

Integrating Appliance Therapy into Your Practice

» PRACTICE POTENTIAL:

Doctor, How am I going to eat or go out in public? I hate this flipper, and I just can't afford implants or a bridge now. Isn't there anything you can do for me?

Little Jimmy, age eight, doesn't seem to have enough room for all his teeth. In fact, two of them appear to be in cross-bite. Could you explain to Jimmy's parents why he doesn't have enough room for all his teeth? Even more important, could you treat Jimmy's problem?

A patient comes into your office with a horizontal fracture just above the crest of the bone in tooth #8. Because of the patient's high lip line, it is clear that an extraction or osseous surgery would severely compromise an esthetic result. Could you save tooth #8?

Every day we are faced with new challenges that effect how we deliver our care. Early tooth loss, drifting teeth, tipped molars, posterior bite collapse, anterior flaring, and occlusal trauma are just some of the difficult clinical problems we constantly face. When clinical situations like these arise, we must be equipped with alternatives in therapy to maintain a healthy, intact masticatory system.¹ By integrating Appliance Therapy into your armamentarium, you can gain the versatility you need to meet these challenges.

In the past, the term "appliance therapy" only referred to the use of simple orthodontic appliances like a space maintainer or a Hawley retainer. Today, this term encompasses a wide variety of appliances which are used through every phase of a patient's treatment.

Whether you are placing implants, performing periodontal surgery, or simply doing interceptive orthodontics, you will need to use appliances to help control and direct your patient's treatment.

The Principles of Appliance Therapy for Adults and Children Textbook was introduced to help you integrate the use of appliances into your practice. In this Practice Building Bulletin, I would like to share with you some clinical cases that demonstrate many of the innovative ways that appliances are being used.

» INDICATIONS:

I. Interceptive Orthodontics for Children

a. Simple Space Maintenance

Pediatric space management is often the key to preventing a serious malocclusion in the permanent dentition. The early loss of primary teeth can result in a reduction of arch length directly affecting the later eruption of the adult teeth. If the permanent teeth are not going to erupt within six months of primary tooth loss, appliance therapy is indicated.

The early loss of a tooth is usually due to dental caries or trauma and if space loss has not already occurred, rapid intervention with a space maintaining appliance is of utmost importance. If space loss has already occurred, a space regaining device should be considered.

Our clinical case exemplifies the premature loss of anterior teeth due to Baby Bottle Syndrome. On the day of

the extraction the doctor delivered a Groper Fixed Anterior Bridge. Esthetics and strength are the key advantages to this popular design. The esthetics is accomplished because the teeth are now made with a non staining composite instead of plastic. This allows you to characterize them and repair them when necessary. The anterior bridge is made extra strong by attaching each tooth separately to a specially designed, stainless steel pad (a Space Maintainers exclusive). Each unit is then welded and soldered to the arch wire. As you can see, within a week the tissue is healed and the patient is able to maintain normal speech, function, and esthetics.



Customary Fees and Income Potential:

Space maintenance is a relatively simple procedure. Follow-up appointments are generally only needed to keep an eye on the patient's growth. The average fee for this type of procedure ranges between \$500 to \$1000. Even if you only place one appliance a month you can add up to \$12,000 each year to your bottom line.

b. Crossbite Correction

Crossbites are one of the most common orthodontic problems that we see in growing children. They usually occur as a result of disharmony in either the skeletal, functional, or dental components of the orthognathic system of the child.³

It is essential to treat a crossbite in the primary and mixed dentition. Allowing this malocclusion to continue into the permanent dentition without correction can lead to: occlusal trauma, enamel abrasion or fractures of the teeth, the development of abnormal chewing and swallowing problems, abnormal growth of the maxilla and the mandible, the development of a permanent dentofacial abnormality and temporomandibular joint dysfunction.^{4,5,6}

Many methods have been used to correct crossbites. These range from the use of an acrylic incline plane for a simple anterior crossbite to a rapid palatal expander for a severe posterior crossbite.



In the case shown here, an eight year old girl exhibited both an anterior and a posterior crossbite. The upper device used to correct these crossbites was a modified expansion appliance. Turning the central screw once a week allowed for bilateral development of the arch. Posterior occlusal coverage was used to remove any inhibition to tooth movement that might occur as a result of the occlusion. A recurved finger-spring was used to move the central out of the anterior crossbite. Correction of the crossbites were completed in four months.

