

The Sectional Arch In Class II Extraction Cases

OTTO J. SORENSON, D.D.S.

Greenwich, Connecticut

I have long questioned the practice of a complete abandonment of the sectional arch in the treatment of Class II extraction cases. I have continued to use the sectional arch in the preliminary stages of the full band technique. The sectional arch is employed in a form somewhat modified from the usual type. It is my belief that the use of this modified sectional arch provides advantages which are both substantial and measurable, advantages to the patient as well as to the operator.

The complete band technique in the treatment of malocclusions is an exacting and time consuming undertaking. Of course, if it can be started gradually, it will be easier for the patient and the operator, too. It also can be made less overwhelming to the patient to have only the cheek teeth banded first; later, the lower incisors, and finally, the maxillary incisors as treatment progresses.

The object of the modified sectional arch is to apply force *only* in the direction in which the teeth are to be moved. This method of approach avoids the placing of bands on the upper anterior teeth and the necessity for a painstaking application of a full maxillary archwire in the early stages of treatment.

This modified type of sectional arch is quite simple to construct and simple to use. The usual type of sectional arch requires several replacements during the treatment period. By use of the clock spring (as evolved and designed by Dr. Strang) the effective life is extended many times and breakage is

virtually nonexistent. Its functional durability is achieved by the simple act of activating the clock spring with a new ligature. As the tie loop is always against the tube on the molar band, there is not the "see-saw" action on the anchor tooth that obtains when a loop sectional arch is employed.

There seems to be no question about the fact that the change in the occlusal relations of the maxillary and mandibular buccal teeth is a reciprocal "fifty-fifty" movement. It consists of a forward migration of the mandibular molars and premolars and a distal movement of the maxillary side teeth to obtain the change in the mesiodistal relation and to close the spaces.

The strategy of treatment is to have intermaxillary force constantly available before exerting a distal moving force to the maxillary canines. (It is assumed that the elastics will be worn continually as instructed.) This permits a long horizontal resilient pull of the intermaxillary elastics as the hook is fashioned in the mesial end of the sectional arch. The usual sectional arch, with the intermaxillary hook attached distally to the closing loop, affords a shorter and more vertical pull. My experience with the modified sectional arch has convinced me that the long horizontal pull which it affords is more desirable.

As a prerequisite to the use of this sectional arch, it is necessary that the following band placement and arch manipulation be executed.

Appliance and band placement begins on the mandibular teeth and an

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.021 x .025 loop arch is applied just as soon as it is practical and possible to do so. The molars and second premolars are banded first, preferably before extraction, and the canines immediately afterward. It is good procedure to place archwires and bands promptly after extraction in order to control the space closure. This procedure will avoid unfavorable tipping of the teeth following extraction, tipping which may take place if there is postextraction delay for any one of a variety of reasons, such as illness or failure to keep appointments.

The first mandibular archwire employed is an .018 with a coil spring between the canine brackets. The coil spring is .010 hard steel, compressed about $1\frac{1}{2}$ times the width of a single bracket. In the event that the occlusal discrepancy is so great as to require adjustment in the occlusal plane, a corresponding "step-up" is made in the canine area to permit easy seating of the archwire into the brackets. The archwire is not made passive in the occlusal plane since some depressive action should be exerted. If, after a few weeks, spaces do not develop between the incisors, the coil spring may be opened slightly. Any occlusal interference from the maxillary first premolars should be constantly observed; if such interference occurs, its removal should be accomplished in the usual manner by extraction of the maxillary first premolar or by the insertion of a bite plane.

When slight spacing occurs between the lower incisors, they can be easily banded. Next, a series of round archwires is employed until a loop arch of .021 x .025 steel can be inserted.

Concurrently with this procedure on the mandibular teeth, the maxillary buccal teeth have been banded and levelled following the extraction of the maxillary first premolars. Full round

arches may be used followed by laminated sectional arches, if necessary, to complete the levelling.

