
16. When are separating springs used?
17. What are the basic steps for direct bonding of brackets?
18. After the brackets are selected for the patient, what should you do?
19. What task may be delegated to you to prepare the patient's teeth for bonding?
20. If a bracket bond fails, what must be done before beginning the new bonding sequence? How is this done?
21. What are the three basic steps required for band placement?
22. How do you prepare the teeth before cementing the bands?
23. What does the dentist use to seat the band on the dried tooth?
24. Explain when and how the bands are cleaned.
25. How are the bands checked to make sure they are firm and full seated during cementation?

26. Who routinely completes ligation procedures?
27. What are used to ligate the arch wire?
28. When providing oral hygiene instructions to the orthodontic patient, what must you emphasize?
29. What should you inform orthodontic patients about their diet during treatment? Give some examples.
30. At what time intervals are most active fixed appliances reactivated? Why?
31. What types of damaged or broken appliances should you check the patients for at adjustment appointments? How is this done?
32. After the dentist examines the progress and determines which arch wires to remove, what is the assistant's role?
33. What instruments can you use to debond the brackets from the teeth?
34. After the brackets are removed from the teeth, how is any excess bonding material removed from the teeth?
35. Briefly explain how bands are removed.
36. What is the goal of the retention portion of orthodontic treatment?
37. At what intervals are orthodontic patients recalled for follow-up appointments when in the retention phase of treatment?
38. Where are fixed retainers commonly used and what is their purpose?

39. What are the basic uses of removable orthodontic appliances?
40. What type of removable appliance can be used to accomplish tooth movement and be deactivated to be used as a retainer?
41. What type of removable orthodontic appliance was designed to promote the expansion of an arch?
42. What must be obtained to fabricate a removable orthodontic appliance?
43. What items should you have ready at the time of removable orthodontic appliance delivery?
44. What is the role of a trained orthodontic assistant at the initial delivery of a removable orthodontic appliance?
45. What items will you need to have available for appliance adjustment appointments?

1-3. Pediatric Dentistry

Many of the tasks you perform in pediatric dentistry are similar to those done in the other dental specialties. The major difference is that your patients are children. You must approach and manage children differently than adults. Your ability to communicate with the children is of vital importance. A basic understanding of behavior characteristics and behavior management techniques can result in a positive experience for patients and the dental team.

Pediatric dentistry is the specialty concerned with treating children's teeth. More specifically, it usually means treatment of the teeth through eruption and the mixed dentition stage. Mixed dentition is the period when children have both primary and permanent teeth.

409. Function and patient management

Pediatric dentistry provides the same basic treatment as other specialties. The difference is that the pediatric dentist treats children, which brings a special set of challenges. Some of the most important aspects when assisting in pediatric dentistry include communication with the child, speed and efficiency of the assistant, parental communication, and behavior management techniques. Understanding behavior characteristics of the different types of child patients impacts on successful patient management.

Young children often are much more expressive of their fears than adults are. This results in some management problems unique to pediatric dentistry. Young children may fear separation from their parents, unknown settings, such as the dental treatment room (DTR), strange people, and unknown situations. They often react much more vigorously to discomfort or fatigue. The imagination of a youngster can conjure up wild expectations of what will happen in the dental chair. These traits can result in a less cooperative, more fearful patient.

Another complicating factor in pediatric dentistry is the behavior of the parent. The majority of parents present a rational behavior regarding the treatment of their children, but at times, they are quite anxious. This is especially true if the child has suffered a severe dental-related illness or traumatic injury. Some parents also are overindulgent, overanxious, domineering, etc. The complicating behavior of such parents could well increase the management difficulty of a young patient.

Patient management

Successful treatment of any patient centers on how well the patient is managed. Managing young children and their parents is a challenging aspect of pediatric dentistry. Reassure parents that their child will receive the best possible professional care, and that they need not concern themselves for the child's welfare while in the dental clinic. Use a positive approach when treating children. Most children respond well if you take them by the hand and lead them kindly, but firmly into the treatment area. Have parents wait in the reception area during treatment unless providers ask parents to accompany the children.

Communication with the child

When treating children, pleasant, positive and successful dental experiences depend largely on the ability of the assistant and provider to communicate effectively with each child. Establishing and maintaining communication with children is very important. Communication occurs best when it's one-on-one between the provider and child. A member of the dental health team will come and get the parent if the parent's presence is needed.

Verbal

Be sincere, friendly, and interested when speaking to children. Lying will cause you to lose the child's confidence. Do *not* lose your temper or get angry with children, be stern and firm when necessary.

Use normal voice tones during conversation. *Avoid* a high-pitched singsong voice level because a change to a normal voice tone during the procedure could be interpreted by the child as a change from friendliness to seriousness. Voice tone during the procedure is an important communication device. A singsong voice may not get the same results as a voice with a firm tone. The tone should *not* be harsh or unfriendly, just firm and definite.

When giving directions, be positive and specific. If you give directions in the form of a choice, children are required to decide what to do. Without realizing it, you have given them the option not to comply with your directions. For example, if you ask "Would you like to come now?" or "Do you want to sit in the chair?" your directions give children the choice of not complying with the very tasks you are attempting to accomplish. If your directions are given in a positive and specific manner, this can be prevented. For example, if you say, "It's time to come with me now" or "climb up into the chair;" you tell the children exactly what you want and give them no choice in the matter.

Make children the center of attention from the time you greet them until the appointment ends. Direct the conversation toward the children and encourage them to talk about things that interest them. Good subjects to ask children about include the clothes they are wearing, television shows, pets, favorite toys, sports, and favorite stories. Look for something to make a sincere compliment, like a new dress or shirt. If the child is shy, direct the conversation in a manner that is yes or no; or a shake of the head response can be given. For the shy child the first communication is the hardest to make.

Explain the procedures the children will experience at their level of comprehension. This does not suggest the use of baby talk, but rather using words that have meaning for the child. Adjust the vocabulary from a higher level to a lower one as needed, rather than assuming the children know nothing and talking down to them. The dental health team should be oriented to the use of a second language that uses inoffensive or mild expressions substituted for those that suggest unpleasantness or are fear promoting. For example, “spraying sleepy water on the tooth” is much less offensive and fear promoting than, “giving you a shot in your gum.” The different expressions that can be used are limited only by the creativity of the dental health team. This table provides a small glossary of word substitutes that can be used to explain procedures to children. A word of caution: word substitutes are used most effectively with preschool children. Use with older children may be perceived by the child as talking down.

Dental Terminology	Word Substitute
Air	Mr. Wind
Impression material	Pudding, mashed potatoes
Anesthetic	Sleepy water
Bur	Brush or pencil
Caries	Brown spot, sick tooth
Explorer	Tooth counter
Evacuator	Vacuum cleaner
Matrix	Fence for filling
Prophylaxis paste	Special toothpaste
Rubber dam	Raincoat, false face
Rubber dam clamp	Tooth button or ring
Rubber dam frame	Coat rack
Stainless steel band	Ring for tooth
Stainless steel crown	Hat for the tooth
X-ray equipment	Camera
Radiograph	Picture

Every appointment should end on a good note. During the appointment, reinforce a child’s positive behavior by offering various forms of praise. Even for the most unruly child there should be at least one thing the child has done that merits praise. At the end of the appointment, take a few moments for some expression of praise from the dental health team.

Nonverbal

Children are able to read facial expressions and form opinions just like adults. A friendly facial expression is worth thousands of kind words. Conversely, a firm look at the right time often achieves effective results. Maintaining eye contact during conversation strengthens the sincerity of what you are saying and enforces the attention given to a child.

Most young children like to be touched with a gentle pat, hand held, or an arm around them. They see these gestures as expressions of affection; however, do *not* touch without permission. On the other hand, a squirming child knows exactly what is meant when a firm grip is applied to an arm or leg.

Another successful method of nonverbal communication in dentistry is the use of distractions. Distraction can be used by keeping the use of frightening items, such as the aspirating syringe, out of the patient’s sight; therefore, its use is kept out of the patient’s mind. To distract the patient, pass the syringe to the dentist in an area where the patient cannot see the transfer, such as behind the patient’s head.

Behavior characteristics

Understanding the basic behavior characteristics of children can be helpful when selecting the type of behavioral management technique needed. This can lead to more favorable experiences for both the children and the dental team.

Good child

The good child dental patient separates easily from the parent. The child appears eager to get started, shows no observable fear, and talks freely with the assistant when escorted from the reception room to the DTR. This child also gets right into the dental treatment chair and adjusts well to the authority and directives of the provider. The actual procedure takes place with ease and the appointment ends

on a high note. Congratulate and praise these children for their good behavior while in the treatment chair. They'll return to their parents beaming with pride; they know they have done well, they have pleased their parents, and themselves.

Emotionally compromised child

Dentistry as well as many other challenges of life is difficult for these children because of their psycho-emotional problems. It's important to realize that the problem may be undiagnosed. A significant finding with children who are emotionally compromised is a high level of anxiety. When this anxiety is compounded with the anxiety of a dental appointment, a behavioral explosion often occurs. There often is no confirmed diagnosis of emotional illness with these children. Parents often have no idea that anything is wrong because they have grown accustomed to the behavior of their child or rationalize an explanation for the behavior. This is unfortunate, since most emotional illnesses are diagnosable and treatable. Emotional illness can be a problem for children from broken homes, poverty, abuse, or neglect.