Customary Fees and Income potential:

Early treatment of a crossbite can usually be done rapidly, inexpensively and easily. Although fees are always subject to the cost of doing business in your area, the average fee for this treatment around the country seems to range between \$1,000 and \$1,500. By treating just two patients a month, you can conservatively add \$12,000 a year to your practice income.

II. Minor Tooth Movement for Adults

It's a fact that most adults are unwilling to undergo complete orthodontic care. Yet many of them would love to do something to improve the way their

teeth look. Fortunately, there are minor tooth movement procedures to give your patients the esthetic results they want.



A typical example of adult minor tooth movement is illustrated above. This patient has overlapping centrals and two peg laterals that are lingually placed. After a diagnostic wax up was completed, it became clear that the patient had two choices. He could either have his teeth prepared for four crowns or he could undergo some minor tooth movement followed by the placement of six veneers. The patient chose the less invasive procedure. In this case the orthodontics was completed by using a simple Hawley retainer with distal kickers and finger springs. Retainers of this type can be seen in the Individual Tooth Movement section of the Principles of Appliance Therapy textbook

Customary Fees and Income Potential:

Depending on the complexity of the case, fees for adult minor tooth move-

ment may range between \$750 and \$2,500. These cases can be the bread and butter of your practice. Don't be surprised if you are soon finding at least one case per month. At an average fee of \$1,500, you can expect to add \$18,000 to your yearly gross production.

III. Bleaching

The introduction of the home bleaching technique in March 1989 has opened the door for thousands of people to enjoy the benefits of tooth bleaching without experiencing the disadvantages of the traditional in-office techniques.

It is incredible to watch the transformation of a patient with a dull smile to one that is vibrant. Passive tooth bleaching is a procedure that can transform an average smile into an attractive more youthful smile. Enhancing a patient's smile can do wonders for that patient's self-image. The power of a whiter, brighter smile cannot be overstated. Notice the dramatic esthetic improvement seen in the following clinical case. Which smile would you want to have?



The key to success in bleaching is an excellent custom tray that properly holds the bleach against the surface of the teeth. A stock tray or an ill-fitted custom tray will not accomplish the desired results. An ill-fitted tray will also subject the patient to tissue irritations

that will cause them to return to your office, consuming your valuable chair time.

Customary Fees and Income Potential:

How much should the patient be charged for this procedure? To determine this, ask yourself the following questions. What are your overhead expenses? How much time will you spend with the patient? How much chair time will be consumed? I hear fees being quoted across the country that range between \$200 and \$1,000. If you are charging \$500 and you treat just two patients a month, you will add an extra \$12,000 a year to your gross income.

IV. Mouthguards



The purpose of the mouthguard is to reduce the incidence and severity of injuries during sports and athletic activities of any type. Intraoral mouthguards have been used for years to protect against injuries to the teeth and lips. Current mouthguard studies show that by separating the jaws and preventing the condyles from being displaced upward and backward against the wall of the glenoid fossa, they are also effective in reducing the forces that can cause jaw fractures, neck injuries, concussions, cerebral hemorrhage, and even death.^{7,8}

Due to the diversity of sports that can produce oral trauma, it is recommended that mouthguards be worn by all participants. **Every patient in your practice who is involved in any athletic activity where contact can be**

made or a fall can occur should be using an athletic mouthguard. Some examples are baseball, basketball, boxing, rugby, hockey, squash, soccer, racquetball, tennis, lacrosse, karate, judo, volleyball, touch and contact football, bicycling, and skating.



In the case shown the patient's injuries occurred while riding a mountain bike. Although she was wearing a helmet, she was not wearing a mouthguard!

Simply put, not all mouthguards are equal in their quality. Today the standard of care for the dentist demands that you only recommend custom formed lab made mouthguards. The state of the art mouthguards are Heat/Pressure Laminated Thermoformed Mouthguards: This type of mouthguard is constructed using ethylvinyl acetate sheets that have a Shore Hardness of 80 with minimal shrinkage or water absorption after their fabrication. The Mouthguards are laminated with a special machine, under high heat and high pressure. The occlusal surface can be finished to positively intercusate with the opposing arch if the lab is provided with an opposing model and occlusal bite registration.

As of today the majority of adults in the United States have some form of Periodontal disease ranging from gingivitis to moderate periodontal disease, with up to 15% of them actually suffering from advanced periodontal disease. Scaling and root planing is usually central in the treatment of periodontal disease, but it has its limitations. For example, during scaling, the bacteria can diffuse into the soft tissue and sometimes it's just impossible to get into the deepest area of the pockets.

