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TABLE OF CONTENTS

Editorial

In early February I attended the 17th Annual Upper Cervical Spine Conference at Life University in Marietta, Georgia. I had the opportunity to meet with some of the other members of the College of Upper Cervical Spine to discuss the brochure on the Upper Cervical Diplomate degree. Before that meeting I sat in on part of Dr. Roy Sweat's class of an estimated 90 students/doctors that was being held concurrently but separate from the research conference. He was doing an excellent job of presenting his material and at break time I complemented him on his teaching skills.

As part of my attendance at the conference I prepared a "poster board display" on some old NUCCA information. This was one of the two poster board displays at the Conference; the other display was by Dr. K. Hoiriis (See case report in this issue of the Monograph.) The display representing NUCCA/NUCCRA consisted of the page from NUCCA's submitted document to the Mercy Conference showing doctor activities in the office protocol, one of the pages on data showing the improvement in adjustic results over time (which included the retrospective laterality data from the files of Dr. John F. Grostic as published in JMPT by Dr. John D. Grostic et.al.,), and the two page NUCCA-NUCCRA historical highlights article celebrating 25 years of NUCCA which appeared in the document submitted to the Mercy Conference and also Vol. 5, No. 6 (1995) of the Monograph in which people reminisced about the Grostic era. I was surprised when one of the doctors questioned me about the validity of the historical highlights document. I recall when Dr. Dan Seemann and Dr. Gregory were putting the article together and the discussion that took place over its content, with Gregory making sure that it understated his contribution to the Grostic work so that no one would be offended. And now over a decade later people were "questioning" the article because they said that Gregory had essentially nothing to do with the Grostic technique! This was from a doctor who went to school with John D. Grostic. More than one doctor at the conference intimated that this NUCCA highlights document was revisionist history.

It is time to slowly address the historical evidence. It is time to be reasonable because there is historical evidence available. From my experience with Gregory I can testify to his absolute honesty and integrity. It was difficult enough to have him agree to take a Mulligan even though golf was just a game to him. There were Saturdays that I sat at his kitchen table and asked him questions such as, "What precipitated the fallout between you and Grostic?", "What was your relationship to the rest of Grostic's family?", "How much was his son aware of what was going on?", "Why did you not publicly object to . . .", and "Why did you go back to help". One of his statements that always struck a chord with me was essentially "if those were the only things I would ever have done then I would not have let it go". From hindsight-historically speaking—it was <u>not</u> better to let truth lay idle. But Gregory did let it lay idle in part because of his concern for research and development and in part because of friendship; for the good of upper cervical chiropractic it may have been better to let it go, at least at that point in history.

The solution is to let each person speak for himself—Grostic for Grostic and Gregory for Gregory. To this end two articles in this issue of the Monograph are Gregory for Gregory.

There is concern when one relies on statements too far up the information chain; i.e., on information that is not from a participant in the research but rather from someone who knew someone who knew the researcher, no matter how well the secondary person knew the researcher. When I wanted to know something I asked Gregory, not Seemann; now I can only inquire from Dan Seemann or someone else that was there at least on a weekly if not daily basis.

There is concern that what is written or stated is not totally honest. This is one reason why I wrote the Monograph article putting forth the hidden agenda hypothesis and reasonably proving the biased research of the infamous JMPT article on upper cervical measurement (The Monograph January 1989, Vol. 4, No. 7, 1-5). Even this Monograph article did not get much acknowledgment from Gregory. He was infinitely more interested in the Atlas Subluxation Complex. And so should we be too.

October 1966 Class Presentation

"Integrity and Honesty"

Editor's Title.

Integrity requires that we say what we mean; integrity also demands that we mean what we say. Good communications demands this also. I have often been accused of making unpopular talks, and my most recent one given at the Palmer Homecoming has seemed to reach a new high in that respect. Let me say that I would rather be unpopular and communicate than to be popular and fail to communicate.

I can say this in all honesty because there is nothing from you that I want. There is nothing from any organization or college that I want. The thing that I do want, which is to be left alone in my own office to follow out my own ideas and plans without interruption, and which seems to be the thing that I can not have, is the only thing for which I would willingly pay a price.

It was, therefore, with reluctance that I assumed the duties that I have following the death of J. F. Grostic. I have done this because there is no one else capable of solving the unsolved problems or continuing the research work. Much of this research I have presented to the field was done before the death of J. F. Grostic and was given to him. This is also the reason why I did not align myself with those who were chosen to continue presenting the work.

It is becoming increasingly evident to me that I must do something, either to start the basic training of the new chiropractors coming into this work or to stop giving really advanced work. I say this because the newer fellows coming into this work have had no real training in instrumentation and no training in the basic classes in spinal mechanics.

The number of calls I am getting from the older so-called Grostic men relative to complicated problem cases leads me to believe that there is a lack of understanding as to what to do regarding cases that are out of the ordinary. Doctors themselves who were adjusted over the years by Dr. Grostic, and whose subluxations were normalized, and who have supported the other faction in this work, are running into problems with their own conditions. Within the past two weeks I have adjusted two such Doctors who at last decided to come to Monroe for service. One doctor had a seven degree rotation and a nineteen degree rotation of his cervical spinouses and ended up in the hospital. He had muscular spasms and was put under cervical traction which gave him more relief than the Grostic adjustments for which he traveled hundreds of miles on several occasions over the past two years to consult with this Grostic expert.

The second doctor chose another Grostic expert and ended up with 11 degrees of atlas rotation and a spinous of 17 degrees. Both doctors were into severe kinks, and needless to say were pretty sick. Apparently neither of these experts were capable of figuring out these cases on the basis of spinal mechanics, and chose or had to choose to go according to the listings that were taught in basic classes in Ann Arbor, and which did not work.

This is precisely what I have warned those of you against who have been in my classes; learn the spinal mechanics involved.

I might add that B. Shaw apparently knew what he was talking about when he said: "Those who can, do; those who can't, teach."

Now my reason for telling you this is to point out that we must have organization if we are going to advance. If there is to be any research, others are going to have to do the organizational work. As for chiropractors who are supporting the other faction, if I am going to have to take care of their subluxations, they are going to have to support us. In other words, those chiropractors who support NUCCA will get the preference. I want this to get around. The supporters of NUCCA will get preference in my office and in future classes.

NUCCA is or will be a part of the future of chiropractic. The strength of NUCCA will depend upon the ability of its members to reduce subluxations. The policy adopted by the NUCCA Board by unanimous decision in its last meeting was that Chiropractic is based upon the restoration principle.

The restoration principle in chiropractic is the restoring to or toward normal the misalignment factors of the subluxation and all else that follows naturally and uninterruptedly from that principle.

If we define a subluxation according to D. D. Palmer, we find that it is a condition wherein a bone has moved out of its normal relationship. It is a partial or incomplete separation; one in which the articulating surfaces remain in partial contact.

Dr. Janse defines a subluxation as a condition caused when a vertebra is carried beyond its normal range of motion; he says it is a slight change in the relative position of a vertebra.

Verner defines a subluxation as any displacement less than a luxation.

Other authorities speak of fixation, that is to say, where

the subluxated vertebra or vertebrae is fixed at some point within the normal range of motion or at the extremity of the range of motion.

These authorities all agree, however, that there is movement of the vertebra in subluxation and that there is through some pressure, irritation or interference producing mechanism an ability of the subluxation to produce symptoms and/or pathology.

It is interesting to note that the emphasis today is shifting away from the intervertebral foramen. It is being discovered and accepted today that pressure on the intervetebral foramina theory is only 50% correct, because 47% of peripheral nervous system does not go thru movable intervertebral foramina. Therefore 50% of spinal adjusting is in error on any vertebra from the axis down.

B. J. Palmer in his Volume XX, published in 1938, speaks of a vertebral subluxation as being the condition of a vertebra that occludes an opening; produces pressure upon spinal cord or spinal nerves; interferes with transmission of mental impulse supply between brain and body; interference offers resistance to transmission; interference and transmission reduce quantity of energy flow; reduction of energy flow reduces and slows down tissue cell action; reduction of tissue cell action is disease.

The point that I am making here is that while all these authorities word their definitions differently, there are certain points upon which they do agree. The one point that I am most concerned with, and I trust that you are also, is that the subluxed vertebra moves; it becomes malpositioned, it gets out of line in one or more directions. The subluxated vertebra travels due to some force that makes it travel in some direction or directions which are undesirable, and this is undesirable because, being a subluxation, it produces pathology or symptomology in the patient.

Therefore, the science of chiropractic is to find out the exact location and malposition of the subluxated vertebra; to find the amount of interference; to determine the exact adjustment that will remove the misalignment factors of the subluxation, remove the interference; ascertain places of origin of function, paths of distribution, and the location of the functional effects of that interference. To put the latter statement another way: relate the subluxation to the disease processes.

Thus the whole procedure rests upon the restoration principle. To restore the vertebra to its proper position; restore nerve supply; restore function and to restore health. Any so-called adjustment that does not restore to or toward normal the misalignment factors of the subluxation is not an adjustment; and therefore cannot be chiropractic science.

Now, in spite of the fact that all authorities agree that some mal-position of the subluxated vertebra is an elemental part of the subluxation, very little attention is paid, or has been paid to developing techniques that will do that. It has been taken for granted that so-called adjustments which were not adjustments at all, reduced or removal the malpositioning of the subluxated vertebra. The truth has been, and still is, that in the majority of cases, so-called chiropractic adjustments have increased the misalignment factors of subluxations. This is the Achilles' heel of chiropractic; the LSD of chiropractic. One school authority has gone so far as to say that all techniques are good. Yet all authorities agree that malposition of a subluxation is an essential part of a subluxation. Malposition means wrong or faulty position, and it can be anywhere around a 360 degree circle in a horizontal, vertical, diagonal or any other plane and will be in 99% of the cases a combination of these planes.

We cannot escape the fact that forces do travel both in the production and in the reduction of a subluxation. No reasonable individual can support any other conclusion. Any chiropractor who increases the patient's subluxation by increasing the misalignment factors of that subluxation is liable for malpractice and I have ample legal opinion on that.

At the present time I am taking care of a case who was adjusted wrong by a Grostic practitioner, and she is contemplating sueing. I took the case over with the understanding that she not sue if I can get her spine back where it belongs. This is the fifth case I have taken over for this man and, yet, he has never attended a class in Monroe. I might add I am doing it for free, too.

We have rather well established, according to the authorities, what is a subluxation and we can say that in the main they are pretty well in agreement on the majority of the elements constituting a subluxation. Where they begin to disagree seems to be in the area of the adjustment, or if you prefer, the art of chiropractic. After studying D. D. Palmer closely, I find that I agree with his position in respect to the adjustment. I particularly like his statement that, and I quote him, "Adjusting is the result of intellectual and mechanical force on the part of Educated—not of Innate". I like also his statement that "Any person can learn to hit the high places, replace and displace vertebrae, relieve one disease and cause others". A further statement of D. D.'s also is interesting and that is the one in which he advises that adjusting should be guided by scientific knowledge.

I can also say that I can agree with B. J. Palmer's statement in which he speaks of the measurement of subluxation distance and adjustment correction of malposition of a vertebra before and after adjustment. I like the term subluxation distance and adjustment correction, and measurement. It would seem that while the authorities agree on the majority of elements of the

subluxation the only two authorities that agree on the adjustment were the Palmers, DD and BJ. These two were the ones who stressed the specificity of the art of chiropractic. The rest seem to get lost after the subluxation is defined as to what to do with it.

Note that DD speaks of adjusting in terms of "intellectual and mechanical force"; "replacing and displacing vertebrae"; relieving disease and causing others. Note that BJ speaks of measurement of the subluxation; of malposition of subluxated vertebrae; of subluxation distance and adjustment correction. You might note also that DD did not agree with the Innate adjustment because he said that it was a matter of educated mind—not of Innate mind.

Be that as it may, the point is that of all the authorities, the Palmers stood almost alone in the specificity of the art—the exactness of the art--. Why? Because both knew innately that chiropractic could not be proved unless and until means and methods were developed that corrected the misalignment factors of the subluxation. In this area alone lay the key to the proving—and these two men knew it. It is inherent in every statement that they published relative to the adjusting art of chiropractic.

They knew that the only tests that were available to prove chiropractic were those that could be applied in the area of the misalignment factor and its restoration. Who could or who can prove whether the element of irritation, interference or pressure to, with or upon nerves or which of these concepts is correct, or whether any of them are correct? This is pure theory. Whether each or any of these reduces function or produces pathology in tissue cells is pure theory. The fact that patients get well from adjustments is only clinical evidence. All this is not peculiar to chiropractic. Theories abound in other healing arts as well.

However, we do have one area in which we can produce indisputable proof: we can replace vertebrae to or toward normal position; we can reposition vertebrae from their faulty position. This is where our strength lies; this is where our chance for survival exists; this is our area of defense.

I submit to you today that institutions and organizations in chiropractic have not encouraged this understanding of chiropractic; this necessity of chiropractic; this strength of chiropractic. No one has ever proved that subluxated vertebrae pinch, squeeze or compress nerves as these nerves pass thru intervertebral foramina. D. D. said "pressure against a nerve" which is an entirely different concept. Personally, I do not believe in the intervertebral foramina pressure theory.

I further submit that either or both national organizations owe a duty to their membership to try to advance the proof of the basic restoration principle, and they owe it to chiropractic. They should start with the one element that is provable; the misalignment factor of the subluxation and its reduction. I say this because they have both defined the scope of chiropractic, and by doing this they themselves have opened the door to the question and placed upon themselves the responsibility, if not of proving these concepts, at least of attempting to prove that upon which each takes so dogmatic a stand. The same could be said of the schools.

A medical doctor in 1925, Dr. Jesse F. Willimans, said, and I quote him: "Chiropractic will remain a debatable subject, even to chiropractors, until scientific standards and tests are applied to it. It may grow by advertising methods, it may record 'cures' by adjustment of subluxations, but it will remain a claim and a cult until it meets satisfactorily the sort of tests that intelligent men everywhere make to cause and effect questions."

In your heart you know he is right.

Now I am aware of the fact that many chiropractic educators have attempted to, and are attempting to, relate the theory of the mechanism by which disease in the human body is produced by the subluxation.

To them all credit is due. However, I deplore the fact that so little emphasis is being placed upon the reduction of the misalignment factor of the subluxation, the one and only element of the subluxation upon which we can rely as being susceptible of proof; of meeting those tests that intelligent men everywhere make to cause and effect questions.

Because forces do travel both in the production and the reduction of the vertertebral subluxation, we cannot escape the fact that damage cannot be avoided by wrong adjustments. As I said in Davenport as long as the scientific formula remains a scientific formula that Work equals Force times "Distance" and the "Distance" factor of the formula, or the direction factor of the formula, is traveling, which it must, and this situation obtains every time an adjustment is given, whether that adjustment is right or wrong, doing good or creating harm, we are morally, legally and professionally bound to give good adjustments.

It is true now, and it will always be true, that the misalignment factor of the subluxation will need to be measured and the adjustment will ever need to be figured so that it exactly reverses the misalignment factors of the subluxation. The failure of the profession to understand this, and their failure to do it, will cause our downfall. Remember, that if we are attacked in this area we can be more easily defeated than in an area of theory, where there is room for argument. For the production of more subluxation by the adjustment will not meet the tests of intelligent men everywhere, and there is now abundant legal opinion that it is negligence.

This all makes it more difficult to understand why chiropractic authorities, institutions and organizations do not concern themselves with this misalignment factor; and it makes it impossible to understand why some even deny its importance. Why do some say all techniques are good? Are the techniques good that increase the misalignment factors? Our courts would not agree with them; neither do I believe will the FDA.

The fact that many patients get well by maladjustment is also advanced as an argument. It proves nothing. The fact that patients get well under proper adjustments does not prove anything, either. Many get well who never consult a D.C., and many get worse who do. All of this is explainable when we consider the various forms for the transmission of energy. The same applied to the medical profession. Of course it depends on how one defines the word "get well".

It has, however, been demonstrated many times that people can be made ill—that is to say, disease can be created—by increasing the malposition of the subluxation. I have done it intentionally.

Therefore, in view of the things which I have discussed with you this morning, and at other times, it has seemed to me that we should have a national organization. Such has been formed, named, incorporated and we now have our status with both the State of Michigan and the Internal Revenue Service. The National Upper Cervical Chiropractic Association, Inc. is in business. It has adopted a policy based upon what I have outlined here today. It is open to all chiropractors who are in good standing and accredited graduates. It's not in its membership confined to upper cervical men or necessarily to so-called straight practitioners. Its Board of Directors is composed of graduates of three colleges; Lincoln, Palmer and National. It is not anti-anything, but at the same time it is committed by action of its Directive Board to sane, sensible and rational practices particularly in the area of the misalignment factors of the subluxation.