Shy or timid child

This introverted, poorly socialized child is afraid of the social challenges associated with going to the dentist. The best management technique with this type of child is to break the barrier of shyness with friendship. The dental experience for this child is an intense human encounter that demands rapport and communication between the adult provider and child. This child will be stressed by the experience and can lead to an avoidance behavior like crying. The crying usually takes the form of whimpering rather than aggressive avoidance behavior, such as a tantrum. Establishing rapport, trust, and communication with the shy child requires patience, since the child is overwhelmed by the challenge of communicating. By using the techniques of talking to these children on their level and using praise and tell-show-do, their shell can be penetrated and in time they'll open up. Once this occurs, they usually become fantastic patients because the dental appointment means that socially someone knows their name, is interested in them, and is willing and ready to talk to them.

Frightened child

Children with this type of behavior have the hardest time with dentistry. Their fears range from fear of needles to fear of bodily harm to general fears of the unknown. These fears may be overreactions caused by other emotional upsets in their lives. These children may have acquired fears based on feelings, attitudes, and concerns developed from the suggestions of peers, siblings, or parents. If these children had bad or painful experiences in the dental office, doctor's office, or hospital, their fears may be learned from these experiences. Children with unmanageable behavior caused by intense dread or fear of dentistry should have everything done to prevent further development of the fears. This can mean postponing the dental treatment, using drugs, or accomplishing the treatment under general anesthesia.

Child adverse to authority

This child does *not* like authority and does *not* like dental appointments. The dislike is based on an opposition to comply with adult directives. These children are the most difficult to handle and are frequently influenced by misdirected goals. There are four potential misdirected goals described in the following table:

Misdirected Goals	Description
Undue attention	Annoying, irritating, teasing, or disruptive behavior. Children with this goal may actually find dental treatment a nice experience since it is a personal one-on-one experience.
Struggle for power	Verbally arguing and contradicting, doing the opposite of what they are instructed, angering people, and throwing temper tantrums. These children have a bully's attitude and may have an irresistible impulse to argue with a provider or challenge the provider's authority.

Misdirected Goals	Description
Retaliation and revenge	Misbehave with violent tempers, say things that hurt people, seek revenge and get even. These children are dangerous and are the type who may bite. They are not warm and fun, and probably will not respond to praise.
Inadequacy	Give up easily, rarely participate, act incapable, and display inadequacy. These children show a variety of misbehaviors when asked to cooperate. Overcoming the challenges of the dental appointment is beyond the grasp of these children. When the challenges arise, they tell themselves they are inferior and cannot possibly measure up.

Behavior management techniques

As a dental assistant, you must be knowledgeable of the provider's preferences regarding the management of both the child and parent. You may also find many of these techniques useful when you are the provider performing other dental procedures on children.

Tell-show-do

The tell-show-do technique is used to introduce and educate young and dentally inexperienced children about the dental procedures that will be involved in their dental treatment. When using this method, the provider first explains what will be done as the telling portion. Next, the provider demonstrates how it will be done by simulating the procedure as the showing portion. After the tell and show portions take place, the procedure is done (do). An example would be explaining the use of the rubber polishing cup attached to the handpiece, then demonstrating it on the patient's fingernail, followed by polishing the child's teeth. An appropriate level of explanation and the choice of words is important when using the tell-show-do technique. The provider uses a substitute vocabulary for the instruments, equipment, and procedures that the child can understand.

Positive reinforcement by rewarding the child with a pleasant stimulus following good behavior can be used in combination with tell-show-do. Providers can accomplish this in the dental environment in several ways. It can be done simply by praising the child for cooperative behavior, gently patting the child, or smiling at the child. Another example is providing a small token or toy as a reward at the end of the appointment to serve as positive reinforcement.

Voice control

Voice control is a management technique used to gain the child's attention during treatment. The tone of the provider's voice is raised and the child is spoken to firmly with authority, but not in anger. This technique is extremely effective at intercepting inappropriate behaviors as they begin to happen. When the child's attention is gained and behavior improves, the provider's voice is lowered to a normal level.

Voice control is an example of negative reinforcement in which an unpleasant stimulus is withdrawn (loud voice) when the child displays good behavior. The assistant may find this technique useful when obtaining radiographs or providing a topical fluoride treatment.

Hand-over-the-mouth

The hand-over-the-mouth technique is somewhat controversial. It is used to intercept tantrums or other fits of rage. It is *not* intended to scare the child. It is used to gain the attention of defiant children and reduce the noise they are creating so that communication can be established between the child and provider. The technique requires providers to place their hand over the mouth, but *not* the nose, of the misbehaving child. The technique *must* be paired with voice control. The provider informs the child that if the noise stops, the hand will be removed. When the child becomes quiet, the hand is removed, but the hand is replaced if problems arise again. This is another form of negative reinforcement—removal of an unpleasant stimuli following good behavior. Parents do *not* view this technique favorably, so explanation and written consent *must* precede its use.

Physical restraint

This technique involves physically restraining inappropriate movements of the child during dental treatment. The simplest and most commonly used aspect of physical restraint includes the management of the patient's jaws to keep the patient's mouth open. This can be done using mouth props or mouth gags. Often, the provider or assistant may need to restrain the child by holding the head, body, arms, or hands. This method is *most* commonly used during the injection of local anesthesia. The restraint helps control the patient and prevents injury to the child, provider, and assistant. As a precaution, most providers have assistants position their hands across the children's hands and arms of the treatment chair. Positioned in this manner, assistants are ready and able to use restraint only when necessary.

When treating extremely unmanageable children, physical restraint using hands, ties, sheets, or a papoose board could be required for the duration of an appointment. Parents are highly negative about the use of these techniques; again, extensive explanation and written consent must precede their use. After parents are informed about the necessity and use of these aids, they may accept their use. Some situations that may require the use of such restraints include the emergency treatment of trauma in a very young child (less than 30 months) and various types of disabled children, including mentally retarded. An alternative to physical restraint usually involves management by drugs or general anesthesia, which can be expensive and sometimes is dangerous.

Separation of the child and parent

Often parents are tempted to enter the dental treatment room with children. However, in most situations the dental health team can handle a child better if the parent remains in the reception area. This practice allows children to experience dentistry on their own. It also allows the dentist and assistant the opportunity to establish rapport with the child patient without interference from the parent. Usually, the dental team makes the child the center of attention. Therefore, if the conversation is directed toward the youngster, the patient accepts directions from the provider. If the parent is present, the child's attention often is diverted from the provider to the parent. Parents cause additional management problems when they repeat the provider's orders or inject their own orders, thus becoming a barrier. As a result, the child may not easily accept the provider as an authority figure and the provider is unable to use voice control. Additionally, the provider's attention is divided between the parent and the child.

There are situations when it's useful to have the parent present in the DTR with the child. This would include treatment of children less than 3 years of age, some handicapped patients, or children who speak a different language (either verbal or sign language). In such situations, parents can provide reassurance for very small children, provide restraint by holding the child in their lap while seated in the dental chair, or translate or sign to the child. There are other reasons for allowing a parent in the DTR. The parent's presence increases the provider and parent contact, and allows the parent to see first hand what treatment is being provided. This can save time that may have been used by the provider after the treatment is completed to answer the parent's questions. Some parents insist on being present in the treatment room while the child is treated. An agreement should be reached between these parents and the provider about leaving if the child misbehaves or the parent's presence is disruptive to the dental environment.

Pain and anxiety control

There are many reasons why a child may be unable to tolerate a dental procedure in spite of adequate local anesthesia. The various behaviors of children can cause them to react differently to the stimulus of pain or fright. It may be necessary to manage the child's behavior and reaction to pain with drugs or chemicals. A variety of drugs can be used to relax or sedate a child. They can be swallowed, injected intramuscularly or submucosally, administered intravenously (IV sedation), or given rectally. Nitrous oxide accompanied with oxygen is used as another method. The last method is general anesthesia. It works well, but is expensive, time-consuming and has a slight morbidity risk. Often, IV

sedation or general anesthesia is used only when the child requires extensive dental treatment, multiple restorations, or is otherwise completely unmanageable.

410. Assisting with pediatric procedures

You'll assist in pediatric dentistry in a manner similar to general dentistry. Speed and efficiency are essential when performing chairside techniques such as aspiration, retraction, preparing and passing instruments and supplies, and mixing materials. The span of time to perform the dental procedures and the attention span of the child patient are much shorter compared to adult patients.

Assistant's role

As the dental assistant, you play a key role in separating children from their parents and preparing the children for treatment. Most often, it's the assistant's responsibility to introduce children to the DTR and its equipment. It's important to have everything ready and out of sight before greeting children. Approach children in a relaxed manner and introduce yourself. Establishing a conversation with the child patients is important. Learn the child-patients' names and nicknames. Focus your attention and conversation on child patients. Offer your hand to children when separating them from their parents and going to the treatment area. Make sure children have used the restroom, if necessary, before seating them for treatment. When seating children for treatment, tell them exactly where to sit and allow them to climb into the treatment chair. Some children will need assistance and may have to be guided by the hand or even picked up and put into the chair. If children cooperate and get right up into the dental chair, this is the first opportunity to praise them for good behavior and the ability to do things asked. Before adjusting the dental chair to the proper treatment position, let children know you are going to move the chair. You can make it a fun experience by telling them they are going for a ride in the chair. Always avoid any sudden movements since this could scare or startle children.

You may explain some of the equipment and its uses to children, but select your words carefully. Remember to talk to children using a vocabulary they can relate to and will not scare them. Avoid using fear-triggering words and baby talk, or talking down to children. It's essential to maintain positive communication with children. Always be truthful, kind, and understanding yet firm. Find out a little about each child patient. Ask about favorite toys, animals, television programs, food, or clothes. When praising a child patient, use key words such as lucky, best, and special.