Therefore use of chemotherapeutic agents and antimicrobials offers a method to help overcome the physical impediments and limitations of mechanical treatment alone.



Briefly, the Perio Protect method uses custom trays prescribed by you and made by a lab registered with the FDA. The trays have a special patented seal that directs antimicrobial agents into the gingival sulcus and these specially designed and custom fabricated trays maintain the medications there long enough to kill the bacteria. The frequency and duration of usage are modified as the medications kill the cause of the disease and the host heals. The medications modify the biofilm so the patient continues to use the method daily as part of a new home care system and the disease does not return. Perio Protect is a patented FDA-cleared medical device that delivers doctor prescribed medications that are able to:

1. Be delivered to the source of the infection
2. Eradicate bacteria with antimicrobial agents
3. End bleeding
4. Reduce inflammation
5. Promote gum healing
6. Reduce periodontal pockets

Although scaling and root planing is usually central in the treatment of periodontal disease, acceptance of treatment is impacted by patient phobias

and fears. This results in patients not receiving treatment that will improve their oral health. The good news is Perio Protect makes these cleanings easier and less painful, increasing patient acceptance of your treatment.

Customary Fee and Income Potential:

Average fees around the country range from \$50.00 to \$150.00 per arch. Just one mouthguard per week at \$150 each equals \$7,800 in additional gross.

Many doctors make mouthguards for their patients at or below cost because of their effectiveness as a marketing tool. Some marketing ideas I have found effective are to: offer this service to local gyms and sports clubs; become a school dentist; give talks to community service clubs i.e. P.T.A., Rotary; make the service available to neighborhood sports teams i.e. soccer, Little League, Pop Warner Football. A substantially higher return may be expected if the mouthguard service is used as a method to generate new patients.

V. Fluoride Delivery System

Fluoride is routinely used in most dental offices when a patient comes in for their regular prophylaxis. However, many patients need extra fluoride protection on a daily basis.

A typical example of someone who needs extra protection is shown in the next column. This patient has undergone extensive periodontal therapy and restorative work. To protect this patient's investment from the possibility of recurrent decay, daily fluoride treatment is a must. I have found that the best method of delivery is to use 1.1% neutral sodium fluoride in a custom tray for five minutes.²

This technique can effectively help:

1. Patients with a high caries index.
2. Patients undergoing periodontal therapy.



3. Chemotherapy and radiation therapy patients.
4. Patients with tissue recession, exposed roots, and root caries
5. Over denture patients.
6. Patients with extensive restorative work.
7. Orthodontic patients.
8. Patients with a high level of tooth sensitivity.
9. Anyone who needs extra hygiene motivation.

Customary Fee and Income Potential:

Average fees for this service range between \$150 and \$300. Many doctors regularly include this procedure as part of a patient's treatment. It is estimated that delivering one set of fluoride trays a week can add up to \$7,800 a year to your bottom line.

VI. Splint Therapy

Splints can be used to achieve a variety of objectives in the general practice. Bruxism splints are used to prevent excessive tooth wear, tooth mobility, and loss of tissue attachment. Stabilization splints are used after periodontal surgery to distribute forces, decrease trauma, and aid in the healing process.¹⁰ They are also used in orthodontics as

a form of final stabilization.¹⁰ Patients with TMJ dysfunction, i.e. patients who suffer from local (neck, shoulder, or sinus) pain, clicking in the joints, pronounced malocclusion, impaired excursion in opening of the mouth or deviant motions of the jaw, are also regularly treated with splint therapy.

Splints come in a variety of designs. Traditionally, they have been made from a hard acrylic material. The hard acrylic splints provide the patient with an adjustable occlusal surface but usually require substantial chair time to make the appliance fit comfortably. Some practitioners have offered their patients soft splints made out of a mouthguard material in an effort to make them more comfortable for the patients. Unfortunately these materials do not lend themselves to adjustment and repair and actually encourage bruxism.

In the following example, the patient is wearing a Talon[®] Splint to protect his six anterior veneers from any abnormal occlusal forces during sleep. The Talon[®] Splint's internal layer is a soft, thermoplastic, resilient polymer while the outer layer forming the occlusal surface is made of hard acrylic.¹⁰



The Talon[®] Splint should be used when you need:

1. A splint with a superior fit - the soft nature of the retentive portion of the appliance completely eliminates pressure points and thus the patient

adapts immediately. No longer will you have to spend time trying to find "tight spots" on the appliance due to model imperfections. You will find that your delivery appointments will be reduced greatly over conventional hard splints.

