

Discussion Of The Newer Trends And Techniques

ROBERT H. W. STRANG, M.D., D.D.S.

Bridgeport, Connecticut

So many men have approached me with the question, "What do you think of this light wire technique?", that I welcome the opportunity to discuss this subject.

Primarily I am placing myself in the same situation as I believe the younger men in our specialty now find themselves. I am certain that this wave of interest and enthusiasm which has swept throughout our ranks has coincidentally brought marked confusion to these recent graduates and the question arises in their minds whether or not to discard the training that they have just received and take up this new technique. Also, will they be back numbers if they do not accept this procedure? Consequently I believe that an analysis of this situation by an individual who has been through several of these crises may be of help to them.

Probably no one here has had to change more procedures in technique than the essayist. An analysis of why these changes have been made has an important bearing on the present situation. The first shift came with the acceptance of the pin and tube appliance over the old plain .030 archwire, the so-called "E" arch. This change was made because it could do something that the plain archwire could not do, namely, move the roots of teeth instead of just tipping tooth crowns. This indicated that it was a more efficient appliance.

Then came the ribbon archwire ap-

pliance, the first of the bracket mechanisms. Again, this could accomplish root movements by a less complicated technique than the pin and tube. It not only had control over root movement but also could rotate teeth. It no longer fixed individual teeth to one location on the archwire but allowed them to shift from side to side when crowded. It also introduced the advantages of torque force for root movement and anchorage purposes. Furthermore, it was a one-piece archwire instead of being in three sections and permitted torque action on the anchor teeth. So it was adopted because it was a more efficient appliance than the pin and tube.

I would also bring to your mind that soon after the ribbon arch appliance was introduced another opportunity came to change mechanisms. This offering was the lingual arch appliance introduced by Dr. John Mershon and, as many of you know, accepted by a great number of specialists. This appliance was by-passed by your essayist because he believed it to be decidedly lacking in efficiency owing to the fact that it had no control over root positioning. My reaction to this appliance is expressed in a very positive manner in the *Dental Cosmos*, Vol. 64, 1922.

Finally came the edgewise archwire mechanism which offered still greater efficiency over the ribbon arch appliance in that it added root control over the premolar teeth both in buccolingual and mesiodistal directions. This was accepted as a successor to the ribbon arch.

Presented before the Strang-Tweed Study Groups, New York, December, 1960.

Following the introduction of the edgewise arch came the twin arch appliance, a much better appliance than the lingual arch mechanism and a popular one even today. However, I believe all will agree that to change from the edgewise to the twin arch would be giving up certain advantages in root control.

Note that each successive mechanism that was accepted had the possibility and means of producing better results with an added incentive of obtaining more permanent stability of the product of treatment than did the preceding appliance. Furthermore much of the technique of the former device could be transferred to the new one. With the acceptance of the edgewise arch appliance, modifications for tooth movement could be accurately plotted from a governing chart. One was finally in possession of a precision mechanism which was under the perfect control of the experienced operator.

We are now confronted with the problem of accepting or rejecting another device for treatment procedures. The first question to answer is, "Will this mechanism enable us to produce better results than the one we are now using and more permanent stability of the finished product?"

In the hands of Dr. Begg, unquestionably it has produced just as fine results as the edgewise appliance and in a comparatively short period of treatment. His results equal those found in any completed cases that I have ever seen. I have only the greatest praise for his work and I classify him as one of the outstanding orthodontists in the world today. But Dr. Begg has had twenty years of experience with this device and he and his associate, Dr. Simms, are the only ones whom I know who have carried their cases through to completion with such excellent results using only this mechanism from

start to finish.

When the opportunity came to take Dr. Kesling's course at a time when Dr. Begg would be present, I decided to apply for membership and was accepted. I appreciated this privilege as I did not feel that I had any right to discuss the merits of this mechanism unless I had received all the instruction available. I am very thankful that I attended the session and can honestly say that I profited greatly by doing so.

I was made fully aware of the fact that these light wires, of high tension quality, will move tooth crowns quickly and efficiently. I learned that all treatment was based upon tooth tipping, first the crowns and then the roots, that molar anchorage depended upon using a force so light that multirouted teeth would not move to any great extent but single-rooted teeth, on the other hand, would receive sufficient force to move. All of this was rational and acceptable.

However, the reverse procedure of stabilizing the single-rooted teeth by a force sufficient to move the multirouted teeth was a concept that was more difficult to accept. Being purely biologic in its analysis, and hence depending upon stasis in tissue reaction because of diminished blood supply, and realizing that reaction in tissues of individuals was not open to standardization but was quite a personal problem, this seemed quite a trial and error proposition. It might be possible to arrive at the proper degree of force application if one was to see his patients every day but to turn on the power and send the patient away for several weeks was purely guesswork.

Then came the stage in treatment when crown tipping had to be followed by root tipping. This was to be accomplished by an auxiliary light round archwire in which obliquely directed vertical spring loops were incorporated and

bent gingivally to contact the incisor crowns at their cervical edge. This was pinned to the band slot on the gingival side of the primary archwire. Its ends did not pass through the molar tubes but were caught over the primary archwire.

This particular treatment procedure, in my mind, is the weak link in the Begg appliance. Having been the individual who introduced the vertical spring loop in the edgewise appliance technique, a suggestion which brought forth bitter criticism when presented in 1931, I was fully aware of the fact that vertical spring loops were quite difficult to control, as far as their specific force of activity was concerned, even in an edgewise archwire. However, in the edgewise appliance one did have control of the top of the loop in a labiolingual and buccolingual plane by virtue of the precision adjustment of the archwire in the bracket slot. In this round light wire adjustment, with absolutely no control in these planes at the points of fixation to the bracket, how could precision adjustments possibly be incorporated in this mechanism?