Do your best to see that the treatment starts on time. Delays will only upset children. When the provider enters the DTR, introduce the child to the provider. As the provider establishes a rapport with the child, gradually reduce your involvement in the conversation. During the procedure, the provider should give directions to the patient. This establishes the provider's authority with the children, and eliminates confusion and problems that can be caused when directions are given from two sources. Before the treatment begins, make sure the child is given signals to allow communication during the procedure, if necessary. During the treatment, it's critical that neither the provider nor assistant get mad or upset. Remember, children are not young adults and need constant, repeated instructions. It's important to make each dental visit as pleasant as possible to develop a positive attitude toward future treatment. It's imperative that if the provider leaves the DTR, you remain with the child. Once the treatment is completed, give the postoperative instructions, dismiss the child, and escort him or her to his or her parents.

Procedures

Generally, restorations are done the same as for adult patients, but cavity preparation is modified somewhat due to differences in the anatomy of the primary teeth as compared to permanent teeth. The pulp of a primary tooth is generally much closer to the surface. This factor requires extra caution by the dentist to avoid mechanical exposure during cavity preparation. Also, the roots of the primary molars are widely spread and span the crown of the permanent tooth developing under them.

Some providers use smaller instruments and handpieces designed specifically for use in pediatric dentistry. For example, many providers prefer to use a T-band (fig. 1-60), in order to avoid the bulky

extension of the Tofflemire retainer. The T-band is available in stainless steel or brass, curved and straight, and small and large sizes.

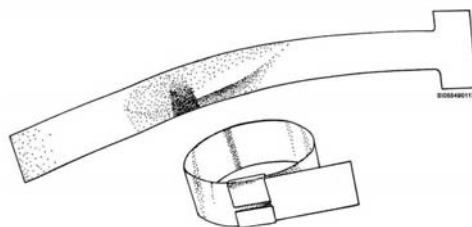


Figure 1-60. Pediatric T-band.

Endodontics

Carious or mechanical exposure of permanent teeth is often treated by either pulp capping or endodontic therapy, depending on the extent of the injury to the pulp. On primary teeth, a pulpotomy is much more common. Figure 1-61 shows the possible types of pulp therapy. The degree and extent of inflammation in the pulp determines the type of treatment provided. The basic instrument kit for a pulpotomy includes:

- Mirror.
- Cotton forceps.
- Explorer.
- Endodontic spoon.
- Woodson and spatula.

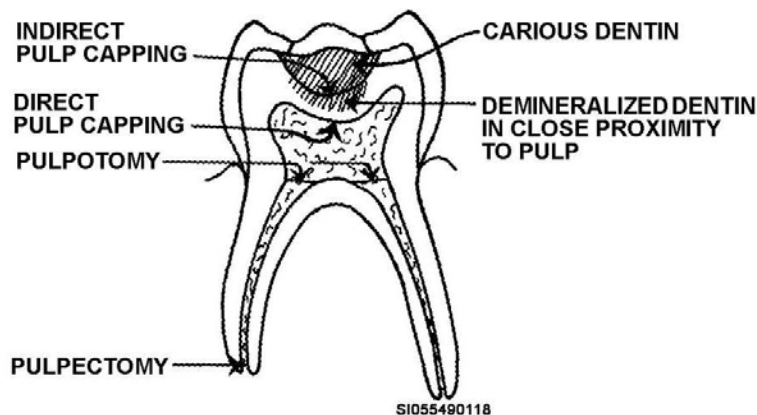


Figure 1-61. Pulp disease.

Conventional endodontic procedures are more difficult on primary teeth due to the anatomy of the root canal system (canals are flat ribbon-like) and root resorption from the eruption of the permanent teeth (obtaining a good apical seal is more difficult).

Oral surgery

Oral surgery procedures on the pediatric dental patient often involve treatment of injuries. Children are much more prone to facial injuries. Broken teeth and the associated soft tissue injury require prompt care. Be familiar with the oral surgery instruments designed for use on children.

Prosthodontics

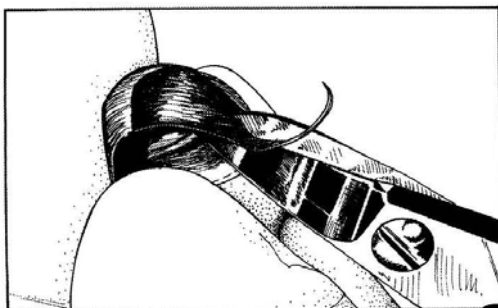
Prosthodontic procedures are sometimes done on children. In cases where missing teeth present an esthetic problem, plastic, removable, partial dentures known as flippers are often used to replace the

teeth until either the permanent tooth erupts or patients reach an age where they are better able to tolerate complicated prosthetic treatment. Flippers are often used to replace prematurely lost maxillary anterior teeth.

Since primary teeth are lost within a few years, cast crowns are not normally made for teeth with extensive dental decay. Much more common in pediatric dental practice is the use of preformed metal crowns on posterior teeth. Polycarbonate crowns (tooth-colored plastic) and strip crown forms filled with resin material are used on anterior teeth for esthetics. They are much less expensive than castings and usually last a few years until the permanent tooth erupts or the more sophisticated crown can be made. In addition, these crowns are much simpler to replace than cast crowns.

A number of different styles of preformed metal crowns are available. They vary in the amount of contouring on the facial and lingual surfaces, the anatomy of the occlusal surface, and occlusal-gingival length of the crowns. Two commonly used types are the Unitek and Ni-Chro. They usually come in a variety of sizes for primary first and second molars. The dentist may ask you to select the crown for the tooth to be worked on. Keep in mind that if you select the wrong size, you'll have to sterilize the crown before returning it to the set. The steps in fitting a preformed crown are shown in figure 1-62. Once the dentist adjusts the crown so the fit is satisfactory, it's time to cement it. Many pediatric dentists use zinc phosphate or polycarboxylate cement. You'll mix the material and fill the

crown with cement. After cementation, you may be asked to remove the excess cement.



When restoring a tooth using a strip crown form estimate the correct size of the form from the space and existing tooth size. Remove the collar around the crown form and trim the length to approximate the cervical margin of the prepared tooth. Use a round bur to cut a small vent hole in the lingual surface of the crown form so that excess resin and air can escape during the seating of the crown. Fill the crown form with resin material and seat. Remove excess resin at the cervical margins and vent hole. When the resin is set, cut the crown form and peel off, and then polish and finish the restoration.

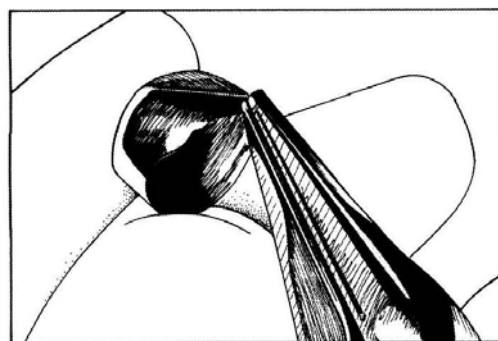
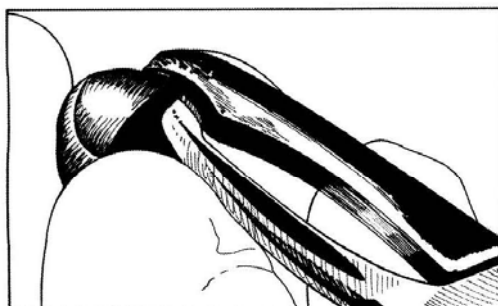


Figure 1-62. Preparing a preformed metal crown.

Orthodontics

Orthodontic procedures involving space maintenance are common practices of the pediatric dentist. There are several simple ways to do space maintenance. Some appliances are fixed by cementing them onto the teeth and requiring better oral hygiene by the patient. Other appliances are removable and can be taken in and out of the mouth by the patient. These appliances are easier for the patient to clean. The type of appliance used will depend on the dental problem and the patient's cooperation and oral hygiene.

The band and loop appliance maintains the space for only one posterior tooth. Sometimes several posterior teeth are missing and a band and loop appliance will not provide the strength necessary to hold the space. When this happens, a lingual arch maintainer can be used. The lingual wire is usually soldered to the bands. The band and loop, and lingual arch hold a portion or

all of the arch space so posterior teeth cannot move forward and anterior teeth cannot move backward to reduce the space. A lingual arch or band and loop is of no help when a primary second molar is lost before the permanent first molar erupts. The fixed appliance used to treat this situation is a distal shoe (fig. 1-63). Using local anesthesia, this appliance is inserted into the tissue next to the unerupted permanent molar and serves as a guide along which the permanent molar can erupt. When the permanent molar erupts, the distal shoe is replaced by a lingual arch until the permanent second premolar erupts.

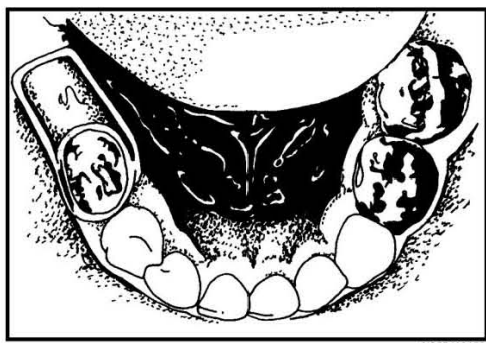


Figure 1-63. Distal shoe appliance maintaining the space of a missing primary second molar while the permanent first molar is unerupted. The appliance extends subgingivally to guide the permanent first molar into its proper position.