It is hoped that as it branches out in influence and in membership that it can increase its sphere of influence in any area of chiropractic in which it can be effective. Right at the present time connections are being sought with the Detroit News to publish an answer to be carried by the national press agencies in rebuttal of the most recent AMA attack. It is hoped that a series of articles carried by AP or some other national news agency will come out of this. If it does, we will explain Chiropractic on the basis of what we can prove along the lines that we are talking about this morning.

No one, including the AMA can call people quacks who render a subluxation-misalignment reducing service to the public which can be proved on a measurement basis based upon mathematics, physics and the like. This is particularly true when they themselves engage in such dangerous misalignment producing measures as traction, and leverage manipulation. If they do not know that W equals F times D and that "distance" is a vector moving in some direction then we'll be happy to explain. If they do not know that scientifically they are producing harm by increasing subluxations, we will be happy to explain that also. However, we have the same problem in chiropractic and we had better get our house in order before we show them where their house needs redecorating. This is NUCCA's job.

Therefore, there is a big need for NUCCA. We have an attorney who is 100% chiropractic. He believes in it; he understands it. He advocates it to his friends, and his family is under chiropractic. He also knows how to fight as witness his recent legal victory in the Osteopathic Hospital case; in the Haye's Case.

I have long felt that upon the basis of the misalignment concept within the premise of the subluxation, and upon which as I said above, all agree to a greater or lesser degree lies the basis for unity of the profession. We cannot gain any semblance of unity by attacking those who practice a broader scope of practice nor can they attain unity by attacking those who favor a narrower scope of practice. Nor do we influence each other by calling each other names. Calling mixers "medipractors" or even mixers convinces no one; calling "straights" technicians is equally shortsighted for all doctors must be technicians. I would hate to have brain surgery by one who is not a good technician. Saying that straights do not conduct a rational practice is equally foolish because there are many straights who remove subluxations and what is more rational for a D.C. to remove than the subluxation of a subluxated patient?

If all chiropractors can be led to see that subluxation-misalignment factors are more complicated and more susceptible of reduction than they previously knew, and that this before all else is the function and purpose of the D.C., we may thru a process of education lead closer to unification. And when all chiropractors see that it will be required of them by the courts and by the government that regardless of what else they may do, they must reduce the misalignment factors and do away with misalignment producing adjustments, we will be on the road to true unity by a process of education and persuasion and not of force. At least the force will come from the government agencies, not from attempted force within the profession. It is just a possibility that state legislatures will be called upon to outlaw dangerous adjusting procedures whether done by a medic, osteopath or chiropractor. That would certainly be within the public interest.

Therefore, there is a big need for another organization. It is a need that goes directly to the question of the survival of chiropractic. I do not see where any school or organization is aligning itself with this proposition. I believe that there are hundreds of chiropractors who will support this proposition. I also believe that there are hundreds of chiropractors who are not aware of this because they have not thought it through to this point. As we showed above, many of the educators are not aware of it.

I would also like to see our work subjected to testing in a consulting firm or university. This alone would cost, I am informed, about $10,000.00. I would like to see it meet those tests that intelligent men everywhere make to cause and effect questions. Then I would like to see corrections made where they are needed and proof provided in the areas other than the misalignment concept. This necessitates the hiring of skilled people of all kinds.

Also I would like to see NUCCA become effective in helping a D.C. with his problems right within his own office; feeding him research material, tapes, meeting material; advice on his problem cases, and the like.

In closing, I want to say that this program should have a vital appeal to all chiropractors who are or will concern themselves with the misalignment factors of subluxations.

I further wish to mention the fact that chiropractors who took the Grostic work are still criticizing the fact that I have added to the work and am adding to the work. This attitude on their part is unrealistic. This is the same thing as saying that the work is without fault; that all the problems are solved and all is known that should be known. I ran into this criticism in Davenport; and let met say, that it is a stupid criticism and I would be ashamed to support it. I defy anyone to say that Dr. G. ever labelled his work as finished.

I think I can say without fear of contradiction that the two Chiropractors who were adjusted by so-called Grostic experts and whose subluxation-misalignment factors were badly increased would agree most emphatically with me when I say that problem cases sometimes require more knowledge than was taught in Ann Arbor classes, and to become proficient in upper cervical adjusting you have to know more than some of the current so-called experts perhaps realize. So to contend that the Grostic work needs no additions or deletions or what have you, is a little rediculous when you consider that there have been a lot of changes made during Dr. Grostic's lifetime of which some people did not know.

Commentary:

Some Implications Regarding Tensegrity and the Upper Cervical Adjustment

by Michael D. Thomas, D.C.

This article on tensegrity illustrates the adeptness and fluidity of Dr. Michael Thomas' thought process and his ability to hold the reader's interest by making connections to that which is fundamental to NUCCA. Dr. Thomas is a member of the NUCCRA Board, the associate editor or the Monograph, and the author and editor of a soon to be completed and published A-Z book about NUCCA chiropractic. Editor.

Origin of chiropractic embedded in the concept of tone and renitency.

D.D. Palmer conceived of the dynamics within a human organism as an interplay of two forces. He termed the two opposing forces "tone" and "renitency". He believed that this tone or tension was opposed (and balanced) by resistance to tension or renitency. Abnormal increase in tone created localized areas of increased tissue temperature. These areas of increased heat could be palpated by the fingers. This soon led to the "following" (by palpation) of the hyperthermic tissue back to the spine. This localized hyperthermia became the initial diagnostic indicator for dys-function. Palmer hypothesized that abnormal alteration in structure (subluxation) created abnormal alteration in function (dis-ease). Correction of the abnormality in structure (the adjustment) allowed normalization of function to recur.

This train of thought requires the conviction that the self-organizing ability of the organism is adequate to maintain optimal health if interference to it's function can be removed. This is very different from trying to "control" the altered physiology through "therapeutic" means. Attempting to "drive" the organism (even in a minor way) is very different from "removal of interference".

The empirical nature of orthogonal upper cervical work.

Upper cervical chiropractic began as an empirical exercise. In the Grostic model, it has long been recognized that orthogonal arrangement of the upper cervical alignment is critical to overall biomechanical stability and optimization of function. It is apparent to many of us that correction of the atlas subluxation complex is the "specific" that chiropractic has sought.

The Grostic work was an extrapolation of this idea, forged into a practical protocol. Once the measurement system allowed more accurate analysis, (using measurement of the angular rotation of the structures in relation to each other, rather than linear measurement) it was understood that it would be necessary to work out a systematic protocol that could optimize maximal, proportional correction of each individual misalignment pattern. This process was largely empirical. There is an apocryphal story that at the very beginning, each misalignment was addressed as a H2A2 on the side of laterality. This is how empirical reasoning begins. Do something, see what happens. Change what you do, see how that changes the result. Soon, in the Grostic work, the four elements were identified for the misalignment pattern in the frontal plane. The proper algorithms to address the rotational patterns of the upper cervical spine in the transverse plane, were also soon investigated.

Much later, (in the NUCCA work) Gregory began to formulate a biomechanics of the upper cervical spine based on lever systems that he hypothesized to be operational in the area of C0-C1-C2. This biomechanical analysis resulted in an ability to reason out an optimal vector to more fully maximize proportional correction and to trouble-shoot problems when the spine did not reduce as expected. This system of biomechanical analysis has, for the first time, allowed the teaching of a practical protocol to large numbers of students who are then able to reproduce the corrective results in their patients.

The impact of this protocol cannot be over-estimated. Earlier versions of upper cervical chiropractic were often unable to be taught to large numbers of students because the variables were simply not yet understood in the depth necessary to allow consistent correction of complex subluxation patterns. Without firm grounding in an objective biomechanics, few individuals had the intuitive or intellectual abilities to codify the manifold complexities of the many variations of subluxation patterns and consistently correct them.

It will not be the attempt of this paper to overturn or even to question the value of this rational approach to the upper cervical spine. Indeed, I am grateful many times each day for the ability to adjust my patients from this perspective and to marvel at the results in their lives. Removal of the interference identified by this approach has amplified, and sometimes saved, the lives of millions of people over the last fifty years or so.

Newton's understanding of physics revolutionized mankind's ability to understand the physical forces of our world. In the last century, a new understanding of the quan-

tum nature of the physical world has again revolutionized our perspective. However, we continue to use the equations of Newton in our various works because they are practical approximations that work very successfully at this level of magnitude. Attempting to use quantum mechanics to describe these same problems is possible and could result in correct answers, but the complexity of accounting for each quanta at this level of magnitude is virtually untenable even using the largest computers yet imagined. At the same time, this new perspective has revealed an understanding of reality that has fundamentally altered the way we look at our world. Our sense of possibility has quite literally taken a "quantum-leap"!

It is the hope of this author that an examination of some concepts which are currently surfacing in various investigations around the world may be of use to the evolution of upper cervical chiropractic in the future.

Tensegrity

"Tensegrity" was coined from the words "tensional integrity" by Buckminster Fuller to denote a structure that retains its integrity under tension. The concept was first formulated by Kenneth Snelson, an American sculptor and one-time student of Fuller. Tension may also be considered as "pulling", and compression as "pushing". This concept has obvious parallels with tone and renitency. A structure that uses tension as well as compression to support itself may be considered to use the property of tensegrity. This structural property can be seen throughout the physical universe, from atoms to galaxies, from snowflakes and radiolaria to human beings.

Traditionally, human-made structures have relied on the compressive forces of gravity. Indeed, if your home were suddenly removed to the vacuum of space, it would break apart because it relies on the compression of mass following the force of gravity to maintain its stability. Organic forms are mobile. If they relied only on compressive forces to maintain their stability, they could never shift their orientation with respect to gravity. If they did, they would completely lose their stability. Instead, organisms rely upon both tension and compression to maintain stability.

Until very recently, all mathematical models describing the spine have been based upon axial-loaded compression based mechanics. However these models all break down when the spine is observed to move away from the vertical axis. The same compressive forces that maintain stability in the vertical position will cause the spine to be, as Levin noted:

"...pulled apart...if tilted out of plumb. The mechanical laws of leverage that operate in the compressional system would create forces that far outstrip any strength of biologic materials. We could not use such a system to walk on our two legs, crawl on all fours, walk on our hands or stand on our heads without the addition of tensional forces to hold us together. Such a system is only as strong as its weakest link. The laws of leverage act differently when applied within the tensegrity system so that forces generated are dissipated and may actually strengthen the structure much as prestressed concrete or a wire under tension. External forces applied to the system are dissipated throughout it so that the "weak link" is protected. The forces generated at heelstrike as a 200 pound linebacker runs down the field, for example, could not be absorbed solely by the os calcis but have to be distributed-shock absorber-like- throughout the body."(1)

The components of tensegrity structures are all "prestressed". As tension increases and is distributed throughout, the structure is balanced by an equal increase in compression. Stability is maintained through what Fuller called "continuous tension and local compression".

Ingber notes:

"Tensional forces naturally transmit themselves over the shortest distance between two points, so the members of a tensegrity structure are precisely positioned to best withstand stress."(2)

This may recall Wolff's Law to the reader's mind. It has long been known that bones change shape according to the forces placed upon them. The very trabecular patterns forming the matrix of the bone structure shift over time, in response to alteration in load bearing as it is applied to the bone. It is now beginning to appear that this property is present in all the tissues of the organism.

Of at least equal importance, Ingber also relates that :

" ...tensegrity structures function as coupled harmonic oscillators. DNA, nuclei, cytoskeletal filaments, membrane ion channels and entire living cells exhibit characteristic resonant frequencies of vibration. Very simply, transmission of tension through a tensegrity array provides a means to distribute forces to all interconnected elements and, at the same time, to couple, or "tune," the whole system mechanically as one."(3)

Levin presented a couple of examples of tensegrity at work in the human structure.

"The entire support system of the upper extremity is a tension system being supported by the musculature interweaving the spine, thorax and upper extremity into a tension support system. The scapula does not press on the thorax. The clavicle has been traditionally recognized as acting more as a compression strut, as it would in a tensegrity model."

And,

"The anatomist Grant, in his classic book, "Methods of Anatomy" describes the sacroiliac joint, the major supporting joint between the pelvis and spine and its superimposed structures. He states that the sacrum behaves not as a keystone but as the reverse of a keystone, and tends,

therefore to sink for-ward into the pelvis. The spine and its superimposed structures are, of course, supported by the massive ligaments so that the sacrum-and all that is above it- is "slung" in the pelvis and not dependant on axial-compressive support." (4)

In another paper, Levin goes into much more detail regarding the biomechanics of the shoulder girdle. In the abstract to this paper, he explains:

"The least successfully modeled joint complex has been the shoulder. In multi-segmental shoulder models rigid beams (the bones) act as a series of columns or levers to transmit forces or loads to the axial skeleton. Forces passing through the almost frictionless joints must, somehow, always be directed perfectly perpendicular to the joints as only loads directed at right angles to the surfaces could transfer across frictionless joints. Loads transmitted to the axial skeleton would have to pass through the moving ribs or the weak jointed clavicle and then through the ribs. A new model of the shoulder girdle, based on the tension icosahedron described by Buckminster Fuller, is proposed that permits the compression loads passing through the arm and shoulder to be transferred to the axial skeleton through its soft tissues. In this model the scapula "floats" in the tension network of shoulder girdle muscles just as the hub of the wire wheel is suspended in its tension network of spokes. With this construct inefficient beams and levers are eliminated. A more energy efficient, load distributing, integrated, hierarchical system is created."(5)

Conceiving of the shoulder as a tensegrity structure helps to explain why compressive loads from the arm can be transferred from the scapula to the spine without any rigid, compressive load bearing structure which links the scapula and the axial skeleton together. Without this connection, there is also no adequate fulcrum.

Levin further explains:

"In a linked system a seamless continuum of compression elements are necessary. Bone must compress bone. The almost frictionless joints would require forces to be always directed at right angles to the joint. The scapula is not anatomically situated to transfer loads through the ribs to the spine. Even if it were, the ribs could not take those loads and act as levers to connect to the spine.

The ribs themselves, by shape, position and connection, are not structurally capable of transferring these loads. The clavicle is in no shape to transfer loads either. It is a crank shaped beam that connects the scapula to the sternum by a small, mobile joint that could not transfer compressive loads of any significant magnitude."(6)

The description of the shoulder girdle as a tensegrity structure may sound somewhat familiar to the student of the NUCCA work. Although not defined as such, the adjustment was understood by Gregory as much more than merely an "arm" delivered adjustment. The procedure for the delivery of the adjustment requires proper alignment of the adjustor's entire body. The magnitude and direction of the adjustic force is determined by the proper alignment of forces within the adjustor's body. The concept of the "closed kinetic chain" effect (as described by Gregory) in the delivery of the adjustive force is certainly paralleled by the property of tensegrity.

It has been shown by several investigators that ligaments are under continuous tension even in a neutral position. The ligamentum flavum, anterior longitudinal ligament and the posterior longitudinal ligament all have been observed to maintain a baseline tone even when the spine is in a neutral position. (7a,b,c)

Clearly, the soft tissue elements are capable of continuously transmitting forces throughout the entire framework of the body. "Linking" of the tensegrity structures (through loading of the patient's upper cervical joint complex by proper positioning of the adjustor's body) between the pisiform of the adjustor and the atlas transverse process of the patient, allows distributive transfer of the tension present in the adjustor's body down a specific vector (specifically defined through the adjustic stance). This force distributively affects the tensegrity structure of the patient. Ideally, it will do so in just the proper way to restore biomechanical integrity.

As Ingber states:

"...the 206 bones that constitute our skeleton are pulled up against the force of gravity and stabilized in a vertical form by the pull of tensile muscles, tendons and ligaments...In other words, in the complex tensegrity structure inside every one of us, bones are the compression struts, and muscles, tendons, and ligaments are the tension bearing members" (8)

If examining the NUCCA work in the light of the property of tensegrity leads to a wider view, the resulting new perspective can potentially improve biomechanical understanding of the upper cervical subluxation complex. At the same time, it is clear that the Newtonian formulation of the involved dynamics have been extremely successful.