2. Positive retention without the use of metal clasps.
3. The ultimate in comfort - a Talon[®] Splint has the best features of a soft splint yet it allows for excursive movements free of the friction inherent in polyvinyl splint designs.¹⁰
4. An appliance that can be made in a manner that will not interfere with your patient's ability to speak normally. Because retention is superior, this appliance can be designed without speech inhibiting lingual extensions. This is greatly appreciated by your adult patients.

Customary Fee and Income Potential:

Fees vary greatly depending upon the condition being treated, i.e. Bruxism splint - \$500 to \$1,000, TMJ splints - \$400 to \$1,000 or more depending on the diagnostic, therapeutic, and restorative procedures required. Just one splint of any type per week will add over \$20,000 to your bottom line at year's end. If you choose to do TMJ therapy, one patient per month will add an additional \$40,000 or more.

VII. Sleep Apnea

Perhaps one in every ten adults snores. For most, snoring has no serious medical consequences. However, for an estimated one in 100 persons, habitual snoring is the first indication of a potentially life threatening disorder called "Obstructive Sleep Apnea."¹¹

In obstructive sleep apnea, the muscles of the oropharynx, hypopharynx, and tongue relax and sag, obstructing the airway and making breathing labored and noisy.¹¹ Collapse of the airway walls blocks breathing entirely. When

breathing stops, a listener hears the snoring broken by pauses. As pressure to breathe builds, muscles of the diaphragm and chest work harder eventually uncorking the airway. The effort is akin to sipping a drink through a floppy straw. With each gasp, the sleeper awakens but so briefly and incompletely that he/she usually does not remember doing so in the morning.¹¹



Because the etiology of obstructive sleep apnea is multifactorial and the treatment options are varied, proper diagnosis and treatment are best handled by a team approach. Members of this team may include a Sleep Specialist, an ENT, an internist, a speech pathologist, an orthodontist, an oral surgeon, and a general dentist. As a general dentist, you should play an active role in all three stages of apnea therapy: screening, diagnosis, and treatment.

Research has shown that many appliances are quite effective in treating snoring and obstructive sleep apnea. In fact, sleep appliances offer several advantages over other therapy choices. They are inexpensive, noninvasive, easy to fabricate, reversible, and quite well accepted by patients.

Sleep appliances seem to work in one or a combination of three ways. They either change the position of the soft palate, affect the tongue position di-

rectly, or alter mandibular position causing a change in tongue position.



The patient seen here is being treated for Snoring and Apnea with an appliance called the FBS or the Full Breath Solution. This appliances unique feature is that it works without repositioning the mandible! It has an extension that touches the tongue and prevents it from dropping back and blocking the airway during sleep.

An excellent protocol for the use of dental appliances has been established by the American Academy of Dental Sleep Medicine. We highly recommend that you follow their guidelines.¹²

Customary Fees and Income Potential:

Fees for treating obstructive sleep apnea range between \$900 to \$1500 for the initial treatment which includes the dental records and placement of an appliance. This does not cover out of office services such as sleep studies, tomograms/ceph x-rays, and any medical consultations or procedures.

This hidden source of income in your practice is huge. Remember one in every ten people snore and one in every hundred people suffer from obstructive sleep apnea.

VIII. Temporary Partialials

Temporary removable partial dentures serve many useful purposes and are an integral part of any prosthodontic treatment plan.¹³ These appliances are classified according to the purpose for which they are used. The three types of temporary removable partial dentures are the interim, transitional, and treatment partial.¹³

An **interim partial** is used to:

1. Maintain space.
2. Re-establish occlusion.
3. Replace visible missing teeth while definitive restorative procedures are being accomplished.
4. Serve the patient while he is undergoing periodontal or other prolonged treatment.¹³
5. Condition the patient to wearing a removable prosthesis.
6. When healing is progressing after an extraction or a traumatic injury.
7. Maintain function while accomplishing minor tooth movement.

The **transitional partial** denture is planned when some or all of the remaining teeth are beyond the point of restoration but immediate extractions are not indicated for physiologic or psychological reasons.¹⁴

For example, this treatment plan can be used effectively on an elderly patient suffering from a chronic debilitating disease where multiple extractions could exacerbate the basic illness.