The removable appliance most useful for space maintenance is the partial denture. This appliance replaces missing teeth with either acrylic primary denture teeth or an acrylic block in the posterior part of the mouth. These appliances can provide good esthetics for missing anterior teeth and aid in speech and eating. One drawback of this removable appliance is that it is only useful if the patient cooperates in wearing it.

Preventive dentistry

Preventive dentistry is of great importance in pediatric dentistry. This is especially true for two reasons. First, the primary teeth preserve the space and provide a pathway of eruption for the permanent teeth. This function, if not properly preserved, can result in unusual crowding situations in the late dentition. Second, since

the oral health care habits and attitudes are formed during adolescence, proper preventive training can prepare an individual for a dentally, trouble-free life if accepted by the patient.

Teach children good brushing techniques. If they gain a feeling of the importance of personal oral hygiene, these habits could carry over into adulthood. Parents are often told to brush their children's teeth until they develop the necessary manual dexterity to do it for themselves. Prophylaxis procedures followed by a topical fluoride application are frequently done on children. This supplements the child's or parent's efforts to preserve the health of the teeth while children develop the ability to care for their own teeth.

Application of pit and fissure sealants in deep grooves and fissures of posterior teeth is a highly effective means of preventing pit and fissure decay. This involves etching the occlusal surface of a noncarious permanent tooth with an acid. An adhesive sealant that provides a physical barrier to the pits and fissures is then applied to the tooth. This hard adherent barrier prevents entry of decay producing contaminants, such as food impaction, plaque, and bacteria to the tooth surface.

Patient instructions

Giving the patient instructions is very important in pediatric dentistry. In talking with children and their parents, stress the two following areas:

1. The danger of biting or chewing while the mouth is numb.
2. The importance of not eating, drinking, or rinsing following fluoride application.

Young children are naturally intrigued by the feeling of numbness. Because of this, they may purposefully bite themselves to sense the unusual feeling. They also may bite themselves accidentally. Many children have injured themselves badly in this manner. Stress to the parents that if the child must eat, only give liquids, since liquids require no chewing.

Self-Test Questions

After you complete these questions, you may check your answers at the end of the unit.

409. Function and patient management of pediatric dentistry

1. If the same basic treatment is provided in pediatric dentistry as in other specialties, how is pediatric dentistry different?
2. What are some of the most important aspects when assisting in pediatric dentistry?
3. List four possible fears young children may experience when in the dental clinic.
4. Name some negative behaviors parents exhibit that could affect a child's dental care.
5. How should you approach children when escorting them to the treatment room? Where should parents wait?
6. How does communication occur best when treating children?
7. Why should you avoid a sing-song voice level when verbally communicating with children?
8. Why should you avoid giving directions to children in the form of a choice?
9. What are good subjects to ask children about to direct the conversation toward them?
10. How should you explain to children the procedures they will experience?
11. How should every appointment end when treating children?
12. What nonverbal expression strengthens the sincerity of what you are saying and enforces the attention given to a child?

13. What nonverbal method of communication is used to keep frightening items out of the patient's sight? Give an example.
14. What behavior characteristic is described by the child who is eager to get started, shows no observable fear, and talks freely with the assistant when escorted from the reception room to the DTR?
15. What behavior characteristic is described when the anxiety of a child is compounded by the anxiety of a dental appointment, resulting in a behavioral explosion?
16. What behavior characteristic is described by the child stressed by the dental experience and can lead to an avoidance behavior like crying?
17. What techniques can you use with shy or timid children to help them overcome this disorder?
18. What are the fears of frightened children based on?
19. List the four potential misdirected goals and characteristics of the child adverse to authority.
20. Briefly explain the tell-show-do behavior management technique.
21. What behavior management technique is used to gain the child's attention and is extremely effective at intercepting inappropriate behavior as it begins to happen? Explain how this is done.
22. Why is the hand-over-the mouth used? What *must* precede its use?
23. Give some examples of physical restraint from the simplest to more complex.
24. Why is it better if the parent remains in the reception area of the dental clinic?

25. What can happen if a parent is present during treatment?
26. When is it useful to have the parent present in the DTR with the child?
27. What should be done if the parent insists on being present in the treatment room while the child is treated?
28. What may be necessary to manage the child's behavior or reaction to pain?
29. When is IV sedation or general anesthesia generally used on children?

410. Assisting with pediatric procedures

1. Most often, whose responsibility is it to introduce the children to the DTR and its equipment?
2. How should you approach the child patient?
3. When talking to children, what should you avoid?
4. What should you do as the provider establishes a rapport with the child?
5. During the procedure, who should give the child directions? Why?
6. What should you ensure the child is given to allow communications during the procedure?
7. In order to make the dental visit pleasant and positive, what *must* both the provider or assistant avoid?
8. What must you do if the provider leaves the DTR while the child is being treated?

9. Why *must* the dentist use extra caution to avoid mechanical exposure during cavity preparation of a primary tooth?
10. When treating children, what may providers prefer to use instead of the bulky Tofflemire retainer?
11. What type of endodontic treatment is more common on primary teeth? What basic instruments are needed for this procedure?
12. Why is endodontic therapy much more difficult on children?
13. What type of oral surgery procedures are performed on children?
14. What are flippers used for in children?
15. What types of crowns are more commonly used in pediatric dentistry?
16. Why is it necessary to cut a small hole with a round bur into the lingual surface of a crown form?
17. What determines the type of orthodontic appliance used?
18. What type of space maintainer maintains the space for only one posterior tooth?
19. When is a lingual arch maintainer used?
20. What type of appliance is used when a primary second molar is lost before the permanent first molar erupts? Briefly explain how this appliance is placed. When is it removed?
21. What type of appliance is useful as a space maintainer and replaces missing teeth with either acrylic primary denture teeth, or in the posterior part of the mouth an acrylic block?

22. List two reasons preventive dentistry is of great importance in pediatric dentistry.
23. What procedure creates a hard adherent barrier that prevents entry of decay producing contaminants to the tooth surface?
24. List two important factors to tell children or their parents regarding patient instructions.

Answers to Self-Test Questions

401

1. To substitute or replace oral structures.
2. Substitutes for natural teeth.
3. Prosthodontic appliances are either fixed permanently into the patient's mouth or removable from the mouth by the patient. Fixed appliances include inlays, onlays, crowns, and fixed partial dentures (bridges). Removable appliances include complete dentures, removable partial dentures, and special maxillofacial appliances.
4. A dentist with specialized training in replacing missing teeth; however, many general dentists provide prosthodontic care. The most difficult cases are usually referred to a prosthodontist.
5. You, the prosthodontic assistant.
6. The procedures to be done during the appointment and the laboratory time required between appointments. These factors will dictate the time allocation and date for which you should reschedule the patient.
7. The sequence of prosthodontic treatment procedures, appointment lengths, and know the varying amounts of time that must be allowed for laboratory work between visits of a patient.
8. Ask the dentist and coordinate with the laboratory so that the dentist's and laboratory technician's time is used efficiently.
9. An evaluation that could include complete oral radiographs.
10. To diagnose cysts, residual roots, unerupted teeth, impacted teeth, periodontal conditions, caries, bone density, or other conditions requiring restorative or surgical correction before prosthodontic treatment is started.
11. Irreversible hydrocolloid (alginate).
12. Initiate a DD Form 2322, have the dentist sign it, and take it along with the disinfected impression to the dental laboratory for the fabrication of diagnostic casts.
13. Irregularities of the occlusion that must be corrected before beginning prosthodontic treatment and irregularities that will be a factor in determining the type of appliance to be constructed. They are used for custom tray construction for fixed and removable treatment procedures, and in fixed prosthodontic treatment procedures, they are frequently used for making interim (temporary) fixed restorations.

402

1. Whenever dental laboratory work is required to support prosthodontic treatment.
2. Contains patient information and fabrication instructions; used as a precious metals voucher and an entry form for CLV codes.
3. The dental assistant. It advises the laboratory, in writing, of exactly what materials to use and the services to provide. An incomplete or inaccurate form could result in the lack of necessary items to fabricate the appliance or an unsatisfactory restoration.
4. It depends on whether the case is sent to another laboratory, and whether precious metals are expended.

5. Three; two.
6. Four; three.
7. The last copy. All remaining copies including the original.
8. Keeps one copy for its records and puts the original in its Register of Precious Metals and Alloys if precious metals are expended. The servicing laboratory returns a copy with the completed prosthesis.
9. The laboratory officer.

403

1. Trays made in the dental laboratory from tray acrylic for individual patients from a dental cast of a patient's teeth. They are used to make final impressions for crowns, fixed partial dentures, and complete dentures.
2. (1) The Beale #7 is short and has small, spoon-shaped double working ends for detailed wax work.
(2) The Gritman #31 is double-ended with one large, rounded spoon-shaped end and one large, sharp-pointed spoon-shaped end. It is used on the less delicate wax work where detail is not a requirement.
3. To mix polyvinylsiloxane impression material and express it onto the tooth preparations and custom trays.
4. Double-ended instrument used to cut, smooth, and carve dental waxes. Resembles the wax spatula. Has a sharp spear-shaped blade at one end, with a deep-welled, very small spoon (also sharp) at the other end, which may be used to carry melted wax.
5. (1) The compound knife has a large, red plastic handle. It is used with the #25 detachable blade to trim impression compound, wax, and other materials which require an extremely sharp cutting edge.
(2) The plaster knife is a heavy-duty knife used to trim and chisel plaster of Paris and impression compound. It has a large flat blade at one end with a wide screwdriver-appearing projection at the other end; the handle is made of wood and riveted in place.
6. They are used to shape copper bands, and to cut and contour matrix bands. They come in straight and curved.
7. The #104 is flat nosed with serrated beaks used for wire bending. The #121 Langbeck appears similar to the #104, but the beaks are longer. It is used for general treatment room and laboratory uses. The #107 is round nosed and used for bending wire, and shaping crowns and bands. The #139 Angle appears somewhat similar to the #107, but beaks are cone- and pyramidal-shaped for sharp angle and smooth curve wire-bending. The #114 Johnson has beaks similar to a ball and socket. It is used to contour crowns and fit bands. The #134 McKellops is designed with ridges across one of the beaks, useful when bending clasps. The #201 Aderer has three prongs for wire and clasp bending.
8. Crown remover.
9. They reproduce the patient's jaw movements with dental casts made from impressions, and mounted onto the articulator. Allows the dentist and dental laboratory technician to recreate the normal movements of the patient's jaw during the fabrication of the prosthesis.
10. They duplicate the position of the maxilla to an articulator. The face-bow rests on the patient's face and a wax bite plate is inserted into the oral cavity to record the patient's bite.