The cell as a tensegrity structure

Not so long ago, the cell was "seen" as a *"bag of concentrated solution of enzymes and metabolites mixed up at random, save for a few organelles and intracellular membranes." (9)* Much of this view came from the methods used to investigate the cellular components. The standard procedure of the time was to homogenate or grind up the various components of the cell and then separate the different "fractions" according to size or density. If a specific "fraction" was being investigated, the other "fractions" were removed. The resulting "pure" fraction was then dissolved in deionized water to which ultrapure substrates were added. A long process to "characterize" the enzyme activity then began. All of this, as Ho points out, serves to

reinforce the notion of the cell being nothing more than a bag of enzymes and metabolites dissolved in solution.(10)

Ho brings us up to date:

"As electron microscopy and other specific staining techniques became available, it gradually dawned on us that the cell is highly structured. Nowadays, the generally accepted picture of a cell is quite sophisticated. It is bound by the cell membrane - a double layer of lipids, which is supported by and attached to the membrane skeleton composed of a basketwork of contractile filamentous proteins lying immediately underneath it. The membrane skeleton in turn connects with the three-dimensional network of various fibrous proteins collectively known as the "cytoskeleton", which links up the inside of the cell like a system of telegraph wires terminating onto the membrane of the nucleus. In the nucleus, the chromosomes (organized complexes of DNA and proteins) are anchored directly to the inside of the nuclear membrane. The nuclear membrane and the cell membrane are also in communication via concentric stacks of membranous vesicles, the Golgi apparatus- with special secretory functions, and the endoplasmic reticulum - a system of three-dimensional canals and spaces believed to be involved in intracellular transport and occupying a large proportion of the cell volume. A substantial volume is also taken up by organelles such as the mitochondria, where simple carbohydrates are oxidized to CO2 and H20 with the generation of ATP, and ribosomes on which polypeptide chains are synthesized. Finally, what is left over is the cytosol (or 'soluble' cytoplasm)."(11)

In addition, it is now believed by many that most of the water found in the cell is bound (or structured) on the manifold surfaces within the cell. (12) This "bag of solution chemistry" is now being recognized as a solid state system. The implications of viewing the cell and by fractal reasoning, the organism, as a solid state system are most profound, though beyond the scope of this paper.

Ingber reports on the current understanding of the cytoskeleton (CSK):

"It is now accepted that the CSK of eukaryotic cells exists as a complex interweaving meshwork of three major classes of filamentous biopolymers... Most biologists agree that actomyosin interactions within contractile [microfilaments] generate CSK tension and that all three filament systems provide some structural function. However there is no model of CSK organization that can explain how these filament systems associate and integrate so as to form a continuous "solid" network that can change shape and move."(13)

Ingber posits that tensegrity offers a globally integrated architectural model that explains the coordination between the "part and the whole that is so characteristic of the CSK".(14) Cells spread and are motile, they undergo transformations in size, shape and function. Organismic function requires fluid and coordinated movement at every level, from tissue to cell to molecule. Again, quoting Ingber:

"If cells do use tensegrity, then we will need to change our frame of reference in studies on CSK remodeling and cell shape to include the concept of a pre-stressed CSK. In other words, we need to transform our image of cell architecture from a rigid static view that is largely based on local molecular binding events into one that is mechanically based, globally integrated and dynamic. Inherent in this form of architecture is a mechanism for mechanical information transfer...integration between all parts, both large and small...that is based entirely on provision of tensional continuity. Thus a central tenet of tensegrity is that every structural element with the system is poised to sense and immediately respond to physical stimuli from both inside and outside the cell. It is difficult to think of another type of building system that could explain how stretching a tissue such as skin, results in extension of the ECM [extracellular matrix], cell, CSK and nucleus in a coordinated manner without producing any structural breakage or disconnection...."(15)

Beyond explaining global integration of movement both intra and inter-cellularly, Ingber has hypothesized how tensegrity can also model coordinated information transfer:

"Tensegrity provides a mechanism to mechanically and harmonically couple interconnected structures at different size scales and in different locations throughout living cells and tissues...Thus cell and tissue tone may be tuned by altering the prestress of the system. This may be accomplished by altering the architecture of the system or the level of CSK tension...In either case, increasing the stiffness of the network will alter vibration frequencies and associated molecular mechanics of all the constituent support element. This may, in part, explain how the part (molecule, cell) and whole (e.g., cell, tissue, organ, organism) can function as a single mechanically integrated system...

This tuning mechanism also may play an important role in mechanical signal amplification, as well as in the adaptation responses that are necessary to tune out certain signals...Any one of these changes may feed back to tune the mechanotransduction response, as seen in studies with intact cells...

On a larger scale, alterations in CSK stiffness or in the number of load-bearing elements in the system will change how stress dissipates in the network before it reaches the molecular transducer. A cell that is very stiff may be able to sense lower levels of stress more quickly than a more flexible cell. Conversely, the more flexible cell may be able to sense larger strains. This adaptability may contribute to the different sensitivities exhibited by specialized mechanosensory cells; for example, the stiff hair cells

of the inner ear sense small vibrations, whereas more flexible spindle cells of muscle recognize changes in length (stretch). A similar mechanism may explain why osteocytes, which contain highly extended (and hence stiffened) processes, preferentially respond to high frequency and low amplitude strains...

Finally, because the ECM physically interconnects with the CSK, its mechanical properties may also contribute significantly to the mechanotransduction response. If the ECM is highly flexible, then a rapid deformation may be sensed, whereas a sustained stress will dissipate before it reaches the cell...The resistance imposed by the relatively inflexible ECM induces global rearrangements in the CSK through a tensegrity mechanism, as measured by a linear stiffening response...These changes in CSK mechanics, in turn, may serve to simultaneously modulate multiple signaling mechanisms."(16)

D.D. Palmer seems to have gotten it right. Structure does affect function. An interesting example can be found in a study by Wirtz and Dobbs who examined the effects of mechanical distension on alveolar type II cells. They found that a single stretch on one cell resulted in *"a transient (less than 60 seconds) increase in cytosolic Ca(2+) followed by a sustained (15 to 30 minutes) stimulation of surfactant secretion."(17)* As the entire frame of an individual distorts secondary to the ASC, there is effect on every tissue and cell. There is increasing evidence that genetic expression too, is altered by changes in the mechanical forces acting on the cell. The effects of the ASC resonate deeply and on many different levels.

The organism as a tensegrity structure

An important property of tensegrity is that it does not vary with respect to macro-level. The property seems to be engaged at the atomic level, the galactic level and all the levels in between. Another way to say this is that tensegrity has a fractal quality. And so, the human organism can be understood as a tensegrity structure. This fractal quality which is present at the level of the atom, the molecule, the cell, the tissue, the organ and the organism, ultimately creates a surprising level of coupled harmonic coherence throughout the organism. When an arm moves, for example, the entire arm moves simultaneously with incredible coordination. Muscle activity is remarkably coordinated and coherent. Studies have shown that muscle contraction occurs in distinct synchronous quantal steps over entire muscle fibers.(18)

The implications for distribution of mechanical force have been briefly touched upon. Other implications regarding energy flow, coherence, and resonant transfer of information must be dealt with elsewhere.

It would appear that Gregory intuitively understood the property of tensegrity before it was formally identified, considering his systematic inclusion of the critical dynamics that are operational throughout the adjustor's entire body in the delivery of the adjustment. The concept is also present in his discussion of the adjustic force, which he described as utilizing a "closed kinetic chain effect" to conduct the work of the adjustment. It was Gregory that really fleshed out the distributive effects of the ASC throughout the entire structure. With the help of the Anatometer, Gregory and Seemann were able to measure how the misalignment in the upper cervical spine correlates directly with compensation and adaptation throughout the system. Our description of the measurable aspects of the ASC on the body: functional short leg, unleveling and transverse rotation of the pelvis, coupled movement of the axial skeleton away from the vertical axis, twisting and moving into one of the frontal planes, is exactly the distribution of stress which is being described in the tensegrity structure.

The rational biomechanical reasoning which has followed the extensive empirical investigations has made the practical delivery of the adjustment possible, even in complex cases where the "numbers" alone are not adequate to maximally and proportionately reduce the ASC. There are many cases that defy simple first or second class lever explanations, as anyone who sits in on Dr. Denton's lectures must see. He often discusses the "splitting" of the adjustic force in out-of-pattern misalignments and type fours. This is why the term "greatest resistance" is often used. There are innumerable potential "resistances" in every aspect of the system. The identified lever arms, and fulcrums represent practical approximations of the distributive and continuous tension and discontinuous compression inherent in the system. It is a very beautiful and useful abstraction of an unimaginable complexity.

It is this author's hope that these ideas may lead to further understanding of the biomechanics underlying the physics of the adjustment as well as the biomechanics of the atlas subluxation complex.

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Revisiting the Coordinator: Is there a more efficient way for students to train?

by Jeff Scholten, B.Sc.

Changes in current practice often come about due to great frustration. My greatest obstacle to learning the NUCCA procedure is not hamstring flexibility but the successful completion of the enigmatic triceps pull. A major reason for this frustration is the lack of biofeedback mechanisms available while training individually. In the search for basic competence a multitude of suggestions have been made in regards to how this motor skill may be learned. Dr. Zebellin suggests fatiguing the triceps through isolated exercises, thereby utilizing pain as the feedback mechanism when the pull is attempted. The no pain no gain model although effective has painful disadvantages. In a recent Palmer elective, Dr. Dickholtz Sr. suggested lying supine so to engage gravity as an aid (which was helpful) as well as using his triceps coordinator so the triceps pull could be attained with the feedback of a noisemaker set off by chest compression. The difficulty with these methods came in their real life application. Having your shoulders flexed to 90 degrees is biomechanically very different than interlocking the distal forearm and attempting to create the thoracic compressive force necessary to complete the adjustment.

In training to become proficient at the NUCCA procedure the coordinator seems to have reigned supreme. NUCCA doctors have mentioned on countless occasions that when the adjustment is performed correctly its completion should be as much of a surprise to the doctor as it is to the patient. The typical coordinator has a plunger as its source of resistance. Although there are many different grades of plungers, all present a similar problem. Having dented the plunger for the first time the adjuster becomes kinesthetically aware of how much force is necessary to overcome the resistance. Regardless of any attempts to disregard this information it is no longer possible to be surprised by the amount of force that must be harnessed in denting that specific plunger. Some of the experts in the field have been rumored to use a number of different coordinators to overcome this problem. Although this approach may not be practical for most practitioners, those who choose this method are still susceptible to being aware of exactly how much force is necessary to overcome the resistance of each coordinator after a few practice sessions.

The best way that we at the Palmer NUCCA club have found to be sure a practitioner is isolating the correct muscles while pulling involves the use of two spotters. One has a hand over the rhomboids to ensure that area stays relaxed and only contracts at the very end (the follow-through) of the pull; a second spotter presses the infra-glenoid tubercles, thereby helping the student feel when the correct muscles contract. These methods, although helpful in a group format, do not allow for continued growth on an individual basis.

Recently while working on a coordinator and becoming frustrated with my inability to differentiate *pushing* from *pulling*, I attempted the triceps pull while contacting my Thurle speeder board. For those unfamiliar with the speeder board it is an aid that all students of Toggle use to practice their thrust depth and speed. It also is used by many chiropractors as a drop piece for increased velocity while adjusting extremities.

By performing the NUCCA procedure while contacting a speeder board, (which has the ability to be set to variable resistances) the moment the exact amount of force necessary to overcome the predetermined resistance of the speeder board was generated it dropped away. The most significant part of this procedure is that the movement of the speeder board is a surprise, thereby mimicking the actual adjustment more accurately.

During subsequent training sessions other benefits of using the Thule board became evident. While pulling on the traditional plunger it was necessary for me to be aware of it to see if it dented. This created a conflict due to my inability to singularly concentrate on overcoming my own resistance. Speeder board use solves this problem by creating a snapping noise when its resistance is overcome.

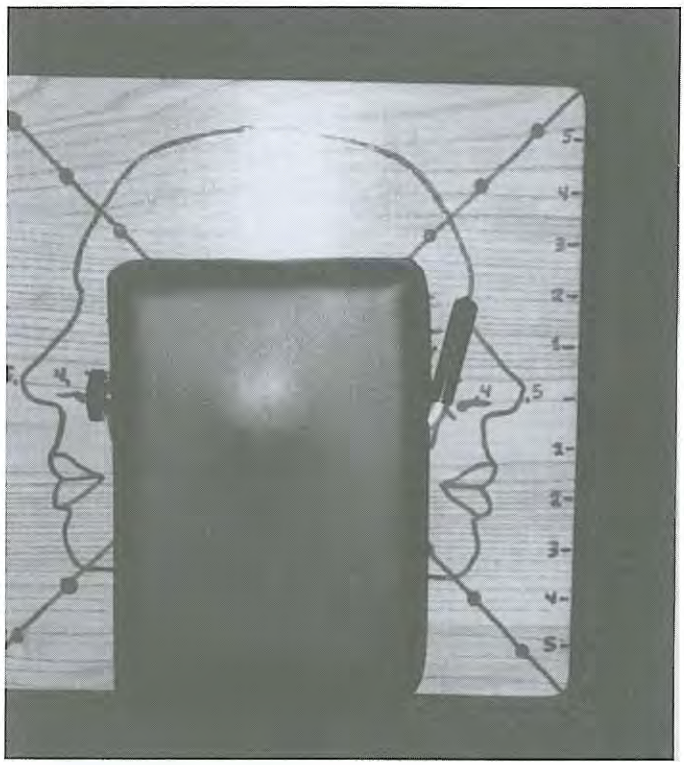
Another problem which became evident upon my first real patient encounter was a difficulty in maintaining the radial deviation in my contact hand. This may be due to there being nothing in the space closely surrounding the coordinator's contact point allowing a lack of radial deviation to go unnoticed while training. The speeder board has a contact provided by a removable plug used by togglers as a mock transverse process. Radial deviation is encouraged as a result of the contact made between the hypothenar pad of the adjustor and the board when this step is not performed fully. When the speeder board is contacted properly increased proprioceptive feedback is induced due to the plug being buried below the upholstery of the speeder board.

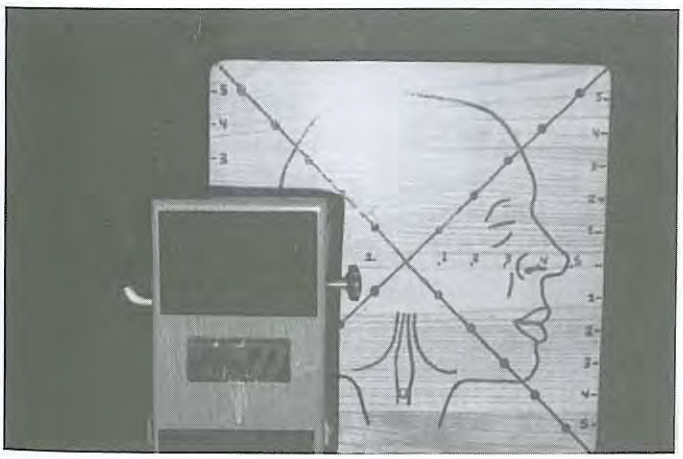
Perhaps the most significant benefit noticed was that when a resistance which could be overcome was exceeded, it was possible to just "hang out" and correct phase weaknesses, (i.e.-relax, reinstate neck lock, shift weight, increase triceps isolation, etc.) so as to effectively overcome the higher level of resistance. While testing this new coordinator at a recent Palmer NUCCA club level 4 meeting it was interesting to note that while initially most of the club

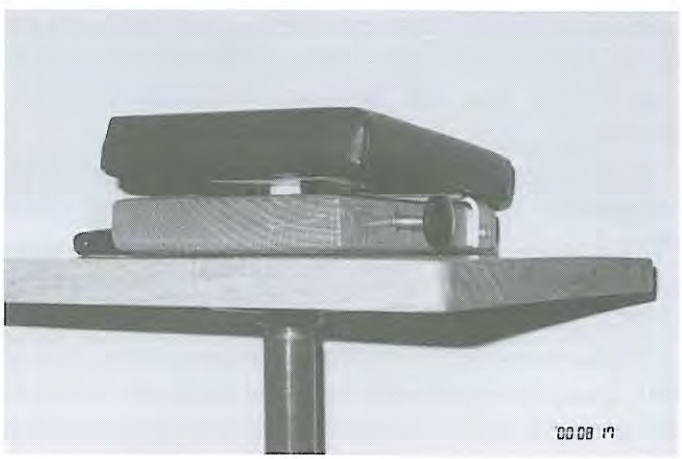
members could only overcome very little resistance, by the end of a short practice session the amount of resistance overcome had increased significantly. The best part was that the board dropping was still a complete surprise to the practitioner even at these higher levels of resistance with the benefit being more isolation of the triceps due to a very gradual increase in the resistance. An even more realistic environment can be established for the student if a training partner sets the resistance.

A benefit of the Thule speeder is that it has a grip on its underside that stops it from sliding around as well as a precut screw slot for wall hanging. It was suggested by a colleague that by using the screw slot properly the speeder could be firmly attached to the coordinator with very little effort. The speeder board is easily attached by placing the transverse process insert at the center of your coordinator once the plunger is removed. Mark the coordinator at the speeder board's edge closest to the screw hole. By measuring the distance from the same edge to the screw hole and applying that measurement to the coordinator, an appropriate sized screw can be attached to an appropriate depth resulting in the speeder board being tightly fastened.

The Palmer NUCCA club has begun to make use of this procedure and has seen excellent results. The goal of any departure from current practice should only be done with the expectation of an accelerated learning curve for a student of the NUCCA procedure. Being able to synthesize the adjusting act and incorporate feedback to the doctor is essential in training more students to become practitioners of NUCCA thereby allowing more people to experience the benefits of spinal balance. It is my hope that this alteration will decrease the frustration level of new practitioners by reducing the time it takes to become truly proficient in the NUCCA procedure.