Examination of Dr. Begg's cases showed very definitely that he had controlled the action of these vertical spring loops sufficiently well to obtain the desired root movements. This demonstrated that it could be done. It is for this perfection of technique that I again proclaim Dr. Begg to be one of the outstanding orthodontists in the world today.

However, Dr. Begg's ability to overcome this unquestionably inefficient technical method of producing desirable root movements, so essential in obtaining a stable result in treated cases, does not eliminate the fact that there is a very undesirable weak link in the chain of efficiency of this light wire technique. This was further emphasized by the fact that Dr. Kesling

gave evidence of recognizing this weak link in all cases that he exhibited at this course. Dr. Kesling's cases were not carried to completion by this looped auxiliary root-moving archwire but, at a certain stage of treatment, the Begg appliance was discarded and a positioner was given to the patient for the finishing adjustments of root and crown relationship.

Now Dr. Kesling is an expert orthodontist and one of the finest operators that we have in the specialty. If he does not see fit to put the finishing touches in his cases with the third stage of the Begg technique, certainly, less experienced young men cannot do it and many experienced operators will also be unsuccessful in its use.

I am convinced that this light, resilient wire can be used to advantage by an experienced operator in certain stages of treatment. It unquestionably will move teeth very rapidly and with little discomfort to the patient. Consequently, for leveling in the horizontal plane, for rotating teeth, for opening and closing spaces and for opening the bite, it is extremely useful. But, as mentioned before, for root movement it requires a second auxiliary archwire. The technique associated with its application for root movement is exceedingly intricate and lacking in precision control.

Furthermore, note that I have said for an experienced operator to use. I am firmly convinced that unless the orthodontist is well-grounded in a technique such as is associated with the use of the edgewise arch mechanism, he is not qualified to treat cases with this appliance. The incorporation of modifications from the horizontal plane in the form of loops and hooks is not only difficult to make and properly locate, but also exceedingly hard to control in the vertical plane so as not to impinge on gingival or lip tissue. This

wire will twist in such an unpredictable manner when inserted in the brackets that it is quite impossible to foresee such deviations previous to its bracket fixation. Bending the loops after bracket engagement is very apt to modify or even destroy their previously planned action.

In Dr. Angle's teaching, simplicity of archwire design was emphasized. As previously stated, when I introduced the vertical spring loop in edgewise technique, I was vehemently and bitterly criticized until the accurate and safe technique associated with its use and coincidentally described with its introduction was understood and subsequently adopted. At the present time no such accurate technique for evolving archwire form, loop positioning and modification is available to the novice who wishes to try this light wire appliance. Hence one has a trial and error problem confronting him at the start. The experienced operator has a means at hand for correcting errors for he can always fall back on his edgewise appliance. Consequently, my advice to recent graduates of orthodontic courses and for less experienced operators is to first learn to use an efficient mechanism which has associated with it an accurate, available technique before attempting to treat any cases with this very complicated appliance. Above all else, do not let anyone make you believe you are a back number if you do not use Dr. Begg's technique. I can assure you that there are very few orthodontists in this country who can approach Dr. Begg's ability as an operator. His results are magnificent and spectacular. But remember he has spent many years with this appliance and was grounded in edgewise technique previous to its use. Most certainly he has taught us the efficiency of light wires in properly tempered form and I am sure that they can be used with advan-

tage as previously mentioned.

I am deeply grateful to Drs. Begg and Kesling for teaching me the advantages gained by the use of this so-called differential force application. I am using it in all stages of treatment where I believe it is indicated. But, for the production of accurate and delicate root movements so essential for effecting permanent stability in a treated case, I still depend upon the edgewise arch appliance.

It is far from my intent to discourage any capable operator from accepting this appliance if he believes that it offers advantages over the one he is now using. If he can treat more patients in the same available time and give them equally satisfactory stabilized results, he is advancing the welfare of the specialty by more nearly meeting the demands of the public which are certainly on the increase. My concern is for the welfare of the less experienced operator who, I definitely believe, is not sufficiently prepared to use this intricate technique until he has acquired a sound foundation in edgewise appliance manipulation thoroughly tested by clinical application and backed up by creditable treatment results. He then has a means of correcting errors that may arise as a result of faulty adjustments of the appliance under discussion.

It having fallen my lot to be a director and teacher in a School of Dental Hygiene, there is another factor that quite naturally comes to my mind and hence I would like to mention it at this time as exceedingly detrimental to the use of these various forms of light wire technique now being advocated by various individuals. This is the great danger of injury to exposed enamel surfaces by accumulations of food debris that cannot possibly be removed by the most fastidious patient in the home care of oral structures.

Any loops that overlie or touch ex-

posed enamel surfaces are bound to be food catchers and retainers. Loops that overlie gingival tissues are very difficult to control in their relationship to these tissues as their activity dispenses itself. Hence impingement and embedment in these soft tissues does occur, even in the hands of the expert operators. The size and numbers of these massive loops advocated by certain technical procedures is astounding to behold. The trend of advocating simplicity in mechanisms has passed so far from the teaching of Dr. Angle as a fundamental concept that those of us who still believe that the protection of tooth structure and gingival tissues should be the subject of great concern by the orthodon-

tist are exceedingly disturbed. For years the damage done to these tissues during the period of orthodontic treatment has justly been of great concern to the dentist and also to parents. It is my feeling that many of these present techniques of corrective procedures will aggravate this condition rather than alleviate it. This is not good to contemplate.

The one virtue that is accorded this light wire technique is the speed of accomplishing the end result. If tissue damage is sacrificed for this speed, then we are paying a very high price for the virtue.

114 *State St.*