



NUCCA Editorial

We live today in an age of growing consumer protection. Legislators in several states and on the federal level are looking more closely at the rights of the consumer, and in an increasing number of instances the healing arts are not excluded. Patients are consumers and as such are entitled to receive the type of service which they are led to believe is offered. If a practitioner, therefore, holds himself out to the public to deliver spinal adjustments or manipulations, be he a chiropractor, osteopath, or medic, his patient is entitled to receive corrective spinal services, corrective within the accepted definitions of the terms "manipulation" and "adjustment". Despite the numerous systems of vertebral adjusting and manipulation offered the public, any of these systems that fail to reduce the misalignments of a vertebral subluxation may violate the basic rights of the patient.

The wide use of non-corrective systems of vertebral adjusting is a situation that is fraught with danger to the public, to the profession, and to the adjustor. The responsibility to correct this situation, in our opinion, lies with the colleges and with the chiropractic educators. The profession seems to have forgotten the words of its founder, D. D. Palmer: "Remember, adjustments are only made when a vertebra is returned to normal position." Palmer's statement is particularly true today, especially of upper cervical vertebral subluxations, because research has conclusively shown that when the upper cervical spine is not normally and structurally positioned the entire spinal column is subjected to muscular stresses that cause it to distort and misalign from its true vertical axis. C1, therefore, proves to be a stress-producer throughout the body, and must be normally positioned by the adjustment before the patient's spine can be said to be properly aligned.

Continued on Page 6

© Ralph R. Gregory, D. C. 1977. All Rights Reserved.

The Biomechanics and Neurological Aspects of the Atlas Subluxation Complex

by

Daniel C. Seemann
NUCCRA Research Advisor
Background and History

Daniel David Palmer, the founder of chiropractic, based the development of his system upon the fundamental principle that displaced vertebrae must be replaced to a normal position. According to Palmer, displaced vertebrae that were not replaced to a normal position were not adjusted. (1) He claimed to be the first to replace displaced vertebrae by using the spinous and transverse processes as levers to rack subluxated vertebrae into normal position, and from this basic fact, to create a science which is destined to revolutionize the theory and practice of the healing art. (2) It was this basic principle, the restoration of displaced vertebrae to normal position, that distinguished the system Palmer named chiropractic from the **non-specific spinal** methods utilized by his contemporaries.

Strong differences of opinion existed in the early days of chiropractic concerning the vertebral subluxation and the adjustment. D. D. Palmer's most outspoken opponent was a medical doctor, Alva A. Gregory. Gregory rejected Palmer's theory and posited that, due to muscular contraction, vertebrae approximate, are drawn together causing nerve interference by narrowing the intervertebral foramina. (3) Gregory called this approximation of vertebral segments, the spinal lesion, and its correction consisted of simply a relaxation of the spinal ligaments and muscles by the introduction of an external force applied by the adjustor. It was in no sense a replacement of displaced vertebrae, but a "relaxation of spinal ligaments, thereby overcoming the contraction". (4)

The early development of spinal x-ray by B. J. Palmer, son of the

founder, largely discredited Gregory's approximation theory, especially in the upper cervical region where x-ray frequently disclosed gross (misplacements) vertebral subluxations.

While x-ray resolved the differences of opinion between Palmer and Gregory, the conflict regarding the adjustment was not resolved. Insofar as the upper cervical spine is concerned, the same non-specific leverage techniques are used today as advocated by Gregory, despite the lack of control of force and direction. The greater emphasis has been upon full spine and pelvic adjusting, the lumbo-sacro joints and the sacro-iliac joints. Presumably, this is based upon the principle that a straight spinal column is dependant upon a correctly positioned base of support.

The search for a specific, single vertebral subluxation that would produce the greatest nerve interference was discussed in the writings of the Palmers. D. D. Palmer referred to specific adjusting as . . . where and how to adjust the one vertebra which, by its displacement, causes one or more symptoms or ailments from which the patient desires relief. B.J. Palmer felt the profession lost sight of the single specific and started adjusting all and every spinal vertebrae, but later came back to the single specific idea with the meric system which systemized the backbone and limited adjustments into the majors and minors system, accentuating some subluxations and making others less important.