404

1. Spacers and tissue stops.
2. Because it will result in a damaged cast or tray when you attempt to remove the hardened tray.
3. Tinfoil substitute.
4. Monomer.
5. By adapting two layers of record base wax to the tray area on the cast and adapting each layer of wax, one layer at a time.
6. At areas outlined in the molar, premolar regions.

405

1. To reduce the potential for injury to the teeth and surrounding tissues.
2. The mouthguard extends to the point where the soft tissue meets the attached gingiva.
3. Prolonged heating.
4. With pumice or by lightly flaming the mouthguard with an alcohol torch.

5. A shell that will be filled later with tooth-colored resin and seated on the prepared teeth, forming the provisional restoration.
6. Clear stint material (.020-inch).
7. Adapt spare resin denture teeth to the edentulous area; sticky wax it in place; and if necessary, adjust the occlusion.
8. When you begin to see small bubbles appear.
9. The section needed for the provisional restoration plus one or two uninvolved teeth anterior and posterior to it.

406

1. It is the specialty of dentistry concerned with the study and supervision of the growth and development of the dentition, correction of abnormalities of growth and development, and related anatomic structures in children and adults.
2. Procedures that involve evaluating, treating, and maintaining a functional relationship between the teeth, dental arches, and supportive tissues of the face and skull.
3. To achieve occlusion and facial contour that is as normal as possible for the patient.
4. The appearance of the teeth (also referred to as esthetics), if unpleasant to the patient and a deformity that impairs the dental function.
5. (1) c.
(2) b.
(3) a.
6. Adjacent teeth drift or tip into the space left by the early loss leaving the permanent tooth trapped in the bone and unable to erupt into its normal position. To prevent the teeth from tipping or drifting into the space, the dentist inserts a space maintainer.
7. Shortly after the primary tooth is lost.
8. To guide the permanent first molars into proper position during eruption.
9. Distal shoe.
10. Correction of oral habits, such as tongue thrusting, thumb- or finger-sucking, bruxism, and mouth breathing. For example, behavior modification to eliminate a thumb-sucking habit prior to the eruption of the permanent incisors may prevent a malocclusion.
11. Correcting developing problems to prevent them from becoming worse.
12. Early removal of primary or permanent teeth to allow room for the remaining teeth to erupt in a more orderly arrangement. When there is inadequate room for all the teeth to come in their normal arrangement.
13. Space regaining. This is done with an appliance that will exert pressure on the offending teeth to push them gently back out of the space into which they have migrated.
14. To move the malpositioned tooth back to the facial position in relation to the mandibular teeth.
15. A sufficient force applied for a sufficient period of time may cause a tooth to move to a specific position in the alveolar bone.

407

1. They are cemented to the tooth and serve as a means of holding or grasping the tooth so that a bracket can be attached to move the tooth.
2. Facial attachments are brackets or buccal tubes. Lingual attachments consist of lingual buttons, sheaths, cleats, or seating lugs.
3. The bracket is the portion with a slot for a wire and wings for tying in the wire. The bonding base or pad is the flat portion behind the bracket, which is used to hold the orthodontic bracket to the tooth; a mesh screen is welded to the back of the base.
4. A direct bond bracket holder.
5. They are small lengths of wire formed in the shape of the dental arch. These wires are deformed when tied into the brackets of the malaligned teeth and generate the force that aligns the teeth.

6. Wire ligation uses a thin, flexible stainless steel wire to hold all types of orthodontic arch wires in the attachment. An elastomeric ligature is a small loop of clear or gray plastic material that is stretched around the bracket wings to secure the arch wires.
7.
 - a. Recontour the orthodontic band for a better band adaptation around the tooth; two long, tapering, slightly bowed beaks, opposing ends fit together in a ball-and-socket manner.
 - b. Seat and position posterior bands during the sizing and fitting of bands; tip is used to engage the occlusal edge of the band, used with occlusal biting pressure of the patient.
 - c. Position and seat the band properly on the tooth; also used to burnish and adapt the band edges around the tooth, as well as tucking the metal ligature “pigtailed.” Angled tip is rectangular and serrated on all five sides to prevent slippage of the instrument during use.
 - d. Aid in seating bands onto the teeth with pushing force. A single-ended, large, hollow handle with a spring creates a pushing force to the tip when the handle is compressed and released.
 - e. Remove bands or brackets during trial fitting or debanding. One beak has a replaceable plastic pad which is perpendicular to the opposing curved, flat-sided beak.
 - f. Uses reciprocal pliers action to shear off the temporary cap on a convertible first molar buccal tube.
 - g. Designed for use with metal brackets only for easy removal of brackets with less discomfort to the patient; wire at the tip of the instrument.
 - h. Reverse-action pliers used to tie metal ligatures. Opposing handles, shank, and tip which join just below the shank in a round, metal cylinder with a channel. Blunt opposing tips are forked for passage of the ligature wire; the opposing handles are attached by a spring that holds them apart. Tips touch when the pliers are not in use. As the handles are compressed, the tips spread and the channel locks the end of the ligature wire automatically.
 - i. Ligature tying instrument with fine, serrated tips and a quick release positive locking mechanism on the rear of the handles. A free sliding leaf spring on the inner surface opens the beaks when the lock is released.
 - j. Tuck and direct ligatures under arch wire or bracket wings; pushes arch wires or auxiliaries into position. Tips of the instrument are notched to hold wires.
 - k. Cut ligature wire and pins of any size, and arch wires up to $.56 \times .71$ mm. Also used to remove bonded brackets by grasping the bracket at the base of the margins and twisting to remove. Has two tapered and pointed opposing beaks with sharp cutting edges.
 - l. Cut the distal ends of arch wires intraorally, and cut round wires up to .5 mm and rectangular wire up to $.56 \times .71$ mm in diameter. Safety hold features a uniquely designed ledge behind the cutting edges to grasp the cut portion of wire.
 - m. Cut heavy face-bow wire up to 2 mm; features super tough cutting edges and locks in the closed position.
 - n. Adjust or contour the inner and outer arches of face-bows and heavy wires up to 1.6 mm diameter. One of the three beaks opposes and fits between the other two parallel beaks when the pliers are closed. Each beak has a rounded notch at a right angle to the beak near the tip.
 - o. Used with a squeezing motion to adjust and place sharp bends in heavier wires on face-bows and retainers. One beak has two matched, parallel prongs while the other beak has an opposing single beak which aligns precisely between the two prongs—three-prong or three-jaw.
 - p. Bend small wire and spring forming, and contour brackets by placing the brackets between the rounded or cone beak. Beaks are parallel, yet one is shaped as a cone and the other a pyramid.
 - q. Form various loops required in orthodontic treatment. Two opposing parallel beaks, one concave and one round, rounded beak generally has three sections of various diameters. The outer one-third of the concave beak is serrated to avoid wire slippage.
 - r. Reshape and contour arch wires with mating convex and concave beaks.
 - s. Utility pliers used mainly for grasping the arch wires during placement and removal, or adjusting bends in the wire. Also used to seat anterior bands and tie ligature wires. Two long, rounded beaks taper to a pyramid shape and bow to meet at the end by serrated pads.

- t. Hold or grasp the arch wire to make adjustment bends, or place the arch wire in and remove it from the mouth. Has two beaks with opposing serrated, oblong, pointed tips either straight or curved from the long axis of the pliers.