Out-of-Pattern Biomechanics

by Keith E. Denton, D.C.

This out-of pattern misalignment was presented in Atlanta in the fall of 2000 to the advanced doctors by Dr. Keith Denton. Dr. Denton is a Board Certified NUCCA doctor, recipient of the prestigious R. R. Gregory award, and a former editor of The Monograph. Also he has the distinction of having been one of the two NUCCA doctors who worked with R. R. Gregory on a daily basis during the last decade of R. R. Gregory's practice. He is widely appreciated for his expertise in biomechanics, his natural teaching ability, and the quality of care delivered to his patients. Dr. Denton is on the NUCCRA executive board and has an unsurpassed history of effective service to NUCCA. Dr. Denton's understanding of Dr. Gregory's thought process is unequalled among NUCCA doctors; the day by day interaction with R. R. Gregory resulted in the professional qualities that are appreciated by all. The literature shows that no other NUCCA doctor has as high a set of correlations with Dr. Gregory in marking X-rays. The data says it best. Editor.

This article is the first of a series that deals with the unusual or the out-of-pattern misalignment complexes seen by the NUCCA practitioner. The out-of-pattern misalignments became apparent with the development of the vertical axis concept by Ralph R. Gregory, D.C. As Dr. Gregory began to define the four basic type misalignments of the Atlas Subluxation Complex, it was discovered that some of the misalignment patterns would exhibit angle relationships common to a particular basic type, with some biomechanical component not commonly seen with that particular basic pattern.

Many of the out-of-pattern misalignments do have characteristics that can be categorized. Once we began to categorize them, biomechanical correction mechanics can be applied to obtain consistent optimal reductions.

With the unusual or out-of-pattern misalignments, the post x-ray evaluation becomes critical for successful patient care. To achieve maximum stability for the patient the adjustor must decide if any uncorrected portion of the misalignment was a biomechanical or adjusting problem or an expected result. If the problem was biomechanical, was it a problem with headpiece placement or vector selection.

Credit must be given to Albert A. Berti, D.C., of Vancouver, B.C., Canada. Many of the correction mechanics for out-of-pattern misalignments were first presented by him during the NUCCA educational programs in the early to mid-1990's.

When reviewing this misalignment a series of questions and answers have been developed and are used in NUCCA educational programs to assist the adjustor in categorizing these patterns. As with all Atlas Subluxation Complexes, each must be looked at individually.

Question 1. Name the basic type misalignment. Give the characteristics. Is this misalignment out of pattern or in pattern?

Answer 1. Basic type two misalignment with the characteristics of a sever head tilt greater than C-1 laterality. The acute angles are ipsilateral, with the angular rotation of the lower cervicals into the left frontal plane. Unusual for this degree of head tilt is a slight posterior rotation of C-1. The plane of C-1 is well below a true horizontal. Although this pattern of basic type two is seen, the degree of head tilt is unusual.

Questions 2. & 3. What production mechanics produced C-1 laterality? Over what articular surfaces did C-1 laterality occur? What are the mechanical resistances encountered in correction mechanics of the misalignment?

Answers 2. & 3. C-1 laterality is produced by the skull's occipital condyles turning on the superior articulating surface of C-1. This movement is over the superior articulating surface of C-1. The primary mechanical resistance is in the condylar circle, with a specific site at the right occipital condyle.

Question 4. Into which frontal plane has angular rotation misaligned the lower cervical spine? Is there a spinouls rotation that must be considered?

Answer 4. The angular rotation of the lower cervicals is into the left frontal plane and contains a significant right rotation of the C-2 spinous process. This may be a secondary shift of C-2 in response to its weight bearing function. The shift of the skull's center of gravity to the right lateral mass of C-1 and downward to the right superior articulating surface of C-2 probably influences the right spinous rotation. This right sided weight bearing would usually dominate the rotation of C-1 in the transverse plane by causing an anterior rotation. This is an anatomical relationship of the superior articulation surface of C-1. Once again the slight posterior rotation is not expected.

Question 5. What do you want the effort of the adjustment to accomplish? Do you need to raise or lower the vector from the calculated vector to accomplish this?

Answer 5. The effort of the adjustment should be directed into the right occipital condyle of the skull, through C-1. This will aid in turning the skull and Foramen Magnum counter clock wise or upward toward the vertical position. The angular rotation of the cervical spine must be directed back toward its normal position on the vertical axis. The correction of the angular rotation is accomplished by two mechanisms. One, when the adjustive effort is directed into

the occipital condyle of the skull, a simultaneous downward force is produced at the fulcrum. This fulcrum is located on the opposite or left superior articulating surface of C-2. This effort is directed into the circular pathway of angular rotation. Two, coupled with careful attention to an inferior torque in the adjustive effort, the lower cervicals should move toward the vertical axis. The more the height vector is lowered, the greater the need for inferior torque. Pre Listing: L1 P1

Question 6. What do you want the reactive force of the headpiece placement to accomplish? Use the schematics and diagrams below to answer the question.

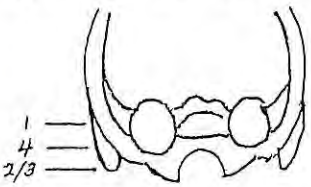
Answer 6. The reactive force of the headpiece is to turn the skull counter clock wise or upward toward the vertical axis. The use of the round headpiece is recommended. This is described as supporting the skull as far below its center of gravity as possible. Schematically this is skull position 2/3 placed on D.

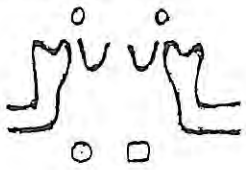
The mastoid tips are somewhat medial to the outer portion of the skull, and could be described as a round skull. The round skull designation with the need to turn the skull in the adjustment would make the B headpiece angle the best choice.

Type of mastoid support to be used in each case, why

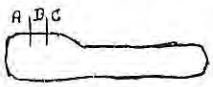
Round ◯ or Square ▭

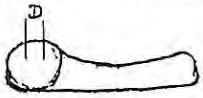
What portion of the mastoid or skull will be placed on the mastoid support: (1): (2): (3): or (4): (refer to drawing)





What portion of the mastoid or skull (1), (2), (3) or (4) is placed on the mastoid support areas (A): (B): (C): or (D): and why.





Head piece angle to be used in each case:

(A)  OR (B) 

Question 7. Is the post x-ray an acceptable correction? Was there a pattern change on the post x-ray? What needs to be accomplished to improve the post x-ray findings?

Answer 7. The post x-ray revealed a maximal correction of C-1 laterality, with three of the four and one half degrees of head tilt corrected. With the NUCCA practitioner's constant pursuit of perfection, we need to be reminded that head tilt along with plane line are not known to produce neurological insult. With the correction of spinous rotation it would be possible to lower the naisum vector on the post listing. This post x-ray has a tendency to appear as an out-of-pattern basic type two with type four characteristics. This appearance would still influence the author to only lower the vector slightly.

Post Listing L1 & 1/2 P1

$(R4\frac{1}{2})$

At: $R2\,P\frac{1}{2}\,S^2$ PL: $-1\frac{1}{4}$ C/A $3\frac{1}{2}/5$

Od: R0 At/Od: −1

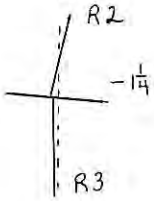
BC: R0 C/A: +1

Sp: R5 Ang: $-\frac{1}{4}$

Head R Vector $L1\frac{1}{2}\,P\frac{1}{2}$

No 11499

Pre



At: $R\frac{1}{4}$ $(R1\frac{1}{2})$ PL: $-\frac{3}{4}$

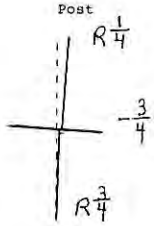
Od: R0 At/Od: $-\frac{1}{8}$

BC: R0 C/A: +1

Sp: R0 Ang: −0

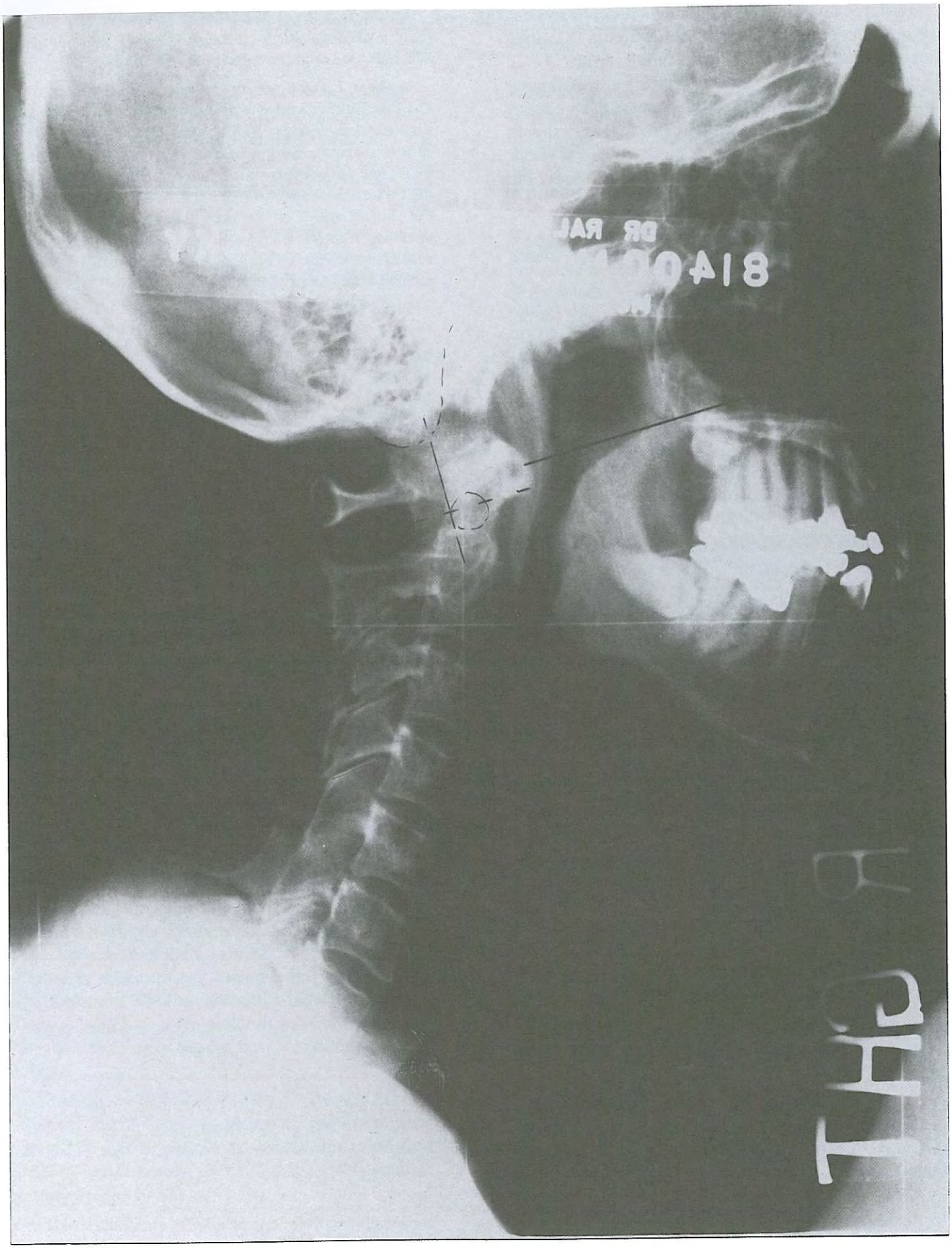
Post Vector $H\frac{1}{8}\,P\frac{1}{2}$

Post

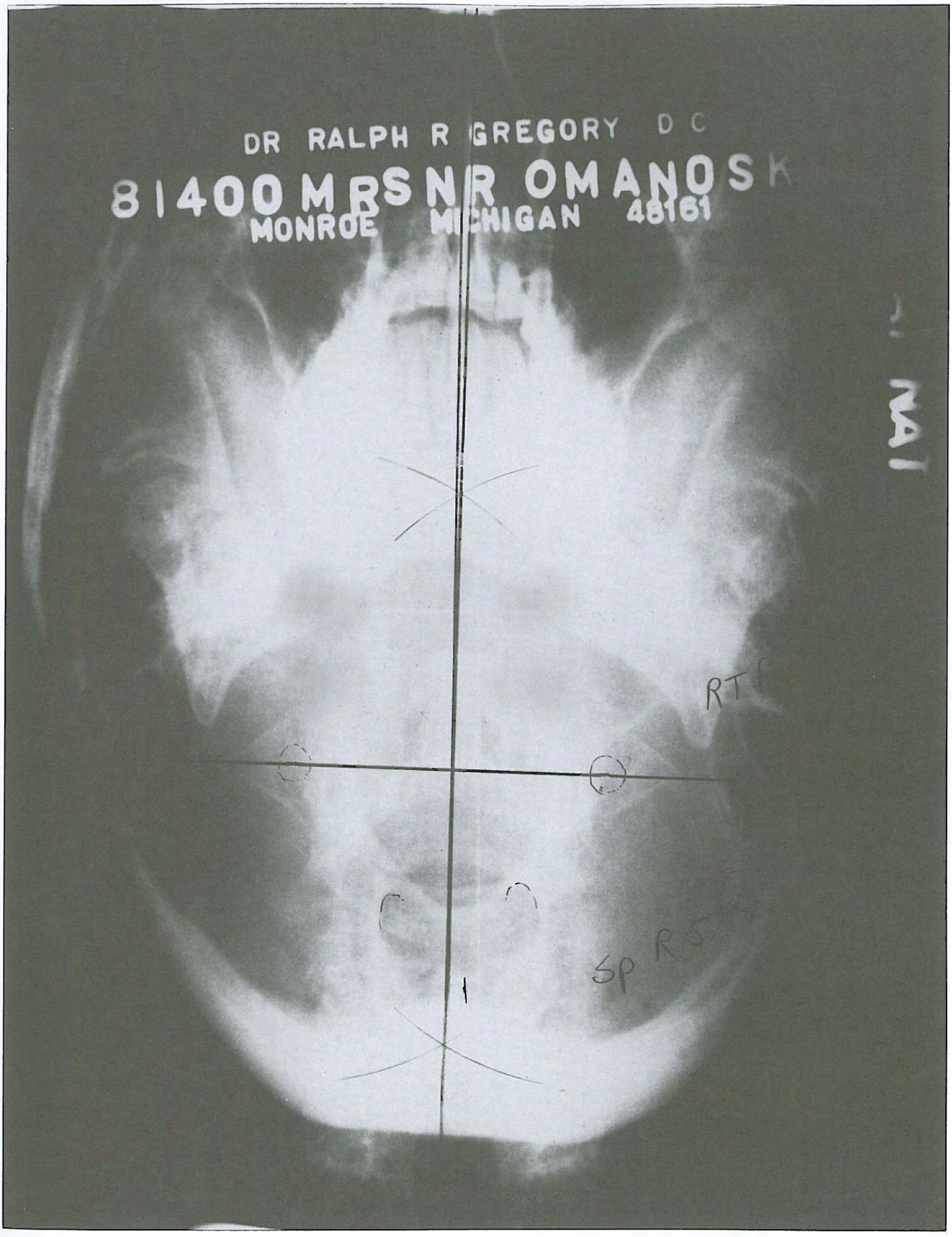


Anatometer Record

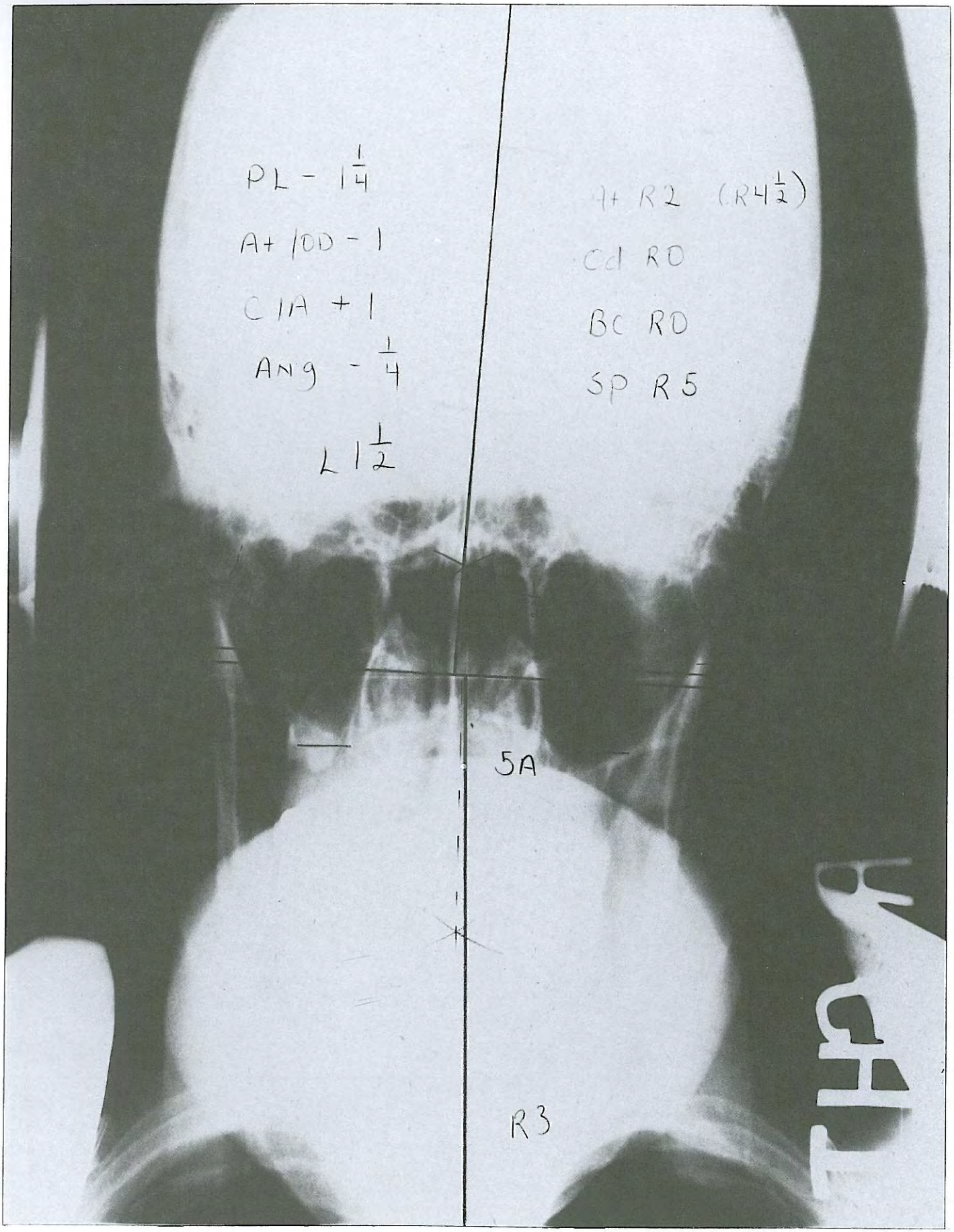
Date	LLI	Front.	Trans	F.P.	Bal.
	$L\frac{1}{2}$	L3	P4	L2	+7.5
	L0	L0	P0	0	−0.1