Finally, the working sectional arch is applied. This wire is made of .019 x .026 steel with a tie loop against the molar tube and a hook in the mesial end, forward of the canine, for intermaxillary elastics. The tie loop is in contact with the mesial end of the tube on the molar band so that the force of the intermaxillary elastics will be directly transmitted to that particular tooth. After several weeks' application of the elastics, clock springs are added. The clock springs are made of .022 gold and platinum wire. The attachment to the sectional arch is made with low fusing stainless steel solder at a point approximately midway between the premolar and canine brackets. The end to be soldered is bent into a small hook in the notched beak of an SSW 342 plier; the solder is fused to the hook in the gold wire which is applied to the buccal and occlusal aspect of the section archwire and is drawn to the steel wire the very moment the solder is molten. The soldering procedure is one which I have employed over a period of years and it has, for me, proved most effective. It is a method which rarely fails to achieve the ideal result of a complete encirclement of the steel wire by the solder, a goal I was never able to reach with any pronounced assurance by other soldering procedures. The buccal placement offsets the coil and the second loop of the spring will be above the sectional archwire. Usually this is enough to clear the gingival tissue.

The clock springs are fashioned by bending the gold wire around the beaks of a tapered round-nosed plier to form a coil two to three millimeters in diameter (Fig. 1).

That a coil, seemingly so small, proves fully effective should not be

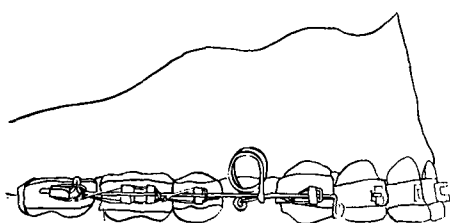


Fig. 1. An artist's sketch of a sectional archwire and clock spring. The incisors would not be banded at this stage.

surprising when one considers the fact that such a coil requires a very substantial length of wire. Among its many advantages is the fact that it provides a light resilient force and thus avoids the problems that may ensue from excessive force. Coils of clock springs larger than three millimeters in diameter are more difficult to adjust to avoid impinging on the soft tissue and may well reduce the distance the canine bracket can move along the sectional archwire.

The terminal end of the clock spring is bent around the end of an SSW 342 plier to form a small eyelet. The cut end is finished with a safe-sided disk. This will allow close contact in completing the eyelet with the plier mentioned above.

The clock spring is activated by ligating to the distal staple of the canine band, making one twist to hold the compression of the spring; then one end of the ligature is passed lingually to the sectional archwire and through the gingival wing of the canine bracket. It then passes buccally to the sectional wire to seat it in the bracket. The purpose of doing the ligature in this way is to avoid loose, floppy ends with their attendant propensity to irritate the lips.

The canines may thus be moved into contact with the second premolars, or within a millimeter or two, before banding the maxillary incisors.

The stage is now set for the banding

of the incisors which, under the methods here outlined, have a minimal period of banding. Usually the labially inclined incisors can be retracted with round arches and space-closing rectangular arches in the bracket slots. In the event that the labial inclination is severe, and "toe-hold" difficult to overcome, then the lateral and central sections of the rectangular archwire are applied incisally to the incisor bracket wings. This permits depression and tipping of the incisors without strain upon the maxillary anchorage. Placing the archwire below the wings of the brackets rather than in the slots avoids any binding action and the necessity of a detorquing adjustment in the incisal segment of the wire. After the incisors are uprighted, or nearly so, the anterior section of new finishing archwire is fitted into the slots of the brackets on those teeth.

Some reference should be made to one of the presumed advantages of *immediate* full banding, namely, the utilization of the resistance value of the maxillary anterior teeth. Such resistance value as may exist is admittedly not brought to bear in the sectional arch technique. It is my opinion that the advantages gained by the use of the sectional arch, as modified, so completely outstrips any benefits claimed for harnessing the maxillary incisors that, consequently, I am devoted to the sectional arch. Figure 2 illustrates a case treated by this procedure.