In 1930, B. J. Palmer introduced his single specific, the analysis of and the correction of the atlas and the axis vertebrae, both a specific, depending upon the degree of severity of misalignment. He reasoned that it was only at this spinal location that neurological interference between brain and body

Continued on Page 2

could sufficiently exist. The adjustment of either single specific was predicated upon the misalignments of the displaced vertebra, the exact malpositions of the vertebra.

The initial research on C1 and C2 specifics was conducted at the Palmer Chiropractic Clinic during the 1930s. The investigations were supervised by both chiropractors and medical physicians, and careful pre and post examinations were given to the patients after adjustments to C1 or C2 vertebrae. This research continued over many years and the single specific hypothesis was largely substantiated. As a result of this research, the findings were incorporated into the curriculum at the Palmer College of Chiropractic.

However, attempts to use the Palmer system to reduce a C1 and C2 required a more precise method for taking x-rays; and that more accurate and detailed techniques of film analysis be devised, and that a procedure for adjusting C1 and C2 to obtain maximum reductions be perfected.

In 1941, Dr. Ralph Gregory working conjointly with another chiropractor, Dr. John F. Grostic, instituted a program of investigation of C1 and C2 subluxations, using a unique system of x-ray analysis. The lateral magnification, the center of the x-ray bucky, center of the film, and the focal spot of the x-ray tube were perfectly aligned in all planes. Alignment devices were designed and perfected which centered the patient to the center of the bucky and the x-ray film and to the central ray of the tube. Distortion-free x-ray films were obtained, providing accuracy in making measurements of the misalignment factors into all the planes of abnormal motion: the sagittal, lateral, and transverse planes. Further, less radiation was required to take the x-ray because of the more effective use of the central ray. Lead collimators were installed which reduced scattered radiation, resulting in lowering the time factor needed to take the x-ray film.

An intensive study of the mechanics of the subluxations of C1 and C2 followed the x-ray alignment procedures. A procedure for determining how the subluxation was produced and how the vertebrae rotated abnormally from the condylar structures was studied. Also investi-

gated was how the misalignments could be corrected or reduced by the adjustment. With the system of pres and posts the reduction of the subluxation could be verified immediately.

With this precision in x-ray filming several biomechanical measurements could be made:

- (1) A procedure was developed for measuring lateral displacements of the atlas on the occipital condyles.
- (2) Many variations were found and measured between the condylar and axial circles.
- (3) It was found that the odontoid process of the axis when misaligned could shift into the same lateral plane as the atlas or it could shift into the opposite lateral plane. With precision x-ray, these differences could be measured.
- (4) With the system of measuring plane lines, the position of the atlas plane could be determined in relationship to a normal plane line.
- (5) The relationship of subjacent cervical vertebrae to C1 in the frontal plane, including the rotatory misalignments of the spinous processes of C2 through C7, were determined by measurement.
- (6) The misalignment of C1 into the transverse plane was also measured and compared to the central plane of the skull.

Using the planes of motion as the basis for measurement, it was determined that the misalignments of the upper cervical vertebrae could be measured in degrees. This required the design of instruments which could accurately measure rotatory relationships between atlas and subjacent vertebrae.

With this series of precise measurements, force vectors were calculated mathematically which were then interpreted into the position where the adjustor was to stand and how the adjustor was to direct the force to the transverse process of the atlas.

It is important to note that during the early periods of the development of this system it was determined if the atlas was properly adjusted the axis as well as the other cervical vertebrae returned to normal position. Therefore, it became a major premise with Gregory and Grostic

that C1 was the primary vertebra and concentrated their research on the atlas. (CA 1942-43)

Because of the specificity of the analysis of the C1 subluxation, the adjustment therefore became a highly skilled procedure. As in the case of the analysis, the adjustic technique developed through trial and error over several years. The analysis system and the adjustic procedures are constantly being refined and improved.