408

1. The patient's skeletal and facial profile, speech, swallowing pattern, and jaw movements, as well as examine the patient's dentition. The dentist also classifies the occlusion and identifies other dental conditions.
2. Radiographs, clinical photographs, preliminary impressions, and study casts.
3. The dentist traces and analyzes cephalograms by linear and angular measurements to compare and assess the growth pattern of the patient, and the effects the orthodontic treatment has on skeletal development.
4. At pretreatment and post treatment stages, and at various intervals as treatment progresses.
5. The dental esthetics and condition of the oral hard and soft tissues.
6. Five views: front, right, and left lateral views (one each) with the teeth occluded, and maxillary and mandibular occlusal views (one each) with the mouth open.
7. The patient's clinical appearance. Two views directly in front of the patient with the patient's teeth visible (smiling) and not visible (lips at rest and not smiling); and another view in straight profile, usually from the right lateral view.
8. The dentist presents the treatment plan using the radiographs, study casts, and other diagnostic aids to explain the diagnosis and treatment plan to the patient. The presentation also informs the patient of the approximate length of treatment, informed consent, and a clear statement of the patient's responsibilities in successful completion of the treatment.
9. Posterior teeth. They serve to connect the appliance to the teeth when cemented into place.
10. Brackets are attached to orthodontic bands or bonded directly to teeth. They hold the arch wire in place and transmit the force of the arch wire to the teeth.
11. Buccal tubes.
12. Arch wires. The arch wire is attached to the brackets by wire or elastic ligatures on either the facial or lingual aspect of the teeth.
13. Fine wires or elastic ligatures.
14. Rubber bands used to exert force on teeth. They are frequently used to exert force between upper and lower teeth to improve occlusal relationships.
15. Separators.
16. When it is difficult to place elastic separators because the patients have tight contacts.
17. Identification and selection of brackets for the patient; isolation and preparation of the teeth for bonding; and placement of brackets and cleanup of excess material.
18. Arrange them on the bracket tray or on the special sticky pad provided by the manufacturer, in sequence of the patient's teeth for quick identification during placement.
19. Polishing the tooth surfaces free of plaque and debris with a rubber cup in a slow-speed handpiece and pumice.
20. Retained bonding material must be removed. By using a sharp scaler or high-speed handpiece with a carbide finishing bur.
21. (1) Separation using elastic or spring separators.
(2) Band selection and trial sizing.
(3) Cementation and cleanup.
22. Polish the teeth with a rubber cup and pumice to remove any plaque and debris. Apply a fluoride treatment after polishing the teeth.
23. Using finger pressure, the band pusher, and the band seater in that sequence.
24. After the cement is set, the excess cement is removed from around the band using a scaler; an explorer may be used to remove cement lodged between the teeth; after the excess cement is removed, the protective wax is removed from the brackets and patients are allowed to rinse their mouths.
25. By applying occlusally directed force with a scaler.

26. Orthodontic assistants.
27. Thin, flexible stainless steel wire or elastomeric ligatures.
28. The importance of maintaining a clean mouth and teeth to avoid the occurrence of carious lesions on the teeth around the brackets and band margins during orthodontic treatment.
29. Avoid highly cariogenic foods and foods that will damage or dislodge bands or ligature ties. For example, avoid hard things like ice, hard candy, and very sticky things like taffy.
30. Three to five week intervals. Most tooth movement ceases after approximately 3 to 4 weeks. By this time, the cellular activity that permits tooth movement ends, and the active components of the appliance require reactivation.
31. Common things to check for are loose bands and brackets. Place the end of a scaler on the gingival edge of the band and tug lightly in the occlusal direction.
32. You may remove elastomeric or wire ligatures from the brackets and remove the arch wires from the patient's mouth. After the dentist adjusts the removed arch wires, you may place them back in the patient's mouth. Engage the arch wires into the brackets and secure with new wire or elastomeric ligatures. The last step in any adjustment appointment is to check the patient carefully to be sure that the appliances do not irritate any portion of the patient's cheeks or tongue.
33. Pin and ligature cutter, debracketing instrument, or debonding pliers.
34. With the use of a sharp scaler. Use a rubber cup and pumice on the enamel to buff the tooth surface. If necessary, the dentist may use a carbide finishing bur in a handpiece to remove any remaining bonding material.
35. Lifting the band in an occlusal direction with band-removing pliers from the facial aspect of the tooth, place the beak of the band-removing pliers with the plastic pad on the occlusal surface and position the opposing beak on the gingival portion of the band. Squeeze the handles of the pliers together to break the cement bond loose and remove the band.
36. To maintain the correction accomplished so that the patient has a functional and esthetic occlusion that is stable.
37. One, three, and six months following treatment. After this time frame, yearly appointments are adequate.
38. The lower arch in the form of a heavy wire bonded on the lingual aspect between the two cuspids. The purpose of the retainer is to prevent the cuspids from moving and keep the incisors from tipping lingually.
39. Minor tooth movements, such as tipping teeth, or as retainers to hold teeth in place while the bone reossifies.
40. Hawley.
41. Activators.
42. An alginate impression of the arch for which the appliance is to be made.
43. Mouth mirror, three-prong pliers, bird beak pliers, articulating paper and holder, acrylic bur, and handpiece.
44. To make some basic appliance adjustments and provide instructions and information to the patients.
45. Mouth mirror, three-prong pliers, and study casts.

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1. The pediatric dentist treats children and that experience brings a special set of challenges.
2. Communication with the child, speed and efficiency of the assistant, parental communication, and behavior management techniques.
3.
 - (1) Separation from their parents.
 - (2) Unknown settings such as the dental treatment room.
 - (3) Strange people.
 - (4) Unknown situations.
4. Overindulgent, overanxious, and domineering.
5. Use a positive approach by taking them by the hand and leading them kindly, but firmly into the treatment area. Have parents wait in the reception area during treatment unless providers ask parents to accompany the children.

6. When it is one on one with the provider and child.
7. A change to a normal voice tone may be interpreted by the child as a change from friendliness to seriousness. A sing-song voice may not get the same results as a voice with a firm tone. The tone should not be harsh or unfriendly, just firm and definite.
8. Children are required to decide what to do; therefore, giving them the option not to comply with your directions.
9. The clothes they are wearing, television shows, pets, favorite toys, sports, and favorite stories.
10. At their level of comprehension, using words which have meaning for them.
11. Reinforce the child's positive behavior by offering various forms of praise from the dental team.
12. Maintaining eye contact.
13. Distraction. For example, pass the syringe to the dentist in an area where the patient cannot see the transfer, such as behind the patient's head.
14. Good child.
15. Emotionally compromised child.
16. Shy or timid child.
17. By talking to them on their level, using praise and tell-show-do, the shell can be penetrated and in time they open up.
18. They may be overreactions caused by other emotional upsets in their lives; acquired fears based on feelings, attitudes, and concerns developed from the suggestions of peers, siblings, or parents; or learned from bad or painful experiences in the dental office, doctor's office, or hospital.
19.
 - (1) Undue attention. Annoying, irritating, teasing, or disruptive behavior and may actually find dental treatment a nice experience since it is a personal one-on-one experience.
 - (2) Struggle for power. Verbally arguing and contradicting, doing the opposite of what they are instructed, angering people, and throwing temper tantrums. They may have an irresistible impulse to argue with a provider or challenge the provider's authority.
 - (3) Retaliation and revenge. Misbehave with violent tempers, say things that hurt people, seek revenge and get even. They are dangerous, may bite, are not warm and fun, and probably will not respond to praise.
 - (4) Inadequacy. Give up easily, rarely participate, act incapable, and display inadequacy. They show a variety of misbehaviors when asked to cooperate. Overcoming the challenges of the dental appointment is beyond the grasp of these children. They tell themselves they are inferior and cannot possibly measure up.
20. The provider first explains what will be done as the telling portion, and then demonstrates how it will be done by simulating the procedure as the showing portion. After the tell and show portions take place, the procedure is done.
21. Voice control. The tone of the provider's voice is raised and the child is spoken to firmly with authority, but not in anger. When the child's attention is gained and behavior improves, the provider's voice is lowered to a normal level.
22. To intercept tantrums or other fits of rage when it is necessary to gain the attention of defiant children and reduce the noise they are creating so that communication can be established between the child and provider. Explanation to the parent and written consent.
23. Mouth props or mouth gags; assistant holds the child's hands and arms while in the treatment chair, physically restrains the child with the use of hands, ties, sheets, or a papoose board for extremely unmanageable children.
24. The dental team can handle the child better if the parent remains in the reception area.
25. The child's attention is often diverted from the provider to the parent, causing additional management problems.
26. When treating children less than 3 years of age, some handicapped patients, or children who speak a different language (either verbal or sign language).
27. An agreement should be reached between these parents and the provider about leaving if the child does misbehave, or the parent's presence is disruptive to the dental environment.

28. Drugs or chemicals.
29. When the child requires extensive dental treatment, multiple restorations, or is otherwise completely unmanageable.

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1. Yours, as the assistant.
2. In a relaxed manner, introduce yourself, establish and focus a conversation on the child, use the child's name or nickname, and offer your hand to the child when separating the child from the parents.
3. Avoid the use of fear-triggering words, baby talk, or talking down to children.
4. Gradually reduce your involvement in the conversation.
5. The provider. This establishes the provider's authority with the children, and eliminates confusion and problems that can be caused when directions are given from two sources.
6. Signals.
7. Getting mad or upset.
8. Remain with the child.
9. The pulp of a primary tooth is generally much closer to the surface.
10. T-band.
11. Pulpotomy. A mirror, cotton forceps, explorer, endodontic spoon, woodson and spatula.
12. Due to the anatomy of the root canal system (canals are flat ribbon-like) and root resorption from the eruption of the permanent teeth (obtaining a good apical seal is more difficult).
13. Treatment of injuries.
14. To replace missing teeth until either the permanent tooth erupts or the patient reaches an age where they are better able to tolerate complicated prosthetic treatment.
15. Preformed metal crowns on posterior teeth, and polycarbonate crowns (tooth-colored plastic) and strip crown forms filled with resin material are used on anterior teeth for esthetics.
16. So that excess resin and air can escape during the seating of the crown.
17. The dental problem and the patient's cooperation and oral hygiene.
18. Band and loop.
19. When several posterior teeth are missing and a band and loop appliance will not provide the strength necessary to hold the space.
20. Distal shoe. Using local anesthesia, this appliance is inserted into the tissue next to the unerupted permanent molar and serves as a guide along which the permanent molar can erupt. When the permanent molar erupts, the distal shoe is replaced by a lingual arch until the permanent second premolar erupts.
21. Removable partial denture.
22. (1) Primary teeth preserve the space for and provide a pathway of eruption for the permanent teeth.
(2) Proper preventive training can prepare an individual for a much more dentally trouble-free life.
23. Application of pit and fissure sealants.
24. (1) The danger of biting or chewing while the mouth is numb.
(2) No eating or drinking following fluoride application.

