Taking a Second Look at Headcap Treatment

DONALD KETTERHAGEN, D.D.S.
Milwaukee, Wisconsin

In modern clinical orthodontics our search for the better technique, like the better mousetrap, has the unfortunate result of turning a goodly portion of the profession pell mell toward any new appliance. Fortunately for all of us, the older hands at the game like the long pendulum on a grandfather's clock swinging slowly and deliberately, help keep the impetuous orthodontist in check.

The path of the pendulum can be traced quite clearly. Starting at the time when head-cap therapy appeared to have fallen by the wayside in favor of the more efficient principle of intermaxillary anchorage, we watch it swing past Angle's functional concept of development and begin to slacken with the introduction of extraction. It reverses itself as misinterpretations of Broadbent's and Brodie's work on growth and development lend speed to the wave of bicuspid extraction, and begins once again to increase its pace when Oppenheim reported the case of an actress who wore his appliance so successfully while on tour. I think that the head-cap, with refinements, is now enjoying even more popularity than it did previous to 1893. Certainly the excellent work of people like Kloehn, Urban, Fischer and Nelson is greatly responsible for the return to its present place in our armamentarium of available appliances.

The resurgence of head-cap therapy was still on the upgrade as this fledgling orthodontist left college to do battle with Class II's, armed with the Angle philosophy, the edgewise appliance and the head-cap.

The progressive advice "Look ahead" is undoubtedly sound, but it can be overdone. Reverse the coin and we read "never look back!" Such a philosophy can have disastrous results. As any military strategist can attest, it is absolutely essential to a successful campaign to fall back and regroup occasionally in order to consolidate the advances already made. The motivation for such an analogous consolidation was given to me when I was asked to present a paper for this meeting, for here was my chance to stop the wheels for a short time and make an analysis of what had been accomplished. A thorough house-cleaning was attempted and the results were enlightening. The avowed purpose of this catharsis was to expose the relationship between head-cap therapy, full appliances, and extraction, but a crystallization of my thinking in regard to head-caps resulted; the procedure employed can be heartily recommended to those who have not had the opportunity for a real appraisal of their practice procedures.

At this point I address myself to those of you who have engaged yourselves in the practice of orthodontics for ten, twenty and thirty years, to those who have watched appliances and concepts come and go, who have committed and avoided errors and gained thereby in stature. Only those who are mature enough to proceed with caution or astute enough to surround themselves with you, the older and wiser personages, can avoid disaster. For there are oftentimes

Presented at the reunion meeting of the Graduate Department of Orthodontia, University of Illinois, March, 1956, Chicago, Illinois.

more than the usual number of errors in case analyses, in office procedures, and perhaps even an unintentional partial digestion of the scientific advances being made daily. I lay claim to all these defects and cleave to the motto "Live and Learn." At least my experiences obtained for me the virtue of humility and it is with a considerable measure of this, that I bring to you the results of my investigation.

It is not my purpose to criticize extraoral anchorage, for such an intention would fly in the face of proven fact; nevertheless, my considered opinion is that we are using it in many cases where a better type of result can be obtained, over a shorter period of time, with other appliances. I am thinking particularly of Class II, Div. 1 cases with deep overbites, particularly when complicated by loss of mandibular arch length. Permanent improvement here, it seems to me, must wait until the bicuspids have erupted and, unless this aspect of the malocclusion is corrected, little benefit will accrue from the simple distal tipping of upper incisors. Indeed, head-cap treatment in these instances may even exaggerate the damage done to the supporting tissues around a deep traumatic overbite by causing lingual tipping of the lower incisors. I have seen many examples of this, some in cases treated by others, many by myself; and I am painfully aware of the disappointment to the operator and operatee that can occur, when, after several years of weary procedure for all parties concerned, a once cooperative patient is informed that full appliances will now be necessary.

My usage of the word "head-cap" here is taken to mean *any* apparatus utilizing the back of the head or neck for anchorage, such as the skull cap made of webbing, or belting strips, and the elastic strap method of obtaining cervical anchorage. These are attached to the teeth by means of an E arch and face bow, as described by Oppenheim, which engages a round tube on a posterior tooth, or possibly a slit tube engaging an archwire as described by Fischer.

