The Application of the Respiratory Principle to Osteopathic Manipulative Procedures

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The respiratory principle has been used for many years by the manipulative therapist. It has also been used in various ways in other specialties for a long time. Due to this previous usage, the following material will not be new to the common sense of the word but its application to general osteopathic manipulative procedures may open up new fields of use for some, and the specific application to the skull is a new idea to most physicians.

For the purpose of this discussion, the respiratory principle is defined as the voluntary control of respiration by the patient at the direction of the physician as an aid to or the motive force for the correction of osteopathic lesions. The osteopathic lesion may be of either an osseous or a soft tissue type.

One way in which this principle was first used was for relaxation. The physician often asks the apprehensive patient to take one or two good deep breaths as an aid to abdominal or pelvic examination. Another application is for diverting the patient's attention while correcting osseous lesions. In more recent years, the movement of the vertebral osseous parts during respiration has been utilized in the specific correction of vertebral lesions. Even more recent is William G. Sutherland's application of the respiratory principle. Dr. Sutherland is re-emphasizing the exaggeration technics by the use of the respiratory principle. He is also creating great interest by his discussion and teachings of the cranial concept. In these presentations, movement at the articulations between the individual bones of the cranium and face is given great significance.

In order to utilize the respiratory principle in osteopathic manipulative procedures we must first have an understanding of the physiological effect of respiratory motion upon the tissues of the body. This has been stated by Hoover in these words: "All normal spinal and sacral joints, and indeed, probably all visceras, have an orbit of excursion during respiration. It seems that they move in one direction during inhalation and return in the opposite direction during exhalation.

Movement in this orbit is one of the factors necessary for physiological function of the related parts as well as for physiological activity of the related tissues."

Throughout the history of the osteopathic profession, stress has been placed on the need for a detailed knowledge of anatomy and physiology. The writings of Andrew Taylor Still carry many references to the relationship of fasciae, venous and lymphatic channels, arteries, nerves, ligaments, muscles, and bones. A review of these subjects in the light of respiratory motion is indicated. The idea of each of these structures having a normal excursion with each respiratory cycle is especially interesting in that it explains many of the physiological disturbances occurring in the apparent absence of gross lesions. It is logical to assume that failure of any tissue to move freely in its normal orbit is the beginning of disease. This concept also fits the common working definition of an osteopathic lesion, i.e., misalignment or loss of motion or both of a tissue constitutes a lesioned condition. This relation of all tissues, osseous and nonosseous alike, to respiration and the relation of these factors to lesions is again best summarized by quoting Hoover:

A given lesion occurs at a certain point in the respiratory cycle and in a certain position. In correction, the related parts are moved to the point of release by slight exaggeration of the lesion as the patient breathes deeply. The release occurs in the position at which the insult to the joint took place and at the point in the respiratory cycle at which the lesion was produced. In that certain position and at that certain point the respiratory movement picks up the abnormally related parts and swings them into motion in union with contiguous parts.

This motion in union with contiguous parts during the respiratory cycle is the immediate object of the corrective maneuver, and the osteopathic articular lesion is reduced when these conditions are fulfilled. The relation between the parts involved is now physiological and they can be moved easily to any other physiological relation.

It is wise to have the patient breathing deeply, because the lesion may have been, and frequently is, produced in either deep inhalation or deep exhalation. Breathing by the patient with frequently corrected lesions if the parts are placed in a relaxed or released position. This is probably Nature's way of doing the job. However, severe lesions require aid from the physician to release them. Here, as always, an accurate diagnosis based on a knowledge of the physiological

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movements of the related parts is essential to secure the re-

sevoir.

Another point in the diagnosis of osteopathic lesions now becomes apparent. The usual procedures of history, observation, and palpation for position and for motion may be markedly enhanced by splitting the palpation for motion into two phases, active motion and passive motion. The latter represents the move-

ment of a part by the efforts of the physician. Active motion can be divided into that produced voluntarily by the patient through his muscular system and that produced involuntarily by respira-

tion.

The use of passive motion in the examination for lesions is no less common that further discussion is con-

traindicated in this paper. The loss of voluntary active motion is often noted by the patient; indeed it is fre-

quently the reason that furthering the physician. The palpable muscular contractions and the obvious mal-

alignment of the lesioned segment or segments are seen easily in the daily routine in the doctor's office; thus, these are the only means for discussion of this phase of motion. The involuntary active motion of the tissues is often easy to detect. The reason for this difficulty lies in the lack of understanding of the subject. The initial attempts of the average physician to use this factor in diagnosis are often discouraging because he is not sufficiently familiar with the normal excursion of the tissue with respiration or because he has not developed an acute aëctic sense.

