

SPLINT APPLIANCES/ SPORTS MOUTHGUARDS

DIGITALLY DESIGNED FOR IDEAL FIT AND COMFORT

DAL is proud to offer a full range of digitally designed and manufactured splints and deprogrammers to assist you in protecting restorations or preventing damage from bruxism and clenching. Your patients will appreciate the ideal fit and comfort of our digital splints and you will benefit from less chairtime and increased practice profitability.

- Comfort H/S Bite Splints
- DAL CAD/CAM Skinny Splints
- DAL CAD/CAM Full Contact Splints with Anterior Guidance
- DAL CAD/CAM Deprogrammers

Several appliances presented in this brochure are designed and taught by:

- Dr. Peter E. Dawson
- Dr. John C. Cranham
- Dr. Frank M. Spear
- Dr. DeWitt C. Wilkerson
- Pankey Institute



DAL CAD/CAM
Skinny Splint

HOW TO CHOOSE THE APPROPRIATE APPLIANCE

Symptoms/Concerns

- Occlusal Muscle Disorder
- Protection Against Bruxing and Clenching
- Finding Comfortable Joint Position
- Occlusal Muscle Disorder
- Protection Against Bruxing and Grinding
- Certain Intracapsular Disorders
- Long-Term Wear
- Provide Immediate Disclusion of Posterior Teeth
- Protect Natural Dentition and Fixed Restorative

Appliance Type

- Anterior Deprogrammer
- Full Contact Splint with Anterior Guidance
- Nightguard Bite Splint



DAL Comfort Bite Splints
Available in clear, blue, red and green



DENTAL ARTS LABORATORIES, INC.

DAL SPLINTS AND DEPROGRAMMERS PROTECTION AND COMFORT.



DAL Comfort Bite Splint **Easy, Comfortable, Cost Efficient**

Providing bruxing and clenching splints can be one of the most rewarding treatments in dentistry today by getting your patients out of pain quickly and reducing further tooth destruction. These sparkling clear splints are available in soft, or hard with a soft inner surface for extra comfort. The Comfort Bite Splint is a vacuum thermoformed splint made from a co-polyester disc and is ISO medically approved for dental use.



DAL Skinny Bite Splint **Clear, Strong, Long Term, Thin, Comfortable**

Whether protecting restorations or preventing damage from bruxing and clenching, the DAL Skinny Bite Splint offers long term performance and lasting value. Fabricated using precise CAD/CAM design and milling technology, each DAL Skinny Splint is milled from a tough, durable and transparent PMMA thermoplastic featuring canine guidance with posterior disclusion.



Dawson B-Splint - Anterior Deprogrammer **Reduces Clenching, Alleviates Head, Neck, Joint and Shoulder Pain**

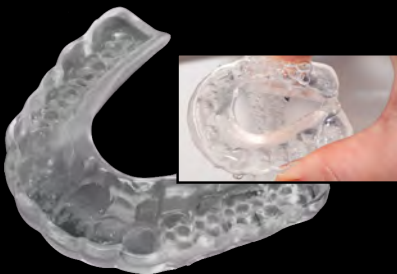
The Dawson B-Splint, an anterior deprogrammer developed by Drs. John Cranham and DeWitt Wilkerson of The Dawson Academy, features full occlusal coverage with a small anterior discluding element to eliminate any interferences during function. This splint separates all posterior teeth contact, leaving only the anterior teeth in contact and decreasing muscle activity (clenching) by almost 80%.

DAL SPLINTS AND DEPROGRAMMERS PROTECTION AND COMFORT.



SRS Splint - Perfected Occlusion Splint Ideals Muscle Activity

Superior repositioning splints (SRS) are a new reversible treatment used to give maximum occlusal contact in the form of centric stops, which allows seating of the joints while creating harmony in the muscles of the mastication through anterior guidance with posterior disclusion.



DAL CLEARsplint CAD/CAM Milled and Self-Adjusting

The proprietary CLEARsplint material is amine and methyl methacrylate free, providing a splint that is perfectly clear (optical clarity). The material is a self-adjusting material that softens when heated before wearing (warm water) and then hardens once placed in the mouth, making it very comfortable to the patient. DAL CAD/CAM designs and mills these splints to provide you with the ultimate in fit and predictable dimensional stability. CLEARsplints are available in flat plane or with canine guidance and posterior disclusion.

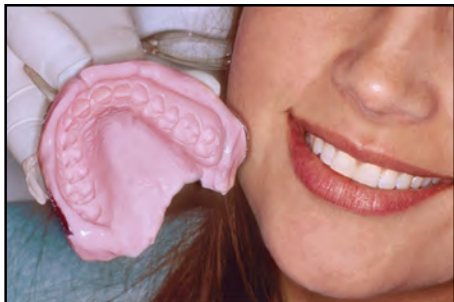


DAL CAD/CAM Gelb Splint Custom CAD Designed

The Gelb Splint is a traditional mandibular splint used to establish proper vertical dimension with slight to moderate anterior repositioning. The amount of repositioning dictates how heavily indexed the posterior bite pads become. DAL Gelb Splints are unique in that the metal lingual bar (the major connector) and clasps are custom CAD designed and then cast to each individual patient for perfect fit and adaptation - versus the "one-size-fits-all" traditional bent wire construction.