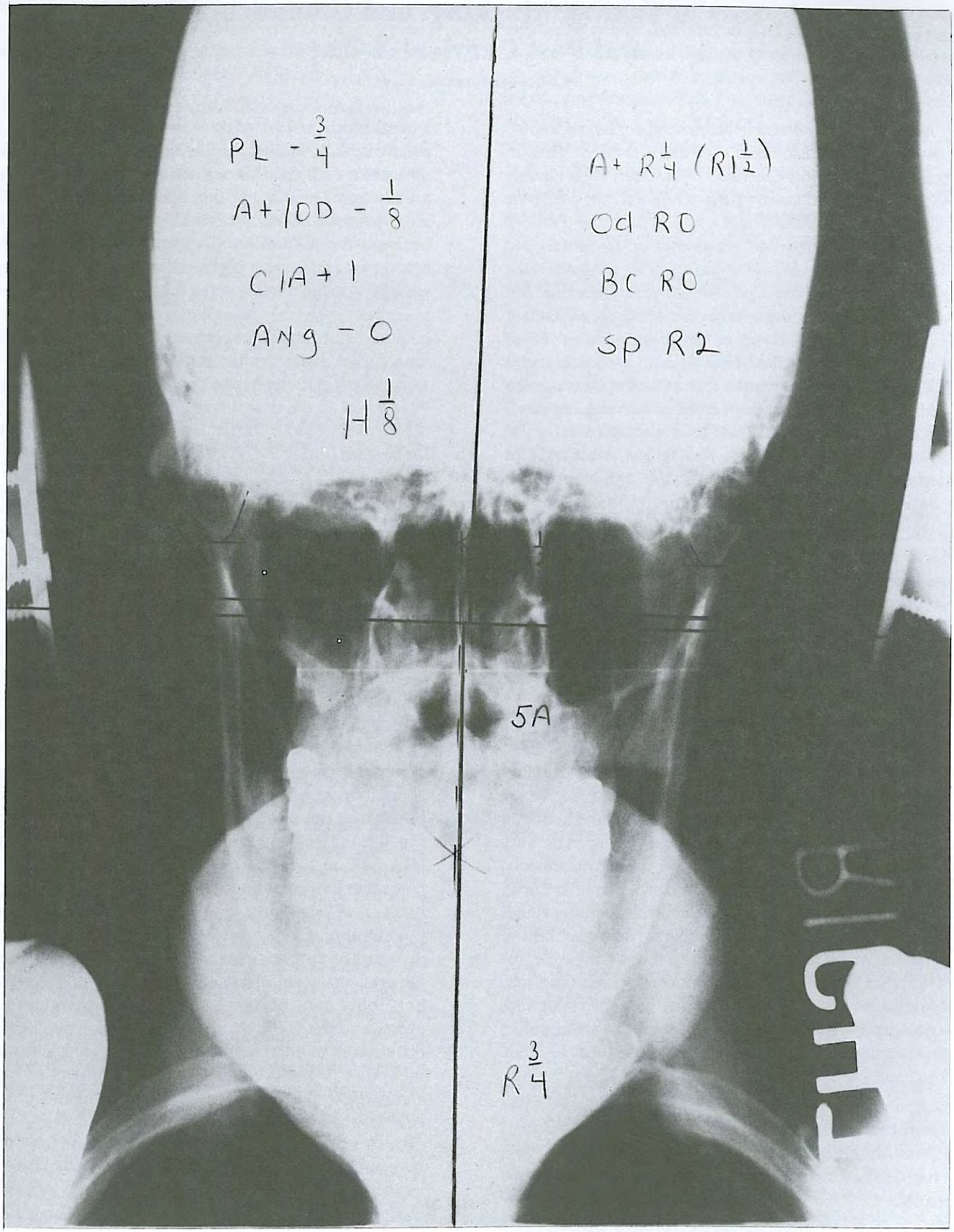
Lateral View


DR RALPH R GREGORY DC
81400 MRSNR OMANOSK
MONROE MICHIGAN 48161
RT
SP RS

Vertex View



Pre-Nasium



Post-Nasium

Errors in Taking, Marking, and Comparing Pre and Post Cervical X-Rays

By Marshall Dickholtz Sr., D.C.

This article is a portion of the protocol of Dr. Dickholtz, president of NUCCRA and a Board Certified NUCCA doctor. Dr. Dickholtz's Chicago area practice is exclusively by medical referral and by patient referral. Dr. Dickholtz is the most active of the NUCCA researchers and is known for his superb X-rays and his pursuit of innovation and continual improvement in the quality of the care delivered to his patients. He has a passion for excellence and is a master of detail. He is the recipient of the D. D. Palmer Scientific Award and the R. R. Gregory Award. It should be noted that because Dr. Dickholtz is on the leading edge of some areas of chiropractic research that some aspects of his protocol have not been codified into the Standards of Practice of NUCCA. The views and opinions of Dr. Dickholtz are not necessarily the views of the NUCCRA Board of Directors. Editor

Introduction. It is well known and appreciated that the NUCCA doctor has the X-ray equipment properly aligned; this is a first condition for NUCCA Board Certification and it is the starting point for the ability to compare pre and post x-rays. Properly aligned X-ray equipment allows one less variable to be present in the process of obtaining a valid listing. However proper alignment of equipment does nothing to ensure the absence of errors caused either by improper patient placement or by osseous structures not being centered in the X-ray field.

It has been stated by Dr. J. F. Grostic and Dr. R. R. Gregory that approximately one third of atlas laterality misalignments are less than or equal to one degree.(1) Outcome studies presented at the NUCCA conventions by this clinical researcher are in agreement. Since laterality measurements are recorded in quarter-degree increments, corresponding to 0.17mm on a three inch condular circle, and since postural effects are not seen with laterality values less than or equal to one-half a degree, then one third of subluxated patients have either three-fourths or one degree of laterality. For this population of laterality misalignments, the adjustor need only have a 50 percent reduction, assuming the rest of the misalignments are reduced proportionately, to normalize body posture!

Procedures. The following are the procedures that are used in my office and are what I recommend; they cover the spectrum from pre-adjustment X-rays to post-adjustment X-rays. These procedures are the result of over a half-century of continuous improvement in the clinical setting.

In the first procedure the patient is instructed to stand in front of a NUCCA wall chart containing horizontal lines spaced about 1 &1/2 inches apart. The position of the patient is such that his back has no contact with the wall and each foot is directly below its corresponding acetabulum. Once in position the patient is instructed to close his eyes, lower his head, and then bring his head back to a neutral position. This head motion is repeated a few times; each time a positional observation of the right ear lobe is made relative to the left ear lobe when the head is in the neutral position. When consistency of relative position is observed, a notation is made on the patient's record card. For example, if the right ear lobe is lower than the left ear lobe by one quarter of an inch, then a (-1/4) is listed on the record card. This measurement is then used to help ensure correct patient placement for part of the nasium film.

In the second procedure lead markers are taped to the patient.(2) The lead bird shot is taped to the palatable inferior anterior aspect of the tip of each mastoid. These lead shot markers are easily seen on X-rays and their location relative to the transverse processes of the atlas on the same X-ray are used to locate the transverse process of the atlas when compared to palpated position of the mastoid. This process makes it easier for the adjustor to replicate a position for Pisa form contact. Remember that there is approximately 30% magnification in the vertical direction on the X-ray.

The third procedure requires either flatten birdshot or square, flat pieces of lead foil about 3-4 mm on a side and about 0.01 inches (approx. 1/4 mm) thick being taped to the inferior tips of the ear lobes. When viewing a nasium film one is able to see these ear markers and the horizontal lead line on the grid carrier. Knowing from the first procedure the relative position of the ear lobes to the set of horizontal lines, one is able to verify the "proper" positioning of the head by looking at the respective distances of each ear marker to the horizontal lead line on the grid carrier and then comparing this with the relative ear lobe measurement. Again, magnification is approximately 30% in the vertical direction in the positional differences of the two pieces of the lead foil markers measured to the horizontal lead line projection when compared to the differences in distances recorded in the first procedure. If one accepts a nasium view that is not exactly where the level of ear markers should have been, then one is accepting a different plane line and a different angle formed by the vertical axis and the central skull line. This could result in a different lower cervical angle but do not assume that the lower angle necessarily changes. In practice this researcher would change calculations for the

plane line for height vector and change the angle of central skull line mathematically if the head is leaning into the subluxation; this changes the place of mastoid support on the head piece when the patient is adjusted.

LATERAL VIEW PROCEDURES/RECOMMENDATIONS: the lateral view in NUCCA protocol is taken first. A 24cm X 30cm or a 10inX12in film is recommended; the larger film enables the patient to visualize the relationship of the cervical spine to the head. The patient sits erect with head in neutral position; the inferior ocular orbit should be at the same level as the auditory meatus. The grid carrier is set at the same angle as the head.

A centering head clamp with an alignment rod is necessary. With the alignment rod pointing down and the line on the mirror in the center of the grid carrier, the chair of the patient is turned until the patient's ears are in juxtaposition with the line in the mirror and the alignment rod.

The critical region in determining the S-line on the lateral film is the first three eighths of an inch (1cm) where the posterior arch attaches to the lateral masses. (Sometimes you will see both sides of the arch. When both sides are seen, then it is recommended that the straight edge be placed midway between each side of the posterior arch.) Take a straight edge and use the intersection of the posterior arch and the lateral mass as the pivot for the straight edge to get the posterior portion of the first three eighths of an inch such that the posterior arch will have a slight elevation to the straight edge. Keep in mind that the atlas bobs up or down when the head is flexed; the higher the S-line the more the head is dropped both to get a better projection and to get the posterior arch slightly elevated on the nasium. This projection is mandatory.

NASIUM VIEW PROCEDURES/RECOMMENDATIONS. Errors can also be produced when taking the nasium X-ray. As in the lateral view the patient is to sit erect with his head in a neutral position. The goal is to have the patient's ear lobes in the same relative position as when they were standing in procedure one. If there is a discrepancy, move the patient's shoulders with their body such that the ear lobes match the desired relative position. If, with a little shifting of the body from the shoulders, the ear lobes are not in the correct position, then have the patient stand in front of the horizontal line chart to see if procedure one results might be in error.

When the sitting patient has ear lobes in the same relative orientation as when standing in procedure one, have the patient drop his head if the S-line is over S-zero, the neutral position. The higher the S-line projection the more the patient should drop his head. As the head is dropped, make sure the same relative ear lobe position is maintained. If this position is not maintained, then take the head by itself and put it back to this previous position. (3)

If there is head tilt in the frontal plain then there is unequal magnification. This can result in an incorrect value of atlas laterality, including the side of laterality! The atlas is locked in its frontal plane (possibly there is one half degree of movement from its non-subluxated state towards its usual subluxation side). The remedy, especially for small listings, is to force the head straight so that equal magnification of the parietal region is achieved. When this is done, this nasium X-ray is used only to get the true atlas laterality. In addition the standard NUCCA nasium X-ray is taken. In this X-ray head tilt is not taken out! The standard nasium film with head tilt is used to measure head tilt, axis spinous, plane line and lower cervical angle. The true atlas laterality is carried over to the standard nasium film.

The X-ray chair and head clamps can be involved in the production of errors in the measurement of the lower cervicals to the vertical axis and in the rotation of the spinouses. In procedure one where the patient was standing with eyes closed, look at the patient's chin in relationship to his episternal notch and his feet and note mentally the relationship to each. Now with the patient in the X-ray chair and sitting erect (shoulders above the acetabulum), the head should be pointed in the same direction to his feet as when standing. When the head is set for the proper S-line, the grid carrier is set approximately to touch at least one shoulder and the occiput area at the same time.

Now with the above successfully completed, center the patient to the head clamp by moving the X-ray chair. Bring in the head clamp. If the head is moved do not tighten the head clamp further. Open the clamp up a little and center the patient with the chair such that when the clamp is again tightened the head will not shift. If not done correctly this will change the lower angle. After the head is centered with the head clamp, bring down the alignment rod. If the glabella is not centered to the alignment rod, then have the patient hold the same position as the head clamp is opened. Pull the chair and patient slightly forward and turn the X-ray chair while making sure that the patient's head is also turned with his body. Put the patient's back to the grid carrier and put back the head clamp and recheck the glabella. Never push the patient to where his shoulders are forward of the acetabulum cavity. Now set the X-ray tube. With the above processes done correctly a good nasium view justifying a proper height vector will be obtained.

When viewing the nasium film for rotation the doctor looks at the superior orbital arches in relationship to the parietal region. This area can look like the superior aspect of the eye sockets (which it is not). Although this is the most important area that may show rotation on the nasium film, look at all the osseous structures. If there is rotation in this view then the glabella may not have been in the center of the head. Assuming that the glabella was in alignment to the alignment rod, mark on the patient's record card how much you are going to place the center of the glabella either right or left of the alignment rod.

The following are some errors that occur on the nasium view: 1) Attachment of the posterior arch is not discernible. (A 2 K.V.P. change in either direction will give you more detail.), 2) Head tilt is present., 3) Rotation of head exists in the X-ray., 4) The parietal region is either too dark or too light., and 5) Poor detail is present in the lower cervicals. (Generally due to insufficient penetration of the primary curve.)

Filters are absolutely necessary to take consistent nasium and vertex films. (4) This is true because of the range in size of patients and because there is a range from small to large in primary curves and a range of different angles from which a nasal view is taken.

There remain times when the posterior arch attachments cannot be discerned with a sharp pencil point. This researcher suggests that a more black and white film may make a difference. To achieve this decrease the K.V.P. by 10% and double the exposure time. If this is still not sufficient, then do it one more time (drop K.V.P. etc). Only enough K.V.P. is needed for penetration.

Occasionally one side of the posterior arch is either too dark or too light. This is corrected by using the "1/2" filter in the NUCCA filter kit; this a 0.003 inch thick piece of lead that can be used to cover one side of the posterior arch while concurrently adjusting the exposure time and or K.V.P. to get the proper detail to both sides. If less penetration is needed then one can substitute a piece of aluminum 2-3 mm thick for the "1/2" lead filter.

After the adjustment the patient is placed in front of the horizontal line chart of procedure one and a notation is made as to the right ear lobe level before taking a post nasal film; this procedure will help the doctor know if the head is either in a new or the same relationship to the vertical axis. (If the adjustment is done on the same day as the pre X-rays the ear markers are not removed.) These post-adjustment reference points can be used on future visits, especially in types 2, 3 & 4 which may change; if there is a change resulting in the head not leaning as much or at all towards the side of laterality, then either more "pres" are in order or maybe changing the height vector a little and bracing the patient's head a little higher, depending on how much change is observed, is required.