The normal excursion of the tissues with respira-

tion is palpable even with the patient at complete rest. However, these changes may be materially exaggerated by forcing inhalation and exhalation to the physio-

logical limits. This feature to itself is of tremendous value when dealing with the bedfast patient. It makes a careful and detailed examination of all articulations possible without the too frequent manuvering of the pa-

tient. It is even more important in the treatment in such cases. The same position and sense of touch used in examining the lesioned area can be used to

exaggerate the lesion slightly, and with the respira-

tory cooperation of the patient, active release and mobility can be secured in the same operation. This application is not limited to bedfast patients for it is equally effective in acute traumatic lesions and post-

operative cases of all types.

Since involuntary active motion is detectable in all tissues, the subject of general manipuliation will, for convenience of discussion, be divided into four parts dealing with (1) the skull; (2) the vertebral column; (3) the appendicular skeleton; and (4) the soft tissues.

THE SKULL.

Osteopathic manipulation of the skull is a rela-

tively new idea based upon the premise of a normal move-

ment at the articulations between the bones of the skull. This movement is a part of the normal function of the primary respiratory mechanism but may be affected by the voluntary control of respiration.

The brain and spinal cord, the cerebrospinal fluid

within and around the central nervous system, the meninges, particularly the processes of the cranial and the spinal dura, the articular mobility of the skull, and the respiratory mobility of the sacrum between the ilia collectively make up the primary respiratory mechanism. The force creating the motion within this mechanism is described by Dr. Sutherland as an inherent motility of the central nervous system.

Careful examination of a disarticulated skull will demonstrate the logic of this premise of internal motive force. The outstanding feature revealed by such a careful study is the construction of the articulating surfaces. It is true that the articular surfaces are beveled, grooved, irregular, and smooth, and some surfaces combine various of these characteristics. Each bone, regardless of the type of motion, is held to the fellow by either cartilage or connective tissue. This intervening substance readily permits the small amount of motion in these articulations. The direction or type of motion is governed exclusively, however, by the contour of the articulating surfaces.

The second point to note in examination of the disarticulated specimen is the general arrangement of the bones in relation to each other. The arrangement is such that the face is related to the occipital bone in the disarticulated skull are disseminated by its contour through normal fastnesses after compressing the intra-articular substance, but the arrangement also permits expansion to the point of complete separation when the force is applied from within. This factor has been known for many years and is utilized in disarticulating all types of skulls. The combination of bone arrangement and the contour of the articulating surfaces indicates the direction of the normal motion at each point. De-

tailed study of these two factors was made over a period of several years by Dr. Sutherland. This study revealed the movements which are now being described for these bones.

The movement of the cranial bones during the inhalation phase produces a shortening of the vertical and anteroposterior diameters of the skull and a lengthening of the transverse diameter. During and as a result of these changes, the facial skeleton moves in such a way that the orbit is shortened in its long axis and widened at its peripheral; the nasal fossa is widened transversely and shortened in its vertical diameter, each para nasal sinus is increased in volume, and the alveolar arch is widened posteriorly. During the exhalation phase of motion, the exact opposite occurs thus allowing the bones of the skull to tra-

verse their orbit of excursion completely. These move-

cements may be exaggerated by the voluntary forcing of respiration to the physiological limits.

Too frequently the discussion of motion and les-

ions is limited to the change occurring between the osseous parts. The real effect of all such changes is dysfunction in the organ systems. Many of these effects are produced indirectly through the nervous system, but many are also produced directly through the fasciae and vessels of the area. For this reason, an attempt should always be made to visualize all tissues directly or indirectly related to the lesioned part. In the instance of the skull, consideration of the changes in the osseous case is of no real value unless considera-

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active motion, which is limited to the involuntary type in the skull.

The correction of cranial lesions is accomplished by four methods, each of which is combined with the use of the respiratory principle. They are: (1) Exaggeration of the lesion to the point of articular release plus control of respiration by the patient as directed by the physician; (2) direct action technic in which the parts are directed toward normal and aided by the patient's control of respiration as directed by the physician; (3) decompression of compressed articulations aided by the rocking effect of the normal respiratory movement now exaggerated by forced inhalation and exhalation; and (4) molding of the tissues during which normal respiration will usually suffice.

In this treatment outline there are two points to note particularly: (1) the absence of external force and (2) the necessity for specific diagnosis of the lesion as to type and location. These two points often make it difficult for the physician to become rapidly adept at cranial osteopathic manipulation and the use of the respiratory principle elsewhere in the body.