Another example where a transitional partial is appropriate would be for those who are psychologically unable to accept the loss of their teeth. In the minds of many people, the presence of teeth is related to sex appeal, youth, and happiness. If the patient is truly concerned over the loss of his or her teeth, but the loss is inevitable, treatment should be carried out over as long a period as possible. The use of a transitional denture will enable you to accomplish this goal.¹⁴

The **treatment partial** denture may be used as a vehicle to carry tissue treatment material to abused oral tissue, as a splint following surgical corrections in the oral cavity and to increase or restore the vertical dimension of occlusion on a temporary basis while the results of the increase can be observed.¹⁴



The example shown here is of a patient who has extensive periodontal disease. A transitional partial has been designed which will allow the dentist to inexpensively add teeth to it as it becomes necessary. At the same time, this partial gives the patient the esthetics and function he needs to be out in public.

Customary Fees and Income Potential:

\$500 to \$1,500 per appliance is a reasonable fee depending upon the type and length of treatment. For example, a tissue treatment partial which is being used to treat papillary hyperplasia may only be used for two to three weeks.

The fee for this would be far less than for an interim partial that is being used to accomplish minor orthodontic movement. Longer treatment time and periodic adjustments would command a much higher fee.

In most general practices, there is not a week that goes by where an interim, transitional, or treatment partial would not enhance the quality of your patient care. At this conservative rate, you can expect to add a minimum of \$34,000 to your yearly gross income.

IX. Temporary Bridges

Simple space maintainers, which are more commonly used after premature loss of primary teeth, can also be used quite effectively as interim bridges for your adult patients.

Some common uses of interim bridges are:

1. To maintain space when a patient cannot afford a traditional bridge.
2. To re-establish the occlusion by preventing the super-eruption of the opposing dentition.
3. To replace visible missing teeth while definitive restorative procedures are being accomplished.
4. To stabilize an area until periodontal therapy is complete and a decision on the best restorative technique can be made.
5. To maintain space and protect a surgical site while healing is progressing after an extraction or a traumatic injury.
6. To maintain an implant site.

In the example shown in the following column the patient had unfortunately experienced a traumatic blow to the mouth. After a surgical extraction and a ridge augmentation were completed, an interim bonded bridge was placed to protect the surgical site. This technique was used for two reasons. First, a bonded bridge will prevent any pressure from being placed on the

augmentation site. Second, the patient was an attorney and could not wear an appliance that would interfere with his ability to speak.



Customary Fees and Income Potential:

How many times do you encounter a patient that for personal reasons cannot proceed with the treatment that you have planned for them? Temporary bridges give you the flexibility to keep these patients actively in your practice. Just two interim bridges a month can produce up to \$12,000 a year in gross revenue.

X. Forced Eruption

There are several common methods available to manage a tooth which is severely broken down or periodontally

involved. These include extraction of the remaining root followed by a prosthetic replacement, and techniques to expose sound tooth structure such as an osseous surgery or a forced eruption.

Forced eruption is the use of gentle, continuous orthodontic forces in a coronal direction. This movement can change the architecture of both the hard and the soft tissues allowing you to alter or eliminate an isolated periodontal defect. This coronal movement also gives you the ability to restore a tooth with lost tooth structure at or below the bony crest.¹

For example, after forced eruption, periodontal surgery can be performed exposing sound tooth structure without sacrificing bone on the adjacent teeth. The soft tissue can then be sutured to blend with the gingival margins of the adjacent teeth to produce an acceptable esthetic result.

There are several methods for erupting teeth. The dentist can choose either a fixed or removable appliance depending upon the clinical situation.

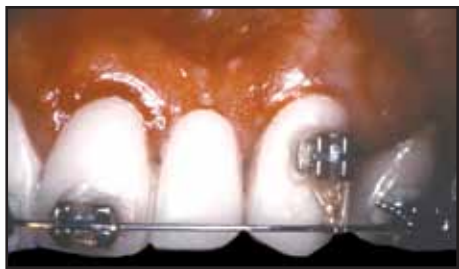
Removable appliances are used when bracketing teeth for anchorage is either inappropriate or not possible. For example, placing brackets on porcelain veneers or crowns is contraindicated as the bonding process will damage their finish.

Sometimes patients do not have enough teeth to use as an anchor. This happens quite frequently in partially edentulous patients where one of the remaining abutment teeth needs to be restored.

In both these cases, a removable appliance allows you to use the soft tissue, teeth, and the appliance to form an anchor while an activating spring can be used to engage the tooth to be erupted.