BASIC CLINICAL REQUIREMENTS FOR SPLINT FABRICATION

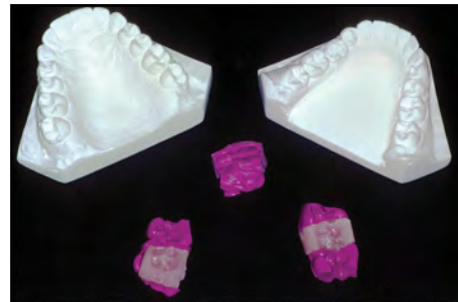
THE BASICS - WHAT'S NEEDED



Upper and lower alginate impressions



Open construction bite



Upper and lower models with open construction bites

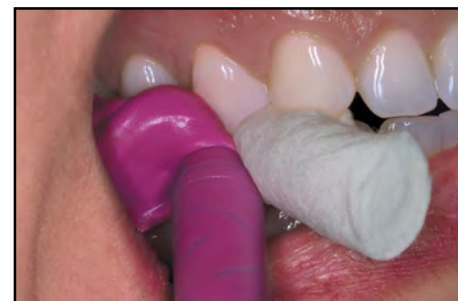
CLINICAL TECHNIQUE - First Appointment



1. After diagnosis of bruxism, instruct the patient to close into centric relation to verify midline position and bite.



2. Place 2 cotton rolls behind the cusps and instruct the patient to close until resistance is felt.



3. With patient closed into this open bite, inject bite registration material into the posterior openings of both quadrants.



4. Inject bite registration material into the anterior opening to capture a complete open construction bite.



5. As an alternative technique, you can place softened wax over the posterior teeth and have the patient close to the desired 3 mm opening.



6. Take upper and lower alginate impressions that include all teeth and extend at least 3 mm past buccal gingival margins and 10 mm past lingual gingival margins.

Second Appointment



7. Seat the splint and evaluate fit, retention, and occlusion. Adjust with carbide bur and polish if necessary.



8. After completely seating the splint, check bite using marking tape to identify any premature occlusion.



9. Instruct the patient to care for their splint by rinsing with water after every use and storing dry.

PREDICTABLE SPLINT THERAPY GO BEYOND THE NIGHTGUARD

By Dr. Leonard A. Hess
Senior Faculty, The Dawson Academy
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Splint therapy is a major source of frustration for many dentists. The question is often the same, “How can something so seemingly simple be so difficult and unpredictable?” Dentists often feel confused about what type of appliance to prescribe. The clinician is unsure if they are making a nightguard, a testing device, or just something to give to a patient when they just don’t know what to do, but they know they need to do something.

There are also questions about how it should be designed and fabricated. And there is the concern of patient comfort and compliance. Factor in the confusion about the length of treatment as well as the goals of splint therapy, and you have a recipe for frustration. All of the above about splints can be summed up by a great quote from Dr. Peter Dawson, “In spite of its popularity as the most common treatment for orofacial pain related to TMJ disorders, it is still considered by many as a ‘mysterious treatment’ that no one really understands.”

The reality is that **appropriate** splints do work. Unfortunately, splints can also make a patient worse when the wrong appliance is prescribed or when they are improperly designed.

In order to prescribe the correct type of orthotic splint, it is incumbent on the clinician to perform a complete examination. This examination should include the following:

1. Oral medical and dental history (dental focused on joint, muscle, and occlusal Hx)
2. Muscles of mastication palpation and evaluation
3. Evaluation of range of motion
4. Centric relation load test
5. Doppler auscultation
6. Evaluation of the dentition for wear, migration, and mobility
7. CBCT or MRI imaging

The complete examination will lead the clinician to a differential diagnosis:

1. Intra-capsular issue
2. Occluso-muscular issue
3. Other (medical systemic, other pathology, psychological, etc.)

The diagnostic flow must follow the appropriate path of a complete examination leading to a differential diagnosis, leading to appropriate splint treatment, leading to definitive occlusal and restorative treatment. Splint therapy is the beginning of treatment for most patients, not the end of treatment. Splint therapy is part of a treatment plan. Making a patient dependent on a piece of plastic should not be the goal.

Splints fall into two basic categories:

1. Permissive Splints

This is an appliance which allows unrestricted movement of the mandible against the appliance. Most splint therapy will fall into this category.

2. Directive Splints

This type of appliance will direct the mandible into a predetermined position. These types of appliances should be used with great caution and for very limited periods of time. Permanent occlusal changes can occur with improper directive splint therapy.