In summary, there is considerable difference between adjusting the full spine and adjusting the single specific, C1. The differences are mainly mechanical and neurological. C1 mechanically distorts the spinal column by its adverse effects upon the musculature of the spinal column, causing contraction. An adjustment applied to a dorsal or lumbar vertebra, or several of them separately, is limited in its beneficial effects in that it is localized to the motor unit, in association with the particular vertebra being adjusted. The effects are not the same neurologically as in the case of an adjustment of C1. **A C1 correction effects the central nervous system.** There is sufficient evidence to show that any number of adjustments on spinal vertebrae below C1 will not remove the spasticity of the spinal musculature unless C1 is properly corrected. It is also a fact that realignment of the pelvic girdle, the lumbo-sacral joint and/or the sacroiliac joints, will not effectively remove spasticity of the spinal musculature, nor bring the spinal column in line with its center of gravity until the C1 subluxation is correctly reduced.

Neurological Aspects Of The Subluxated Atlas

During the years of developing the biomechanical system of analysis and adjusting, Dr. Gregory began to study the neurological aspects of the subluxated atlas. It was noticed that patients who had a subluxated atlas also manifested other types of physical problems such as pelvic distortions, leg disparity (short leg), or the body would show a displaced center of gravity. It was also determined that after a successful reduction in most cases of the atlas subluxation, these disparities would disappear.

It was theorized that these disparities were caused by misalignments of the atlas vertebra effecting the brain stem, a subluxated atlas. The atlas vertebra is located at the caudal portion of the brain stem and when misaligned can produce longitudinal and transverse tractionization on the cervical cord and brain stem. This pressure can effect the efficacy of the central nervous system. Magoun (1968) has demonstrated that the central reticular formation of the brain stem exerts influence both on the ascending and descending connections from the cerebral cortex and the more cephalic of these connections facilitate motor discharge while the caudal section exerts an inhibitory influence. Neural imbalance in the extra-pyramidal motor connections is thought to be responsible for spasticity.

Williams (Monograph 1976) in her review of "Selected Central Nervous System Motor Control Structures" in discussing pyramidal tract fibers notes that . . . "55% of all pyramidal tract fibers end in the cervical region of the spinal cord, 20% in the thoracic area and 25% extend into the lumbo-sacral areas of the spinal cord . . . in terms of sheer bulk this tract deposits its load so to speak in a very small area physically, in the cervical regions of the spinal cord. This, of course, has important implications for possible effects of deviations on bony structures in this region of the spinal cord on pyramidal tract activity."

Williams also discusses the importance of the reticular formation which is located in the brain stem and is an important part of the extra-pyramidal tract. "The reticular formation provides a basis of support for the body against gravity and when a person is in the standing position continual impulses are transmitted from the reticular formation via the spinal cord to the extensor muscles. Contraction of the extensor muscle groups allows for repositioning of the limbs to support the body against the pull of gravity. The normal excitatory nature of the upper reticular formation provides much of the intrinsic excitation required to maintain muscle tone in these antigravity muscles."

It is NUCCA's position that an atlas subluxation can produce more

detriment to the central nervous system than any other vertebral subluxation because of its critical position in the vertebral column and more specifically to the brain stem. Inappropriate pressure or tension in this area can inhibit normal excitation to the extensor group muscles resulting in spastic contracture. Elimination of this pressure through chiropractic adjustment relieves the spastic contracture and eventually the pelvic distortion, short leg, and perhaps more importantly the center of gravity.

The Anameter

In 1971, Dr. Gregory and the writer began discussions concerning the feasibility of researching and proving that there was a direct relationship between a subluxated atlas, pelvic distortion, and a short leg. The critical part of the study was to design an instrument (eventually called the Anameter) which would measure leg disparity and pelvic distortion while the patient was standing in the vertical position. The instrument had to measure subtle changes between the pre and post adjustments. The neurocalograph of course would not be appropriate for this type of study and the traditional leg check was considered too subjective a measurement for the precision that was required.