A small study. With pre and post nasium films the inner mastoid line is supposed to be a double check of the analysis of the centercephloscope line. (5) This line is drawn across the bottom of each mastoid. It is this author's opinion that the mastoid line should not be used to double-check the centercephloscope line. The following study supports this position.

A set of 25 consecutive X-rays dated 4-26-93 to 6-3-98 were taken from stored data. The difference in degrees for the mastoid line and centercephloscope line were found to be the following:

3 sets were off 0
3 sets were off 1/4
3 sets were off 1/2
4 sets were off 3/4
2 sets were off 1
5 sets were off 1 1/2
4 sets were off 2
1 set was 2 1/4

These average ti 1.0 degrees. The reasons that the X-rays were not compatible is because the projection differences were as follows:

5 sets had different head tilt
13 sets had different S-line projections.
4 sets had different head rotations.

VERTEX FILM PROCEDURES/RECOMMENDATIONS. Vertex films must be identical; if they are not then there will be a miscalculation. For example, anterior rotation might actually be posterior or vice versa. Also one may have a reduction in the subluxation and the measurement would not include it. To have comparable vertex films use the following:

1) A chin centering device must be placed on the grid carrier when needed.
2) When positioning a patient for the vertex film make sure the glabella is on center. The projection of the nasal area would be on the vertical centerline.
3) The projection of the rami should also be level. This could be compared to the horizontal lead line on the grid carrier.
4) The lower cervicals should have the same angles as on the nasium film. If the cervicals are on the vertical axis then they also should be on center of the vertex film.
5) A centering head clamp contacting the head one inch behind the auditory meatus to consistently place the foramen magnum in the same spot on the films. If the foramen magnum is not on the same spot on the vertex films then the odontoid would also not be in the same place. Displacement of these structures would project images with different magnifications of their parts. This would also change the measurement on the vertex films.
6) The length of the head on two vertex films should be identical. (6)

Keep in mind that exposure of the vertex film at different angles results in heads of different lengths. Also, therefore, the X-ray is exposing/projecting different parts of the atlas. To be exact, a string lateral to the focal spot to the back of the occipital area should hit the same spot on the grid carrier.

When taking the vertex view if the head has more than a slight tilt and you straighten out the tilt you must consider that the axial canal will shift; do not use this axial canal for the carry over to the nasium film.

ODONTOID/ATLAS OBSERVATIONS. It is suggested that the grid carrier have both a horizontal lead line and a vertical lead line. With the vertical lead line one can look at the center of the odontoid on each film to see if they are in the same relative position. Remember that as the atlas has moved after the adjustment the odontoid moves with it. With a three-inch condular circle every 1 1/2 degree movement of the atlas corresponds to 1-mm movement of the odontoid in the same direction. The following data indicate that there can be consistency of odontoid positions; when comparing films and having allowed for atlas movement the positions should be within 2mm of one another.

Of 25 sets of X-rays taken when the head clamp was put lateral to the crown of the head (not 1 inch behind the auditory meatus), 19 of the sets fell within the 2mm recommendation with an average of 1mm difference. The remaining 6 sets of X-rays had a range of 3mm to 5 1/2 mm difference; the latter value would affect the rotation measurement.

On 31 sets of X-rays taken when the head clamp was put one inch behind the auditory meatus, all 31 fell within the 2mm recommendation with an average of less than 1mm difference.

A line that is drawn between the foramen transversearium may not represent the center of the atlas. The deepest part of the lateral masses is in the center. Place dots lateral to the tubercle of the anterior arch and just in front of the lateral masses and also dots on the posterior margins of the lateral masses. The center of each lateral mass is between the front and back dots. Use a variable vertex square to help check these land marks with the outline of the transversearium. There maybe abnormality in the atlas transverses and/or different projections of the transverses. Change the interpretation of the foramen to match the rest of the atlas. This procedure is accurate even when one lateral mass is longer than the other.

CONCLUSION. Improvement is an on going process. It is an everyday occurrence and involves reasoned trial and error. It is recommended that all improvement be focused on mastering the NUCCA standard procedures with the goal of certification. Once certification is obtained then the NUCCA doctor has the base to more easily refine and improve the art and science of upper cervical chiropractic.

References/Footnotes

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Case History of Flexion — Extension Spinal Trauma With Closed Head Injury Via Motor Vehicle Accident Treated with NUCCA Procedure for Spinal Correction.

By Thomas D. Groover, D.C.

HISTORY OF THE COMPLAINT

The patient presented to my office on April 10, 2000 requesting National Upper Cervical Chiropractic Association Care. She reported cramping, aching, constant, non-radiating low back pain. She also complained of generalized, constant achy spinal pain, aching neck and shoulder pain, right arm numbness radiating from the neck to above the elbow, and a significant decrease in grip and strength in that arm. The patient reported weekly headaches, and occasional fever and dizziness. Her eyesight was constantly blurred, with severe lack of tracking, visual memory and comprehension. Her left pupil was dilated, and accommodated poorly. She also reported poor equilibrium, poor concentration when noise was present, and TMJ problems. Her general energy level was poor. She was constantly tired and lost her breath quickly. She reported concern about her urgent need to void and her inability to retain her urine. Her menstruation was irregular since the accident and she was taking birth control pills in an attempt to regulate it.

The patient was despondent and depressed, and had to be driven to and from her visits by her parents. She had fainted at school and had blacked out while driving. Amanda had to withdraw from college due to her impairment. She had spent the previous two years watching videotaped movies and had gained a significant amount of body weight. Her discomfort had prevented her from exercising adequately, and her depression caused her to crave large amounts of carbohydrates.

The patient's complaints began September 19, 1998 after receiving a flexion/extension spinal trauma and closed head injury from a rear end motor vehicle accident. She had slowed her car due to traffic congestion on the highway, and was hit at high speed from behind.

PERSONAL HISTORY

The patient was seeing a primary care medical doctor, osteopathic physician, physical therapist, cognitive therapist, vision therapist, strength trainer, had received acupuncture, Rolfing, massage, and Pilate's training. The patient had seen four or five chiropractors and had received numerous standard segmental manipulative adjustments. The care she had received temporarily relieved her symptoms, to some extent, but had not made a significant difference in her condition.

The patient had not broken any bones or received any surgeries. Her exercise program involved strength training through daily visits to her gym. She reported poor nutrition and diet habits, and supplemented her diet with magnesium and biotin.

FAMILY HISTORY

The patient reported her immediate family was healthy, except for her Mother's high blood pressure.

EXAMINATION RATIONALE

The rationale for the exam is that if the spinal cord and brain stem are free from nerve interference, then the patient's orientation to the field of gravity is perfect or nearly perfect. This assumption is based upon sixty years of research and clinical experience with the Atlas Subluxation Complex. When the spine mis-aligns, the upper cervical structures misalign to such an extent that the neural canal at that region becomes distorted, and tension is drawn upon the dentate ligament. Neural canal misalignment affects the cranial nuclei of the brain stem and the spinal tracts passing through the neural canal. Dentate ligament tension causes tensile forces upon the attachments of this ligament on the lateral aspect of the spinal cord. This causes sclerotic changes and abnormal neuronal function of the lateral tracts of the spinal cord.

The most visible effect of the mechanical misalignment of the structures forming the upper cervical neural canal is measured postural distortion. Tone of the postural muscles is controlled through nuclei in the upper cervical region of the brain stem. Congestive, pressure or tension forces in this area causes over stimulation of the nervous control of the posture muscles. The effect is to increase tone of the gravity resisting musculature on one side of the body. Typically, the spinal misalignment causes a force to be exerted on one side of the brain stem only. The unilateral myohypertonicity is observed as a high or low hip and shoulder, apparent leg length disparity, twisting of the body framework and uneven distribution of weight bilaterally.

EXAMINATION FINDINGS

My exam revealed hypertonicity of her left side posture muscles. While lying in supine position, her shortened left side muscles had pulled the left hip higher than the right. This caused her left leg to appear one-half inch shorter than the right. During weight bearing, her left hip was two

degrees lower than her right, and her left ear lobe was one quarter of an inch lower than her right.

My X-ray exam included lateral, nasuim, and vertex cervical views, and an anterior to posterior full spine view. The X-rays were taken on specially aligned equipment, utilizing precise patient placement to eliminate projectional distortion. This enables an assessment of the actual biomechanics of the spine. Positioning for the full spine view involved standardized heel slots, bisected by a lead line running up the bucky, perpendicular to the level floor. This lead line represents the ideal center of the patient's body and their ideal center of gravity.

Degenerative disc disease and kyphosis were found at the C4 and C5 levels. The cervical spine showed anterior weight bearing with a loss of nearly all of her cervical curve. The frontal plane of her C1 vertebra had slipped to the left one and one half degrees, and rotated anterior on that side one degree. The angular rotation of her lower neck was into the left frontal plane one degree. Her head was tilted left one degree on the condylar/atlas surface. Her femur head and iliac crest lines were one half degree low on the right. The entire spine was shifted to the left of her ideal center of gravity, with a slight left curvature. There was a noticeable left rotation of the L5 vertebra.

SPINAL CORRECTION

A correctional vector was obtained from specific analysis of the spinal biomechanics. On April 11, 2000 the vector force was administered by hand to the C1 transverse process in a precise, controlled manner. The patient was reexamined for postural distortion and found to be clear. Nasium and vertex films were repeated, revealing a need to improve the contact position of the correcting hand. This information was used to improve the correction at that time, and in subsequent correctional appointments.

As of November 1, 2000 the patient has been seen thirteen times since the original spinal correction. Six times, the procedure has been repeated, and seven times she was holding her correction and required no spinal correction. I have also prescribed massage therapy as needed to help normalize her soft tissue and manage her stress.

PATIENT PROGRESS

On April 25, 2000 (fifteen days after her initial spinal correction) the patient reported feeling great. She had significant positive breakthroughs in her energy and motivation and was feeling eighty to ninety-percent better. She reported her primary physician had taken her off all therapeutic modalities, and that she had stopped seeing all other care providers. On May 9, thirty-one days following her initial spinal correction, the patient reported her reading and retention was well. At this time, the patient is driving and is enrolled in college. Except for some muscle tightness, the patient reported feeling great and symptoms free most of the time. She has reported feeling well until a recent fall that caused her to lose her correction. After I corrected her spine, she reported feeling well again.

PROGNOSIS

Currently, the patient may hold her corrections for thirty to forty five days, at most. Spinal trauma, stress and fatigue, and toxic influences typically cause loss of the spinal correction. Her motor vehicle accident has weakened ligaments in her spine, which cause her spine to be unstable. When the patient's spine is in correction, her muscles compensate for the weakened ligaments and hold her spine in alignment. By avoiding spinal trauma, stress and fatigue, and toxic influences, and regular monitoring of her correction, she should be able to live a fairly comfortable life. Adjunct therapies such as massage therapy, meditation, and nutritional support will be significantly helpful. It is unknown at this time how much stress and fatigue she will be able to manage. I have instructed her to challenge herself by taking on stress and fatigue, but not to the extent that she loses her spinal correction.

FOLLOW UP

The patient needs to have her spine checked on a regular basis. All of our patients complete the initial two, two-hour appointments to receive their spinal correction. The customary follow-up is a check-up three or four days later, once a week for the first month, once a month for the next three months, and then once every three months. Patients are trained to know when they are in or out of correction, and may schedule a check-up at other times. At this time, the patient needs to be checked monthly, to be sure she is holding her correction and the healing phase of her care is proceeding as needed. Eventually, she may be able to return for a check-up every three months, depending upon her condition.

The Case Study/Report

At the Upper Cervical Conference (February 3-4, 2001) at Life University in Marietta, Georgia, Dr. Kathryn Hoiriis (khoiriis@life. edu) gave a presentation on the case report (case study) Dr. Hoiriis also had a poster board display which gave an example of a case report on an adult patient with Scheuermann's Disease and back pain. She provided the following references during her presentation:

McMaster B. Writing the Case Study: Beginning in the middle. Palmer J Res 1995; 2(2):30-31.

McMaster B. Writing the Case Study: Both ends meet. Palmer J Res 1995; 2(3):59-62.

Green B., Johnson C. Writing a Better Case Report. Sports Chiropractic & Rehabilitation 2000; Vol 14. No. 2, 46-47.

ChiroAccess: Access to Mantis & Health Related Newsletters: http://www.chiroaccess.com/Public/Home.asp

Medline: (free) http://www.ncbi.nim.nih.gov/PubMed/

Galileo Databases: CINAHL & Others: http://www.galileo.peachnet.edu/ (password)

Compiled Life Literature Searches: http://www.life-research.edu/menu.html

WWW Search Engines: http://www.life.edu/newlife/engines/engines.html http://www.life.edu/newlife/library/Lib.html

Requirements for manuscripts submitted to Biomedical Journals http://www.life-research.edu/erj/submit 1.html

Also Dr. Hoiriis's power-point presentation provided most of the following information presented here in outline form:

Case Report Outline

I Abstract
- a. purpose
- b. design
- c. methods
- d. results
- e. conclusion
- f. key words

II Background/Introduction
- a. purpose
- b. need
- c. importance
- d. context

III Methods
- a. details of design
  - 1. population
  - 2. protocol/procedures
    - a. informed consent
    - b. case history
    - c. examinations
    - d. interventions
- b. measurements
  - 1. surverys
  - 2. tests
  - 3. X-ray listings/basic type, etc.
- c. statistical analysis

IV Results
- a. data description
  - 1. statistics
  - 2. tables
  - 3. charts
  - 4. graphs
- b. outcomes
  - 1. pre
  - 2. post
  - 3. final (last) visit

SURVEYS: SF-36
VAS
Neck Disability Index
Oswestry Disability Index
Modified Zung Depression Scale
Other

Minimum NUCCA Data (pre & post)

Basic Type Laterality Rotation
Contractured Leg Line of Drive
Percent weight differential
Head Support Abnormalities

Abstract & Comments

Clinical Study on Manipulative Treatment of Derangement of the Atlantoaxial Joint by Z. Wei, J. Weizhuang, L. Xing, Z. Yongdóng, Z. Ji, and W. Ziming. (Institute of Orthopedics and Traumatology, China Academy of Traditional Medicine, Beijing 100700 China). This article can be accessed at http://tcm. medboo. com/message/100816635.htm

What follows is the abstract from the article and some comments of interest. Editor

Abstract "The derangement of the atlantoaxial joint is one of the main cervical sources of dizziness and headache, which were based on the observation on the anatomy of the upper cervical vertebrae, analysis of x-ray film of the atlantoaxial joint and the manipulative treatment in 35 patients with cervical spondylosis. The clinical diagnosis of derangement consists of dizziness, headache, prominence and tenderness on one side of the affected vertebra, deviation of the dens for 1mm-4mm on the open- mouth x-ray film, abnormal movement of the atlantoaxial joint on head-rotated open-mouth x-ray film. An accurate and delicate adjustment is the most effective treatment.

Doctors usually pay more attention to the middle or lower segments of the cervical vertebrae in conservative treatment of cervical spondylosis because such pathological changes as osteophyte, protrusion of cervical disc, abnormal cervical curve, stenosis of cervical canal, ossification of the posterior longitudinal ligament (OPLL) can be found on imaging study (X-ray, CT, MRI) from the 3rd to 7th cervical vertebrae. In clinical practice, we had some unsuccessful experience in treatment for patients suffering from dizziness, nausea, headache using conventional conservative measures. Further examination showed that those were the patients with displacements of the atlantoaxial joint shown on X-ray films. After adjusting the deranged joint excellent results were obtained. A study on the anatomy, x-ray and manipulative methods for the upper cervical vertebra had been carried out from 1993-1995."

Some comments. Major symptoms were dizziness (85%), pain in the head or occiput region (59%), nausea (53), fatigue, blurred vision, and tinnitus; approximately 10% of the patients had pain radiating to the arm.

"Traditional Chinese manipulations were adopted to correct the deranged atlantoaxial joint to the normal alignment." Descriptions are given for both supine and sitting positions of the patients undergoing manipulation. The authors found that even a "slight displacement (of the atlantoaxial joint) would result in some severe symptoms." Disections were done on three specimens and decrease in blood supply, spasm of the inferior oblique capitus muscle impacting the greater occipital nerve (headache), and unilateral tension or spasm of muscles were some of the postulated reasons forming the pathological basis. The authors stated that trauma was not a common cause for derangement of the atlantoaxial joint; the dens was found to deviate to one side for 1mm-4mm on open-mouth views.

As to the manipulation procedure, "a delicate and accurate adjustment is the key to manipulation. We prefer to do reduction for a single vertebra in order to protect the cervical region from additional injury."

Editor.

References for the chiropractic researcher from the medical literature. Articles received from Dr. M. Thomas, associate editor.