My first step was to review case records from January 1948 to January 1955, including only those cases in which a full appliance was used—upper and lower, or a full upper appliance with a head-cap, or a head-cap only. The words "head-cap only" refer to cases involving bands on upper first molars alone, or in combination with bands on upper centrals for attachment of side to side elastics; but head-cap-only cases may have a lower lingual arch *not* used for intermaxillary anchorage or for gaining more than a slight amount of arch length. Bite planes may or may not have been used. The head-cap-only could also be utilized for retention.

Up to January 1955 there were 557 cases started, of which 238 wore a head-cap, either head-cap only, as just described, head-cap in combination with full appliances, or head-cap for retention, or any combination of these three. So it appears, that 43% or somewhat less than half of my patients wear head-caps.

Of the 557 cases, up to November 1, 1955 there were 442 in retention or out of retention. Of these 442 completed cases, some 184, or 42% were treated with head-caps, a similar figure to the analysis of *all* cases examined.

Of the 184 cases treated with head-caps, in 55 of them extraction was resorted to, or approximately 30%. In the 258 non head-cap cases, extraction was resorted to in 122 cases, or 47%. These figures suggest that it was possible, by means of using a head-cap in some form, to reduce the incidence of extraction diagnosis by about 17% in a cross section of patients presenting for treatment. It was interesting to note, in a

year by year analysis, that a definite inverse relationship existed between the number of cases utilizing head-gear and the number of cases in which extraction was resorted to.

A recheck of the cases under active treatment January 1955 (not retained before November 1955), showed that about 30% of these head-cap cases were also being treated with extraction, although in the non-head-cap cases the amount of extraction has swung sharply upward to 61%. This was due to an increased number of extractions in 1954 during which year 67% of these non-head-cap cases were treated with extraction.

A further breakdown of the 184 cases utilizing head-caps showed that 50 had a period of treatment with head-cap-only (as previously described), or 27% of all head-cap cases. The balance of 134 were head-cap in combination with full appliances, including those in which the head-cap was continued for retention. Of the 50 classified head-cap-only, in only 27 was I able to finish the case with no further therapy. In the remaining 23 cases a multi-band technique was eventually used. However, of these 50 head-cap-only cases, only five needed extraction, or about 10%.

By way of further interpreting this resumè of my personal practices in adapting the head-cap to almost half of my patients the 184 finished cases were classified either excellent, good, fair or poor.

Of these 50 cases having a period of treatment utilizing head-cap-only, there were 11 excellent results, 12 good results, 16 fair and 11 poor. Of the eleven excellent results, seven were obtained with a second period of treatment using full appliances for from 22 to 37 months. In only four, was I able to finish with head-cap-only.

Of the twelve cases achieving good results, seven needed a second period of treatment with full appliances for from 20 to 55 months, and three needed extractions for completion.

Of the 16 fair results, three had a second period of full appliance therapy of from 24 to 29 months, ten needed a second period of treatment and never received it, three of which would have included extraction. I shall refer to these in a moment. Only in three cases was I satisfied that I had reached the optimum improvement for the patient.

Of the eleven poor results, three had a second period of full appliance treatment of from 36 to 60 months, one was an extraction case, and two should have been. Eight needed a second period of treatment, six of which would have included extraction, and never received it. In only one of these eleven cases was I satisfied that I had attained the optimum improvement.

We must realize that any standard for tabulation of results must be based on the orthodontist's own conception of an ideal. Cases here classified as "fair" and "poor," in many instances will represent a considerable improvement in function and esthetics. This classification, therefore, represents only my personal reaction to what I had achieved by the therapy employed.

Nevertheless, it does tend to substantiate an uneasy feeling I had that possibly all was not well with many of the cases in which I had instituted head-cap therapy. In searching for the reason for this disturbing reaction, I found that while a number of these cases, as expected, had a deficient bony facial pattern and others enjoyed very little growth, in some cases I was attempting to do things with the head-cap that the appliance was simply incapable of accomplishing.

Even more disconcerting, I discovered that in too many cases the patient and parent, or both, and often the orthodontist, were reluctant to subject the

patient to further treatment. Some wise and honest man has stated that there was about 18 months of cooperation in most patients and that, when the "saturation point" had been reached, further improvement was a struggle for all concerned. In far too many cases I was ready to begin a second period of therapy with more extensive appliances, only to find that mother and father had decided that their child's teeth were now "good enough." While *they* may have been satisfied, I certainly was not. In some instances the additional financial investment involved proved to be just more than the family could handle, and I sadly had to advise the parents that "If I were they" I would probably not consider further treatment. Or I may have advised the family in pretreatment consultation that if there had to be a choice between head-cap therapy and full appliances, the head-cap was the more important. Such advice is no longer given in my office.