With these parameters as the basic foundation, we started a most frustrating and exciting period five years ago. The original purpose of the Anameter was to measure leg shortness more accurately which in turn would indicate the absence or presence of nerve pressure in the brain stem. Our findings have far out-distanced what we had originally intended. It was found, for example, that the pelvis distorts into two planes, both the lateral and transverse planes. It also was discovered that as the subluxation reduced the Anameter listings also reduced. Perhaps the most valuable finding was when the subluxation was successfully reduced to the 0° plane in all planes the Anameter also recorded 0° in both planes. The Anameter's value becomes readily apparent with this information. If the upper cervical chiropractor can know that he/she is satisfactorily reducing the subluxation by recording the measurements after each adjustment, the knowledge becomes an

invaluable part of the adjustment process.

We also found that a neurological drag occurred with some adjustments. This happened usually when the patient had never been adjusted before. The post x-rays would show that the subluxation had been satisfactorily reduced but the Anameter would still show distortion in the planes. Our explanation is that the nerve tissue involved in the subluxation has not healed or adapted and until this occurs the pelvic distortion will remain.

Summary

This article has reviewed the background and history leading to the theory and practice of chiropractic as promoted by the National Upper Cervical Chiropractic Association, Inc. (NUCCA). The relationship between the biomechanics of the subluxation, the neurology involved, and the Anameter was also discussed.

References:

- (1) Palmer, D. D.: The Science, Art, and Philosophy of Chiropractic (1910). Portland Printing House Company, page 42.
- (2) Ibid. Page 42
- (3) Gregory, Alva A.: Spinal Treatment, Science, and Technique (1912). Palmer-Gregory College. Page 129
- (4) Ibid. Page 437

MONOGRAPH

Subscription Blank

I, the undersigned, wish to receive the MONOGRAPH regularly. I understand that in filling out, signing, and returning this form to NUCCA, 221 West Second St., Monroe, Michigan 48161, I am in no way obligated.

Name _____

Address _____

City _____ State _____ Zip _____

I am actively engaged in practice Yes No

I am a member of the following Chiropractic Organizations:

ICA ACA NUCCA Other

S/S
(Please type or print)

The Eleventh Annual NUCCA Convention

Of paramount importance to every chiropractic doctor and college student who attends an educational conference are the questions: what benefits will I receive proportionate to my investment, and what exactly will the conference do for me?

In discussing these questions in relation to the 1977 NUCCA Annual Convention and Educational Conference, a look at the 1977 NUCCA schedule shows that a full basic course in upper cervical film analysis and adjusting will be presented with plenty of individual and practical instruction. For the student enrolled in a chiropractic college, the special fee of \$50.00 entitles him to participate in all the convention activities, become a student member of NUCCA for the ensuing year, attend the banquet, and all of the lectures. Not included in the convention fee is the cost of analytical instruments. These are obtainable, however, at the convention at the manufacturer's cost of \$70.00 per set.

For the doctor and for the college student who have had NUCCA instruction, some of the practical work may be a review, but additional and new information will be taught, such as: new and tested concepts of patient placement on the adjusting table in relation to skull centers of gravity. This information greatly assists in subluxation-reduction; improved biomechanical considerations of the cervical spine that aid in subluxation reduction, and a new headpiece that expedites greater and faster reductions of C1 rotations, both posteriors and anteriors, C1 lateralities, and lower cervical kinks.

The theme of the 1977 NUCCA Convention is "Measured Responses Between C1 Subluxations and Their Effects on the CNS". The theme is based upon the research findings of the National Upper Cervical Chiropractic Research Association, Inc. (NUCCRA) during the past year. Related to the theme will be subjects presented at the convention by the academicians: Professor Aaron Mattes (Kinesiologist) from The University of Toledo, Professor Robert Deck (Physicist), The University of Toledo, and Professor Daniel C. Seemann who is well known to NUCCA members as their

Executive Director and the NUCCRA Research Adviser, also from The University of Toledo.

Principles of kinesiology as they relate to the convention theme will be discussed by Professor Aaron Mattes. Basic to the convention theme is the now established NUCCRA principle that neurological imbalance within the CNS is a cause of bodily distortion and that, as a result, the viability of the spinal column is dependant upon the absence of C1 interference with the inhibitory and facilitatory neurological mechanisms located in the brain stem.