The excursion of the vertebrae during respiration results in specific alteration of the anteroposterior curves of the spine. With inhalation, the excursion produces a lessening or decrease in the curve of each region. Movement in the opposite direction during exhalation completes the orbit of motion. More specifically, with inhalation the sacral base moves posteriorly into postural extension; the lumbar spine is flexed; i.e., the normal extension is decreased; the dorsal spine is extended, i.e., the normal flexion is decreased; and, the cervical spine is flexed, i.e., the normal extension is decreased. These movements may also be exaggerated by forced respiration within physiological limits. A good understanding of the direct changes produced by this excursion of the osseous parts is equally as important as it is when similar consideration is given to the contents of the skull.

The consideration of the normal respiratory excursion of the vertebra in the diagnosis of lesions in this region does not in any way alter the procedures ordinarily used for the detection of gross anatomical changes. It does, however, increase the physician's knowledge of his patient's structure and is of particular value in the examination and treatment of the acutely ill patient. The importance of diagnosing physiological loss of motion is especially great when it is remembered that this change disturbs the physiology of the part and related tissues and is a predisposing factor toward gross osteopathic lesions.

The application of the respiratory principle in the correction of osseous lesions of the vertebra column is dramatic, peculiarly effective, and surprisingly simple. It reduces the labor of osteopathic manipulative therapy and provides a method for correction of acute traumatic lesions of the severely ill patient when other forms of treatment could not possibly be used. Hoover summarized the exaggeration principle of Still and the respiratory principle of Sutherland in the following quotation: "The principle of exaggeration, held it in exaggeration and use respiration to secure release and mobility." The application of the combination of exaggeration and respiration to specific articulations of the spine has been made by other authors and need not be repeated here.

The Appendicular Skeleton

Motion at the articulations of the appendicular skeleton is usually limited in the thinking of most individuals to the passive motion produced by the patient or the active motion voluntarily produced by the patient through his muscular system. Involuntary active motion of these articulations occurs with each cycle of respiration in the thorax, ribs, and pelvic diaphragm. Any doubt regarding this statement is effectively dispelled by diligent palpation of the parts in question during exaggerated respiratory effort.

Again the usual diagnostic procedures may be enhanced by consideration of the respiratory movements by the physician's ability to recognize deviations from this normal excursion. Corrective treatment again may be applied in a simple, effective, osteopathic manner by exaggeration of the lesion and voluntary control of respiration by the patient at the direction of the physician. Space does not permit the description of these procedures as applicable to the specific articulations.

The Soft Tissues

Movement of the viscera with respiration has been known for many years. However, the total orbit of excursion and the possibilities of restrictions in movement have not received any great amount of attention. Frequent and well understood are the discussions of physiological changes occurring in the presence of osseous lesions and the effect of fascial, ligamentous, and muscular changes on the venous and lymphatic drainage of an area. These changes have long been considered as predisposing to disease processes. Is it not logical to assume that restriction of visceral excursion may also play an important role in disease entities? Visualize the movements with respiration of the heart, liver, kidneys, digestive tube, uterus, bladder, and abdominal and pelvic diaphragms. Then consider the effect on a structure and its related fasciae and vessels of limitation of this normal movement. This one point should explain the visceral dysfunction often evidenced by symptoms but without sufficient vertebral changes to account for the disturbance.

Detection of soft tissue changes is dependent upon a thorough understanding of the normal orbit of excursion of the part and a tactile sense that is capable of recognizing the minor congestive changes occurring in these tissues. Careful examination of the liver, the thoracoabdominal diaphragm, and the contents of the thorax and of the pelvic cavity will reveal the cause of most of the common disorders of thoracic, abdominal, and pelvic viscera when it is not already evident in the mal-alignment of the osseous parts related to these areas. Treatment by any method not designed to restore normal visceral motion will fail to produce a complete response. True, there may be relief from the major symptoms but a total return to normal physiological activity is not possible in the presence of uncorrected visceral lesions. Technics have been described in recent literature for the correction of the more common visceral lesions to which reference is limited.

Summary

The respiratory principle is not new in some of its aspects, but is being more widely and effectively applied to the etiology of disease and to the diagnosis

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and treatment of osteopathic lesions. This application has resulted to a large degree from the premise that all tissues have a normal orbit of excursion synchronous with the respiratory cycle. The use of this principle in treatment is broadening the base of the osteopathic concept by re-emphasizing the need for structural integrity as a prerequisite to normal physiological activity and by bringing to the front some of the small but important details commonly overlooked in the consideration of normal structure and function. The use of this principle in treatment is also serving to re-emphasize the exaggeration techniques advocated by Andrew Taylor Still.

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