Unit Review Exercises

Note to Student: Consider all choices carefully, select the *best* answer to each question, and *circle* the corresponding letter. When you have completed all unit review exercises, transfer your answers to the Field-Scoring Answer Sheet.

Do not return your answer sheet to the Air Force Career Development Academy (AFCDA).

1. (401) What is the function of prosthodontic dentistry?
 - a. Provides root canal therapy.
 - b. Extracts nonrestorable teeth.
 - c. Treats the gingival and bone defects.
 - d. Substitutes or replaces oral structures.
2. (401) Which dentist receives referrals for the *most* difficult cases requiring replacement of missing teeth?
 - a. Periodontist.
 - b. Oral surgeon.
 - c. General dentist.
 - d. Prosthodontist.
3. (401) What factors influence the scheduling of prosthodontic patients for treatment?
 - a. Procedures to be done during the appointment and laboratory time required between appointments.
 - b. Appointment desk procedures and clinical treatment provided.
 - c. Laboratory personnel staffing and workload.
 - d. The dentist's and assistant's preference.
4. (401) What should you do if you are uncertain about the time allocation for various prosthodontic procedures?
 - a. Ask the laboratory personnel.
 - b. Check with records and reception section.
 - c. Ask the dentist and coordinate with the laboratory.
 - d. Check the patient's record for a history of prosthodontic treatment and appointment sequence.
5. (401) What form *must* you initiate whenever preliminary impressions are made?
 - a. DD Form 2322.
 - b. AF Form 490.
 - c. AF Form 696.
 - d. SF 603A.
6. (401) When does the assistant coordinate the prosthodontic cases with the dental laboratory?
 - a. Prior to seating the patient.
 - b. Prior to taking impressions.
 - c. After dismissing the patient.
 - d. After completing evaluation and DD Form 2322.

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7. (402) The DD Form 2322, Dental Laboratory Work Authorization, contains
 - a. treatment information, fabrication instructions, and is used as a precious metals credit voucher, and an entry form for composite laboratory value (CLV) codes.
 - b. patient information, fabrication instructions, and is used as a precious metals voucher, and an entry form for CLV codes.
 - c. patient information, fabrication instructions, and is used as a precious metals debit voucher, and an entry form for CLV codes.
 - d. appointment information, fabrication instructions, and is used as a precious metals voucher, and an entry form for CLV codes.
 8. (402) How many copies of DD Form 2322, *must* accompany a prosthetic case if the case is to be fabricated locally and precious metals are *not* required?
 - a. One.
 - b. Two.
 - c. Three
 - d. Four.
 9. (402) How many copies of DD Form 2322, *must* accompany a prosthetic case if it is sent out to another laboratory for fabrication and the case requires precious metals?
 - a. Two.
 - b. Three.
 - c. Four.
 - d. Five.
 10. (402) When and how many copies of the DD Form 2322 are retained in the Register of Precious Metals and Alloys if precious metals are expended?
 - a. Before sending to the servicing laboratory; 1.
 - b. Before sending to the servicing laboratory; 2.
 - c. At the servicing laboratory; 1.
 - d. At the servicing laboratory; 2.
 11. (403) Which spatula do you use on the less delicate waxwork where detail is *not* required?
 - a. #321.
 - b. #324.
 - c. Beale #7.
 - d. Gritman #31.
 12. (403) When *smoothing* wax in the dental laboratory, which is the *best* instrument to use?
 - a. Plaster knife.
 - b. Roach carver.
 - c. Compound knife.
 - d. Collar and crown scissors.
 13. (403) Which prosthodontic knife do you use to trim impression wax and requires an extremely sharp cutting edge?
 - a. Plaster.
 - b. Compound.
 - c. Margin finishing.
 - d. Denture trimming.
 14. (403) Which prosthodontic knife do you use to trim and chisel impression compounds?
 - a. Plaster.
 - b. Compound.
 - c. Margin finishing.
 - d. Denture trimming.

15. (403) What type of bur is used *only* in straight handpieces and lathes in the dental laboratory?
 - a. Diamond.
 - b. Finishing.
 - c. Excavating.
 - d. Denture trimming.
16. (403) Which type of dental pliers do you use to contour crowns, fit bands, and have beaks that are shaped similar to a ball and socket?
 - a. #104.
 - b. #107.
 - c. #114.
 - d. #139.
17. (403) Which dental pliers, *commonly* called three-prong pliers, do you use for wire and clasp bending?
 - a. #114 Johnson.
 - b. #121 Langbeck.
 - c. #139 Angle.
 - d. #201 Adere.
18. (403) Which dental instrument has a handle encircled with a heavy steel weight that slides from one end of the handle to the other?
 - a. Band driver.
 - b. Clamp forceps.
 - c. Crown remover.
 - d. Malar elevator.
19. (403) What dental device recreates the normal movement of a patient's jaw during the fabrications of the prosthesis?
 - a. Face-bow.
 - b. Articulator.
 - c. Extruder gun.
 - d. Bite registration.
20. (404) In prosthodontics, when fabricating custom impression trays, custom tray tissue stops are used to
 - a. lock the tray into position.
 - b. eliminate the need for spacer material.
 - c. allow a thinner mix of impression material to be applied.
 - d. provide room for a controlled thickness of impression material.
21. (404) In fabricating a prosthodontic custom tray, what will surely result from failing to block out undercuts on the cast?
 - a. Distorted tray only.
 - b. Damaged cast only.
 - c. Damaged cast or tray.
 - d. Distorted tray and impression.
22. (404) What requirement *must* a prosthodontic custom tray handle have?
 - a. Economically constructed.
 - b. Angled 45 degree to the occlusal plane.
 - c. Strong enough to withstand biting forces.
 - d. Shaped not to interfere with lip movement.

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23. (404) In prosthodontics, what material, applied to the attachment site, will improve bonding between the handle and tray?
- Polymer.
 - Monomer.
 - Polyacrylate.
 - Cyanacrylate.
24. (405) Although a mouthguard does *not* prevent the teeth from fracturing, it *does*
- maintain the teeth's position.
 - allow the teeth to be re-implanted in the alveolar.
 - prevent teeth fragments from damaging the oral tissue.
 - prevent dislocation of the mandibular and maxillary arch.
25. (405) One purpose of a mouthguard is to reduce the risk of concussion by
- acting as a shock absorber.
 - countering the impact force.
 - allowing the teeth to slide freely.
 - preventing the forward motion of the head.
26. (405) The buccal flange of a mouthguard normally extends to the
- buccinators point of origin.
 - termination of mucobuccal fold.
 - point where frenum attachments are covered.
 - point where soft tissue meets the attached gingival.
27. (405) Before placing a dental cast in a vacuum adaption machine, you soak the cast in water for a couple of seconds to
- remove the air from the cast.
 - soften the cast and allow easy trimming of the material.
 - prevent the hot thermoplastic material from adhering to the cast.
 - cool the cast and consequently cool the hot thermoplastic material.
28. (405) What polishing, if any, is done to the periphery of a mouthguard?
- No polishing is done.
 - It is smoothed with a rag wheel.
 - A light flame with alcohol torch is used.
 - It is smoothed with a cotton ball and chloroform.
29. (405) What purpose does a stint serve?
- Used as a surgical dressing.
 - Duplicate the diagnostic cast.
 - Make provisional restorations.
 - Secure an appliance to the cast.
30. (405) In fabricating a stint for a fixed partial denture (FPD) provisional restoration, what action, if any, is taken to fill the edentulous space?
- Blockout the space.
 - Waxup the pontics.
 - No action necessary.
 - Adapt resin denture teeth.

31. (405) In prosthodontics, how will you know when the material for a stint is overheated?
- It smokes.
 - It turns cloudy.
 - Small bubbles appear.
 - It sags more than 1 ½ inches.
32. (405) In fabricating a prosthodontic stint, what is used to cut away excess material in the sulcus areas and form around the base of the cast?
- Fissure bur.
 - Heated scissors.
 - Separating disc.
 - Heated Bard-Parker knife.
33. (405) In prosthodontics, the unused arch sections of a provisional stint should be
- kept.
 - discarded.
 - reclaimed.
 - given to the patient.
34. (405) The thinning and stretching of a mouthguard is caused by
- flaming the material.
 - overheating the material.
 - handling the mouthguard off the cast.
 - applying under heated material to the cast.
35. (406) What dental specialty studies and supervises the growth and development of dentition and corrects growth and development abnormalities in children and adults?
- Pedodontics.
 - Endodontics.
 - Orthodontics.
 - Prosthodontics.
36. (406) What two factors cause people to seek orthodontic treatment?
- Appearance and status.
 - Replacing missing teeth and esthetics.
 - Appearance and impaired dental function.
 - Replacing missing teeth and caries prevention.
37. (406) The three types of orthodontic treatment are
- acute care, interceptive, and active.
 - acute care, cosmetic, and corrective.
 - preventive, cosmetic, and acute care.
 - preventive, interceptive, and corrective.
38. (406) What orthodontic appliance is used to prevent teeth from tipping or drifting into a vacant space?
- Interim removable partial denture (RPD).
 - Space maintainer.
 - Bionator.
 - Hawley.