Professor Deck's discussion of the chiropractic adjustment in terms of physics will add another valuable dimension to our understanding of the chiropractic adjustment. This will be a lecture that neither the student nor the established doctor of chiropractic can afford to miss.

Professor Seemann's subject "Correlations Between C1 and Anatometer Data" will support the convention theme in physical terms. Professor Seemann has researched with the Anatometer for over five years, applying the instrument to patients to obtain data for making correlations between C1 subluxations and their physical effects on the spinal column. His subject is of tremendous interest to chiropractors and students who desire to see for themselves some valid support of their basic chiropractic theory.

Guest speaker at the banquet will be Mr. John F. Savage, author of the book "The Easy Sale". Since 1951 when he left the profession of high school teaching and coaching to enter the life insurance business, Mr. Savage, as General Agent for Columbus Mutual, developed his agency from \$4,000,000 dollars worth of production to \$50,000,000 in 1975. Mr. Savage is a Life Member of the Million Dollar Round Table, received his CLU designation in 1973, and has received the National Quality Award for the past 15 years. He has been President of the Toledo Association of Life Underwriters, and is Chairman of the Board of Trustees of The University of Toledo. A Million Dollar Round Table speaker on several occasions, Mr. Savage is well known as an international lecturer.

During 1975, he spoke at 68 meetings and conventions, here and abroad. He had a personal and successful experience with chiropractic after spinal surgery failed to alleviate a very severe spinal problem.

In sum, the 1977 NUCCA Convention presents a program of considerable practical "take-home" work, reinforced by members of the academic community. There will be no lack of backing proof. Because of the continuing NUCCRA research carried on between annual conventions, film analysis procedures and adjusting techniques are being constantly improved, new material being added, and greater understanding developed and applied to the solutions of subluxation problems. The convention fee includes all activities held at the convention, lectures, banquet, membership dues in NUCCA for the following year, anatometer checks for those requesting same, and the chance for those attending to support future chiropractic research simply by paying the convention fee.

For further information write NUCCA, 221 West Second Street, Monroe, Michigan 48161.

The Upper Cervical
MONOGRAPH

Published by

THE NATIONAL UPPER
CERVICAL CHIROPRACTIC
ASSOCIATION, INC.

EDITOR:

Dr. Ralph R. Gregory
221 West Second Street
Monroe, Michigan 48161

Change of Address

Many MONOGRAPH copies and other NUCCA and NUCCRA material are returned because of the subscriber's change of address. Please notify the NUCCA editor, 221 West Second Street, Monroe, Michigan 48161, of any change of address.

Saturday, April 30, 1977

8:00 - 8:45

Registration

8:45 - 9:00

Invocation

Rev. H. B. Fehner
Pastor Emeritus
Trinity Lutheran Church
Monroe

9:00-10:00

Opening Address

Mr. Peter Benesh
Co-Inventor of the
Anatometer
Certified Manufacturing
Engineer

10:00 - 12:00

Film Analysis
(Practical Work)

Instructors:
NUCCA Directive Board

12:00 - 2:00

Lunch

2:00 - 4:00

Aaron Mattes, M.A.
(Kinesiologist)
The University of Toledo

4:00 - 7:00

Film Analysis (con't)
Instructors:
NUCCA Directive Board

Sunday, May 1, 1977

9:00 - 10:00

Will Innate Be Your Fate?
Prof. D.C. Seemann

10:00 - 11:00

Adjusting the A.S.C.
Ralph R. Gregory, D.C.

11:00 - 12:00

**Practical Work in
Adjusting
Technique**
Instructors:
NUCCA Directive Board

12:00 - 2:00

Lunch

2:00 - 4:00

**The Chiropractic
Adjustment in Terms
of Physics.**
Robert Deck, Ph.D
The University of Toledo

4:00 - 7:00 **Film Analysis
Anatometer
Studies**
Adjusting Procedures

Monday, May 2, 1977

9:00 - 10:30

**Measured Responses
Between C-1
Subluxations and the
Central Nervous System.
C-1 Considered as a
Full Spine Technique.**
Ralph R. Gregory, D.C.

10:30 - 12:00

Practical Work in
Adjusting Technique.