To sum up, the advantages of the modified sectional arch in the early stages of treatment of a Class II extraction case are in the main as follows:

1. Expeditious correction of the Class II relation.
2. Simplification of archwire manipulation.
3. Minimal time of banding the maxillary incisors.
4. Avoidance of adverse force to the

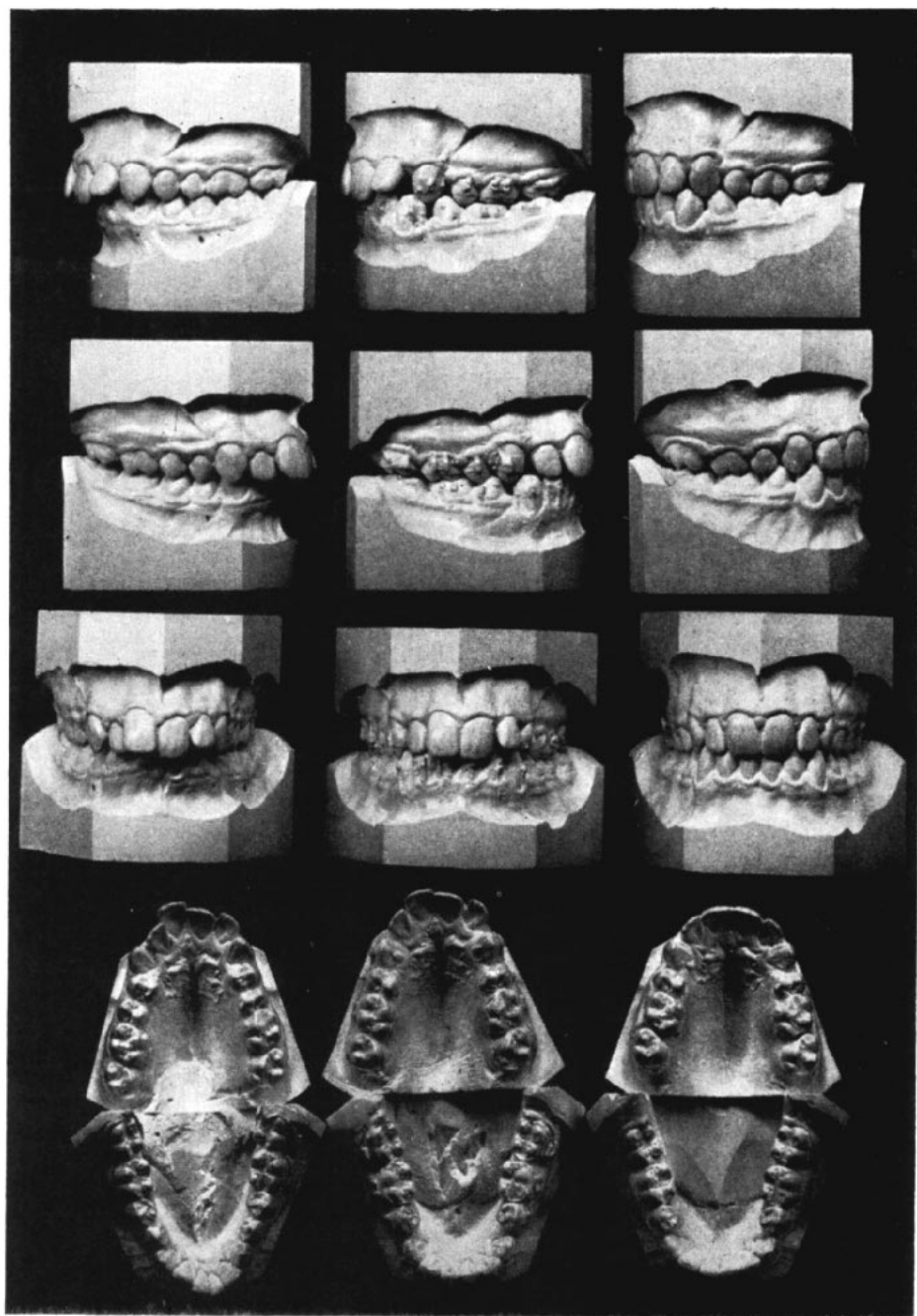


Fig. 2. Treatment of a boy aged thirteen years. Left, February 1957. Middle, April 1958 at the end of sectional arch treatment. Right, April 1959, the end of active treatment. Intermaxillary elastics were worn for five months.

maxillary incisors.

5. Minimal patient discomfort in band placement.

One Dearfield Lane

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