Causal models in conventional and non-conventional medicines by F. Attena, Medical Hypothesis (1999) 53 (3), 177-183.

Basic philosophy and concepts underlying scientific peer review by W. E. Stehbens, Medical Hypothesis (1999) 52(1), 31-36.

User's Guides to the Medical Literature XXIII. Qualitative Research in Health Care A. Are the Results of the Study Valid? by M. Giacomini and D. Cook, JAMA (July 19, 2000) Vol 284, No. 3.

User's Guides to the Medical Literature XXIII. Qualitative Research in Health Care B. What Are the Results and How Do They Help Me Care for My Patients? by M. Giacomini and D. Cook, JAMA (July 26, 2000) Vol. 284, No. 4.

Can randomized trials inform clinical decisions about individual patients? by D. Mant, The Lancet (February 27, 1999) Vol. 353,743-746.

Clinical investigation in the 20th century: the ascendancy of numerical reasoning by J. Vandenbroucke, The Lancet 175 (October 1998) Vol.352, 12-16.

Strategies for Dissenting Scientists by B. Martin (University of Wollongong, NSW 2522, Australia) http:www.jse.com/martin/1.html.

Making the Best of Your Data by M. Ciol (Editorial), Spine, Vol. 25, No. 7,767-768 (2000)

Meta- Analysis: A New Standard or Clinical Fool's Gold? by D. Lewin, The Journal of NIH Research (March 1996), Vol. 8, 30-31.

There is a general lack of understanding within the profession of the level of funding necessary to produce high-quality human experimental research. *Editor*

Book Review:

Practical Shooting: Beyond Fundamentals

Written by Brian Enos

[1990, Zediker Publishing, P.O. Box 426, Clifton, CO 81520]

by Michael Thomas, D.C.

Anyone who has been involved with NUCCA for more than five years will remember Dr. Lloyd Pond and his teaching of the adjustment. He often used the metaphor of firing a handgun when he taught the fundamentals of performing the adjustment. He would relate that the buildup of force in the adjustment, leading to the overcoming of resistance and transmission of the adjustic force to the patient, was very similar to the progressive squeeze on the trigger, and, that the two events both come as, almost, a surprise.

A close friend and patient of mine has long listened to me discuss the NUCCA work. He recently gave me Brian Enos' book to read, saying that there seemed to be important parallels between our talks and his ideas regarding shooting. I am not a great gun advocate, but my friend's enthusiasm for this text caused me to dip into it. I did indeed, find interesting parallels between the two activities. Brian Enos is a Masters Champion, two-time Bianchi Cup winner, and has placed in the top-5 at every major shooting event. He is also a certified Combat Master. I will ask you to simply substitute the word "adjust" for the word "shoot" as you read the quotes from his book.

Enos begins his text with a discussion of what he noted to be usually considered an advanced topic: the shooter's "attitude". He believes however, that attitude, or as he prefers to discuss it, "awareness" and "focus", are central to everything that follows. As he points out:

"If you can be aware of what's happening as you are shooting -not analyze it- *just be aware of what you're doing and of what you're seeing,* there is no limit to your potential." [p.13] Enos defines awareness as: "an opening up of your mind, your vision, and all your senses to accept and observe things that are happening while you're shooting- *at the instant they are happening.*" [p.13]

He believes that this is an intuitive process occurring outside the conscious thought process. The conscious mind, in his estimation, operates through the filter of knowledge, which is your past experience. The rational "picture" you have developed from past experience can close you off from awareness of what is unique in the moment. The rational model will allow development up to a certain point, (the limits of the developed model), but that is all. He believes that for continuous growth to occur that an almost "third person perspective" must be achieved. Enos believes that this quality is what separates good shooters from the great shooters.

The other major prerequisite to excellence for Enos is focus. He writes that focus is "a finite occurrence in the infinite realm of awareness. Focus is your filter for all the inputs your observation brings in..." He differentiates this "filter" from the "filter" of past experience by noting: "The difference between a screen of focus and the screen of past experience is that a screen of past experience built only from your own knowledge of the past blocks observations from entering your mind. Focus doesn't block anything - it only alerts you to the important inputs your observation brings in." [p.15]

To further clarify his idea of focus, Enos writes: "Focus could be defined as having a flexible preoccupation with anything that will affect your shooting performance. Focus is simply paying attention to things your awareness shows you are happening, as they are happening. Focus brings subjectivity to the objectivity of awareness. Awareness makes focus possible; focus engages awareness." [p.16]

Enos believes that present time consciousness is critical to optimal performance. He notes: "An awareness of the present tense is a very fleeting delicate thing. The only way to achieve it is to not think about it. We all, if only for an instant, actually *fire* the gun in the present tense. For maximum performance you have to stay focused entirely in the present tense all the time that you're shooting. This takes ambition, and especially so since no amount of actual work or thought on the matter can accomplish it for you. Present tense shooting must simply happen."[pp.17-18]

Enos makes a great contradistinction between concentration and awareness. He points out that concentration is in its classical meaning, "a narrowing down of the mind to one specific, predetermined focal point. Awareness is an opening up of the mind to all available focal points that have some bearing on your shooting performance. Concentration is limiting; awareness is limitless." [p.19]

Every student of the adjustment has spent much awkward and grueling time learning the multitude of individual phases that comprise the adjustment. Most people can relate to the memory of finally moving their episternal notch over the appropriate coordinate for the listing only to find that every muscle in their body was fully rigid, leaving very little possibility for an effective triceps pull. The sheer effort required to place the body in proper position for the adjustment seems overwhelming at first.

Enos further explains: "There is action and there is the *idea* of what that action should be. The space that exists

between the contradiction of pure action and the idea of action is the thought itself. The larger the contradiction between the action and the idea of action, the larger the space, the more contradictory thought intervenes."[p.19]

Enos admits that complete understanding regarding *why* the idea came into being allows the idea to effortlessly disappear. The steps of the adjustment have been formulated to teach a very complex idea. This is similar to the learning of Tai chi. There are many steps that must be carefully learned. The rote explication of these steps however does not produce the results for which Tai chi exists. "Something else" eventually happens once the form has been mastered. I believe this same process occurs in the delivery of the adjustment.

There are no words that can describe these ideas of awareness and focus. The action is felt or visualized in a more global way. Again, Enos: "If you'll start tuning in to what you see as you are shooting instead of tuning out everything but what you decide to see *before* you shoot, you'll be on your way to experiencing the distinction between concentration and awareness and focus for yourself." [p.21]

More and more, in current society and in the scientific community, a distinction is being made between participation and control. Science has long believed its mandate was to "control" nature". Western medicine is a natural outgrowth of this idea. Use of control however, divorces us from the participatory process we are actually a part of. Enos writes:

"Anytime you consciously *try* to do something to achieve something else, there's no creativity in your actions. Forcing a thought into your mind in the belief that it will control your actions removes you from the experience. If that one thought is the only input you allow into your mind, then there's no room left for your subconscious to intuit and control your shooting - as it is perfectly able to do. Thinking short circuits your perception.....Concentration is a form of control. But who's the controller? The whole idea of control is really an abstraction of the thought process. Your words and thoughts may have tricked you into thinking you have control. But control as such - conscious control over the outcome of your shooting - you have no control." [pp. 22-23]

The NUCCA adjustment is not an attempt to "control" the patient's physiological processes. We work from the principle of "non-interference", removing interference and then trusting the innate intelligence to unfold in the life of our patient.

Enos is not saying that the mechanics of the process are meaningless or that technique is not important.

"Your technique as a whole is only a summary of all the separate components of your technique, and the quality of the overall technique depends on the shooter having a complete awareness of all its individual components. All those individual components should be tailored to fit your needs and the needs of your shooting. Think of each mechanic as being a means to realizing a result in your performance. It's important that you are aware of the effects each of these mechanics should have on your performance, and if you retain that awareness as you begin to experience the results for yourself, your best shooting style will surface.

The mechanics exist only to prepare the shooter to rise above them.

The only function of good form is that it affords maximum shooting efficiency; the mechanics [that] I believe work the best give the shooter physical control in the least compensating manner. Good mechanics give you the physical means to open up and experience the shooting by not restricting the shooting. Good mechanics enhance awareness and focus. But always keep in mind that good mechanics won't, by themselves, make you a good shooter. What you actually do, technique-wise is not nearly as important as your understanding and being aware of *what* you're doing *when* you're doing it. " [p.31]

Enos discusses specific shooting techniques at great length and these are not pertinent to this discussion. To further confirm his point, however, Enos makes a metaphor:

"When you learned to write, you quit thinking about the mechanics of making the letters and moved onto what the letters mean - using them for creative expression. In shooting, you must also quit thinking about the mechanics and move on to using them for creative expression - the desire to hit the targets..." [p.60]

Each NUCCA doctor finds the journey to adjusting excellence to have many twists and turns. There are plateaus and sometimes valleys to cross. Mastery of the basics is only the beginning. Enos finds a similar journey in his own field:

"My improvement now comes from trying to learn how to see more than I thought I could see and intuit past my own experience. There's not much more in the way of external things to be found. Once you've settled into the basic mechanics you feel comfortable with, then it's all internal. The improvement comes from the mind's ability to open up, intuit the truth, and perceive what is actually happening, not from any more thoughts." [p.62]

Enos discusses the need to be relaxed during the procedure. He believes that excessive tension is detrimental to the optimal delivery of the exercise:

"If you are tense, and have always been that way, then you won't be aware of being tense. In practice, you need to see how relaxed you are. Notice things about tension. Notice tension especially in your biceps, stomach, and face.

Check for tension in your jaw and see if your tongue is pressed up against the roof of your mouth. Just see how relaxed you are.

Mostly, if you can keep your stomach relaxed, your whole body will be relaxed.....A recognition that you are too tense and that you move so much more smoothly and accurately when you're not so tense could be a major discovery for you, and not only in shooting, but in any physical action." [p.91]

Enos sees the potential for endless improvement. He believes that "learning to shoot" is an impossibility; that instead, one learns with every shot. It is easily possible however, to learn "about" shooting. In his field as in ours, we worry about doing it "right". He comments:

"See for yourself...If you keep yourself open to your experiences, there's no right or wrong - there's only what you're doing. Right, wrong, good, bad, fast, and slow all exist in comparison, which exists away from the experience. Your perception of your shooting - what you are feeling and what you are seeing - right when it's happening, is all you need to know to answer that question." [p.154]

Any complex physical skill requires practice. Beginners require tangible goals. With more experience, the goals become more internally-oriented. Enos has this to say about his practice strategy:

"Shoot every run as if you were on your last magazine before quitting. Shoot every shot as if your life depended on the attention you were giving it. Never get caught in the trap of practicing haphazardly." [p.158]

In our field, it is not our own life, but rather the life of our patient that is in the balance. Dr. Gregory often used to make a very similar statement. He would say, "Practice does not make perfect. Perfect practice makes perfect."

I hope the parallels between this text on shooting and the delivery of the adjustment have provided some food for thought.

Talk For The 1966 February Class

Ralph R. Gregory, D.C.

The Alphabet with which God wrote the Universe: the Restoration Principle

Editor's Title

"Mathematics", said Galileo, "is the alphabet with which God wrote the universe." Everything in life is reducible to mathematical terms. Chiropractic is no exception; it is no different. The production and the reduction of the subluxation are by nature mathematical. Mathematics is the measuring stick by which we prove our work and justify our existence.

If we will but recognize, investigate and confine our activities in practice to the basic restoration principle of chiropractic, and in so doing set up sound and scientific mathematical and mechanical measuring sticks acceptable to all and work within the scope of the basic principle in resolving our problems, we need fear no opposition.

The tragedy of chiropractic is not that it is divided into two camps for this is remedial, but the real tragedy is that there is so vast a lack of understanding about the problems and solutions of the basic principle. Chiropractors have fought it out on the fringe areas and neglected the basic cause of their differences.

They have sought prestige and respect, but prestige and respect are earned by accomplishment, and how can there be accomplishment in a consistent manner without understanding and knowledge of the very thing with which they earn their daily bread? How may a profession be unified and in harmony when it has failed to solve the problems of the application of the principle which brought it into being?

The very nature of the subluxation concept shows it to be a problem in mechanics and mathematics, and the responsibility to resolve this problem rests equally upon mixer and straight alike. But instead of assuming this responsibility, the void is filled with substitute answers throughout every aspect of chiropractic life from technics designed to aid the doctor in his everyday life in practice up through to the legislative halls.

And every step of the way is haunted by the unanswered question: when will Chiropractic solve the application of its basic premise and fulfill its promise to suffering mankind?

Both of the factions in mankind have said that the most common cause of disease and nerve interference or irritation is the greatest cause of disease, but neither side can tell us after 70 years what percentage of disease is caused by subluxations nor can either side explain it in the light of scientific knowledge.

And, yet, this is all a matter of survival. Unity will not strengthen chiropractic. The survival strength of chiropractic lies in the area of the resolution of the problems found in the application of the basic principle. This must be done thru the technics of scientific methodology until we build a body of knowledge acceptable to all that proves our basic premise. The solution, long overdue, is to build a science.

The chiropractic principle is a fundamental truth, but this is not saying much; because a fundamental truth can be only an opinion, belief, attitude, or axiom until it is universally accepted. Universal acceptance is what makes a fundamental truth a truth. It may give birth to rules and regulations, but until the opinion, belief or fundamental truth is universally accepted, it is not a truth.

To postulate is to assume. One could say with clarity and honesty that the subluxation concept is a fundamental law which he will proceed to assume as truth. And this, my friends, is the stopping point as far as the world is concerned - as far as those who can make or break chiropractic are concerned. They have no love for it. They will weigh it in the scales of science, and test it against the rules and regulations of established and universally accepted truth for its validity and right to exist.

Yet, Chiropractic does not reckon this way. They proclaim a principle and offer no proof. They say, "this is truth" and do not understand what "truth" is.

The time for proof has come. Like a geometry problem, we must set down the premise as an axiom and proceed with the proof. Only then will we gain universal acceptance and then only if our proof is genuine. What is there about chiropractors that permits them to think that they can do it differently from other sciences?

Like everything else, all of this has to have a beginning. Before the production of a subluxation can be understood, the reduction of subluxations must be accomplished fact, and the means and methods for the reduction of subluxations must be set forth in scientific methodology. The tools to do the job must be the same tools that have built other sciences to the point of universal acceptance: mathematics, mechanics and all other sciences that are applicable to our problems and relevant to our needs.

For the past twenty-five years, I have been interested in and have participated in the researching of the upper cervical area. For twenty years I have been concerned with the teaching of that research. For the past nine years, I have concentrated almost daily on researching the problems yet unsolved both in teaching and in upper cervical itself.

There are many problems relative to upper cervical yet unsolved, and yet there are many doors partially opened that will lead to their solution. It is a satisfaction to note that we may have more answers now than six years ago,

and we feel that you will find many differences and many improvements over what you have had before. Those of you who have attended the Saturday afternoon classes know this to be true.

Our classes are advanced in the sense that they are never the same. New material is always being added. Research is not a static thing. The basic idea may remain the same, but the application changes and improves. New concepts open new doors of exploration, which clarify previous ideas and produce better methods.

As an example of what I am talking about, let us discuss the short leg. This question seems to be one of the stumbling blocks that pelvic and full-spine adjustors do not understand. How can an atlas adjustment equalize leg length, they ask? What is the mechanism involved? The question has in a slightly different form appeared on insurance questionnaires, or more often in letter form from medical departments of insurance companies who wanted to know why low back cases were adjusted upper cervical.

The assumption has been for years that pelvic tilt and/or rotation of the pelvis and lower lumbars has been primarily the cause of the short leg. This was a natural assumption. After all, there were the facts: short leg, tilted pelvis, rotated pelvis, spastic muscles, rotated lumbars. The clinical evidence was present.

When we started to use the short leg as an evidential factor in checking the patient back in the early 1940's, EVEN the personnel of the Palmer Clinic criticized us. One even put his objections in writing.

Be this as it may, there was ample clinical evidence that there existed a definite relationship between the atlas subluxation and the short leg; but clinical evidence is not conclusive proof.

After considerable study the question boiled down to the problem; was it the spasticity of the muscle structure that caused the distortions of the pelvis and lumbar spine or was it the distortions that caused the spasticity? The answer to that question was to be found in muscle physiology and the answer was that the muscle spasticity caused the bones to distort. Any sufficient amount of muscle spasticity will distort joint structure.

And, so, in brief, there had to be nerve involvement to the muscles that, because of their spastic state, produced bone distortion. Where, then, was the source of this neurological involvement? Was it in the pelvis, the lumbar spine, the dorsal spine?

Knowing that spasticity is a result of the disturbance of the spinal stretch reflex, that area seemed to be the logical place for study of the problem. Simple? It took four years to piece together the literature that was relevant. I found eventually that the cause of the disturbance of the stretch reflex lay in the excitatory and inhibitory fibers of the brain and brain stem with a few in the spinal cord.

