

## THE SAGITTAL APPLIANCE

The American orthodontists have been slow to utilize removable appliances because it was thought that fixed appliances were far superior. It is true that fixed appliances are capable of more precise tooth movement, but the active plates have some advantages also:

1. They can use soft tissue support for easier anchorage control.
2. Occlusal bite plates can be incorporated to provide TMJ relief during treatment.
3. These bite plates can reduce tipping of buccal segments during tooth movement, utilizing occlusal support.
4. They are removable, therefore easier to clean.
5. They are also more esthetic.

The sagittal appliance looks like a Hawley retainer with no labial bow. The working part is two jack screws placed to open antero-posteriorly. The split is usually between the lateral incisors and cuspids, but can be placed wherever needed. The appliance is held in place by four Adams clasps, usually on the first bicuspid and first molars. It can be used both in the upper and lower arches.

The sagittal appliance is quite versatile and can be used in several ways:

1. To provide space to correct crowding by distalizing molars. This is most effective when accompanied by second molar extractions, but will work reasonably well with third molar extractions on older patients.
2. Moving lingually tipped incisors forward. No extractions should be done when attempting this.
3. Anterior repositioning the pre-maxilla when a deficiency exists in Class III cases. A maxillary lip pad similar to a Frankel III appliance is incorporated to reduce lip muscle pressure. Also, the jackscrews are moved forward so the surface support is smaller in the front, allowing more pressure in that area.
4. Use as a TMJ splint while uprighting lingually tipped maxillary incisors

in Class II, division 2 malocclusions.

In all these applications, the sagittal appliance must be followed by some other treatment to complete the case. Sometimes a bionator is used later to correct a skeletal Class II problem, but ultimately full bands must be used to provide final detailing to provide a good functional occlusion. This point is not emphasized enough by some clinicians teaching this appliance to dentists. Typically, the sagittal will leave generalized spacing somewhere in the arch, depending on how it is being used. Rotations and some tipping may occur, particularly in the anterior teeth. Also, in patients with a tongue thrust habit, the bite will open very quickly as the teeth are mobilized by the appliance. The results do not detract from the usefulness of the appliance, however, if the operator is equipped to correct them in the finishing stages.

So, if braces are going to be needed anyway, why do I bother using the sagittal appliances? The following are some common situations in which I like to use this appliance:

1. Adults with minor to moderate crowding and good profile, can be treated with no extractions except third molars without use of a headgear with a year or less in braces.
2. TMJ patients (usually adults) with tipped incisors causing overcoupling of the anterior guidance can get immediate relief of myospasm and begin correcting the malocclusion without the six month delay of splint therapy.
3. Mixed dentition Class II, division 2 cases that need the incisors tipped forward before bionator therapy do not have to have braces both before and after the bionator if they begin treatment with a sagittal. This is a big psychological boost to these patients because nobody wants braces twice.
4. Borderline extraction cases, age 11 - 14, that have nice profiles can be treated with second molar extractions and sagittals, letting the third molars erupt later. These cases have better stability than bicuspid extractions and look like non-extraction cases with nice full smiles and better function. This should not be attempted on patients with deep overbites where the second molars are needed to help open the bite. The patients also appreciate reducing their time in braces sometimes as much as 50%.
5. Skeletal Class III patients in mixed dentition with a maxillary deficiency

respond well to Class III sagittal therapy because there is some orthopedic growth correction at the premaxillary sutures. Also, the lip pads promote muscle balance to increase long term stability. This appliance is accepted better by our patients than a face mask type reverse headgear, so it is the appliance of choice unless the problem is extreme.

As you can see, this appliance gives us more treatment options to better serve your patients. As long as we recognize its limitations, and are prepared to complete treatment with full bands, the sagittal is a very useful tool in our orthodontic armamentarium.