**Practical Work in
Adjusting Technique.**
Instructors:
NUCCA Directive Board

12:00 - 2:00

Lunch

2:00 - 3:30

**Correlations Between C-1
and Anatometer Data.**
Prof. D. C. Seemann
NUCCRA Research Adviser

3:30 - 5:00

**NUCCA
Annual Business Meeting**

7:30

NUCC Banquet
D. C. Seemann, M.C.
Guest Speaker:
Mr. John Savage
Author & International
Lecturer

Tuesday, May 3, 1977

9:00 - 10:30

Film Analysis (con't)

10:30-12:00

**Adjusting Technique
(con't)**
Anatometer Studies

12:00 - 2:00

Lunch

2:00 - 4:00

Review of Film Analysis,
Adjusting Technique,
and Anatometer Readings

NOTE: Attendance at this convention is limited to 100. Applicants will be refused when quota is reached. The final registration date is March 10th, 1977.

The convention fee of \$250.00 for professionals includes all lectures, banquet, NUCCA dues for the ensuing year, and all practical work. Analytical instruments are not included.

A fee of \$50.00 for students registered in a chiropractic college includes all lectures, banquet, NUCCA dues for student membership, and practical work. Analytical instruments are not included.

This educational program is designed to satisfy license-renewal requirements.

This educational program and conference is under the supervision of Professor Daniel C. Seemann, The University of Toledo.

Nucca Editorial
Continued from Page 1

Many chiropractors, however, relying upon their training believe that the adjustive techniques taught them do in fact correct upper cervical subluxations. As most of the adjustive techniques taught have not been adequately researched, this "belief" is without proper foundation. Certainly, one of the basic rights of a patient is that of not being subjected to adjustive systems that have not been investigated and tested sufficiently to insure his safety under service. Adjustive systems, for instance, that utilize the patient's skull as a lever with which to attempt to restore misaligned and subluxated

cervical vertebrae to normal can be potentially dangerous both neurologically and from a vascular standpoint. Regardless of the fact that these mechanically inept systems are taught in colleges and elsewhere, sufficient evidence exists that these techniques fail to reduce the misalignments of cervical vertebrae, fail to correct cervical subluxations, sometimes increasing them; and, thereby, fail to benefit the patient. By increasing subluxations, they may produce immediate or future harm to the patient, thereby violating his rights.

The right of the patient to be protected from the use of excessive and uncontrolled force in an upper cervical adjustment is clearly indi-

cated. Every subluxation has its exact reduction pathway, and the patient has the right to expect that the professional is competent in determining, prior to the adjustment, the precise pathway that leads to normal positioning of the misalignments of the patient's subluxation without resorting to excessive force as a substitute for knowledge. Force is always going somewhere, and if it is excessive it inhibits subluxation reduction.

The rights of the patient should be paramount. Chief among them is that of receiving from the hands of a practitioner the services, properly, delivered, that the practitioner holds himself out publicly to perform.

NUCCA Scholarship Awards

It was announced at the May NUCCA Convention that the NUCCA Directive Board has authorized a scholarship grant-in-aid award of \$200.00. This sum will be paid to chiropractic students currently enrolled in a chartered college of chiropractic who submit to the MONOGRAPH editor an acceptable article pertaining to the upper cervical spine. The announcement was made by Professor Daniel C. Seemann, NUCCRA Research Advisor.

Submitted articles may deal with any aspect of the Occipital-atlanto-axial area of the cervical spine: mechanics, neurological manifestations, analyses of cervical subluxations, corrective techniques for cervical subluxations, detrimental effects of upper cervical subluxations on the human organism, etc.

All entries will be judged by the NUCCA Directive Board and by Professor Seemann. Their judgment will be final. Accepted articles become the property of the National

Upper Cervical Chiropractic Association, Inc. Winners will be announced at the 1977 NUCCA Convention.

NUCCA will attempt to return all manuscripts that are accompanied by a self-addressed, stamped envelope. The organization will not be responsible for lost or mislaid material. The writer should retain a carbon copy.

Further information is available by writing:

NUCCA MONOGRAPH EDITOR
221 West Second Street
Monroe, Michigan 48161