From these neurological facts, then, it became clear that the short leg was caused by neurological factors high in the nervous system, not in the area where the spasticity is found. The short leg cannot be the result of pelvic tilt/and/or rotation, or of lumbar tilt, curvature or rotation, or of curvature of the spine. For these are not causes, they are manifestations of trouble in the excitatory and inhibitory fibers high in the nervous system.

Therefore, it is not true, as claimed by some, that alignment of the pelvis and lower spine help hold the atlas in adjustment; but the opposite is true that correct reduction of the atlas does help the pelvis and lower spine to maintain alignment, and in fact it does align these structures. This occurs through the mechanism of the spinal cord reflex.

Equally fallacious is the argument that a shoe lift is essential to maintain the integrity of the spinal column, whether that is done by a medic, D.O. or D.C.

Regardless of any spinal technic or pelvic technic, the alignment of the spinal column must be brought about and maintained through accurate upper cervical analysis and adjusting at the highest neurological level feasible.

The two central mechanisms, located within the brain and brainstem and associated with the spinal stretch reflex, are associated with muscular spasticity. This was first described by Magoun and Rhines, and the question is being researched further by Professor Katherine F. Wells, Wellesley College. Muscular spasticity has been proven to be an exaggeration of the spinal stretch reflex.

The first central mechanism is the central inhibitory and the fibers of this mechanism are to be found in the cortex of the brain. These fibers reduce or inhibit the spinal stretch reflex. The second mechanism is the central facilitatory, and its fibers are located in the cerebral cortex, the cerebellum, brain stem and a few in the spinal cord. Impulses from the central facilitatory mechanism serve to augment the spinal stretch reflex.

According to Dr. Wells, if interference cuts off the impulses from the central inhibitory influences, the normal stretch reflex, augmented by impulses from the facilitatory mechanism, causes an exaggeration of the stretch reflexes which causes spasticity of spinal musculature.

Therefore, this is proving a chiropractic concept in the light of acceptable evidence. And the next step should be the proof demonstrated on full-spine x-rays, and I hope we can get to that. I would not hesitate to go before any scientific board on the basis of what I have now, however.

The basic facts are clear; when the leg shortens, there is spasticity of the anti-gravity muscles, which is brought about by interference with the inhibitory influences which have their source in the brain, and the causative factor for the short leg is not located in the spine or pelvis.

The erroneous conclusion that any part of the spinal column must be aligned or positioned or straightened or

corrected by shoe lifts is not in line with scientific evidence; and the notion that alignment of the pelvis helps keep the atlas in position is fallacious.

I am not concerned, nor is it any of my affair, what technic my colleagues choose to practice; but I am aware of the fact that if you cannot adjust the atlas, you have to adjust something which is easier to do. One can justify himself and rationalize the question by saying that: it does ease the patient or it helps the patient, and I presume that he means that it is a salve to the patient's symptoms. To my mind this is the same as saying: "I cannot do the job that I know should be done in the area of correcting the cause of the condition, so I will get by with the patient by relieving his symptoms and some day I'll learn the application of upper cervical". Let me say this: You can never succeed to your fullest expectations, nor can I, until we have mastered and solved the problems that exist in the application of this work and can reduce subluxations. We are well on our way toward that objective. We shall not achieve it by repetition of what has gone before us, but we shall achieve it by continuing our efforts of investigation and research.

On the other hand, all of this is not to be construed as a criticism of any technic; neither is it a criticism of any researcher. It is important that every vertebra of the spine and [bone of the] the pelvis be studied and researched. For it is true knowledge that we seek as a profession, and this cannot be achieved thru ignorance of any section of the spinal column.

The best we can do at present is to stay within the limits of that which we know to be true.

Nor can I believe that the proper attitude toward the basic principle is one of dedication; rather, it seems to me, it should be one of questioning and of understanding and of information and knowledge. Dedication can be a dangerous attitude and it is certainly not in the public interest. The future of Chiropractic will not rest upon our belief or dedication to the principle, but upon our understanding and development of the principle. It is not a matter of faith, it is a matter of education. It is, in short, not a matter of belief, but of proof and universal acceptance which constitutes truth.

You who have not been here before will see as we progress in this class that we have modified, changed, added to and improved many of the concepts in this field of upper cervical. We have added much background material essential to understanding of application. This makes the work more meaningful to the student-chiropractor. All of this has been done in relation to proven principles of relevant science. The material which we give to you has in every respect its basis in accepted fact. I want to stress that the background material is as important as the practical work. We want you to know the WHY so you can better apply the HOW.

We cannot possibly cover all the material we have, particularly in the field of spinal mechanics. Those of you who have not regularly attended previously conducted classes, we might ask of you what knowledge do you have of parallel forces, lines of drive, the mechanism that moves the vertebra, centers of gravity and centers of motion, rotatory and linear movement and how to convert rotatory motion to linear motion, vectors, resultants, levers, fulcra, resistances in the adjustment, forces in the adjustment, posteriors and their problems and many other things you must know about in order to reduce atlas subluxations.

In fairness, I think I should say that I am not primarily interested in conducting classes. I am interested in finding out and establishing the basic principle on provable grounds. Even my practice is kept limited for this reason. I started the Saturday classes at the request of Dr. Grostic. It gave me the opportunity to study the problem as to why chiropractors were not progressing as they should. Some of the boys and girls who attended the Saturday classes are here today. I am grateful to them for the opportunity of helping them and of their helping me.

I have said many times, and I reiterate here, that I am opposed to one-man operations. They are impractical, limited in what they can do and, in the case of death, have a strong tendency to fall apart.. Having been closely affiliated with the Grostic work from the time it began, I know that no substitute can be found to replace the original researcher for there is something gained in the crucible of research that gives to the researcher an understanding and knowledge that he cannot pass on. Having been there, I shared in that; I know for I participated in that crucible, as I now have one of my own. Therefore, it is my desire that we eventually have a non-profit group that will pick up and carry on in the event it should ever be necessary.

According to the legal research that has been done we cannot incorporate the classes under a non-profit organization, but we can give material in the form of notes, tapes, records, drawings and the like to members. I cannot, under the present status, give you copies of my notes, but eventually we may be able to do so. The name of the organization is the National Upper Cervical Chiropractic Academy, NUCCA for short. The name was suggested by Dr. M. Foster. The State of Michigan has been requested to give it a franchise. This is where the matter now stands. We will keep you informed as information materializes on the matter, if you wish.

It is my hope that these training classes will be a nucleus from which we can obtain those who carry on our work, and train others. Some may be able and willing to participate in further research thru the organization, as will I.

In the meantime, let it be understood that I will continue the study of our problems in the manner outlined to you this morning, and I shall place above all else the objective of resolving those problems if such be the will of God.

The Anatometer II Plus

The new Anatometer, the Anatometer II Plus, is now a reality. This new unit is loaded with transducers! On Friday the 23rd of March I had my first encounter with the completely assembled prototype. I was able to see printed output but have not yet had the experience of its use as a patient. Additional information can be obtained by accessing the web site for the anatometer (www.anatometer.com. or (benexel@globaldsl.net.)) Purchase cost has not yet been determined but will appear on the web site when available. It would be appropriate to have a unit tested in the clinical setting with data collected concurrently with an earlier edition. See the previous issue (2000) of the Monograph for a history of the Anatometer. *Editor.*

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The Upper Cervical Diplomate Program

Editor

The members of the College of the Upper Cervical Spine at the request of the Academy of Upper Cervical Chiropractic Organizations (AUCCO) have developed a specialist degree in Upper Cervical Chiropractic through Sherman College of Chiropractic. Successful completion of the graduate degree results in the awarding of the Upper Cervical Diplomate degree by Sherman College.

The degree is composed of two main sections: a 180-hour, academic specific section and a 120-hour technique specific section. The academic section is identical for each successful candidate whereas the technique specific section is determined by the specific technique practiced by the candidate. The technique section will be designed within the parameters defined by Sherman College in order that accreditation standards are satisfied.

Six individual certificates in the areas of anatomy (mod 1 & 4) neurology (mod 5, 6, & 7), biomechanics (mod 2 & 3), imaging (mod 9 & 10), history and philosophy (mod 11, 12 & 13), and basic research (mod 8, 14 & 15) probably will be available to the successful participant in the 180-hour academic specific section. Completion of the 180-hour academic section will be recognized with a certificate. Each technique will be able to offer their own certificate for the completion of the 120-hour technique specific section. Those successfully completing the 300-hour degree will be recognized with the Diplomate degree.

The 180-hour academic portion is comprised of 15, 12-hour modules as follows:

1. Anatomy – bones, muscles, joints
2. Biomechanics I
3. Biomechanics II
4. Anatomy – CNS, PNS
5. Neurology I – Nerve Physiology
6. Neurology II – Integrative I
7. Neurology III – Integrative II (Hypothesis Review)
8. Research Review
9. Imaging
10. X-ray
11. Technique Overviews
12. History
13. Philosophy
14. Case Management
15. Thesis Presentation

The modules will be taught with an upper cervical emphasis but not technique specific. For example in Biomechanics White and Panjabi experimental results will be covered as opposed to opposite angle, basic type, etc. that may be protocol specific.

The various upper cervical techniques may want to incorporate all or just a portion of their own certification into the Diplomate degree. This offers the advantage of giving prestige and both political and legal standing (insurance!) to what a technique's organization can recognize now only internally as a fraternal organization.

The advanced degree also provides additional evidence to chiropractic students that there is a body of knowledge and skills that are at the leading edge of chiropractic. This also sets into motion the paradigm that the upper cervical region is of prime importance to chiropractic and thus to their future. Non upper-cervical techniques are put on notice that there is an integrated body of knowledge which a focused group of techniques is able to place ahead of their differences.

The members of the College of Upper Cervical Spine intend to keep the cost of the modules at $300 or less. An exception to this cost limit may be the neurological integration module (mod 6) which will be taught by Dr. Dan Murphy in September of this year (2001). Members are diligently looking into the feasibility of making as many of the modules distance learning modules; distance learning being web based, provides the participant greater flexibility, while having the potential of reducing costs. Total costs for a module should be no more than that of a technique seminar and maybe much less on those modules where distance learning is used. Also many of the modules are going to be held at times and places that support other meetings such as those at Sherman and Life Colleges and concurrent technique meetings as held in Atlanta in the Fall of 2000.

The first presentation will be by Dr. Dan Murphy on the 8th & 9th of September (2001) and will be the 6th module (Neurology II). Web sites of techniques, the academy, and the colleges will be asked to provide a direct source of program updates/schedules or indirect links to the equivalent information. The official brochure is printed in The Monograph for your assessment. *Editor.*

Invest in Your Commitment

The Academy of Upper Cervical Chiropractic Organizations (AUCCO) and Sherman College of Straight Chiropractic are pleased to announce the development of the Diplomate Program of the Upper Cervical Spine. The program is designed to certify Doctors of Chiropractic in a specialty area of upper cervical subluxation-centered care.

A diplomate program such as this will benefit your patients by deepening your knowledge and enhancing the proficiency of your clinical skills in this most important area of the spine. We hope to nurture the advancement of the science and art of upper cervical specific chiropractic care, while elevating the standards of that care.

The college of the Upper Cervical Spine is developing the program, with representatives from Blair, Atlas Orthogonal, Orthospinology, specific Knee-Chest HIO Toggle and NUCCA. Diplomates will complete 180 hours of post-graduate training in anatomy, neurology, biomechanics, history and philosophy, and pass a comprehensive examination. A research component will be completed concurrently along with overviews of several upper cervical techniques. An additional 120 hours of post-graduate training is required from an approved upper cervical technique organization to complete the diplomate.

Curriculum

The course will include in-depth study of the upper cervical spine, emphasizing detailed knowledge that is germane and basic to any technique dealing with this area. Fifteen 12-hour modules have been scheduled and the course faculty has been identified. Continuing education credit for relicensure will be arranged through Sherman College. The courses will build on each other, but can be taken in any order to satisfy the requirements of the diplomate.

Contact Information

Contact the Dean of Continuing Education Ron Castellucci, D.C., at Sherman College of Straight Chiropractic, P.O. Box 1452, Spartanburg, SC 29304; e-mail rcastellucc@sherman.edu; call 800-849-8771, ext. 1229; or fax 864-599-4860.

Course Outline and Objectives

■ Anatomy

Anatomy will be covered in two modules, including a gross anatomy dissection lab and review of the skeletal, ligamentous, muscular and neural structures in the cervical spine. Particular emphasis will be placed on those structures that might be involved in misalignment and subluxation of the atlas and axis.

■ Neurology

Due to its importance, three modules will be devoted to neurology, including a review of neuroanatomy and physiology, special topics in subluxation hypotheses, and current understandings from the medical and chiropractic literature that help explain the success of chiropractic adjustment of the upper cervical spine in a wide variety of clinical presentations.

■ Biomechanics

Biomechanical concepts will be explored in two 12-hour modules. The first will deal with engineering concepts such as stress and strain, elasticity of tissues and kinematics, especially as they can be applied to the analysis and adjustment of the upper cervical spine. The second module will explore several of the models of upper cervical misalignment. Students should be able to apply advanced concepts of biomechanics to their understanding of normal and abnormal upper cervical mechanics.

■ Imaging and X-Ray Interpretation

These two modules will cover traditional X-ray procedures as well as those specific to upper cervical techniques. X-ray interpretation will develop better skills in radiographic anatomy and visualization. The imaging module will also review current applications of Magnetic Resonance Imaging (MRI), Computerized Tomography (CT), video-fluoroscopy and computer-aided X-ray analysis.

■ Research

One goal of this program is to develop the science of upper cervical chiropractic care. The research component will meet this goal by training doctors in methods for contributing to the scientific literature. A reading list of key articles from the peer-review literature will be used as training examples. In consultation with a published author or research faculty, each diplomate candidate will develop their own research project, ranging from a case study to a controlled trial. Presentation of the project before a peer-group, and acceptance of a manuscript for publication by a peer-reviewed research journal are requirements for this module.

■ Subluxation Theories and Detection

This module will develop into how our understanding of subluxation mechanisms has resulted in detection methods. We will explore the evidence for reliability and validity of a number of commonly used subluxation assessment procedures including X-ray analysis, thermography, functional pelvic distortion/leg length inequality, postural assessment and palpation.

■ History and Philosophy

This module is being planned as an outline course, featuring a collection of essays and reports on the historical development of upper cervical specific techniques, from the

early development of HIO by B. J. Palmer through the work of Wernsing, Grostic, Gregory, Sweat and Blair. The development of more recent techniques that arose from this work will also be described. The Philosophical underpinnings of chiropractic and specific upper cervical adjusting in particular will be explored through assigned journal articles and essays.

■ Technique Overview

This module will provide a more comprehensive overview of the techniques considered "Specific Upper Cervical" procedures. Instructors representing each of the known techniques will be invited to describe their work in one or two hour presentations. The objective is to give all candidates a taste of each technique, observe their similarities and differences, and develop an awareness of current practices of upper cervical technique. New doctors may come to a better-informed choice of a technique in which to specialize.

■ Case Management

Experienced clinicians present cases showing their methods for patient interview and education, record collection and assessment. Topics such as informed consent and risk management will also be discussed.

Tentative Schedule

1. Neurology II – Neurological Integration, Dan Murphy, September 8-9, 2001.
2. Research Methods – Edward Owens and other presenters of Sherman College with the Vertebral Subluxation Research Conference, October 13-14, 2001.
3. Anatomy I – Gross Anatomy of the Upper Cervical Spine, Mercy Navis, Roy Sweat and Sheldon Clayton, November 17-18, 2001.
4. Anatomy II – Deeper Structures/Anterior Dissection, Sheldon Clayton and Mercy Navis; January 12-13, 2002.
5. Neurology I – Neuroanatomy and Neurophysiology Review, Tony Duce; February 9-10, 2002.
6. Neurology III – Evidence for Neurological Theories of Subluxation, Rand Swenson; March 9-10, 2002.
7. Subluxation Theories and Detection – Kirk Eriksen, Edward Owens and Roger Titone; April 13-14, 2002.
8. Imaging – Current Applications: MRI, CT, Videofluorascopy and Computer-Aided Analysis, Laura Greene-Orndorf; May 11-12, 2002.
9. X-ray interpretation, Analysis Procedures – Various presenters; June 8-9, 2002.
10. History and Philosophy – Rob Kessinger, Moderator, Online presentation; July/August, 2002.
11. Biomechanical I – Statics, Kinematics & Elasticity, Cliff Smith; September 14-15, 2002.
12. Biomechanics II – Misalignment Models, Various presenters; October 12-13, 2002.
13. Technique overview – Various presenters; November 9-10, 2002.
14. Case management – Kirk Eriksen and Rob Kessinger; January 18-19, 2003.
15. Thesis presentation – The hot seat, Candidate's presentations; February 15-16, 2003.

The College of the Upper Cervical Spine

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