In our clinical example on the following page, a fixed approach was used to erupt a cuspid. Using fixed direct bond brackets and sectional arch wires, an

otherwise non-restorable tooth can be repositioned coronally. Because crestal bone comes along with it, osseous surgery can be accomplished without sacrificing the bone around the adjacent teeth. This decreases the chances of sensitivity, enhances the final esthetic results, and eliminates the need to prepare any other healthy teeth for the bridge.



Customary Fees and Income Potential:

Your fee for this procedure will depend upon the type and number of appliances, and the estimated length of treatment time. Fees of course will vary depending on your area. Remember that there will usually be a surgical procedure needed as well. In talking with doctors around the country, fees for this procedure range between \$600 and \$1,500.

Adding forced eruption to your restorative skills will give you the flexibility to treat those tough cases which would otherwise be unrestorable. General dentists usually find the orthodontic eruption part of this procedure to be

easy and predictable. However, most of us are uncomfortable performing esthetic periodontal surgeries. This offers you a great opportunity to work closely with your periodontist. What you will soon find is that your periodontist will become one of your best referral sources. Together, you will create esthetic results that you just could not achieve on your own. The results will be beautiful smiles and happy patients who will spread the good word about your work.

XI. Molar Uprighting

The mesially inclined second molar is one of the most common dental malocclusions in the adult population. This occurs because the first permanent molar is often extracted in childhood due to decay. In the adult, the first molar is often lost because of endodontic failures, multiple restorative attempts, decay in the buccal and lingual furcation, and advanced periodontal disease. Without timely replacement or provisions for space maintenance, the second molars drift mesially and tip. When this occurs, arch integrity is lost and teeth begin to shift.

The typical clinical picture consists of extrusion and migration of teeth, accelerated mesial drift, uneven marginal ridges, angular bony crests, altered coronal to gingival form, food impaction, caries, periodontal disease, and ultimately posterior bite collapse with loss of the occlusal vertical dimension.¹⁵



Molar uprighting can be accomplished using either a fixed or a removable appliance. The fixed appliance shown here can successfully upright a molar tipped up to sixty degrees, eliminate an isolated periodontal pocket and realign the occlusal forces along the long axis of the molar

There are times when the fixed appliance approach to molar uprighting is either inappropriate or not possible. For example, when a patient does not have enough teeth to act as an anchor unit, a removable partial with an expansion screw can be used.

Even when stabilizing teeth are present, more anchorage is often needed to upright a severely tipped molar. When this is the case, a fixed/removable approach can be used. Here, an uprighting spring inserts into a fixed molar bracket which has a tube or slot; the spring then hooks onto the removable appliance which provides the needed extra anchorage.



All of us see mesially tipped molars on a daily basis. Given the fact that most orthodontists prefer not to do these adult limited treatment cases and that they usually do them only as a courtesy to you, perhaps it is time for you to consider learning how to upright a mo-

lar. It is the proper thing to do for your patients' dental health, it will enhance the final results of your restorative procedures, and it can be very financially rewarding.

Customary Fee and Income Potential:

Your fee for this procedure will depend upon the type and number of appliances (fixed, removable, or combination) and the estimated length of treatment time. Fees will also vary from area to area. Some practitioners discount their fee if they are planning to do the final restorative work. In talking with doctors around the country, fees for this service range between \$1,000 and \$2,000.

I have never met a dentist that did not have at least several patients that could benefit from molar uprighting. In most practices, there are dozens of candidates for molar uprighting and the income potential is considerable.

Integrating these simple techniques into your routine treatment will open up a whole new world of restorative dentistry for you. Instead of leaving an area untreated or placing a compromised bridge or partial, you now have the flexibility to offer your patients ideal prosthetic care. Happy patients refer. This is one of the best practice building procedures in dentistry.

XII. Implant Appliances

Today, it is considered the standard of care to offer patients the option of having an implant when they have lost a tooth. In fact, implantology is one of the fastest growing fields in dentistry. Placing and restoring an implant requires planning. You will need to use every diagnostic tool at your disposal to have a successful result. Many appliances are now available to help you have greater control over your implant therapy.

a. Implant Stents

Implant stents can be used with CT scans and during surgical procedures to aid in the proper placement of implants. It is generally accepted that a CT scan, used in conjunction with special imaging, can produce invaluable information for pre-surgical planning of osseointegrated implants.

In our clinical example, the surgeon is using a stent as a guide for implant placement. Remember this appliance is a representation of your desired prosthetic result. It is important to take the time to make sure that this is correct.