Even in those cases where I was able to convince the parents of the need for additional therapy they felt their child had been under treatment for 4, 5 or 6 years. These many months may have included a period of head-cap treatment, a period of observation and another period of active treatment, but the length of time spent in making trips to the office is lumped when the matter is discussed at home. It doesn't take most intelligent parents or patients long to realize that their neighbors' children had been in and out of appliances in less than half the time.

This brings me to a point of advice for those who may be in the position I found myself several years ago when beginning practice. It must be made quite clear to our patients that head-cap treatment is dependent not only on cooperation, but on proper growth in amount and direction and that, in order to obtain satisfactory results, it is quite likely that a second period of treatment may be indicated. The advantage of the head-cap for a given individual lies in its ability to enhance the degree of perfection it is possible to attain, and *not* necessarily in reducing the length of treatment, nor in reducing the financial investment necessary for such treatment.

While the foregoing statements may suggest that this writer has "given up" on head-cap treatment, I assure you that this is not the case. The beneficial, psychological effect of early head-cap therapy on a child who is suffering from a feeling of insecurity or inferiority, the reduced danger of fractures in the incisal area, the improved opportunity for normal musculature development, and the discouraging effect of a head-cap on sucking habits are factors which can not be lightly disregarded. As a matter of fact, more cases are now under active treatment at present that are using or have used head-cap than ever before. Idealism must be tempered with realism however, and institution of such therapy is now governed by these refinements in my interpretation of the type of case needing such treatment.

Head-cap-only treatment indications are:

1. Severe Class II cases involving a gross discrepancy in the bony facial pattern. These cases are started as soon as the first molars erupt. A second period of full appliance therapy is, of course, equally basic in an adequate plan for correction.

2. Those cases in which there is an excellent chance of obtaining a satisfactory result with *no* further treatment. These patients also are started as soon as the first molars erupt, if possible. This type of case will have a good mandibular arch with no need for anything more complicated than a simple lingual arch for space maintenance or alignment of incisors. This case may have an

over-jet, but *not* an overbite of any severity. No case in which the cuspids and bicuspids have already erupted is to be treated with head-cap-only if the purpose of treatment is to complete the case with no additional appliance.

3. Those completed cases exhibiting a tendency for return to an overjet, or in which the proper mesio-distal relationship has not been attained or cannot be maintained, are greatly aided by use of a head-cap for retention. This may be either in combination with a Hawley, or a side to side elastic attached to the E arch from cuspid to cuspid.

Head-cap in combination with full appliance treatment indications are:

1. Any Class II case in which the mandibular arch is *not* considered adequate anchorage. This may be a non-extraction case or a case of upper bicuspid extractions where reinforcement of the maxillary buccal segments is necessary, or even a case of biscuspid extractions in both arches.

2. Borderline extraction cases are the instances where, if a slight distal movement of the upper buccal segments, especially of the first molars, could be obtained, treatment might be completed with little danger of carrying the mandibular incisors off the basal bone. Here is the place where a little head-cap treatment can prevent a loss of bicuspids. I place this type of case in the classification with full appliances even though the initial therapy is with head-cap-only for the reason that full appliances are always placed before the case is completed, and the head-cap therapy is often continued right on through the period of active treatment with full appliances. The head-cap is placed on the first molars about one year before the time full appliances will be indicated. This would be at about the dentitional age of ten or eleven. Often the response to treatment is such that a plan of extraction can be changed to one of non-extraction, and very little remains to be accomplished with the full appliances. However, should the case be one of those which is not blessed with the growth necessary, the treatment can go smoothly and with no delay into full appliance therapy, either with or without extraction. Borderline extraction cases, in which it is suspected that the head-cap alone may not be able to secure a satisfactory result, are always started at this time. With this sort of timing, a long period of retention and observation while waiting for the second period of treatment is avoided and, if after a few months it becomes obvious that the head-cap alone will not be adequate, the orthodontist is not tempted to plug away at it, month after month, wasting the patient's patience and his own valuable time.

While this procedure may be open to criticism by those who would start head-cap earlier in order to take advantage of the growth that might occur at this time, until we can, with a fair degree of certainty, select those patients who will receive that growth, this will remain the ideal place in my practice for head-cap treatment.

6031 W. Center St.