39. (406) Orthodontic treatment aimed at correcting developing problems to prevent them from becoming worse is called
- a. intuitive.
 - b. corrective.
 - c. preventive.
 - d. interceptive.
40. (406) What complex orthodontic treatment involves the use of mechanical appliances to restore the dentition to fully functional and esthetic condition?
- a. Serial extraction.
 - b. Space regaining.
 - c. Crossbite control.
 - d. Corrective.
41. (407) Facial attachments on orthodontic bands are
- a. sheaths.
 - b. buttons.
 - c. cleats.
 - d. brackets.
42. (407) Which dental instrument has a ball-and-socket opposing ends used for better band adaptation around the tooth?
- a. Band seater.
 - b. Band driver.
 - c. Band pusher.
 - d. Band contouring pliers.
43. (407) Which type of ligature pliers has a round, metal cylinder with a channel and forked, blunt opposing tips for passage of the ligature wire?
- a. Coon.
 - b. Tweed.
 - c. Mathieu.
 - d. Mershon.
44. (407) Which orthodontic instrument has a safety hold feature to prevent loose wire from impacting and embedding into the intraoral tissue?
- a. Distal end cutter.
 - b. Tweed loop cutter.
 - c. Heavy duty cutter.
 - d. Ligature wire cutter.
45. (407) Which orthodontic instrument is used with heavy wire up to 1.6 mm diameter and is easily identified because each beak has a rounded notch at a right angle to the beak near the tip?
- a. Distal end cutter.
 - b. Heavy duty cutter.
 - c. Ligature wire cutter.
 - d. Face-bow adjusting pliers.
46. (407) Which type of orthodontic pliers is used for bending small wire, spring forming, and contouring brackets?
- a. How.
 - b. Weingart.
 - c. Bird-beak.
 - d. Hollow-chop.

47. (407) Which type of orthodontic pliers has the outer one-third of the concave beak serrated to avoid wire slippage and a round beak generally with three sections of various diameters?
- Weingart utility.
 - Mathieu ligature.
 - Coon ligature-tying.
 - Tweed loop-forming.
48. (407) Which type of orthodontic utility pliers is used to hold or grasp the arch wire to make adjustment bends, or place the arch wire in, and remove it from the mouth?
- Coon.
 - Mathieu.
 - Weingart.
 - Bird-beak.
49. (408) What type of radiograph does the dentist trace and analyze by linear and angular measurements, compare and assess the growth pattern of the patient, and the effect of orthodontic treatment has on skeletal development?
- Occlusal.
 - Periapical.
 - Panoramic.
 - Cephalometric.
50. (408) All of the following are intraoral photographs documenting the patient's dental esthetics and condition of the oral hard and soft tissues *except*
- front view.
 - maxillary and mandibular occlusal views.
 - right and left lateral views with teeth occluded.
 - right and left lateral views with the teeth open.
51. (408) All of the following are part of the standard extraoral series taken at the beginning of orthodontic treatment *except*
- Straight profile from the left lateral view and full-face frontal view.
 - A view directly in front of the patient with the patient's teeth visible.
 - Straight profile from the right lateral view and full-face frontal view.
 - A view directly in front of the patient with the patient's teeth no visible.
52. (408) Following examination, diagnosis, and treatment presentation, fixed orthodontic treatment usually begins with the
- extraoral headgear.
 - placement of bands.
 - placement of elastic ligation.
 - placement of orthodontic separators.
53. (408) Which basic step is *not* required for orthodontic bonding?
- Placement of orthodontic brackets and cleanup of any excess material.
 - Identification and selection of orthodontic brackets for the patient.
 - Isolation and preparation of the teeth for bonding.
 - Trial sizing and rebonding of loose brackets.
54. (408) Placement of orthodontic bands *requires* all of the following steps *except*
- acid etch and bonding.
 - band selection and trial sizing.
 - band cementation and cleanup.
 - separation using elastic or spring separators.

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55. (408) When is the orthodontic patient *usually* scheduled for adjustments, after placement and ligation of the arch wires?
- 1 to 2 weeks.
 - 3 to 4 weeks.
 - 5 to 6 weeks.
 - 7 to 8 weeks.
56. (408) How should you check for loose bands at each orthodontic adjustment appointment?
- Visually inspect and run your finger across the bands.
 - Place the end of a scaler on the gingival edge of the band and tug lightly in the apical direction.
 - Place the end of a scaler on the gingival edge of the band and tug lightly in the occlusal direction.
 - Place the pin and ligature cutter on the gingival edge of the band and tug lightly in the occlusal direction.
57. (408) Following removal of fixed orthodontic appliances, how long does the dentist usually recommend the wear of a retainer?
- Only at night for 3 to 6 months.
 - Only at night for 6 months to a year.
 - A full time basis for 3 to 6 months.
 - A full time basis for 6 months to a year.
58. (408) What type of removable orthodontic appliance can be designed to accomplish tooth movement and retention functions?
- Hawley.
 - Activators.
 - Active retainer.
 - Orthodontic positioners.
59. (408) The items you should have available at the time of removable orthodontic appliance delivery are a mouth mirror, some articulating paper and a holder, an acrylic bur and a handpiece, some
- cotton forceps, and an explorer.
 - bird-beak pliers, and some diamond burs.
 - cotton forceps and some three-prong pliers.
 - three-prong pliers, and some bird-beak pliers.
60. (408) In what *sequence* does the dentist adjust the removable orthodontic appliance?
- Appliance retention, occlusion adjustment, and active or passive spring adjustment.
 - Occlusion adjustment, hard and soft impingements, active or passive spring adjustments, and appliance retention adjustment.
 - Hard and soft impingements, occlusion adjustment, active or passive spring adjustment, and appliance retention adjustment.
 - Hard and soft impingements, appliance retention, occlusion adjustment, active or passive spring adjustment, and reevaluation of appliance retention.

61. (408) All of the following are instructions for patients regarding removable orthodontic appliances care and wear *except*
- a. after eating patients should clean their teeth and appliance with a brush and toothpaste.
 - b. most appliances should be worn full-time except when eating, brushing, or participating in very active sports.
 - c. soak appliance in mouthwash or other alcohol base liquids because they will inhibit bacterial growth.
 - d. the active appliance will make their teeth sore for several days and acetaminophen or ibuprofen will relieve the discomfort.
62. (409) All are important aspects assisting in pediatric dentistry *except*
- a. communication with the child and parent.
 - b. speed and efficiency of the assistant.
 - c. parental observation of treatment.
 - d. behavior management techniques.
63. (409) The young pediatric dental patient may have fears from all of the following *except*
- a. known or strange people.
 - b. separation from their patients.
 - c. unknown settings and situations.
 - d. favorable experiences and known situations.
64. (409) When communicating with a child patient, what voice tone should you use during conversation?
- a. Normal.
 - b. Firm and definite.
 - c. Harsh or unfriendly.
 - d. High-pitched singsong.
65. (409) In pediatric dentistry, what method of communication strengthens the sincerity of what you are saying and enforces the attention given to a child patient?
- a. A gentle pat.
 - b. A harsh verbal tone.
 - c. The use of distractions.
 - d. Maintaining eye contact during conversation.
66. (409) What type of behavior characterizes a child patient with a high level of anxiety?
- a. Emotionally compromised.
 - b. Adverse to authority.
 - c. Shy or timid.
 - d. Frightened.
67. (409) The behavior characteristic where the child patient exhibits *avoidance* behavior like crying is called
- a. emotionally compromised.
 - b. adverse to authority.
 - c. shy or timid.
 - d. frightened.
68. (409) Which is *not* a potentially misdirected goal of the child patient adverse to authority?
- a. Undue attention and inadequacy.
 - b. Retaliation and revenge.
 - c. Intense dread or fear.
 - d. Struggle for power.

69. (409) For which behavior management technique in pediatric dentistry *must* parental permission be granted?
- a. Tell-show-do.
 - b. Voice control.
 - c. Hand-over-the-mouth.
 - d. Simple physical restraint.
70. (409) It is useful to have the parent present with the child in the dental treatment room (DTR) when
- a. treating children under the age of 3 or handicapped children.
 - b. the parent needs to become a barrier to the provider's orders.
 - c. a child's attention needs diversion from the provider to the parent.
 - d. the provider's attention needs diversion between the parent and the child.
71. (410) What type of endodontic treatment is commonly performed on primary teeth in pediatric dentistry?
- a. Pulpotomy.
 - b. Pulpectomy.
 - c. Pulp capping.
 - d. Apicoectomy.
72. (410) What type of oral surgery procedures *requires* prompt care for pediatric dental patients?
- a. Extraction of non restorable teeth.
 - b. Third molar extractions.
 - c. Treatment of injuries.
 - d. Multiple extractions.
73. (410) In pediatric dentistry, what type of prosthodontic appliance is often used to replace teeth until the permanent tooth erupts?
- a. Interim fixed partial denture.
 - b. Standard fixed partial denture.
 - c. Plastic removable partial denture.
 - d. Removable partial denture with cast metal framework.

Student Notes

Glossary

ADL	area dental laboratory
DI	distal incisal
DLWV	dental laboratory weighted value
DTR	dental treatment room
EBA	ethorybenzoic acid
FPD	fixed partial denture
MI	maximum intercuspation
MID	mesio inciso-distal
MO	mesio occlusal
MOD	mesio-occluso distal
OAS	obstructive sleep apena
OVD	occlusal vertical dimension
PCA	polycarboylate
PPE	personal protective equipment
PFM	porcelain-fused-to-metal
PJC	porcelain jacket crown
RPD	removable partial denture
SDS	saturated dehydrate solution
TMJ	temporomandibular joint
VDO	vertical dimension of occlusion
ZOE	zinc oxide and eugenol

Student Notes

Student Notes

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