Surgical stents are designed in the same manner as a scanning appliance with the exception that radiopaque markers are not needed. In fact, most surgeons simply modify their CT stent and use it during surgery. Of course surgical stents can be modified to meet the surgeons' needs. For example, some surgeons prefer occlusal coverage over the existing teeth, while others want the appliance to have full palatal coverage. Space Maintainers will construct your stent to your exact specifications.

b. Interim Implant Appliances

Interim implant appliances have also been designed to give you flexibility in your treatment. Appliance selection will depend on the stage of treatment and the desires of the patient. The com-

pletely removable design shown on this page is retained with wrought wire clasps and can be used through all the stages of implant therapy. This appliance affords the patient the advantage of an excellent esthetic appliance with no speech impeding lingual acrylic as found in regular partials.



Customary Fee and Income Potential

Fees for surgical stents are generally kept to a minimum. However, when a stent is being used for a CT scan to determine if there is enough bone for the proper placement of an implant, a separate charge is appropriate. Fees for this stent range between \$300 and \$500. Fees for interim implant appliances range between \$500 and \$1,000. Even if you are starting only one new implant case a month, you can add up to \$12,000 to your gross production a year.

» TREATMENT PROCEDURES

1. As always, proper appliance selection and application requires a well thought out and thorough diagnosis and treatment plan. This is especially true when you are dealing with a compromised dentition. Your diagnostic records should consist of the following:
 - a. A complete medical and dental history.
 - b. A thorough clinical exam. This should include:
 1. An oral cancer screening.
 2. Documentation of any abnormalities in the oral mucosa and gingiva.
 3. Radiographic evaluation of all necessary films (FMX, PAN, CEPH, TMJ).
 4. Charting of all existing restorations and carious lesions.
 5. A thorough periodontal evaluation.
 6. An occlusal analysis.
 7. A TMJ evaluation.
2. As a general rule, all caries and necessary restorative work should be completed before impressions are taken for appliance.
3. Patients should be checked after the first week of wearing appliances.
4. TMJ patients should have a complete TMJ work up. Radiographic techniques such as a transcranial or a tomogram should be used for the purpose of confirming your clinical diagnosis.
4. Upon delivery of the appliance, do any needed occlusal adjustments.
5. Discuss with the patient how to insert, remove, and care for the appliance.

» CARE FOR APPLIANCES

Fixed Appliances:

Whether your patient is undergoing complete fixed orthodontics, is having anteriors splinted with a Maryland splint, or space maintained with an interim bridge, all fixed appliances will demand special oral hygiene care. We highly recommend the use of fluoride with a tray delivery system to help prevent caries activity.

Removable Appliances:

1. Never allow the appliance near high temperatures or allow it to dehydrate for more than 24 hours.
2. All appliances should be kept moist when not in use. A retainer case works nicely. The patient should simply place the appliance in the case with a small piece of wet paper towel.
3. All appliances should be cleaned every day. A soft brush and toothpaste, or soaking in a cleaner, like Clean and Fresh, is all that is needed.
4. Removal of the appliance is best accomplished by using equal pressure on both sides of the mouth. This will minimize the chance of damage to the resilient portion of the appliance.

» LAB FEES

Lab fees range from \$20 for a simple space maintainer to \$200 for a UCLA Sleep appliance. The average cost for an upper and lower appliance is \$75 per arch.

» SUPPLY LIST

Whether you have been practicing for one month or forty years, you will find that you already have almost everything on this supply list. Be sure to take a moment and review it. Is there a favorite instrument that you use that I have left out?

□ Appliance therapy design worksheet*

Alginate*

Mixing bowl and spatula*

Rim lock impression trays*

Impression tray tree*

Bite registration material*

Per-fect bite sticks*

Elastic separators*

Acrylic burs*

Acrylic repair kit*

Pressure pot*

139 Bird beak pliers*

Three prong pliers*

Expansion screw key*

Stiff robinson brush*

Micro-screw screwdriver*

Boley gauge or diagnostic caliper*

Cheek retractors*

Etchant*

Fluoride releasing band cement*

Pediatric shade guide*

Posterior composite

Wet field bracket bonding adhesive*

Emergency bracket kit (upper and lower brackets with arch wires)*

Cotton pliers or bracket placement tool*

Elastic ligatures*

Needle nose hemostat or ligature*

Arch tie placement forceps*

White utility comfort wax or brace relief*

Direct bond bracket removing plier*

Patient Appliance Care Kit

Interproximal stripping tool*

*Available from Success Essentials, call 800-423-3270

» LAB REQUIREMENTS

Space Maintainers' goal is to give you the best service possible. To help us get your lab work back to you on time, we need the following:

1. A detailed prescription. If you are having a problem designing an appliance have a look at our Practice Building Bulletin called The Appliance Therapy Worksheet. By using this worksheet, with a little practice, you'll have no difficulty designing an appliance.
2. The date wanted and the patient's appointment date. If there is a problem in meeting the due date the lab will call. We will then choose a delivery method, such as UPS, that will get the work to you on time.
3. Accurate casts poured in stone that capture all the teeth and land areas. Air bubbles or holes on tooth surfaces are unacceptable as they can negatively affect the fit of the appliance.
4. Provide a carefully taken construction bite that represents the exact vertical and AP position that you desire in the finished appliance. This is the single most important step to successful treatment after making the correct diagnosis.¹⁰ Check the completed construction bite by placing it back on the working models. Then carefully wrap the bite separately for shipment.

» CONTRAINDICATIONS AND CONCERNS

1. Careful diagnosis and treatment planning are the key elements to success. Before becoming involved in treatment, the patient should be informed of the total treatment required including periodontal, orthodontic and prosthetic therapy.
2. For appliance therapy to work, all care givers must work closely together. This integrated method of treatment will help you deliver the best care possible.
3. Before beginning any appliance therapy, thorough root planing and curettage must be completed to eliminate all inflammation. If the inflammation is not controlled, tooth movement can result in irreversible crestal bone loss. This will probably cause more harm than benefit to the patient.
4. All new or recurrent caries should be treated prior to the fabrication of an

appliance. Generally the younger patient is even more susceptible to caries when wearing an appliance. Adequate prophylactic measures must be taken such as fluoride treatments to prevent decalcification and caries in the teeth contacted.

5. Temporary bridges must not interfere with normal hygiene. To assure this, we recommend that the bands for these appliances be lab made. Only in this way can we assure that proper contours and embrasure spaces will be respected in the appliance fabrication.
6. Appliances can only be effective when they are properly designed to adhere to the principles of retention, force application and anchorage.⁴ Therefore, it is very important that some form of retention be placed as near as possible to the active components of the appliance.
7. When using clasps for retention, care should be taken not to interfere with the patient's normal occlusal pattern. Occlusal interferences will usually cause the patient not to wear the appliance.⁴
8. **A removable appliance must never be unilateral.** A unilateral appliance offers a definitive hazard because the patient may swallow or aspirate the prosthesis.
9. As with all appliances, patients should be checked on a regular basis to be sure your treatment objectives are being met.

» THE ECONOMICS OF APPLIANCE THERAPY

The advantages of doing appliance therapy are:

- * Increased communication between treating doctors.
- * Better comprehensive patient care.
- * Increased referrals.
- * Increased direct income.

Throughout this bulletin, I have tried to give you an idea of how adding appliance therapy to your practice can dramatically affect your income. Add the figures up yourself. Even being extremely conservative, by doing just one of every procedure mentioned in this bulletin, each month you will increase your practice income by over \$150,000 a year!

by **Dr. Rob Veis**
Director, Practice Development

Appliance Type	Fee Range	Potential
Space Maintenance	\$150-400	\$4,800
Simple Crossbite	\$300-800	\$12,000
Adult Minor Tooth Movement	\$500-\$1,500	\$39,000
Bleaching Splints	\$200-\$1,000	\$12,000
Mouthguards	\$50-\$150	\$7,800
Fluoride Trays	\$75-\$150	\$7,800
Bruxism Splints	\$400-\$600	\$20,000
TMJ Splints	\$400-\$1,000	\$40,000
Obstructive Sleep Apnea	\$900-\$1,500	\$24,000
Temporary Partial	\$500-\$750	\$34,000
Temporary Bridges	\$300-\$600	\$12,000
Restorative Enhancing	\$750-\$2,000	\$24,000
Surgical Stents	\$300-\$500	\$12,000
Total Potential		\$249,400*

*Yearly potential amounts are estimated based on my personal experience in a solo practice using an average fee in US Dollars

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Northwest:	800-423-6509
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Northeast	866-310-5800
Midwest:	800-325-8921
CANADA	800-661-1169
AUSTRALIA	03-9521-0299
MALAYSIA	03-6251-8599
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