TREATING INTRA-CAPSULAR PROBLEMS

The primary splint to treat an intra-capsular problem is a Superior Repositioning Splint also known as an SRS or CR Splint. These are full coverage permissive splints which can be made to cover the maxillary or the mandibular teeth. The goal with this appliance is to meet the five requirements of occlusal stability on the appliance, thus in a reversible manner. The five requirements of occlusal stability are as follows:

1. Stable holding stops on each tooth in centric relation
(In the case of an SRS splint, this will be as close to CR as possible. The goal of SRS splint therapy will be TMJ's capable of full loading with bi-manual manipulation without tension or tenderness.)
2. Anterior guidance in harmony with the envelope of function
3. Immediate disclusion of the posterior teeth in protrusion
4. Immediate disclusion of the balancing side during excursion toward the midline
5. Disclusion of all teeth on the working side with the anterior guidance



FABRICATION OF AN SRS

An SRS splint must be fabricated utilizing facebow mounted high quality impressions or digital scans. For the splint to fit the occlusion correctly, the 3-D orientation of the maxilla and condylar axis of rotation must be recorded. The lower model should be mounted as close to CR as possible. The splint should be as thin as possible and created with anterior contour to provide separation of posterior teeth in excursive movements. The splint should be smooth, fit passively, and not rock on the dentition.

TREATMENT EXPECTATIONS WITH AN SRS

The splint must be equilibrated at the delivery appointment to allow even holding contacts, and to be sure there are not any posterior interferences in excursive movements. As the joints stabilize and the condyles seat into adapted centric posture, the splint will need to be further equilibrated. This will be evident by the patient continuing to hit first on the distal aspect of the splint. This is normal and a sign of positive treatment progress.



The patient can expect to wear the SRS splint 20+ hours a day. On average, they should expect the treatment to last 3-6 months. And it is not uncommon to see improvement faster, and also for it to take longer than 6 months. In addition to patient compliance with wearing the orthotic splint, there are a few considerations which should be communicated to the patient.

1. Maintain a softer diet and reduce inflammation in the TMJ's
2. Drink plenty of water and stay hydrated
3. Get 8 hours of sleep each night
4. Increase exercise
5. Eat a healthy diet
6. Reduce smoking and alcohol consumption
7. Positive self talk

Following all of these guidelines will promote a healing environment for the body to allow adaptation in the TMJ's.

Goals of SRS Splint Treatment:

1. Relief of symptoms
2. Reduced inflammation in the joints
3. Formation of a pseudo disc
4. Decrease loading of the joints
5. Increase synovial fluid production
6. Test a reversible perfected occlusion
7. Decrease bruxism and parafunction
8. Alterations of patient behavior

Once stabilization of the joints has occurred, which means they can be load tested and the symptoms have resolved, it is time to correct the underlying issues which resulted in the need for splint therapy. In the words of Dr. Peter Dawson, "Splint therapy is not a cure for occlusal disharmony. The common practice of removing the splint without correcting the occlusion is counter-productive, as the original cause of the problem is still present. In time, the uncorrected occlusal interferences will reactivate the problems. The next proper step is to correct the occlusion."

TREATING OCCLUSO-MUSCULAR ISSUES

The most effective way to treat occluso-muscular issues is with a permissive splint designed to be a deprogramming device. Examples of segmental permissive deprogrammers would be Lucia Jigs, NTI devices, Quick Splints, or Cranham Deprogrammers. Segmental deprogrammers are short term devices or intra-office devices. Because they are segmental, they cannot be worn more than 6 to 8 hours a day without the risk of tooth drifting or eruption. However, devices such as Lucia jigs are excellent tools to help make a differential diagnosis of occluso-muscular issues versus intracapsular.



Deprogrammers are highly effective because they separate the posterior dentition. When the posterior teeth are not touching, this shuts down the elevator muscles around 70% to 80%. These periods of relaxation can greatly reduce inflammation and lactic acid buildup in overused/hypertrophic muscles.

A different device must be prescribed for long term deprogramming, and to allow usage greater than 8 hours a day. A Dual Arch B-Splint is the full coverage permissive device recommended for these clinical situations. Both arches are covered with essentially rigid orthodontic retainers. The anterior segments will have opposing flat plane tables. When the patient closes, the back teeth stay separated. When the patient slides into excursive movements, there is little resistance as the back teeth stay separated and the only contact is on the flat planes. That is why the Dual Arch B-Splint is also an excellent appliance for bruxers. Patients should discontinue the usage with any discomfort and report this to the clinician. Temporary bite changes are also to be expected in the mornings. And the doctor must also use a deprogramming device under caution in patients with very large CR/MI interferences.



FABRICATING A DUAL ARCH B-SPLINT

High quality impressions or scans is all that is required for the laboratory to fabricate a B-Splint. Because the occlusion will be open, there is no need for a facebow.

DELIVERY AND PATIENT INSTRUCTIONS

At delivery, the doctor should ensure a passive fit of both arches. The patient must move their mandible into extreme protrusive and lateral excursive movements to be sure there is no contact of the splint on molars. This is a critical step that should not be overlooked. If the patient can contact second molars on the B-Splint, then the muscles of mastication will still be active.

In conclusion, the astute clinician must utilize the complete examination to be sure the appropriate splint appliance is being prescribed. The clinician must understand the goals of treatment with the appliance, and also what long term treatment must be follow. And the clinician must also not lose sight of other non-dental issues such as neuropathology, CNS issues, soft or hard tissue pathology, psychological issues, and pain disorders to name a few.

